ECOLOGICAL IMPACT ASSESSMENT REPORT

at

Land off Bankfield Drive
Huddersfield
West Yorkshire
HD9 2PH

Client:
Orion Homes

Client Address:
5 Benton Office Park
Bennet Avenue
Horbury
Wakefield
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JCA Ref:
18204d/EG REV 6

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JCA Limited
Arboricultural & Ecological Consultants

Quality Assurance

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This report has been prepared and provided in accordance with the *British Standard 42020: Biodiversity – Code of practice for planning and development 2018* and the *CIEEM's Code of Professional Conduct.*

Summary

JCA Limited has been commissioned by **Orion Homes** to undertake an Ecological Impact Assessment (EcIA) of a site located at **Land off Bankfield Drive, Huddersfield, West Yorkshire, HD9 2PH.** The site is located at Ordnance Survey (OS) National Grid Reference **SE 12159 06546** with nearby postcode **HD9 2PH**.

A desk study and field survey were undertaken in order to assess the potential of the site to support protected habitats and species and species of conservation concern. Recommendations for further survey, avoidance, mitigation and enhancement – where appropriate - have been made and are summarised in **Table 1** on the following page and are detailed in full in Chapter 6 of this report.

Table 1: summary of ecological receptors at the site and recommended mitigation.

Receptor	Potential Risk to Project if No Action Taken	Cause of Impact Description of Effect	Further Survey Required	Mitigation Required
Designated sites				
Statutorily protected	Negligible	Negligible	N/A	N/A
Non-statutorily protected	Moderate	Possible degradation of adjacent local wildlife sites and the Kirklees Wildlife Habitat Network.	N/A	Production of a Construction and Environment Management Plan outlining mitigation strategies.
Protected species				
Flora (WCA Sch 8, CHSR Sch 5)	Negligible	N/A	No	No
Invertebrates	Negligible	N/A	No	No
White-clawed crayfish	Negligible	N/A	No	No
Fish	Negligible	N/A	No	No
Great crested newt	Negligible	N/A	No	No
Reptiles	Low	The removal of scrub vegetation and dry-stone walls could adversely affect any reptile populations of the area.	No	A precautionary approach should be adopted to include an Ecological Clerk of Works (ECoW) being present. Should a reptile be found during site clearance, the ecologist would move it to a place of safety. At present, no further surveys for reptiles are recommended.
Birds	Moderate	Disturbance of breeding birds through removal or pruning works of trees, scrub, and shrubs suitable for breeding birds within the breeding bird season. Resulting in breach of legislation.	If trees or vegetation is removed during breeding bird season (1 February until 31 August), a pre-construction sites walkover survey prior to removal is required. Vegetation must be removed within 24 hours of the walkover survey.	Dependent on timings of works.

Bats	Moderate	Potential to disturb local bat population using the site for foraging and commuting, resulting in breach of legislation.	No	For artificial lighting within the development, guidance from Institution of Lighting Professionals (2018) should be followed.
Badgers	Moderate	Due to surrounding landscape, there is a potential to disturb or harm badgers using the site for foraging and commuting, which may result in a breach of legislation if mitigation advice is not followed.	No	A precautionary approach should be adopted to include the covering of any excavation of the site, or if not possible, a safe exit route provided for badgers to leave the site, such as an artificial ramp to aid their exit.
Otters	Negligible	N/A	No	None
Water voles	Negligible	N/A	No	None
Beavers	Negligible	N/A	No	None
Hedgehogs	Moderate	Disturbance of nesting or hibernating hedgehogs during scrub removal.	No	Hedgehog holes measuring a minimum of 13cm x 13cm to be installed within any newly created walls or fences. Hedgerows permitting hedgehog commuting can be used alternatively to artificial barriers within the development. Vegetation to be hand searched by an ecologist prior to removal to identify if nesting or hibernating hedgehogs are present
Hares	Moderate	Disturbance to local hare population using the site for nesting, foraging and commuting, resulting in breach of legislation.	No	Vegetation to be hand searched hand searched immediately prior to removal by a suitably qualified and experienced ecologist, to ensure no hedgehogs or brown hares are nesting in the vegetation. Exclusion fencing during works and a site speed limit should be applied to protect brown and mountain hares.
Invasive Species (WCA Sch 9) Injurious Weeds (Weeds Act, 1959)				
Potential invasive weeds	None	The survey was conducted outside of optimal survey season and so the assessment	A re-survey was recommended.	The re-survey found no evidence of invasive plant species.

		of invasive flora could not be accurately conducted.	The re-survey was conducted on 02/08/23	Precautionary advice for two invasive species with records within 200m of the site is given in Chapter 8.
Biodiversity Impact				
Biodiversity Net Gain (BNG)	High	A net loss of habitat Biodiversity Units (BU) has been calculated as a result of the proposed development.	No	The purchase of Habitat Bank Credits from a third-party provider equivalent to 4.85 habitat BU.
Key: S41 habitat/species – habitats and species listed as priority for conservation importance under Section 41 (S41) of the Natural Environment and Rural Communities (NERC) Act 2006. WCA Sch – Wildlife and Countryside Act 1981 (as amended) Schedule CHSR Sch – Conservation of Habitats and Species Regulations 2017 Schedule				

Contents

1. Introduction

1.1 Background

1.1.1 In February 2023, JCA Limited was instructed by **Orion Homes** to undertake an Ecological Impact Assessment (EcIA) of a site located at **Land off Bankfield Drive**, hereafter referred to as 'the site'. The purpose of the survey is to establish a baseline of ecological information and assess whether the proposed works, hereafter referred to as 'the scheme', have the potential to adversely affect any protected or notable habitats or species.

1.2 Scheme Description and Location

1.2.1 The site is located at Ordnance Survey (OS) National Grid Reference **SE 12159 06546**, with nearby postcode **HD9 2PH.** The site is bordered to the north by Dobb Top Road and residential properties, to the east by a housing development, to the west and south by agricultural fields.

1.2.2 The scheme is the development of 21 residential properties, including two, three and four bed units, with associated access and soft landscaping.

1.3 Previous studies

1.3.1 A preliminary ecological appraisal was undertaken by JCA in 2022. The report found the site to hold potential to support reptiles, badgers, bats and hedgehogs and potential to support breeding bird species.

1.4 Aims and Objectives

1.4.1 The purpose of the survey is to establish a baseline of ecological information and assess whether the proposed development activities have the potential to adversely affect any protected or notable habitats or species. The following tasks have been undertaken:

- Desktop study – a review of environmental records for the surrounding area to obtain existing information on statutory and non-statutory designated sites of nature conservation interest, and the presence of protected and notable habitats and species within the site and its environs, including the results of recent ecological surveys in the area.
- Field surveys – a UK Hab Habitat survey involving a site visit to record habitat types and dominant vegetation, including any invasive species. During this survey evidence of protected or notable fauna and habitats

or habitat capable of supporting protected or notable fauna was recorded.

- Ecological report – an assessment of the potential ecological constraints to the proposed works at the site and recommendations for further survey, avoidance, mitigation, and enhancement where appropriate. Locations of any features constituting ecological constraints or of other ecological interest and vegetation recorded on and around the development are included in an accompanying UKHab Habitat Map (**Appendix 1**). This report and the maps are supported by photographs (**Appendix 5**) and information regarding current legislation (**Appendix 8**).

2. Methodology

2.1 Desktop Study

2.1.1 The desktop study involved conducting database searches for statutory and non-statutory designated sites and European Protected Species (EPS) licensing applications within a 2 km radius of the site. The baseline conditions are based on a review of existing available information including:

- MAGIC (Multi-Agency Geographical Information for the Countryside) website (to identify statutory designated sites and EPS licences).
- Ordnance Survey mapping (to identify potentially notable habitats including ponds).
- Aerial photography (to identify potentially notable habitats).
- Data search for records of protected/notable species on and within 2km of the site within the last ten (10) years (exempting bat roosts, of which all records are included) obtained from West Yorkshire Ecology Service (WYES), the local environmental records centre for Kirklees, along with information for non-statutory wildlife sites.

2.1.2 The records were checked against species listed as priority species under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 and the Kirklees Biodiversity Action Plan (LBAP, 2007) to assess national and regional habitat and species status.

2.2 Field Surveys

2.2.1 A UKHab Habitat survey of the site was conducted on 01/03/23. All areas of the site were investigated and areas around the site where access permitted.

2.2.2 The vegetation and habitat types within the site were noted during the survey in accordance with the categories specified for a UKHab Vegetation and Habitat Survey (The UK Habitat Classification, Habitat Definitions Version 1.1, UKHab, 2020). Dominant and abundant plant species were recorded for each habitat present.

2.2.3 The site was inspected for evidence of, and its potential to support, protected or notable species, especially those listed under the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019, the Wildlife & Countryside Act (WCA) 1981 (as amended), including those given a higher level of legal protection under the NERC Act 2006 and Countryside & Rights of Way (CRoW) Act 2000, and those listed on the LBAP. The following species were considered:

- Invertebrates (including white-clawed crayfish *Austropotamobius pallipes*.
- Great crested newt *Triturus cristatus* freshwater habitat potential within 500m of the site.
- Reptile habitat within the site.
- Nesting and foraging habitat for birds within the site.
- Bat roost potential and foraging habitat within the site.
- Badger *Meles meles* setts within 30m of the site, where accessible.
- Otters *Lutra lutra* and suitable habitat within 30m of the site, where accessible.
- Water vole Arvicola amphibius habitat within 20m of the site, where accessible.
- Eurasian beaver.
- Other notable species.
- Invasive species.

2.3 Survey Constraints

2.3.1 To determine presence or likely absence of protected species usually requires multiple visits at suitable times of the year. As a result, the survey undertaken focused on assessing the potential of the site to support species of note, which are considered to be of principal importance for the conservation of biodiversity with reference to the National Planning Policy Framework (Ministry of Housing, Communities and Local Government, 2018), especially those given protection under UK wildlife legislation.

2.3.2 The optimum time of year for completing the UK Hab habitat survey is between April and September, as many plant species have a seasonal expression in spring and summer only. The survey was undertaken on 01/03/2023. This does not pose a significant constraint to the findings of the report due to the medium distinctiveness of the habitats present. However, with regards to potential invasive species this posed a significant constraint, a subsequent resurvey was conducted on 02/08/2023, when any invasive species would be in leaf/flower, therefore, not limiting species identification, if present (**Section 8**).

2.3.3 On the day of the survey the weather was overcast with a fine drizzle. The weather in the days leading up to the survey had been dry, which had little effect on visible field signs.

2.3.4 The details of this report will remain valid for a period of 18 months. If works have not commenced within this period or land use on site changes, it is recommended that a new review of the ecological conditions is undertaken.

3. Biodiversity Accounting Assessment

3.1 Introduction

3.1.1 Biodiversity is complex and so it is impossible to measure in its entirety. Therefore metrics, which incorporate measures of different biodiversity attributes, are used to provide surrogate measures of overall biodiversity. This report uses the 'Biodiversity Metric 4.0', which was designed by Natural England (2023) to define the biodiversity impacts and compensation requirements associated with development proposals. The metric works by providing a comparative measure of each habitat on-Site in biodiversity units (BU) by multiplying its area (square meters), distinctiveness (habitat type) and current condition (quality). The relative impacts (habitat loss) of the development, taking into account any additional on-Site habitat creation or enhancement, can then be calculated to determine if a measurable biodiversity net gain will be achieved on-Site. If a measurable net gain is unable to be achieved on-Site, then the process of biodiversity offsetting must be undertaken.

