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Tyrer Ecological Consultants Ltd, Formby Business Centre, 42 Duke Street, Formby, L37 4AT

Preliminary Ecological Appraisal

April 2021

**East of Orkney Close,
Radcliffe,
Manchester,**

M26 2WR

National Grid Ref: SD78940788



East of Orkney Close, Radcliffe, Manchester, M26 2WR
Preliminary Ecological Appraisal

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This report aims to provide general advice on ecological constraints associated with any development of the site and includes recommendations for further survey; it is not intended that this report should be submitted with a planning application for development of the site, unless supported by the results of further surveys and a detailed assessment of the effects of the proposed development

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Tyrer Ecological Consultants Ltd will however consider forwarding data that is collected as part of its reports to the relevant wildlife records centre.

Executive Summary

As part of a proposed planning application of land just east of Orkney Close in Radcliffe, Manchester, Tyrer Ecological Consultants Ltd carried out a preliminary ecological appraisal (PEA) in February 2021. The PEA was commissioned by Fisk & Associates; proposals are for a three storey development care home with access and parking (see Figure 1.1 and Figure 1.2).

As part of this ecological appraisal:

- Habitats on site were identified and mapped using the 'Joint Nature Conservation Committee (JNCC) Phase 1 Habitat Handbook' (JNCC, 2010),
- Trees on site were subject to preliminary roost assessment (PRA) for bats,

Extensive findings, conclusions and recommendations are presented throughout the report; however, the reader should be aware of the following Key recommendations.

Invasive species: Two Invasive Non-Native Species (INNS) were identified at the application site (See Figure 7.1 and Appendix IV Target Notes):

- Japanese Knotweed (*Reynoutria japonica*) - occurs over 50% of the site from the centre of site extending along the north and south eastern boundary.
- Variegated yellow-archangel (*Lamium galeobdolon* ssp. *argenteum*) - a small area of growth located centrally.

Additionally, given the movement of soils on site evidenced by a former site clearance and extant presence of a large spoil heap, and extent of Japanese Knotweed cover in particular at the site, Figure 7.1 below cannot be relied upon alone to map extent of INNS cover, though is provided to demonstrate distribution as was recorded during the PEA.

A full scheme of invasive species eradication is required to remove and control Japanese Knotweed before any development works take place, to prevent the spread of this species any further to local environments which includes neighbouring gardens and a live metro link. The level of work required should be carried out by a professional invasive species contractor. Any spoil on site should be treated as controlled waste, and removed from site responsibly, to be disposed at a landfill site authorised and licenced to accept controlled waste.

Biodiversity Enhancement: Measures to enhance the site and improve biodiversity in accordance with Chapter 15 of the National Planning Policy Framework (Conserving and Enhancing the Natural Environment) are presented in Appendix III.

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1.0 Introduction & Scope

- 1.1 As part of a proposed planning application of land just east of Orkney Close in Radcliffe, Manchester, Tyrer Ecological Consultants Ltd carried out a preliminary ecological appraisal (PEA) in February 2021. The PEA was commissioned by Fisk & Associates; proposals are for a three storey development care home with access and parking (see Figure 1.1 and Figure 1.2).

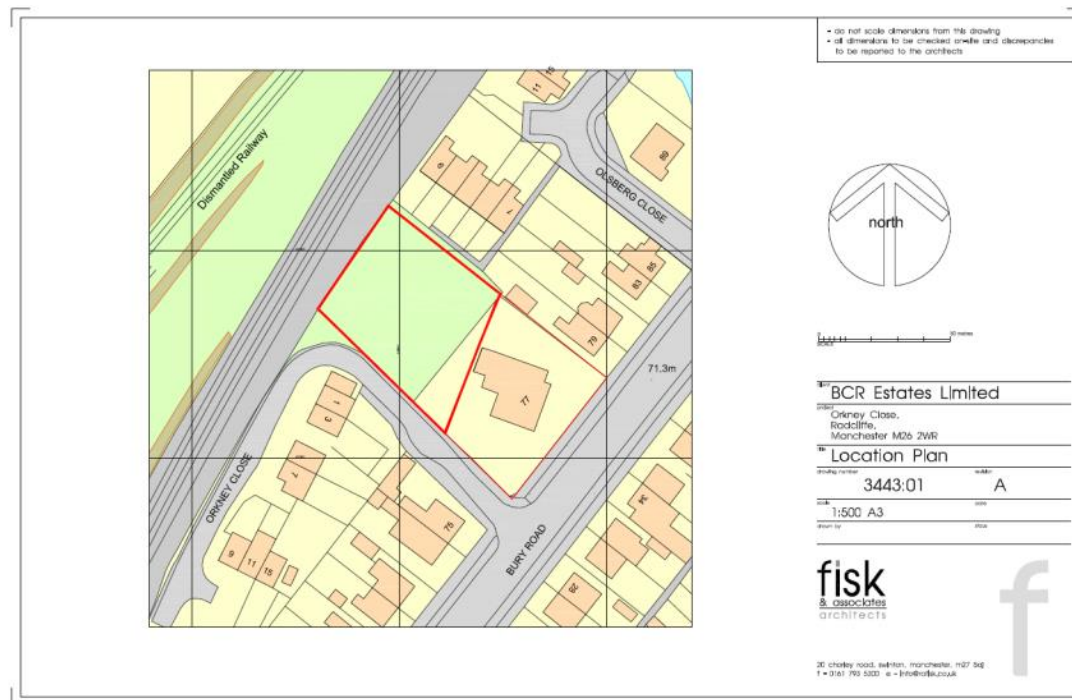


Figure 1.1 – Red line survey boundary (Source: FISK & Associates)

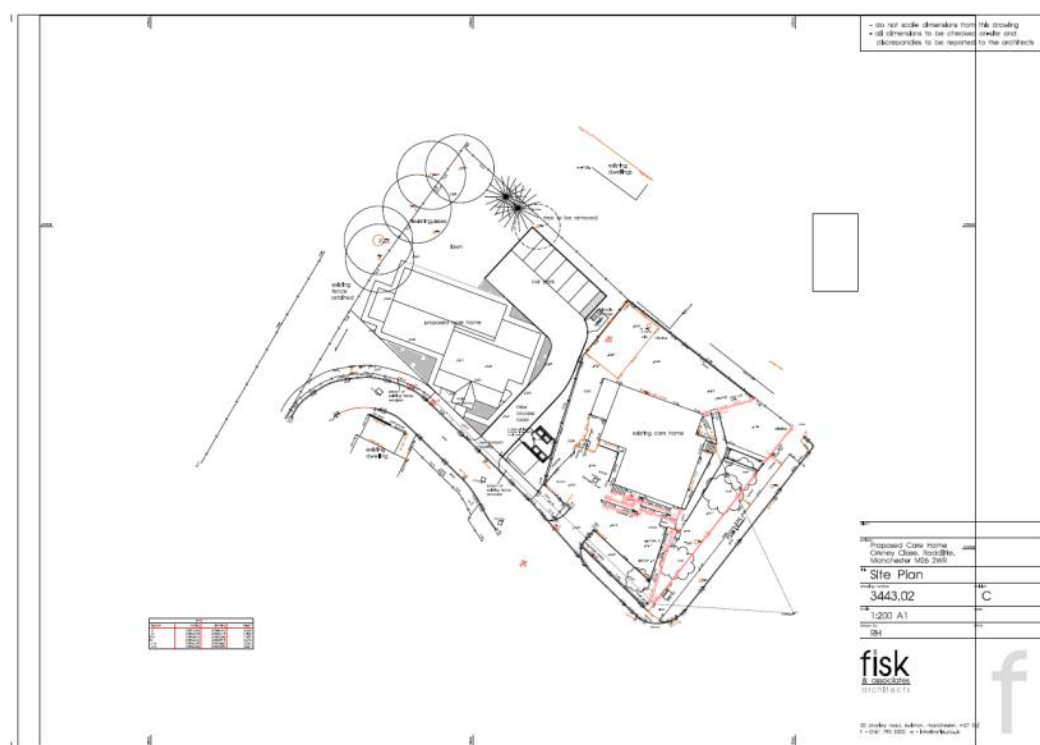


Figure 1.2 – Proposed site plan (Source: FISK & Associates)

- 1.2 The PEA was carried out in accordance with the '*Guidelines for Preliminary Ecological Appraisal, 2nd Edition*' (CIEEM, 2017) and all site associated '*CIEEM Competencies for Species Survey (CSS)*', whilst this report has been presented in accordance with the British Standard 42020:2013.