3.1.2 Biodiversity offsets are conservation activities designed to deliver biodiversity benefits in compensation for residual losses, in a measurable way. Biodiversity offsetting is distinguished from other forms of compensation by the requirement for measurable outcomes. This is achieved by quantifying net biodiversity impacts caused by development; using the same metric to assess direct and indirect negative impacts to habitats and the value of any on-Site compensation, to set the framework of off-site compensation (offset) requirements and the biodiversity net gain generated by these offsets. Biodiversity offsetting ensures that off-site compensation proposed is both proportionate to the development concerned and that a measurable net gain for biodiversity can be achieved.

3.1.3 Biodiversity offsetting, like other forms of compensation, is the last step of the mitigation hierarchy (first avoid, then reduce, and finally, compensate) and is applied as a last resort to otherwise policy-compliant development proposals. 'Offsetting' – i.e. creating or restoring new wildlife habitat in a measurable way and in a different place to where it was lost.

3.1.4 In addition to providing a mechanism for quantifiable compensation and net gain, biodiversity offsets provide reliable biodiversity outcomes as they are long-term (30 years), monitored and enforceable with adaptable management plans for optimised success.

3.2 Biodiversity Net Gain Principles

3.2.1 Biodiversity Net Gain: Good Practice Principles for Development published by CIRIA et. al (2016) states that delivering biodiversity net gain goes beyond balancing relative gains and losses. It also involves doing everything to avoid

biodiversity losses in the first instance. The application of the DEFRA metric detailed in this report supports developments to adopt this approach by:

a. Providing a habitat balance sheet which can be used to identify those habitats with the greatest value and subsequently those with the greatest impacts if lost;

b. Supporting and incentivising the mitigation hierarchy by quantifying the benefits of avoiding and mitigating impacts on high value features;

c. Promoting the value of biodiversity enhancements and demonstrating the potential for additionality on retained habitats;

d. Providing a balance of losses, enhancements or on-Site compensation to determine if a measure net gain contribution can be achieved;

e. Providing transparent, robust and credible evidence to help inform the best possible Site options for biodiversity; and,

f. Ensuring that any residual off-Site compensation required (e.g. through biodiversity offsetting) is proportionate to the impacts and can secure a measurable net gain contribution for biodiversity overall.

3.3 Biodiversity Offsetting Standards

3.3.1 Good practice standards for biodiversity offsetting are set out by the Business and Biodiversity Offsets Programme (BBOP, 2012). These standards inform the approach for selection and development of suitable Offset Sites and projects. Of these standards, the following provide the most relevant UK framework for the preliminary offset site search:

a. The proposed offset site should be identified as suitable for the creation and/or enhancement of a target habitat within the vicinity of where the impact occurs;

b. The site must be available and managed for a minimum specified term (30 years in this instance).

c. The landowner must agree to an enforceable delivery mechanism to secure the long-term management.

d. The site must be available for monitoring to ensure appropriate management is being undertaken and to report biodiversity progress back to the local planning authority.

3.3.2 Further standards, with regards to offset site surveys and ensuring that appropriate target habitats and units can be achieved, will form part of the detailed site search that will proceed the preliminary site search.

3.3.3 In addition to biodiversity net gains achieved on-Site, off-Site enhancements can also achieve positive outcomes for nature in the local area.

3.4 National Policy and Guidance

3.4.1 Specific habitats and species of relevance to the Site receive legal protection in the United Kingdom under various pieces of policy and legislation, including:

- The Environment Act 2021 mandates that all planning applications will be required to demonstrate how a development will enhance biodiversity and protect habitats from November 2023. This is to be achieved through a measurable 10% Biodiversity Net Gain (BNG), in association with development through the use of the most up to date Defra Metric (currently Defra 4.0 Metric);

- National Planning Policy Framework ('NPPF', as revised 2021) sets out how planning policies and decisions should contribute to and enhance the natural and local environment through amongst other things, ensuring BNG through development and protect ecological important sites and networks;

- The Conservation of Habitats and Species Regulations 2017 (as amended) details the regulations for the protection of European Protected Habitat and Species. Such European Protected Species (EPS) include all species of bats, great crested newt *Triturus cristatus*, dormouse *Muscardinus avellanarius*, and European otter *Lutra lutra*, amongst others;

- The Wildlife and Countryside Act ('WCA') 1981 (as amended) covers the legislation for endangered species in England and the framework for the designation of Sites of Special Scientific Interest (SSSIs);

- The Countryside and Rights of Way ('CRoW') Act 2000 reinforces the wildlife legislation listed in the WCA and places a duty of government departments to consider biodiversity, and provides governmental department powers for the protection and maintenance of SSSIs;

- The Natural Environment and Rural Communities Act ('NERC') 2006 places a duty upon local authorities to promote and enhance biodiversity in all their functions. Specifically, habitats and species of principal importance to the conservation of biodiversity in regards to the planning process;

- The Hedgerow Regulations 1997 provides protection by prohibiting the destruction or damage to important countryside hedges; and

- The Protection of Badgers Act 1992 includes the protected of badgers under the act and that it is unlawful to wilfully kill, injure, take, possess or cruelly ill-treat badgers or attempt to do so.

3.4.2 Where relevant, this appraisal takes account of the legislative protection afforded to specific habitats and species.

3.5 Regional Policy and Guidance

Biodiversity Action Plan (BAP) for Kirklees Metropolitan Council.

3.5.1 The BAP for Kirklees (2007) concentrates on species and habitats that had national action plans produced or are of local conservation concern. The species listed within the Kirklees Habitat (and Species*) Action Plan are summarised in **Tables 2 - 5** below:

Table 2: Kirklees Habitat Action Plan bird species:

Birds			
Common name	**Scientific name**	**Common name**	**Scientific name**
Common bullfinch	*Pyrrhula pyrrhula subsp. Pileata*	Red grouse	*Lagopus lagopus subsp. Scotica*
Common grasshopper warbler	*Locustella naevia*	Reed bunting	*Emberiza schoeniclus*
Common linnet	*Carduelis cannabina subsp. autochthona/cannabina*	Ring ouzel	*Turdus torquatus*
Common starling	*Sturnus vulgaris subsp. Vulgaris*	Sky lark	*Alauda arvensis subsp. arvensis/scotica*
Corn bunting	*Miliaria calandra subsp. calandra/clanceyi*	Song thrush	*Turdus philomelos subsp. Clarkei*
Eurasian curlew	*Numenius arquata*	Spotted flycatcher	*Muscicapa striata*
Eurasion tree sparrow	*Passer montanus*	Tree pipit	*Anthus trivialis*
European turtle dove	*Streptopelia turtur*	Twite*	*Carduelis flavirostris subsp. bensonorum/pipilans**
Grey partridge	*Perdix perdix*	Willow tit	*Parus montanus subsp. Kleinschimdti*
Hawfinch	*Coccothraustes coccothraustes*	Wood warbler	*Phylloscopus sibilatrix*
Hedge accentor	*Prunella modularis subsp. Occidentalis*	Yellow wagtail	*Motacilla flava subsp. Flavissima*
House sparrow	*Passer domesticus*	Yellowhammer	*Emberiza citrinella*
Northern lapwing	*Vanellus vanellus*		

Table 3: Kirklees Habitat Action Plan fish, reptiles and amphibian species:

Fish, reptiles and amphibians	
Common name	**Scientific name**
Atlantic salmon	*Salmo salar*
European eel	*Anguilla anguilla*
Common lizard	*Lacerta vivipara*
Common toad	*Bufo bufo*
Great crested newt	*Triturus cristatus*

Table 4: Kirklees Habitat Action Plan terrestrial mammal species:

Terrestrial mammals	
Common name	**Scientific name**
Brown hare	*Lepus europaeus*
Brown long-eared bat	*Plecotus auritus*
Mountain hare	*Lepus timidus*
Noctule	*Nyctalus noctula*
Otter	*Lutra lutra*
Soprano pipistrelle	*Pipistrellus pygmaeus*
Water vole*	*Arvicola terrestris**
West European hedgehog	*Erinaceus europaeus*

Table 5: Kirklees Habitat Action Plan invertebrate species:

Invertebrates	
Common name	**Scientific name**
Northern wood ant*	*Formica lugubris**

The habitats listed within the Kirklees Metropolitan Council BAP are:

- Arable field margins
- Blanket bog
- Hedgerow
- Inland rock outcrop and scree habitats
- Lowland dry acid grassland
- Lowland heathland
- Hay meadows
- Lowland mixed deciduous woodland
- Open mosaic habitats on previously developed land
- Other semi-natural grassland
- Ponds
- Reedbeds
- Rivers and riverine
- Scrub
- Traditional orchards
- Upland flushes, fens and swamps
- Upland heathland
- Upland mixed ashwoods
- Upland oak woodland
- Wet woodland
- Wood-pasture and parkland

3.6 Local Policy and Guidance

Kirklees Local Plan – (Kirklees Council, Adopted February 2019)

3.6.1 Policy 13: Natural Environment (specifically, 13.1 Biodiversity & geodiversity)

- 13.1: The National Planning Policy Framework (NPPF) recognises that the planning system should contribute to and enhance the natural and local environment by protecting and enhancing valued landscapes, geological conservation interests and soils and minimise impacts on biodiversity, providing net gains in biodiversity where possible. Local authorities should also plan positively for networks of biodiversity and green infrastructure. A key objective of the Local Plan is to protect and enhance the integrity of the natural environment in Kirklees and the locally distinctive qualities which contribute to its character, including the district's varied landscapes and natural assets.

- 13.3 and 13.14: The Wildlife Habitat Network in Kirklees has been identified by West Yorkshire Ecology and connects designated sites of biodiversity and geological importance and notable habitat links. It is intended to protect and strengthen ecological links within the district and to adjoining authorities (if within the WHN)

- 13.15 and 13.16: Ancient woodland and Habitats and Species of Principal Importance in relation to the Kirklees Biodiversity Action Plan.

3.6.2 Policy 18 (18.1): Environmental Protection, of the Kirklees Local Plan apply to the Proposed Development.

- Preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability; and

- Remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate.

3.7 Baseline Data

3.7.1 A baseline analysis of the existing habitats onsite was carried out from the information gathered during the site's survey and condition assessment.

3.7.2 To undertake the Biodiversity Metric 3.1 calculations, the following information was recorded for each habitat parcel and/or linear feature:

- Habitat type;

- Area/Length (ha/km);

- Habitat condition;

- Strategic significance; and

- Whether that habitat will be lost, retained, enhanced, succeeded and/or

created, and at what scale.

3.7.3 The habitat map for the Site was digitised and interpreted using QGIS Version 3.22.7 to calculate habitat area.

3.8 Impact Assessment

3.8.1 The existing baseline habitat plan for the site was overlain with the Proposed Site Layout (Drawing number 2021.01.003) of the Proposed Development using GIS software to provide an area (hectares) of temporary and permanent habitat loss.

3.8.2 The area of any retained/enhanced or created habitats proposed as part of the development was also mapped to provide an area (hectares) (or length (Km) for linear features) of the onsite compensation proposals being provided. An estimate of future condition, time until establishment and the likelihood of success was then calculated using landscaping data provided by the client and professional judgement).