Aims & Objectives

- 1.3 The aim of the survey was to ascertain the nature of the land, and where possible obtain information on any priority wildlife habitats, or species, that may be present and if so determine if they will be affected by the proposals. The survey therefore includes the following objectives:
- Gather and present baseline ecological information on site/off site (as necessary),
 - Identify any likely ecological constraints associated with the proposals for the site (i.e. the presence of protected/priority habitats or species that exist within the confines of the application boundary, or zone of influence (ZOI),
 - Identify mitigation / compensation measures likely to be required in line with the mitigation hierarchy (i.e. avoidance > impact minimisation > mitigation > compensation),
 - Identify additional survey requirements following on from this preliminary appraisal,
 - Identify a series of enhancement opportunities for biodiversity in line with national and local planning policy following '*Biodiversity Net Gain: Good practice principles for development*' (CIEEM *et. al.*, 2019).
- 1.4 As part of this ecological appraisal:
- Habitats on site were identified and mapped using the '*Joint Nature Conservation Committee (JNCC) Phase 1 Habitat Handbook*' (JNCC, 2010),
 - Trees on site were subject to preliminary roost assessment (PRA) for bats,
- 1.5 As part of the Local Planning Authorities (LPA) planning policies and obligations to the Planning Framework, ecological surveys are generally required prior to planning permission being granted, particularly where protected/priority species are, or may be present, that could be affected by the proposals for which the application seeks consent.
- 1.6 This report therefore provides baseline information as derived from the diurnal appraisal process outlined above and recommends any necessary additional surveys, or work, where applicable, to provide a conclusive ecological impact assessment.
- 1.7 The Applicant should be aware that if during the appraisal:
- The application site/area was found to be suitable for any European Protected Species (EPS), otherwise protected, or priority habitats/species, or,
 - Signs of use by particular protected species were found, or suspected, or,
 - Seasonal constraints significantly limit the gathering of ecological information to arrive at an accurate conclusion on which the planning application can proceed,

Then more detailed surveys may be recommended where necessary, to allow the ecologist to arrive at a conclusive impact assessment.

- 1.8 If any protected species was subsequently found during detailed further surveys and / or may be affected by the development proposals, then a European Protected Species Mitigation Licence (EPSML) may be required to proceed with the development.
- 1.9 Where more detailed surveys are recommended by the ecologist, following ecological appraisal, then Local Planning Authorities (LPA's) on the advice of their ecological advisors, may not grant permission until such time that all relevant material information is gathered in accordance with their obligations to the legislature.
- 1.10 Protected/priority species omitted from this report have been discounted due to factors including obvious absence/isolation of suitable habitats, and/or distributional aspects negating the necessity to survey for them, and/or the proposed works were not considered to negatively impact the species or encroach on areas where the species may be present.

2.0 Legislation & Policy

- 2.1 The legislature considered for the purposes of this report includes the following:
- Conservation of Habitats and Species Regulations (amendment) (2019) (EU Exit),
 - Wildlife and Countryside Act (1981) (as amended),
 - Countryside Rights of Way (CROW) Act (2000),
 - Natural Environment and Rural Communities (NERC) Act (2006),
 - Protection of Badgers Act (1992),
 - The Hedgerow Regulations (1997),
 - Town and Country Planning Act (1990),
 - Wild Mammals Protection Act (1996)
- 2.2 These acts entail relevance to both protected and invasive species. The degree of protection offered to taxa provided within existing UK and EU legislature often varies depending on species/group, for example, some species may purely be protected during one of its life stages (e.g. common species of breeding bird whilst nesting/with eggs/young); some species may receive full protection within the EU (e.g. otter), whereas others may be protected solely on a national basis (e.g. grass snake).
- 2.3 Table 2.1 contains appropriate legislature to each species/group specifically respective to the site, and provides the relevance of said legislation.

Table 2.1 - Relevant Legislation

Species Group/Species	Relevant Legislation	Level of Protection
Badger	Protection of Badgers Act (1992), Wildlife and Countryside Act (1981) (as amended)	Illegal to wilfully kill, injure or take a badger (or attempt to do so). Cruelly ill-treat a badger. Dig for a badger. Intentionally or recklessly damage or destroy a badger sett, or obstruct access to it. Cause a dog to enter a badger sett. Disturb a badger when it is occupying a sett.