3.9 Habitat Creation and Enhancement

3.9.1 The area of any retained/enhanced or created habitats proposed on-site as part of the Proposed Development was mapped using the Proposed Detailed Landscape Proposals (Dwg No: H2 230201 1) of the final development, to provide an area (hectares) (or length (km) for linear features) estimate of on-Site compensation provided. This includes areas of developed land, which are assigned a very low (or null) value, notably, areas of buildings and/or roads.

3.9.2 Condition and strategic significance for each habitat or linear feature were projected using available ecological data or professional opinion about the likely value.

3.10 Residual Effects

3.10.1 The residual effects of the Proposed Development scheme were calculated using the Biodiversity Metric 4.0 Calculator Tool. This subtracts the pre-development baseline values from that of the post-development values to determine the change in overall habitat value for the Site, taking into account any habitat trading.

3.10.2 Habitat trading is where the loss of a habitat must be compensated for through the creation or restoration of areas of equivalent or greater distinctiveness value. Guidance by Defra is that the loss of high distinctiveness areas, such as Habitats of Principal Importance (HPI, NERC Act, S.41), require compensation in a like-for-like manner (creation or restoration of habitat of the same habitat classification as that impacted). Within the Biodiversity Metric 'trading up' (where compensation through creation of a higher distinctiveness habitat) can

occur, however, 'trading down' (compensation through creation of lower distinctiveness habitats) is not permitted. Therefore, if present, despite gains in lower distinctiveness habitats, these will not reduce the net gain requirement for the development. This also applies to the different habitat features i.e. habitats, hedgerows and rivers and streams. Hedgerow creation gains will not reduce net gain requirements for either rivers and streams or habitats.

3.10.3 Where the resulting biodiversity balance is negative, a residual net loss of biodiversity is recorded. Where the balance is positive a residual net gain of biodiversity is recorded.

4. Baseline Ecological Conditions

4.1 Statutory Designated Sites

4.1.1 The MAGIC website revealed two internationally designated sites within 2 km of the site, detailed in **Table 6** below.

Table 6: Internationally designated sites within 2 km of the site, identified on MAGIC.

Site Name	Designation	Distance (m) from Site	Reasons for Designation
Peak district moors	SPA	1513	A diverse assemblage of breeding migratory birds
South Pennine moors	SAC	1911	Wet and dry heaths; Blanket bog; Transition mires and quaking bogs; and Old sessile oak woods with Ilex and Blechnum in the UK
Key: SAC – Special Area of Conservation SPA – Special Protection Area			

4.1.2 The MAGIC website revealed two nationally designated sites within 2km of the site, detailed in **Table 7** below.

Table 7: Nationally designated sites within 2 km of the site, identified on MAGIC.

Site Name	Designation	Distance (m) from Site	Reasons for Designation
Rake Dike	SSSI	1252	Geology
Dark Peak	SSSI	1926	Geology and vegetation
Key: SSSI – Site of Special Scientific Interest			

4.2 Non-statutory Designated Sites

4.2.1 Records received from WYES revealed six non-statutory designated sites within 2 km of the site, detailed in **Table 8** below.

Table 8: Non-statutory designated sites within 2 km of the site, returned from WYES.

Site Name	Distance (m) from Site	Reasons for Designation
Yateholme Reservoir and Plantations - LWS	56	Wd3 - species rich acid woodland Fe4 - species rich poor-fen Fe6 - Fen network Mo1 - Upland moorland (dry heath) Mh2 - Habitat mosaic
Digley Reservoir & Marsden Clough - LWS	208	Mh2 - Mixed habitats
Car Green Meadows Holmbridge - LWS	877	Gr1 – MG5 grassland Gr5 – Proximity to species rich neutral grassland at New Laith LWS.

New Laith Fields Holmbridge - LWS	967	Gr1 – MG5 grassland Gr3 – Species rich neutral grassland Gr5 – Moderately species rich neutral grassland within the management unit for Gr3
Malkin House Wood - LWS	1075	Wd3 - Species rich acid woodland
Digley Quarries - LGS	1300	Site shows Upper Carboniferous Namurian (Millstone Grit) rocks
Key: LWS – Local Wildlife Site LGS – Local Geological Site		

4.3 Habitats

4.3.1 g3c – Other neutral grassland

67 – dry stone wall

161 – tussocky sward

The predominant habitat type within the site boundary is other neutral grassland, the secondary code 161 is applied as the sward is generally tussocky throughout the site. The site is bordered by a dry stone wall and associated gates for which the secondary code 67 dry stone wall is applied. The species present within this habitat include common bent *Agrostis capillaris*, poison hemlock *Conium maculatum*, pignut *Conopodium majus*, cocksfoot *Dactylis glomerata*, lesser celandine *Ficaria verna*, perennial rye grass *Lolium perenne*, ribwort plantain *Plantago lanceolata*, fleabane *Pulicaria dysenterica*, creeping buttercup *Ranunculus repens*, common sorrel Rumex acetosa, broad-leaved dock *Rumex obtusifolius*, chickweed *Stellaria media*, dandelion *Taraxacum officinale* and white clover *Trifolium repens*.

4.3.2 h3d – bramble scrub

There are three parcels of bramble scrub present on the northern and eastern boundaries of the site. The scrub is dominated by *Rubus* species, with *R. fruiticosus* European blackberry, European dewberry *R. caesius* and elmleaf blackberry *R. ulmifolius* being prevalent with common box *Buxus sempervirens*, common ivy *Hedera helix,* bracken *Pteridium aquilinum* and white meadowsweet *Spiraea alba* present in small strands.

4.3.3 w1g6 – line of trees

A line of trees is present at the northern border of the site, which acts as an ecological buffer between the site and Dobb Top Road. The species present within this habitat include holly *Ilex aquifolium*, oak *Quercus robur*, Caucasian fir *Abies nordmanniana* and elder *Sambucus nigra.*

4.4 Protected and Notable Species

4.4.1 European Protected Species (EPS) Licence Applications

- The MAGIC website revealed four EPS licence applications within 2km of the site;
- a licence granted in 01/01/2018 and ending in 31/08/2018 to allow for the destruction of a resting place used by brown long-eared bat. Licence reference: 2017-32406-EPS-MIT.
- a licence granted in 01/05/2018 and ending in 31/07/2024 to allow for the damage of a resting place used by common pipistrelle and whiskered bat. Licence reference: 2018-33329-EPS-MIT.
- a licence granted in 13/08/2018 and ending in 31/07/2024 to allow for the damage of a resting place used by common pipistrelle and whiskered bat. Licence reference: 2018-33329-EPS-MIT-1.
- a licence granted in 07/11/2018 and ending in 31/07/2024 to allow for the destruction of a resting place used by common pipistrelle and whiskered bat. Licence reference: 2018-33329-EPS-MIT-2.

4.4.2 Flora

Nine records of English bluebell were returned by WYES, located approximately 638m away from the site. The field survey identified no notable or protected flora on site, therefore flora will not be mentioned further in this report.

4.4.3 Invertebrates (including white-clawed crayfish)

The records returned by WYES revealed nine species of invertebrate within 2km of the site, which includes six species within 500m. During the survey no notable or protected invertebrate species were identified, and only generalist plant species were observed. Therefore, invertebrates will not be mentioned further in this report.

4.4.4 Fish

No suitable habitat that could support fish species was present on site and no records of fish were returned by WYES. Therefore, fish will not be mentioned further in this report.

4.4.5 Amphibians

One record of common toad *Bufo bufo*, a UKBAP, WYBAP and Kirklees BAP species and one record of common from *Rana temporaria* a WYBAP species were returned by WYES, both species are also afforded protection under Schedule 5 (WCA as amended). Both records were located over 1km away from the site, and no suitable habitat that could support amphibian species

was observed during the survey. Therefore, amphibians will not be mentioned further in this report.

4.4.6 Reptiles

No records of reptiles were returned by WYES, however the other neutral grassland, dry stone wall and scrub act as a mosaic of habitats and were identified as having potential to support reptile species.

4.4.7 Birds

The data search revealed records of 28 species of bird within 2km of the site, including six species within 1km. No Schedule 1 species were observed on site; however, the site offers nesting and foraging opportunities for bird species, particularly within the scrub, line of trees and other neutral grassland.

4.4.8 Bats

The desk study revealed nine species of bat to be present within 2km of the site, six of which were within 500m of site. The records also revealed the presence of three roosts within 500m of the site. The line of trees was afforded negligible potential to support roosting bats, however, the other neutral grassland, bramble scrub and line of trees all provide good quality foraging opportunities for bat species. The site also sits within the West Yorkshire Bat Alert Zone.

4.4.9 Badgers

No badger setts or latrines were observed on site and no records of badgers within 200m of the site were returned by WYES, with the nearest recorded sett being located approximately 1.2km away from the site. The site partially falls within the area of increased probability of badger activity, given the surrounding landscape, the site offers foraging and commuting opportunities for badgers.

4.4.10 Otters

No suitable habitat that could support otters was identified on site, and no records of otters were returned by WYES. Therefore, otters will not be mentioned further in this report.

4.4.11 Water Voles

No suitable habitat that could support water voles was identified on site, and no records of water voles were returned by WYES. Therefore, water voles will not be mentioned further in this report.

4.4.12 Eurasian Beaver

No suitable habitat that could support beavers was identified on site and no records of beavers were returned by WYES. Therefore, beavers will not be mentioned further in this report.

4.4.13 Other Notable Species

The desk study revealed records of brown hare *Lepus europaeus* and mountain hare *Lepus timidus,* both of which are S41 and Schedule 6A (WCA as amended) species. The other neutral grassland, and border with the line of trees was identified as suitable habitat to support hares. However, no forms were observed during the survey, though mammal tracks were noted within the grassland.

While no records of hedgehog were returned by WYES, it is highly likely that hedgehogs are utilising the site due to the presence of favourable scrub habitat.

4.4.14 Invasive Species

Records of six Schedule 9 WCA (as amended) invasive species were returned by WYES, with montbretia *Crocosmia x crocosmiiflora* and Japanese knotweed *Fallopia japonica* being recorded within 200m of the site. While no invasive species were noted during the field survey, given the proximity of the nearest record, it is possible that invasive species are on site.

4.4.15 **Table 9** below summarises all important or legally protected ecological features identified within their respective zones of influence, along with their geographic context of importance and/or protection status:

Table 9: Summary of important ecological features and their geographic/legal context

Ecological Feature	Geographic Context of Importance and/or Protection Status
SAC, SPA	International – two present within 2km of the site.
SSSI	National – two present within 2km of the site.
LWS, LGS	County – six present within 2km of the site.
Amphibians	Protected Species (The Wildlife and Countryside Act 1981 (as amended); The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019
Reptiles	Protected Species (The Wildlife and Countryside Act 1981 (as amended); The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019
Birds	Protected Species (The Wildlife and Countryside Act 1981 (as amended); The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019
Bats	Protected Species (The Wildlife and Countryside Act 1981 (as amended); The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019
Badgers	Protected Species (Protection of Badgers Act 1992); Protected Species (The Wildlife and Countryside Act 1981 (as amended)
Hares	Protected Species (The Wildlife and Countryside Act 1981 (as amended); The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019
Hedgehogs	Wild Mammals Protection Act (1996); Species of principle important under the NERC act (S41); (The Wildlife and Countryside Act 1981 (as amended);

4.5 Biodiversity Metric Calculation

4.5.1 The assessment was carried out by JCA Limited using the ecological data gathered during the Site's ecological assessment survey carried out on 01/03/23. Existing on-Site habitats can be found in **Appendix 1**.