Bats	CRoW Act (2000) Conservation of Habitats and Species Regulations (2019) (EU Exit) Wildlife and Countryside Act (1981) (as amended)	All British bats and their roosts are afforded full protection from damage/destruction and bats may not be injured/killed/taken at any life stage. Once identified, roosts are protected whether the bat is in occupation or not.
Birds (Breeding)	CRoW Act (2000) Wildlife and Countryside Act (1981) (as amended)	All wild birds (with only minor exceptions) and their nests whilst being built or containing eggs or dependant young are protected. Birds listed on Schedule 1 Wildlife & Countryside Act (1981) (as amended) are afforded a greater level of protection.
Invasive Plant Species	Wildlife and Countryside Act (1981) (as amended)	Species listed within Schedule 9 as invasive, including Japanese Knotweed (<i>Reynoutria japonica</i>) and Himalayan Balsam (<i>Impatiens glandulifera</i>), for example, carry notoriety regarding development. The Act makes it an offence for any person to grow or cause to grow in the wild any plants listed as invasive.

Policy

- 2.4 Guidance for Local Authorities: Extract from Office of the Deputy Prime Minister - Circular 06/2005:

“It is essential that the presence or otherwise of protected species, and the extent that they may be affected by the proposed development, is established before planning permission is granted, otherwise all relevant material considerations may not have been addressed in making the decision”.

- 2.5 Paragraph 175 of the National Policy Planning Framework (as revised in 2019) stipulates:

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

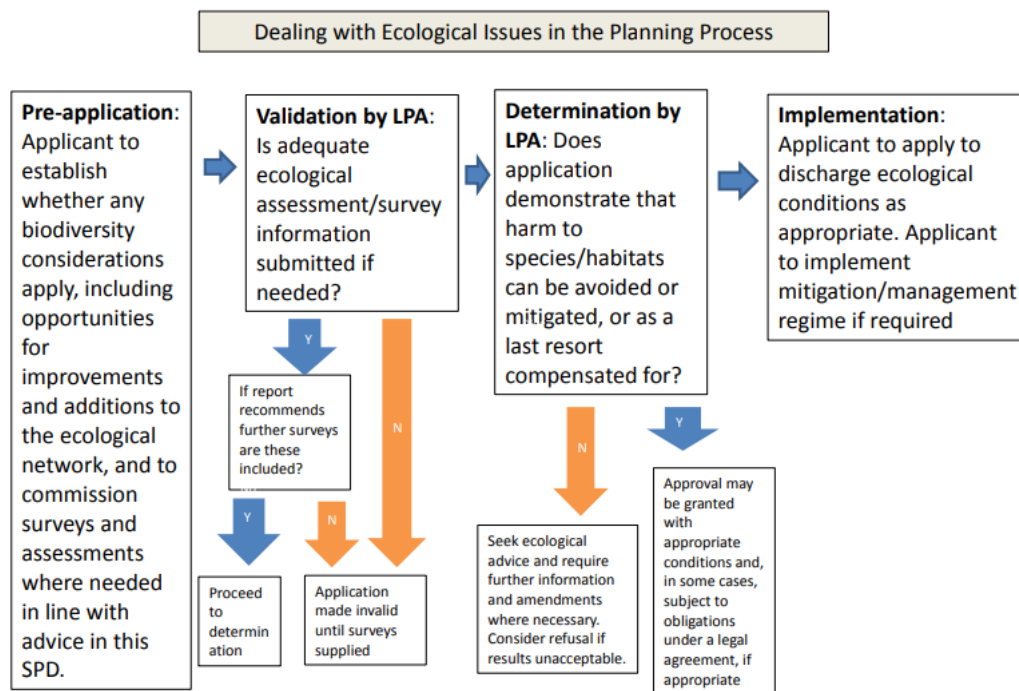
- 2.6 Paragraph 174 also makes the following reference relative to biodiversity enhancement and net gain:

“To protect and enhance biodiversity and geodiversity, plans should... promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity.”

- 2.7 The adopted Bury Unitary Development Plan echoes the aims of the NPPF in policy EN6 - CONSERVATION OF THE NATURAL ENVIRONMENT:

“The Council will retain, protect and enhance the natural environment of the Borough, particularly in relation to areas of ecological, wildlife and geological importance”.

- 2.8 Figure 2.1 is a process model that surmises how ecological issues should be dealt with in the context of the planning process.



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Figure 2.1 - Dealing with ecological issues in the planning process

3.0 Priority Habitats & Species

National context

- 3.1 In the United Kingdom, legal protection and otherwise legislative recognition is afforded to particular habitats and species. Certain habitats and species are considered to hold nature conservation importance and are thus protected due to factors such as their ecological functionality, their rarity, their vulnerability, environmental importance or declining population/status. They are referred to as priority habitats and priority species.
- 3.2 The UK Biodiversity Action Plan (UKBAP) provided a statutory basis for lists of habitats and species of national conservation importance - now transposed under section 41 (s.41) of the Natural Environment Rural Communities Act 2006 (NERC Act).

3.3 The following Priority habitats and species are considered relevant to the survey area:

Habitats:

- None

Species:

- Bats: Brown long-eared (*Plecotus auritus*), Soprano Pipistrelle (*Pipistrellus pygmaeus*) and Noctule (*Nyctalus noctula*),
- Bird species that include: House Sparrow (*Passer domesticus*), Dunnock (*Prunella modularis*), Song Thrush (*Turdus philomelos*), Bullfinch (*Pyrrhula pyrrhula*) for e.g.,
- Mammals that include: Hedgehog (*Erinaceus europaeus*) for e.g.,
- Herpetofauna that includes Common toad (*Bufo bufo*), Common lizard for e.g.

District context

3.4 Local Biodiversity Action Plans (LBAP's) are a way of encouraging people to work together and deliver a program of continuing action for biodiversity at a local level. LBAPs also embrace the idea of 'local distinctiveness'; habitats and species which are not considered UK conservation priorities can be catered for by LBAPs if they are of particular local significance.

LBAP's set out practical steps that aim to:

- Help protect biodiversity,
- Enhance and improve biodiversity where possible, and,
- Promote biodiversity at a local level

3.5 The Greater Manchester Biodiversity Action Plan (LBAP) lists key local habitats/species considered to be rare or declining in the area; some may be of national concern while others are significant at local level. The following local plans are considered of potential relevance to the survey.

- Bats,
- Black Redstart (*Phoenicurus ochruros*)
- Native Black Poplar (*Populus nigra subsp. betulifolia*),
- Willow Tit (*Poecile montanus*)

4.0 Survey Methods

4.1 As part of the Preliminary Ecological Appraisal report, a desk-top and field-based study is conducted. Methods for both components of the appraisal are given below.

Desktop Study

4.2 Prior to a site visit a desktop study was conducted using online resources to obtain information pertaining to any sites afforded statutory (e.g. SSSI) and non-statutory (e.g. LWS) designations within 2.0km of the site boundary. To do so, the 'Multi Agency Geographic Information for the Countryside (MAGIC – provided by Defra)' along with data from the 'Natural England Open Data Geoportal' and Geology of Britain viewer was accessed to gather such information; this particular interactive mapping service was also used to locate any European Protected Species Mitigation Licenses (EPSML) and species records to further inform conclusions concerning protected species in the context of the study site and its proposed development.

- 4.3 Historic satellite imagery was reviewed using sources such as Google Earth (© 2020/21) to help establish past land use/cover and determine the nature of adjoining and extending habitats; such information aids in the understanding of how the site might interact with its surroundings ecologically and its value in that context, and how the development may impact at a wider scale.
- 4.4 In addition the Council Planning Portal 'Search for planning applications' function was utilised to help inform the desktop study by analysis of existing publicly accessible ecological survey results that have been carried out locally within the previous five years.
- 4.5 A commercial data request to the Local Environment Records Centre serving the area Greater Manchester Ecology Unit (GMEU) has not been sourced during this preliminary appraisal assessment and is justified through application of the following recent guidance:

1) The Guidelines for Accessing, Using and Sharing Biodiversity Data in the UK (CIEEM, 2020) states:

"It is generally expected that a desk study, including a data search, will be a key part of the ecological surveys or reports produced to inform a planning application. Freely available web-based sources of data and contextual information should always be used; in some cases, it may be acceptable to not undertake a data search with the LERC or other relevant NSS or local interest groups, for example:

*ii) Situations where the data search would be extremely unlikely to provide information needed to inform the assessment, due to the **scale and location** of the proposed development. The appropriateness of excluding a data search will need to be judged on a case-by-case basis as, in most situations, it will be essential to carry out such a search even if the development is very small or is likely to have a low impact. It can be very difficult to demonstrate that a data search would not have provided relevant information without obtaining and reviewing those data.*

iii) In some cases for Preliminary Roost Assessments of buildings in low impact / small-scale scenarios, such as an extension to a residential property, loft conversions (full or partial), installation of Velux/dormer windows, single modern agricultural or similar building conversion or demolition; however, it should not be assumed that data searches are never required for such scenarios and this must be judged on a case by case basis and justified accordingly.