4.6 Existing Site Value

4.6.1 The existing biodiversity value for each habitat, together with the cumulative value of all habitats is provided in **Table 10** and for hedgerow units in **Table 11**. Full details as to the Condition Assessment criteria for each habitat and hedgerow can be found in **Appendix 4**, **Tables 4.1 & 4.2**.

Table 10: Baseline habitats on site and their ecological value as categorised by the Biodiversity Metric 4.0 calculator.

Biodiversity Metric Reference Number	Biodiversity Metric 4.0 Habitat Type	Total Area on Site (Ha)	Distinctiveness	Condition	Strategic Significance	Ecological Baseline Habitat Unit
1	Other neutral grassland	0.6	Medium	Moderate	Location ecologically desirable but not in local strategy	5.28
2	Bramble scrub	0.06	Medium	Condition assessment N/A	Location ecologically desirable but not in local strategy	0.26
	Total	**0.66**	**–**	**–**	**–**	**5.54**

4.6.2 The other neutral grassland habitat was found to be in 'Moderate' condition as it failed condition two (sward height is generally tussocky but homogenous) and condition six (approximately nine species per metre squared), the condition assessment for bramble scrub is N/A. Detailed assessments of the condition of each habitat can be found within the accompanying habitat condition spreadsheet.

4.6.3 All the habitats within the site have been listed as 'Location ecologically desirable but not in local strategy' due to the proximity to the Kirklees Wildlife Habitat Network.

4.6.4 The existing biodiversity value for each hedgerow, together with the cumulative value of all hedgerows is provided in **Table 11**.

Table 11: Baseline hedgerows on site and their ecological value as categorised by the Biodiversity Metric 4.0 calculator.

Biodiversity Metric Reference Number	Biodiversity Metric 4.0 Habitat Type	Total Length on Site (Km)	Distinctiveness	Condition	Strategic Significance	Ecological Baseline Habitat Unit
1	Line of trees	0.05	Low	Moderate	Location ecologically desirable but not in local strategy	0.22
	Total	**0.05**	**–**	**–**	**–**	**0.22**

4.6.5 The line of trees was found to be in 'Moderate' condition as it failed criteria four (On the southern side there is open habitat. On the northern side there is a road present).

4.6.6 The hedgerow within the site have been listed as 'Location ecologically desirable but not in local strategy' due to the proximity to the Kirklees Wildlife Habitat Network.

4.6.7 To ensure a 10% net gain in biodiversity is achieved as part of the Proposed Development the following measures can be employed:

- Habitat retention; and/or
- Habitat enhancement; and/or
- Habitat creation.

5. Proposed Development Impact Assessment

5.1 Description of the Proposed Development

5.1.1 The Proposed Development involves the construction of 21 housing units with associated soft landscaping and car parking facilities, including garages. The planting of 34 new trees has been proposed.

5.1.2 The Proposed Development will see the removal of the on-Site habitats and hedgerows to facilitate the development.

5.2 Habitats to be Retained

5.2.1 Any development should apply the Mitigation Hierarchy (British Standards Institution (BSI), 2013; shown below in Figure 1).

5.2.2 Development proposals should first seek to **avoid** impacts by retaining habitats. Second, development proposals should look to **minimise** the impact by producing plans that are designed to limit habitat disturbance, damage, and loss, thereby mitigating against any unavoidable impacts. Third, proposals should look to **restore** any damaged or degraded habitats. Then, only as a last resort should proposals **compensate** for unavoidable residual impacts to damaged or lost habitats that remain after avoidance and mitigation measures.

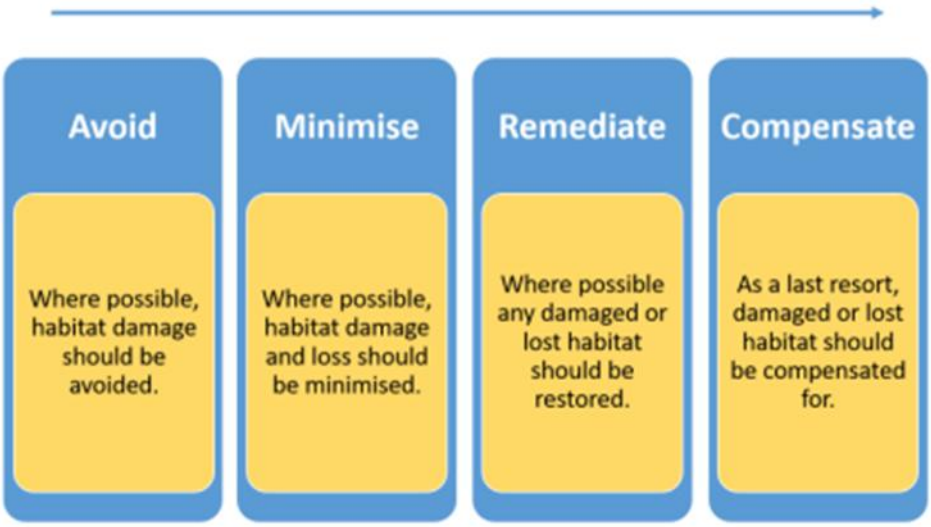

Figure 1: The mitigation hierarchy (BSI, 2013)

5.3 Habitats to be Lost

5.3.1 The other neutral grassland habitat is classified as 'medium' distinctiveness, and under current development plans is to be lost entirely, therefore it is deemed a major loss. The development plans indicate an area of wildflower planting which, for the purpose of the metric element of this report, is classified as 'other neutral grassland'.

5.3.2 The bramble scrub is classified as a 'medium' distinctiveness habitat, under the current development plans is to be lost entirely. This deemed as a moderate loss, as the habitat is not to be replicated or replaced.

5.4 Overall Impacts

5.4.1 The retention, enhancement and loss of habitats as a result of the Proposed Development are quantified in **Table 12**.

5.4.2 The results of the metric calculation indicates that a total of **5.54** BU for habitats are to be lost as a result of the Proposed Development, with **0.00** BU retained and **0.00** BU generated through habitat enhancement.

Table 12: Summary value of baseline habitat biodiversity value through retention, loss and enhancement

Biodiversity Metric 4.0 Habitat	Retained		Enhanced		Lost	
	Area (Ha)	Unit	Area (Ha)	Unit	Area (Ha)	Unit
Other neutral grassland	0.00	0.00	0.00	0.00	0.6	5.28
Bramble scrub	0.00	0.00	0.00	0.00	0.06	0.26
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.66**	**5.54**

5.4.3 The loss, retention and enhancement of hedgerows as a result of the Proposed Development are quantified in **Table 13**.

5.4.4 The results of the metric calculation indicates that a total of **0.22** BU for hedgerows are to be lost as a result of the Proposed Development, with **0.00** BU retained and **0.00** BU generated through habitat enhancement.

Table 13: Summary value of baseline hedgerow biodiversity value through retention, creation and enhancement

Biodiversity Metric 4.0 Hedgerow	Retained		Enhanced		Lost	
	Length (Km)	Unit	Length (Km)	Unit	Length (Km)	Unit
Line of trees	0.00	0.00	0.00	0.00	0.05	0.22
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.05**	**0.22**

5.5 Proposed Habitat Creation

5.5.1 It is proposed that the following habitats be created as part of the Proposed Development:

- Modified grassland represented on the plans by Proposed amenity grass areas,
- Other neutral grassland represented on the plans by Proposed wildflower mix,
- Vegetated gardens represented on the plans by private gardens including trees,
- Developed land; sealed surface represented on the plans by the houses, driveways and access road,
- Mixed scrub represented on the plans by Proposed native shrub planting, and
- Urban tree represented on the plans by Proposed tree Standard (Selected).

5.5.2 The proposed habitats on-Site can be found within **Appendix 2**.

5.5.3 **Table 14** below summarises the value of all habitats that are to be created as part of the Proposed Development.

5.5.4 In total, **+1.25** BU for habitats are to be created within the Proposed Development.

Table 14: Summary value of on-Site habitat proposals.

Biodiversity Metric Reference Number	Biodiversity Metric 4.0 Target Habitat Type	Total Area on Site (Ha)	Distinctiveness	Target Condition	Strategic Significance	Biodiversity Unit Value
1	Other neutral grassland	0.05	Medium	Moderate	Location ecologically desirable but not in local strategy	0.37
2	Modified grassland	0.17	Low	Poor	Location ecologically desirable but not in local strategy	0.36
3	Developed land; sealed surface	0.37	V.Low	N/A - Other	Area/compensation not in local strategy/ no local strategy	0.00
4	Urban tree	0.05	Medium	Moderate	Location ecologically desirable but not in local strategy	0.17
5	Mixed scrub	0.04	Medium	Moderate	Location ecologically desirable but not in local strategy	0.29
6	Vegetated garden	0.03	Low	N/A - Other	Area/compensation not in local strategy/ no local strategy	0.06
	Total (area excl. urban trees)	**0.66**	**–**	**–**	**–**	**1.25**

5.5.5 Other neutral grassland is afforded the condition 'Moderate' with the expectations that the sward will be mown to a specified regime but with the likelihood that the grassland will be impacted by the future residents, preventing the grassland from achieving 'Good' condition.

5.5.6 Modified grassland is afforded the condition 'Poor' due to the expectations that the sward to be a homogenous height through regular mowing regime preventing a varied sward height and species diversity.

5.5.7 Urban trees are afforded the condition 'moderate' due to the trees not being mature, for microhabitats not to be present.

5.5.8 Mixed scrub is afforded the condition of 'Moderate' with the expectation that a minimum of 80% of the species will be native, a mixed age of shrubs will be present and a well-developed land will be present.

5.5.9 All the habitats, apart from developed land; sealed surface and vegetated gardens have been classified as 'Location ecologically desirable but not in local strategy due to the proximity of the site to the Kirklees Wildlife Habitat Network.

5.5.10 **Table 15** below summarises the value of all hedgerows that are to be created as part of the Proposed Development.

5.5.11 In total, **+1.1** BU for hedgerows are to be created within the Proposed Development.

Table 15: Summary value of on-Site hedgerow proposals.

Biodiversity Metric Reference Number	Biodiversity Metric 4.0 Target Habitat Type	Total Length on Site (Km)	Distinctiveness	Target Condition	Strategic Significance	Biodiversity Unit Value
1	Native species rich hedgerow	0.02	Medium	Moderate	Location ecologically desirable but not in local strategy	0.15
2	Native species rich hedgerow	0.13	Low	Moderate	Location ecologically desirable but not in local strategy	0.98
	Total	**0.15**	**–**	**–**	**–**	**1.1**

5.5.12 Both of the hedgerows have been afforded 'Moderate' condition, due to the height being less than 1.5 m along the length, the width being less than 1.5 m along the length and being located directly next to developed land; sealed surface.

5.5.13 All of the hedgerows have been classified as 'Location ecologically desirable but not in local strategy due to the proximity of the site to the Kirklees Wildlife Habitat Network.

5.6 Proposed Development Summary of Net Impacts

5.6.1 **Table 16** below summarises the BU value of the Proposed Development together with the unit value of any biodiversity impacts or on-Site habitat creation/enhancement proposals.

5.6.2 This shows that on balance, the Proposed Development would result in a **net loss** of **-4.29** habitat BU, equivalent to a **net loss** of **-77.46%** and a **net gain** for hedgerows of **+0.88** BU, equivalent to a **net gain** of **+402.10%**.

5.6.3 The Proposed Development does not satisfy the Trading Rules as unit deficits have been generated across low and medium distinctive habitat units.

Table 16: Summary of Biodiversity Metric results for habitats and hedgerows

	Biodiversity Units (BU)
Existing Site habitat biodiversity value (habitats)	5.54
Existing Site habitat biodiversity value (hedgerows)	0.22
Value of gross habitat biodiversity loss	-5.54
Value of gross hedgerow biodiversity loss	-0.22
Value of retained and proposed on-Site habitat creation and enhancement (habitats)	1.25
Value of retained and proposed on-Site habitat creation and enhancement (hedgerows)	1.1
Net habitat biodiversity balance (habitats)	-4.29
Net habitat biodiversity balance (hedgerows)	+0.88

6. Assessment of Effects

6.1 Statutory Designated Sites

6.1.1 Internationally designated sites

The desk study revealed two internationally designated site within 2km of the site, the South Pennine Moors SAC, and the Peak District Moors SPA. Both sites are located over 1km away from the site and due to their distance from the site, no potential pathways of impact are anticipated on these sites.

6.1.2 Nationally designated sites

The desk study revealed two nationally designated sites within 2km of the site, Rake Dike SSSI and Dark Peak SSSI. Both sites are located over 1km away from the site and due to their distance from the site, no potential pathways of impact are anticipated on these sites.

6.2 Non-statutory Designated Sites

6.2.1 The desk study revealed five LWS and one LGS within 2km of the site. Malkin House Wood LWS, Car Green Meadows Holmbridge LWS, New Laith Fields Holmbridge LWS and Digley Quarries LGS are not deemed vulnerable to adverse impacts from the proposed development due to their distance from the site, limited interconnecting habitat and the medium-scale nature of the scheme. Therefore, no potential pathways of impact are anticipated on these sites.

The desk study revealed Yateholme Reservoir and Plantations (LWS) to be approximately 56 m away from the site and Digley Reservoir & Marsden Clough LWS to be approximately 208 m away from the site. Due to the proximity of the sites, they are both deemed to be vulnerable to adverse impacts from the scheme.

Overall, in the absence of mitigation, a minor adverse impact at the local level is predicted for Yateholme Reservoir and Plantations and Digley Reservoir & Marsden Clough LWS. Furthermore, the site is located approximately 17 m away from Kirklees Wildlife Habitat Network.

6.3 Other habitats

6.3.1 Kirklees Wildlife Habitat Network

The site is surrounded by the Kirklees Wildlife Habitat Network, with the closest area being approximately 17 m away from the site. Therefore, there is a risk of this network suffering adverse impacts as a direct or indirect result of the development.

6.4 Habitats

6.4.1 g3c – Other neutral grassland

The other neutral grassland habitat dominates the site, and under current development plans is to be lost entirely, therefore it is deemed a major loss. The development plans indicate an area of wildflower planting which, for the purpose of the metric element of this report, is classified as 'other neutral grassland'.

6.4.2 h3d – bramble scrub

Under the current development plans the bramble scrub is to be entirely removed. This deemed as a major loss, as the habitat is not to be replicated or replaced.

6.4.3 w1g6 – line of trees

Under the current development plans the line of trees is to be removed. The line of trees was deemed to hold potential to support nesting bird species. The line of trees also holds the potential to support hares, as it creates an edge, which is a favourable habitat to hares.

6.5 Protected and Notable Species

6.5.1 Reptiles

The other neutral grassland, dry stone wall and scrub, together acting as a mosaic of habitats were identified as having potential to support reptile species. Under the current development plans, the majority of the existing habitats are to be removed, which could negatively impact local reptile populations through fragmentation of their habitat. It is advised that a precautionary approach should be adopted.

6.5.2 Birds

The majority of habitats are to be removed under current development plans. The bramble scrub and other neutral grassland for ground nesting bird species, hold the potential to support nesting bird species during nesting bird season (1st February – 31st August). If the habitats are removed during this period nesting birds may be negatively impacted by the proposed development.

6.5.3 Bats

While the line of trees was afforded negligible potential for roosting bats, the site falls within the Bat Alert Zone for West Yorkshire. The current development plans involve removal of the majority of existing habitats on site, and therefore reducing the opportunities for foraging and commuting bats. Furthermore, the scheme will likely result in increased levels of lighting. All bat species are light adverse, and therefore, this will impact the availability of 'dark corridors' which are used by bats as navigation tools. Therefore, without the appropriate mitigation measures, the development has the potential to disturb the local bat population, including foraging and commuting bats.

6.5.4 Badgers

The site was deemed to hold potential to support foraging and commuting badgers, under the current development plans the majority of existing habitats are to be removed. The removal of these habitat could result in an adverse impact to badgers through a loss of foraging and commuting habitat.

6.5.5 Other Notable Species

The records obtained from WYES indicate that hares are active in the area, with records of brown and mountain hare within 2km of the site. Furthermore, the site was deemed to hold potential to support hare species, through the presence of their favourable habitat in the form of the other neutral grassland with the associated line of trees. Under the current development plans the majority of existing habitats are to be removed, thus a reduction in habitat available to hare species.

The site is also deemed to hold the potential to support hedgehogs through the presence of favourable scrub habitat. Hedgehogs could be affected by the development plans by the removal of the scrub either by causing injury or death through vegetation clearance, and by the reduction of availability of suitable habitat.

6.5.6 Summary of Impacts

Table 17 below summarises the assessment of effects, including any mitigation and subsequent residual effects.

Table 17 Summary of important ecological features and their geographic/legal context

Receptor	Likely Significant Effect and/or Legal Implication	Avoidance and Mitigation Measures	Residual Impacts After Mitigation
South Pennine Moors SAC	No significant effects	N/A	No significant effects
Peak District Moors SPA	No significant effects	N/A	No significant effects

Rakw Dike SSSI	No significant effects	N/A	No significant effects
Dark Peak SSSI	No significant effects	N/A	No significant effects
Malkin House Wood LWS	No significant effects	N/A	No significant effects
Car Green Meadows Holmbridge LWS	No significant effects	N/A	No significant effects
New Laith Fields Holmbridge LWS	No significant effects	N/A	No significant effects
Digley Quarries LGS	No significant effects	N/A	No significant effects
Yateholme Reservoir and Plantations LWS	Significant adverse impact at the **Local** level	Production of a Construction and Environment Management Plan to avoid any impacts which may result from the construction phase of development.	Minor adverse impact at the **Local** level
Digley Reservoir & Marsden Clough LWS	Significant adverse impact at the **Local** level	Production of a Construction and Environment Management Plan to avoid any impacts which may result from the construction phase of development.	Minor adverse impact at the **Local** level
Other neutral grassland	Moderate adverse impact at **Local** level	Replacement with native species	Moderate adverse impact at **Local** level
Bramble scrub	Minor adverse impact at **Local** level	Replacement with native species	Minor adverse impact at **Local** level
Line of trees	Moderate adverse impact at **Local** level	Replacement with native species	No significant effect
Bats	Moderate adverse impact at the **Local** level	Works to be carried out via appropriate lighting schemes as per Institute of Lighting Professionals' guidance (ILP, 2018).	No significant effect
Reptiles	Potential breach of legislation from killing and injury of individual reptiles	Precautionary Working methods under ecological supervision	No significant effect
Birds	Potential breach of legislation from destruction of nests or disturbance of nesting birds	Precautionary Working methods under ecological supervision	No significant effect
Badgers	Potential breach of legislation from killing and injury of individual badgers	Precautionary Working methods under ecological supervision	No significant effect
Hares	Potential breach of legislation from killing and injury of hares	Precautionary Working methods under ecological supervision, with exclusion fencing	No significant effect
Hedgehogs	Potential breach of legislation from killing and injury of individual hedgehogs	Hand searching of vegetation prior to clearance, and inclusion of hedgehog holes/hedgerows within the development.	No significant effect

7. Recommendations

7.1.1 In the absence of any mitigation measures, the proposed development would be anticipated to have adverse significant impacts at the Local level. However, with the implementation of the mitigation and precautionary measures as specified above, the proposed development is not anticipated to result in any significant adverse residual effects to important ecological features.

7.1.2 Kirklees Wildlife Habitat Network

Kirklees council are to be consulted regarding the potential adverse impacts to the Kirklees Wildlife Habitat Network, given its proximity to the site.

7.1.3 Biodiversity Net Gain

The proposed development has been calculated to result in a residual net loss of -4.29 habitat BU, equivalent to a net loss of -77.46% and a net gain for hedgerows of +0.88 BU, equivalent to a net gain of +402.10%. In addition, the Proposed Development does not satisfy the Trading Rules as a unit deficit has been generated across Low and Medium distinctive habitat units.

As such, the client will undertake the following mitigation measure to ensure that the required overall net gain in habitat BU is achieved:

A. The purchase of Habitat Bank Credits from a third-party provider equivalent to 4.85 habitat BU to compensate for no residual biodiversity net gain being achieved as a result of the Proposed Development; or

Mitigation measure ‘A’ will include that the purchased Habitat Bank Credits will satisfy Trading Rules for a deficit of Low and Medium Distinctiveness Units.

7.1.4 Biodiversity Enhancement Plan (BEP)

A Biodiversity Enhancement Plan should be produced which outlines how to minimise the impact to the biodiversity on site, enhance new or existing habitats of value. In addition, a monitoring scheme to ensure habitats of value achieve their targeted condition levels.

7.1.5 Construction Environmental Management Plan (CEMP)

A CEMP is recommended which will provide further measures with regard to the potential impacts to the LWS and Kirklees Wildlife Habitat Network.

7.1.6 Reptiles

It is advised that a precautionary approach is adopted to include an Ecological Clerk of Works (ECoW) being present prior to works commencing. The ECoW would give a toolbox talk to onsite contractors in order to relate applicable

legislation, what signs to look for, and what to do should reptiles be encountered on site. Should a reptile be found during site clearance, the advising ecologist would move it to a place of safety.

7.1.7 Birds

Any site clearance must take place between September and January (inclusive) to avoid destruction of bird nests or disturbing active bird nests. If site clearance cannot take place in this period, a nesting bird survey must take place no more than 24 hours before clearance works. Any active nests must remain in situ, surrounded by a buffer of undisturbed vegetation, until any young have fledged.

7.1.8 Bats

All lighting must consider wildlife and be in accordance with the ILP Guidance GN01 and GN09 (2018). A key point is the avoidance of internal and external light spill. Where possible, lighting should be timed, or on sensors and avoid the hours between sunset and sunrise, when bats are out foraging.

It is important to avoid:

- Uniform levels of luminance across the site.
- Metal halide and florescent lighting.
- Upward tilting lighting that increases skyline luminance.