2) The Guidelines for Preliminary Ecological Appraisal (CIEEM, 2017) states:

*"Very occasionally it might be possible to carry out a robust PEA without obtaining LERC/NBDC/CEDaR data; this will usually only apply to **low impact or small-scale projects** (e.g. by virtue of size, extent, duration of works, magnitude and locality), and should be determined on a case-by-case basis."*

As exemptions as made **bold** above can be applied for the proposed development at Orkney Close, Radcliffe in good practice, it is considered unnecessary to conduct a commercial data request at this time, however, if a data search is considered to be necessary by the Local Authority or environmental advisory body to better inform the appraisal, a proportionate data search should be commissioned with results interpreted into the conclusions and recommendations of a re-issued/updated report.

Field Survey

- 4.6 A daytime preliminary ecological appraisal was conducted on 23rd February 2021 in clear, windy conditions (8°C), wind 5/12 (Beaufort scale), average 80% cloud, by the following surveyor (Table 4.1).

Table 4.1 - Surveyor credentials

Name	Description of relevant credentials
Mr. Mark Pritchard ACIEEM (Ecologist)	Four years professional consultant experience & training; Licenced in Bats: (2020-5039-CLS-CLS) (Class 1) and accredited agent on the (Class 2) Natural England bat licence of Mrs. K. Wilding (CLS-14227); Flora - Field Identification Skills Certificate (FISC) - Level 3;

Floristic assessment

- 4.7 The survey followed UK industry standard Joint Nature Conservation Committee (JNCC) Phase 1 Habitat Methodology standards (JNCC, 2010) with reference to the Chartered Institute of Ecology and Environmental Management (CIEEM) Technical Guidance Series "Guidelines for Preliminary Ecological Appraisal 2nd Edition (CIEEM, 2017).
- 4.8 During the survey walkover, botanical assemblages were assessed, and the land was inspected for the presence of red-listed (Stroh *et al*, 2014; Hodgetts, 2011), s.41 and LBAP species alongside specially protected species as listed under Schedule 8 of the Wildlife and Countryside Act (WCA) (1981) (as amended) and / or Schedule 5 The Conservation of Habitats and Species (amendment) (EU exit) Regulations (2019). Species nomenclature follows Stace, C. (2019) – definitive English names.
- 4.9 Additional to attributing ecological value to red-listed / BAP species, in accordance with existing CIEEM guidance, a geographic frame of reference is also adopted. Plant species and habitats may be recognised for their ecological value on a geographical scale which is adopted on a site-to-site basis (see Figure 4.1 below).
- For a site-relevant species list, see Appendix II.
- 4.10 In combination with assessing the area in relation to flora and habitats of conservation importance, the land was also assessed in relation to the presence of invasive non-native species (INNS) as listed under Schedule 9 (Part II) of the Wildlife and Countryside Act (1981) (as amended).

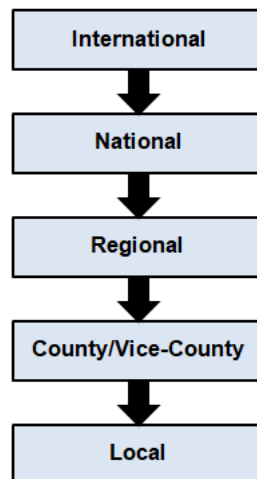


Figure 4.1 - Geographic Frame of Reference entailing degrees of conservation importance