Instead, the following should be installed:

- Dark buffer zones.
- Screening in the form of vegetation, fences and structures.
- Appropriately designated darkened areas.
- Luminaries absent of UV elements.
- LED luminaries with a sharp cut-off, low intensity and good rendition.
- A warm white spectrum (<2700 kelvin) to reduce blue light.
- Peak luminaire wavelength at a minimum of 550nm.
- Downward directional luminaires with upward light ratios of 0%.
- Lower light columns to limit light spill.
- Recessed internal light fixtures.
- Window glazing treatments or automated blind systems.

The trees on site must be felled in a sympathetic manner. This is to be achieved by felling the trees and leaving them in situ where they fall for a minimum of 24 hours before disposal. This is to allow any bats which may be present within the features to escape.

7.1.9 Badgers

Any excavations made during construction must be covered at night to prevent badgers or other species becoming trapped within. If covering excavations is not feasible, a means of escape for badgers is to be provided. This could be ensuring one of the sides of the excavation is angled at around 45 degrees so that badgers can climb out or providing a plank to serve as a ramp for badgers to climb.

If evidence of mammal digging within the site is recorded by contractors during the construction phase, it is advised that works in the area be stopped immediately and that JCA Ltd be contacted for further advice.

7.1.10 Hares

The other neutral grassland and associated line of trees provide good quality habitat for nesting, foraging, and commuting hare species. With the current development plans set to remove all habitats on the site, all vegetation to be removed during site clearance should be hand searched immediately prior to removal by a suitably qualified and experienced ecologist, to ensure no hares are currently occupying the vegetation.

Exclusion fencing around the perimeter of construction should be implemented during works. In the unlikely event that a brown hare gets trapped, the works must cease, and a suitably competent ecologist contacted.

7.1.11 Hedgehogs

The parcels of scrub onsite provide ideal nesting habitat for hedgehogs, which are legally protected during hibernation and while raising their young. Any scrub to be removed should therefore be hand searched immediately prior to removal by a suitably qualified and experienced ecologist, to ensure no hedgehogs are currently nesting in the vegetation.

The construction of any walls or fences included within the proposed development will reduce the movements of hedgehogs locally. This can be mitigated through creating localised habitat fragmentation for the species. Hedgehog holes measuring a minimum of 13cm x 13cm must be installed within any newly created walls or fences. Hedgerows permitting hedgehog commuting can be used alternatively to artificial barriers within the development.

A site speed limit should be implemented to protect hedgehogs, and any other terrestrial mammals.

7.1.12 Invasive species

The timing of the survey was considered a constraint to the identification of invasive flora on site, as many plant species have a seasonal expression in

spring and summer only. Therefore, it was highly recommended that a re-survey of the site is undertaken between April and October, when the vegetation is more readily identifiable.

A resurvey of the site was conducted on 02/08/2023, to determine the presence/likely absence of invasive species (**Section 8**).

8. Invasive Plants Survey

8.1.1 The baseline habitat survey was conducted on 01/03/2023, at a time of year when most plant species were not in leaf/flower, limiting the identification of species. The presence of invasive plant species could not be ruled out at the time; therefore, an Invasive Species Survey was recommended.

8.1.2 The Invasive Species Survey was conducted on 02/08/2023 (JCA Ref: 18204e/AWe), a time of year when plants would typically be in leaf/flower, so not limiting species identification. All areas of the site were accessible during the survey. There were no perceived limitations on the survey.

8.1.3 During the survey, **no** invasive plant species listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) were identified. Invasive plant species are **not** considered to be a constraint on development.

8.1.4 Records of six Schedule 9 WCA (as amended) invasive species were returned by WYES during the desk study, with montbretia *Crocosmia x crocosmiiflora* and Japanese knotweed *Fallopia japonica* being recorded within 200m of the site, therefore, precautionary advice is given below in the event that these species spread to the site before/during works. In such an event, the invasive species must be removed to prevent any further spread that may lead to a potential breach of legislation.

8.1.5 Montbretia

Montbretia is a deciduous perennial flowering plant with long, spear-shaped bright green to yellow leaves, and distinctive red to orange flowers. Montbretia forms dense clumps up to 1.5m tall that push out and out compete native plants. This species can often be found in gardens and thus, be spread through fly-tipping or improper disposal of garden waste. It can also spread via underground propagation of corms and rhizomes.

The active growth season for montbretia is typically March to September, with flowering June to September.

Further information can be found on the NNSS website and factsheet:

https://www.nonnativespecies.org/non-native-species/information-portal/view/1040

https://www.nonnativespecies.org/assets/Uploads/ID_Crocosmia_crocosmiiflora_Montbretia.pdf

Hand pulling: Efficient for small clumps if corms and underground stems can be removed. Hand tools may be required to remove all corms.

Chemical eradication*:* Application of a herbicide treatment, such as 2% glyphosate solution, before flowering occurs. This method is efficient and effective over longer time periods than mechanical eradication, but is non-selective so may harm other plants. Repeated treatments may be required to reach all corms.

Mechanical eradication: Remove plant material and soil containing stolons to a minimum depth of 75cm, carried out over the area where growth occurs. This method is quicker, but expensive, and risks damaging other plants, particularly tree roots.

Disposal: Compost or allow to dry and burn (if permitted). Plants and soils containing stolons can be buried at a depth of 2m or sent to a suitably licenced waste-disposal facility, as they are classed as contaminated waste (PCA 2018).

Monitoring: Survey annually for at least three years of no regrowth (PCA 2018).

8.1.6 Japanese knotweed

Japanese knotweed, and closely related species, are perennial, herbaceous plants that form dense thickets, up to 3-5m tall. The stems are hollow, bamboo-like, green, and flecked with purple. The leaves are large, shield-shaped, with smooth edges, a flat base, and grow alternatively, in a zig-zag pattern along the branches.

Japanese knotweed spreads naturally through underground rhizomes, or is capable of regrowing from rhizome, crown, or stem fragments. Spread is typically human assisted, whether intentionally or not, through fly-tipping of contaminated soil, rhizome fragments on excavators, or other machinery, or lodged in tyre treads. It is not known to produce seeds in the UK.

Japanese knotweed can out-compete native plants, contribute to bank erosion, and increase flood risk. A main issue of Japanese knotweed is the infrastructure and structural damage that can result from its growth. The rapid growth of new shoots can be extremely damaging, capable of breaking through concrete, cavity walls, weak mortar, sewers, and drains, leading to high repairs costs.

It is legally required to eradicate Japanese knotweed.

The active growth period is typically from mid-March to mid-November, and flowering occurs from mid-August to mid-October.

Further information can be found on the NNSS website and factsheet:

https://www.nonnativespecies.org/non-native-species/information-portal/view/1495

https://www.nonnativespecies.org/assets/Uploads/ID_Fallopia_japonica_Japanese_knotweed.pdf

Management advice – https://www.nonnativespecies.org/non-native-species/management-guidance/terrestrial-plants-2/#Fallopiajaponica

There are several strategies available for the safe control and removal of Japanese Knotweed. The treatment method employed will usually reflect the speed at which Japanese Knotweed removal is required.

JCA Ltd highly recommends that any eradication programme for Japanese Knotweed is conducted by a trained and qualified specialist. Japanese knotweed is a highly invasive species and can easily spread if its removal is undertaken incorrectly. Incorrect treatment of Japanese Knotweed can result in hefty penalties, should you inadvertently cause it to spread into other areas. Below is a summary of the options available:

Single Season Herbicidal Treatment: This method involves targeting weaknesses in the plant's physiology with the use of herbicides over a six-month period during the active growing period. Sites adjacent to water courses and trees must be treated using a tailored environmentally sensitive herbicide programme.

Environmentally Sensitive Areas: This method will involve a site-specific eradication program in order to protect any environmentally sensitive features, such as; watercourses, designated sites, woodlands and other ecologically important areas. This method will take two years to complete and will typically involve consultation with the Environment Agency and Natural England.

Integrated on Site Treatment: This method will involve excavating Japanese Knotweed from sections of the site required for immediate development and then relocating this to a more convenient part of the same site. The Knotweed will then be placed on a plastic membrane and allowed to re-grow to a size sufficient for herbicidal treatment (preferably the following growing season). Once this spoil has been fully treated it can be re-introduced to the site.

Soil Screening: This method is a sustainable, time efficient and effective method of removing vegetation from excavated soil. The soil is passed through a screening process after which spoil can be transported to a licensed land fill site, incinerated or taken to a biomass power station for fuel. The separated soil is then re-introduced to the same site. This method is only suitable for larger sites (in excess of 1,000m²).

On Site Burial: Suitable for sites in which on site space is limited and urgent removal is required. This is dependant however on features such as water table level and soil type. This method involves excavating the areas of Japanese Knotweed, treating it once with a non-persistent herbicide and then transferring the spoil to a 5m deep pit located on site. The spoil is covered in a membrane and the pit in-filled.

Cell Encapsulation: This method is similar to the above (on site burial), but instead the pit need only be 2m deep and is lined with a heat joined membrane. Further heat joined membrane is laid on top of the spoil and the edges are sealed and the pit in filled. This method is only suitable where the burial site will not be excavated in the future. The exact location of this pit must be mapped, and the information stored.

Off Site Disposal: This method involves excavating the areas of Japanese Knotweed and burying the spoil in a licensed land fill site. This method will require detailed monitoring and post excavation herbicidal treatment. This is less cost efficient, but yield fast results.

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- Badgers
- Bats
- Beavers
- Dormice
- Great crested newts
- Natterjack toads
- Otters
- Reptiles
- Water voles
- White-clawed crayfish
- Wild birds

As well as:

- Invasive non-native (alien) specie
- Freshwater fish

- Deer
- Invertebrates
- Plants

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Appendices

Appendix 1: UKHab Habitat Map - Baseline

JCA LIMITED

Land off Bankfield Drive, Huddersfield, West Yorkshire, HD9 2PH

Key

- Site Boundary
- g3 - Other neutral grassland
- h3 - Bramble scrub
- w1g6 - Line of trees

Site	Client
Land off Bankfield Drive, Huddersfield, West Yorkshire, HD9 2PH	Orion Homes
Plan	**Author**
UKHAB Map	AWe
Plan ref	**Revision**
01	00

Appendix 2: UKHab Habitat Map - Proposed

Land off Bankfield Drive, Huddersfield, West Yorkshire, HD9 2PH

Key

- Site Boundary
- h2 - Hedgerow
- h2b - Other hedgerows
- g3c - Other neutral grassland
- g4 - Modified grassland
- u1b - Developed land; sealed surface
- u1b5 - Buildings
- u1 - Built-up areas and gardens
- h3 - Mixed scrub
- Urban Trees

Site Land off Bankfield Drive, Huddersfield, West Yorkshire,HD9 2PH	Client Orion Homes
Plan Proposed UKHab	Author AWe
Plan pdf	Revision 03

Appendix 3: Proposed Development Plan

Bankfield Drive, Holmebridge
Orion Homes

Housetype	number	Beds	Storeys
Edinburgh	3	2	2
Preston	2	3	2
Bamburgh	8	3	2
Gosford	2	4	2
Cheltenham	2	4	2
Total	17		
Affordable Housing			
Edinburgh	2	2	2
Preston	2	3	2
Total	4		
Site total	**21**		

Electric vehicle charging point
Bin storage area
Bin presentation point (BPP)

N

Appendix 4: Baseline Condition Assessment

Table 4.1 & 4.2 - detailed below identify the criteria used to assess the condition for each habitat recorded on-Site. The condition of bramble scrub is auto populated within the metric. Condition criteria are taken from Panks *et al* (2023).

Table 4.1: Condition Assessment for line of trees

Condition Assessment Criteria	Line of trees
A. At least 70% of trees are native species.	**Yes**
B. Tree canopy is predominantly continuous with gaps in canopy cover making up <10% of total area and no individual gap being >5 m wide.	**Yes**
C. One or more trees has veteran features and or natural ecological niches for vertebrates and invertebrates, such as presence of standing and attached deadwood, cavities, ivy or loose bark.	**Yes**
D. There is an undisturbed naturally-vegetated strip of at least 6 m on both sides to protect the line of trees from farming and other human activities (excluding grazing). Where veteran trees are present, root protection areas should follow standing advice2.	**No**
E. At least 95% of the trees are in a healthy condition (deadwood or veteran features valuable for wildlife are excluded from this). There is little or no evidence of an adverse impact on tree health by damage from livestock or wild animals, pests or diseases, or human activity.	**Yes**
Condition Assessment Result (Total Score)	**Moderate (4)**
Condition Assessment Result	**Condition Assessment Score**
Passes 5 criteria	Good (3)
Passes 3 or 4 criteria	Moderate (2)
Passes 2 or fewer criteria	Poor (1)

Table 4.2: Condition Assessment for grassland habitat (medium, high and very high distinctiveness)

Condition Assessment Criteria	Other Neutral Grassland
A. The grassland is a good representation of the habitat type it has been identified as, based on its UKHab description - the appearance and composition of the vegetation closely matches the characteristics of the specific grassland habitat type. Indicator species listed by UKHab for the specific grassland habitat type are consistently present. **Note - this criterion is essential for achieving Moderate or Good condition for non-acid grassland types only.**	**Yes**
B. Sward height is varied (at least 20% of the sward is less than 7 cm and at least 20% is more than 7 cm) creating microclimates which provide opportunities for insects, birds and small mammals to live and breed.	**No**
C. Cover of bare ground is between 1% and 5%, including localised areas, for example, rabbit warrens1.	**Yes**
D. Cover of bracken Pteridium aquilinum is less than 20% and cover of scrub (including bramble Rubus fruticosus agg.) is less than 5%.	**Yes**
E. Combined cover of species indicative of sub-optimal condition2 and physical damage (such as excessive poaching, damage from machinery use or storage, damaging levels of access, or any other damaging management activities) accounts for less than 5% of total area. If any invasive non-native plant species3 (as listed on Schedule 9 of WCA4) are present, this criterion is automatically failed.	**Yes**
Additional Criterion - must be assessed for all non-acid grassland types	

F. There are 10 or more vascular plant species per m2 present, including forbs that are characteristic of the habitat type (species referenced in Footnote 2 and 4 cannot contribute towards this count). **Note - this criterion is essential for achieving Good condition for non-acid grassland types only.**	**No**
Condition Assessment Result (Total Score)	**Moderate (4)**
Condition Assessment Result	**Condition Assessment Score**
Acid Grassland Types (Result out of 5 criteria)	
Passes 5 criteria	Good (3)
Passes 3 or 4 criteria	Moderate (2)
Passes 2 or fewer criteria	Poor (1)
Non-acid grassland Types (Result out of 6 criteria)	
Passes 5 or 6 criteria, including essential criterion A and additional criterion F.	Good (3)
Passes 3 - 5 criteria, including essential criterion A.	Moderate (2)
Passes 2 or fewer criteria; OR Passes 3 or 4 criteria excluding criterion A and F.	Poor (1)

Appendix 5: Photographic Evidence

Photo 1: View towards the north of the site showing general composition of site.

Photo 2: View of the south of the site showing other neutral grassland and dry-stone wall.

Photo 3: View of the parcel of bramble scrub located on the eastern boundary.

Photo 4: View of the line of trees located at the north of the site.

Appendix 6: Bat Survey Guidelines

Figure 1: Guidelines used for assessing the bat roosting suitability of a site (taken from Collins, 2023, Tables 4.1, 4.2, 6.2)

Roosting Suitability	Potential Roosting Features (PRFs) Present
None	No habitat features on site likely to be used by any roosting bats at any time of the year (i.e., a complete absence of crevices/suitable shelter at all ground/underground levels). Trees: Either no PRFs in the tree or highly unlikely to be any.
Negligible	No obvious habitat features on site likely to be used by roosting bats; however, a small element of uncertainty remains as bats can use small and apparently unsuitable features on occasion.
Low	A structure with one or more potential roosting opportunities that could be used by individual bats opportunistically at any time of the year. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitats, to be used on a regular basis or by larger numbers of bats (i.e., unlikely to be suitable for maternity and not a classic cool/stable hibernation site but could be used by individual hibernating bats). Trees: PRF-I (Individual) – PRF is only suitable for individual bats or very small numbers of bats either due to size or lack of suitable surrounding habitats.
Moderate	A structure with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only, such as maternity and hibernation – the categorisation described in this table is made irrespective of species conservation status, which is established after presence is confirmed).
High	A structure with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions, and surrounding habitat. These structures have the potential to support high conservation status roosts, e.g., maternity or classic cool/stable hibernation site. Trees: PRF-M (Multiple) – PRF is suitable for multiple bats may therefore be used by a maternity colony.

Figure 2: Recommended minimum number of survey visits for presence/likely absence surveys (taken from Collins, 2023, Tables 7.1 and 7.2).

Negligible roost suitability	Low roost suitability or PRF-I	Moderate roost suitability	High roost suitability or PRF-M
No futher survey required	One survey visit. One dusk emergence survey, May to August (structures). No further surveys required (trees).	Two separate dusk emergence survey visits. May to September, with at least one survey between May and August.	Three separate dusk emergence survey visits. May to September, with at least two surveys between May and August
September surveys are both weather- and location-dependent. Conditions may become more unsuitable in these months, particularly in more northerly latitudes, which may reduce the length of the survey season.			

September surveys are likely to miss maternity roosts due to dispersal before this time but may pick up mating roosts.

Multiple survey visits should be spread out to sample as much of the recommended survey period as possible; it is recommended that surveys are spaced out at **least three weeks apart**, preferably more. Survey timings **should consider the prevailing conditions in the year of survey, which will vary geographically**. In years with a cold spring, the surveys should not be started in early May, or all completed in May. The surveys should maximise the possibility of detecting maternity roosts, which can switch roosts between pregnancy and lactation, and the **optimum coverage includes the pre-parturition, post-parturition, and mating periods**.

Structures that have been categorised as low potential can be problematic, and the number of surveys required should be judged on a case-by-case basis. In some cases, more than one survey may be needed, particularly where there are several buildings in this category.

Figure 3: Survey timings calendar (taken from BCT: Bat Surveys for Professional Ecologists: Good Practice Guidelines; 4th Edition).

Survey type	Month											
	J	F	M	A	M	J	J	A	S	O	N	D
Daytime Bat Walkover (DBW)												
PRA – structures[a]												
Emergence survey for maternity or summer roosts[b]												
Emergence survey for transitional/ occasional roosts[b]												
Re-entry surveys[c]												
Emergence survey for mating roosts[b]												
Hibernation survey – structures[a]												
GLTA[d]												
PRF inspection survey – trees												
Ground-level bat activity survey – night-time walkover surveys and automated/static												
Pre-, during and post-hibernation – automated/static bat activity survey												
Swarming survey[e]												
Back-tracking survey												
Trapping and radio-tagging survey[f]												

= optimal period = sub-optimal period

= weather or location dependent (i.e. may not be suitable due to spring and autumn conditions in any one year or in more northerly latitudes). Note that October emergence surveys are not acceptable in Scotland.

= it is not acceptable to trap bats when they are heavily pregnant and have dependent pups. Mothers need to optimise foraging due to the physiological demands of pregnancy and lactation, and pups need to be regularly fed. Interrupting these activities could potentially have an impact on breeding success in the year in question. The timing of birth can vary between years – it may be as early as the end of May or as late as the start of August, therefore caution should be exercised and local information gained on birth dates before trapping activities are carried out during the summer months. Any information gained and decisions made should be kept as a record.

Appendix 7: Glossary

Activity surveys - are used to assess the level of bat activity at a site. This can be done either by using equipment such as an AnaBat device, or manually walking around a site with a heterodyne detector, documenting the number of bat passes and interceptions.

Dawn surveys - begin around 2 hours before and up to sunrise when bats are returning to their roosts from foraging, and swarming behaviour can be seen close to roost entrances.

Dusk surveys - begin around 30 minutes before sunset and up to 2 hours afterwards. These are done in order to see bats emerging from their roost sites at night.

Echolocation – is a system similar to sonar that allows bats to travel and forage even in total darkness. Bats make a call and then listen to the returning echoes in order to build up a map of their surrounding area. This allows bats to gauge the identity and distance of an object by how long the echo takes to return to them.

Habitat - the ecological or environmental area that is inhabited by a particular species of animal, plant or other type of organism.

Hibernation - is a state of inactivity and metabolic depression characterized by lower body temperature, slower breathing, and lower metabolic rate. Hibernating animals conserve energy, especially during winter when food is short, tapping energy reserves, i.e. body fat, at a slow rate.

Hibernacula - typically consist of underground sites, such as caves and cellars, which remain relatively cold and humid. Bats will hibernate to conserve energy over the winter months when falling temperatures cause a drop in the abundance of insects. These will typically be colonised around November to around March.

Insectivorous – is when an organism feeds exclusively on insects.

Nocturnal - a behaviour characterized by being active during the night and sleeping during the day.

Maternity roosts – colonised around late May early June and consist of mature females and their young. These roosts need to be warm and quiet, and are used up until around August, with females typically leaving first and then the young.

Mating roosts – mating begins around late October to November. Males of most species use special mating calls to attract females. These can include purrs, clicks and buzzing.

Roost – a site where bats live during the day, rear young and hibernate. These can be in man made structures, such as buildings, bridges, tunnels, cellars and mines, or natural features such as mature trees and caves.

Roosts in buildings – many types of buildings will be used by bats. The most likely sites are agricultural buildings (e.g. farmhouses and barns), buildings with exposed wooden beams (greater than 20cm thick), buildings with weather boarding and/or hanging tiles, and buildings close to woodland and/or water.

Roosts in trees – these are typically in mature trees with deep sheltered cracks, under loose sections of bark, or in woodpecker holes.

Species – a group of organisms in which all members can interbreed and produce viable offspring.

Summer roosts (non-breeding) - these are generally occupied by groups of males and immature females during the summer, and are usually only occupied for a short period before the group moves to another location.

Swarming – a behaviour exhibited by bats returning to their roost sites at dawn. Bats can be seen repeatedly flying to and from the roost entrance, making it much easier for consultants to identify where roosts are on a building or structure.

Temporary/Transitory roosts – These are used after hibernation (March – April) before mature females disperse to maternity roosts and male/immature females colonise summer (non-breeding) roosts. Similarly, temporary roosts form before hibernation (August -October).

Underground Roosts – these are typically used during the winter and can be mines, caves, tunnels or cellars.

Appendix 8: Protected Species Information

The following are European Protected Species, and are fully protected in UK law, under **Schedule 2 (Animals)** and **Schedule 5 (Plants)**, detailed in **Part 3: Protection of Species** (Regulations 42-49) of the **Conservation of Habitats and Species Regulations (CHSR) 2017**, retained in UK lay post-Brexit by **CHSR (Amendment) (EU Exit) 2019**:

- All UK bat species
- All UK dolphin, porpoise, and whale species
- Other mammals: Scottish wild cat, hazel dormouse, and otter
- Amphibians: great crested newt, pool frog, and natterjack toad
- Reptiles: smooth snake, sand lizard, and marine turtles
- Fish: sturgeon
- Invertebrates: large blue butterfly, fisher's estuarine moth, lesser whirlpool ram's-horn snail
- Plants: shore dock, Killarney fern, early gentian, lady's-slipper, creeping marshwort, slender naiad, fen orchid, floating-leaved water plantain, and yellow marsh saxifrage

These species are afforded the highest protection in the UK. Under this protection it is an offence to; deliberately capture, injure or kill any wild animal of a European Protected Species; deliberately disturb wild animal of any such species; deliberately take or destroy the eggs of such an animal, or damage or destroy a breeding site or resting place of such an animal.

In addition to this it is an offence to be in possession of, or to control, transport, sell or exchange, or to offer for sale or exchange, a European Protected species.

In addition to these, the following species are protected under **Schedule 4 (Animals which may not be captured or killed in certain ways)** of **CHSR 2017** as detailed under Regulation 45:

- Mammals: mountain hare, pine martin, polecat, bearded seal, common seal, grey seal, harp seal, hooded seal, and ringed seal.
- Fish: barbel, grayling, river lamprey, Atlantic salmon, allis shad, twaite shad, vendace, and whitefish.

The following species are protected under UK law, such as the **Wildlife and Countryside Act 1981 (as amended) (**note that this list is not exhaustive):

- Badger
- Nesting birds
- Red Squirrel
- Reptiles (Adder, Common lizard, Grass snake, Slow worm)
- Water Vole
- White Clawed Crayfish
- Various bird species i.e. Barn Owl
- Various plant species

Therefore, under this protection it is an offence to; kill, injure or take any of the above species.

Nesting birds are only protected during the breeding season whilst on their nest. In addition to the adults being protected, the eggs, young and nest itself whilst in use are protected.

The Wildlife and Countryside Act 1981 also contains measures to prevent the establishment of non-native species which may be detrimental to native wildlife, prohibiting the release of animals and planting of plants listed in **Schedule 9** in England and Wales (e.g. Japanese Knotweed and Himalayan Balsam).

Badgers are protected under **The Protection of Badgers Act 1992**. Under this legislation it is an offence to; take, injure, kill, or cruelly ill-treat a badger; interfere with a badger sett; sell or possess a live badger; or mark or ring a badger.

The following habitat types are protected under UK Law:

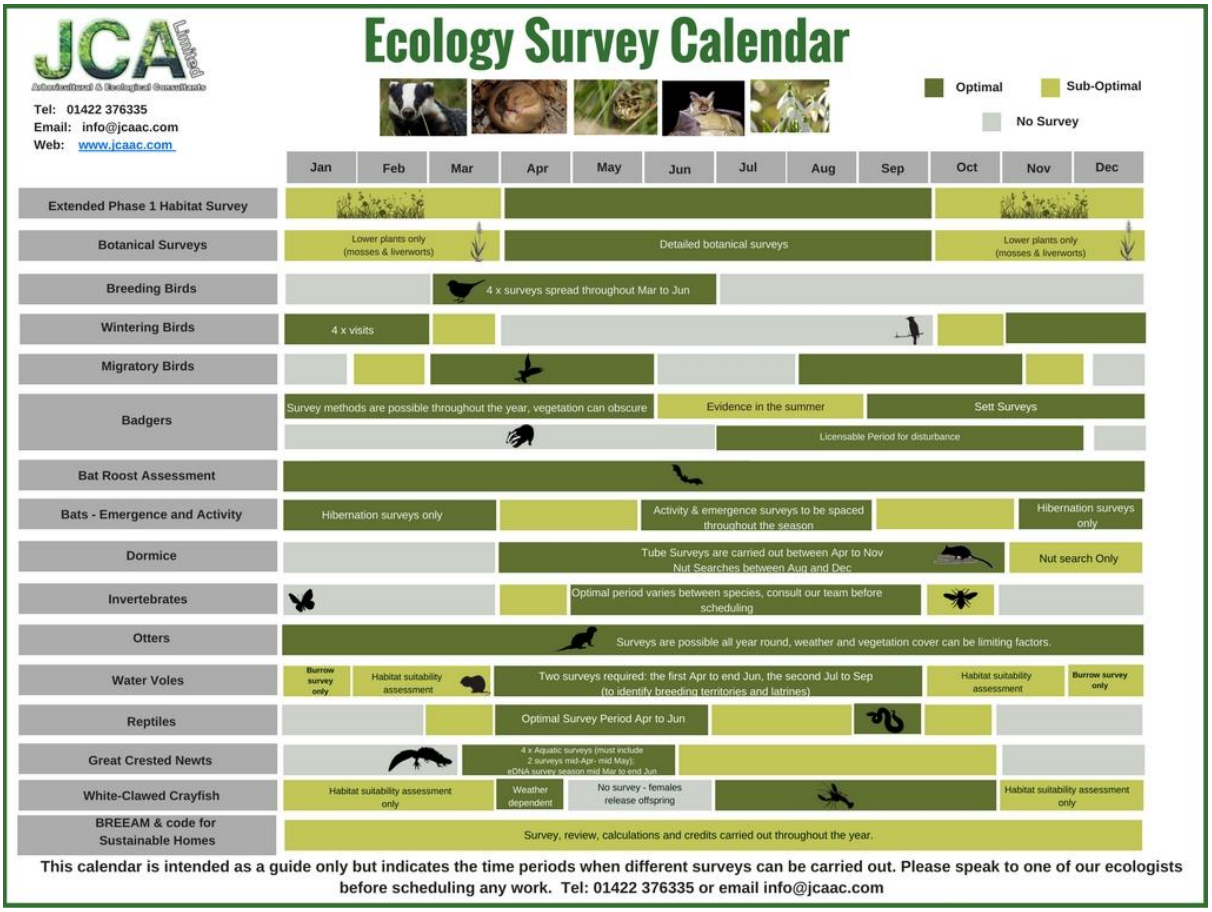
- Habitats that are used by protected species
- Habitats that fall within designated sites
- Hedgerows
- Individual trees/woods can be protected under Tree Preservation Orders

Additionally, several habitats and species are listed as priority habitats or species under **Section 41** of the **Natural Environment and Rural Communities (NERC) Act 2006**, designating them as species of principal importance for the purpose of conserving biodiversity in England. A full list of S41 designated habitats and species is available from:

https://www.gov.uk/government/publications/habitats-and-species-of-principal-importance-in-england

Appendix 9: Survey Calendar

Figure 4: Survey calendar for protected species and habitat surveys.



Appendix 10: Author Qualifications

Adam West, Principal Ecologist

BSc (Hons) Animal and Wildlife Management.

Adam joined JCA to lead the expanding ecology department. Having returned to education as a mature student, Adam studied Countryside Management for two years before undertaking a Batchelor's degree, for which he was awarded First Class Honours. Adam has many years' experience in ecological consultancy, working on projects ranging from individual planning applications to national infrastructure projects. Adam holds a Natural England Level 1 great crested newt survey class licence and a Natural England Level 2 bat survey class licence.

Eve Goodwin, Graduate Ecologist

BSc (Hons) Plant Biology, Qualifying CIEEM Member

Eve gained her Royal Society of Biology accredited undergraduate degree in 2019 from Aberystwyth University in Plant Biology. She has good plant identification skills which were developed through her academic studies and field work. She has since worked as a CAD technician and has joined JCA in 2022 where she hopes to develop her field skills further.

Audrey Bourdais Paull, Graduate Ecologist

BSc (Hons) Zoology.

Audrey graduated in 2020 in Zoology at the University of Leeds and joined JCA in 2022. Audrey volunteered for many years with various wildlife conservation and rescue organisations, as well as working on various projects to develop a variety of field survey techniques, report writing and data analysis skills. Audrey is looking forward to developing her ecology consultancy experience with JCA, as well as combining her previous dog training and detection work with ecology to expand into ecology detection dogs.

James Foster, Assistant Ecologist

BSc (Hons) Biology.

James gained his undergraduate degree in biology in 2012 from University of Leeds. James has plenty of experience in ecology, having worked countless projects of different scales all over the north and midlands. James has 9 years of experience surveying anything from reptiles to hedgerows and holds a Great crested newt licence level 1 and is working towards his bat licence and barn owl licence.

Alex Donovan, Assistant Ecologist

MBIOL, BSc Biology (Industrial).

Alex joined JCA in 2023 after graduating from the University of Leeds with a First Class Honours Integrated Master's degree in Biology. As part of his degree programme, Alex spent an industrial placement year working in the Uplands Research Department of the Game and Wildlife Conservation Trust, assisting on various ecological surveys and projects. Alex is a registered Trainee Bird Ringer, licensed through the BTO and is experienced in conducting preliminary ecological surveys, bat roost assessments and emergence surveys, Biodiversity Net Gain, and has knowledge of wildlife legislation. Alex is a CIEEM Qualifying Member and is currently working towards a Natural England level 1 bat licence, level 1 great crested newt licence, and a barn owl survey licence.

The information and advice which we have prepared and provided is true and has been prepared and provided in accordance with the CIEEM's Code of Professional Conduct. We confirm that the opinions expressed are our true and bona fide opinions.

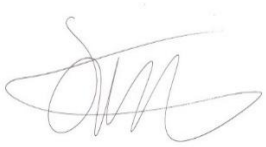
Signed

.....

Alex Donovan *MBIOL BSc (Hons)*

19/02/2025

Approved by



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James Foster *BSc (Hons)*

25/02/2025

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ECOLOGICAL SERVICES

Ecological Pre-Planning Services

- Phase 1 Habitat Surveys
- Great Crested Newt eDNA Sampling
- Protected species: Bat, Wintering and Nesting Bird, Badger, Amphibian, Otter, Water Vole, White-Clawed Crayfish, Dormice and Reptile Surveys.
- Preparation for Environmental Impact Assessment (EIA)
- Invasive Species Surveys
- Code for Sustainable Homes
- Butterfly & Insect Surveys

Ecological Post-Planning Services

- Biodiversity Enhancement Plans
- Protected Species Mitigation
- Ecological Management (Bat and Bird box installation and inspection)
- Planting Schemes
- Monitoring of bird or bat boxes.

ARBORICULTURAL SERVICES

Guidance for Architects & Developers

- British Standard 5837 Surveys
- Arboricultural Implications Assessments (AIA)
- Arboricultural Method Statements (AMS)

Advice for Engineers, Loss Adjusters and Insurers

- Tree Surveys for Subsidence
- Heave Assessment
- Tree Root Identification

Advice for Local Authorities and Social Housing

- Tree Safety Surveys
- Specialist Decay Detection
- Landscape and Orchard Design

Tree Advice for the Legal Profession

- Subsidence Litigation
- Personal Injury and Accident Investigation
- Expert Witness, Planning Inquiries and Appeals

Veteran Tree Management

- Ancient Woodland Management
- Veteran Tree Management

Tree Health and Pest and Disease Management

- Pest and Disease Surveys
- Tree Health Checks
- Disease Mitigation and Control

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