Faunal assessment

Bats

- 4.11 During site walkover(s) the identification and/or evidence of fauna encountered was documented whilst in tandem the area was assessed for the potential to support the priority species in section 3.0. The walkover also aimed to identify any ephemeral pools or unmapped waterbodies.
- 4.12 The site was assessed for bats; structures (where present) would be inspected for potential places that may be of value to bats and to determine evidence of use. This typically involves a search for potential roost features (PRF) both internally (investigation of loft spaces/upper floors/internal elevations for example) as well as externally, comprising an investigation of features (roof material, fabric, aesthetics, components, for example) using a high powered torch. Field signs of bats typically comprise bat droppings, incidental animal presence, dead specimens and/or prey items. The surrounding habitat was also considered in terms of general suitability.
- 4.13 Trees (where present) were inspected for places that may be of value to bats and to determine if evidence of use was present; this typically involves a search for potential roost features along with an investigation of those features using a high powered torch or close focus binoculars. Potential roost features can include woodpecker holes, rot holes, hazard beams, other vertical or horizontal cracks or splits in stems and branches, partially decayed lifted bark, knot holes, man-made holes, tear-outs, cankers in which cavities have developed, other hollows or cavities, including butt-rots, double-leaders forming compression forks with included bark, gaps between overlapping stems or branches, partially detached Ivy with stem diameters in excess of 50mm or bat/bird boxes.
- 4.14 Criteria for preliminary bat roost assessment are based upon the determinants given in the Bat Conservation Trust - Bat Surveys for Professional Ecologists: Good Practice Guidelines, 3rd ed. (2016): (see Figure 4.2).
- 4.15 Factors considered during the preliminary roost assessment include:
- Knowledge of bat species relevant to the site location and geographical range,
 - Nature of the immediate / surrounding habitat in relation to foraging opportunities,
 - Presence and conditions of loft spaces, upper floors, roof linings,

- Presence / absence of roost potential,
- Value of roost potential, where present.

Table 4.1 Guidelines for assessing the potential suitability of proposed development sites for bats, based on the presence of habitat features within the landscape, to be applied using professional judgement.

Suitability	Description Roosting habitats	Commuting and foraging habitats
Negligible	Negligible habitat features on site likely to be used by roosting bats.	Negligible habitat features on site likely to be used by commuting or foraging bats.
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions ^a and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e. unlikely to be suitable for maternity or hibernation ^b). A tree of sufficient size and age to contain PRFs but with none seen from the ground or features seen with only very limited roosting potential. ^c	Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or unvegetated stream, but isolated, i.e. not very well connected to the surrounding landscape by other habitat. Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub.
Moderate	A structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions ^a and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only – the assessments in this table are made irrespective of species conservation status, which is established after presence is confirmed).	Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.
High	A structure or tree 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 ^a and surrounding habitat.	Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge. High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree-lined watercourses and grazed parkland. Site is close to and connected to known roosts.

^a For example, in terms of temperature, humidity, height above ground level, light levels or levels of disturbance.
^b Evidence from the Netherlands shows mass swarming events of common pipistrelle bats in the autumn followed by mass hibernation in a diverse range of building types in urban environments (Korsten *et al.*, 2015). This phenomenon requires some research in the UK but ecologists should be aware of the potential for larger numbers of this species to be present during the autumn and winter in large buildings in highly urbanised environments.
^c This system of categorisation aligns with BS 8596:2015 Surveying for bats in trees and woodland (BSI, 2015).

Figure 4.2 - Bat Conservation Trust (BCT) guidelines extract

Breeding Birds

- 4.16 The site was checked for evidence of nesting birds and suitability for relevant species. Bird species observed and heard were recorded on site, and a search was made for nest material, or areas suitable for nesting - this can take the form of buildings, woody vegetation, semi-aquatic vegetation such as reeds and/or the ground. Additional to the site's capacity to support generally common species for breeding, the area was also subject to an assessment for wider capacity to support species with extra protection under Schedule 1 of the Wildlife & Countryside Act (1981) (as amended), for example Black Redstart (*Phoenicurus ochruros*) and other priority species.

Other terrestrial mammals

- 4.17 The walkover included a search for field signs of Badger (*Meles meles*) which includes signs of activity such as digging, setts, 'runs' leading to and from a sett and the existence of latrines or 'snuffle' holes where badgers have foraged in the ground.

Great Crested Newt (GCN)

- 4.18 During desktop assessment a 250m search was undertaken from a site-central grid reference in relation to the presence of ponds, ditches or other water bodies that may support Great Crested Newts (GCN). The information gathered would then be used to aid in establishing if more detailed surveys are required.

NB: *English Nature's (now Natural England) Great Crested Newt Mitigation Guidelines (2001) states ponds within 500m of a proposed development site should be considered for their potential to support GCN, however, in some instances this distance may be reduced to 250m due to the presence of physical barriers and obstructions, or based on the likely magnitude of impacts arising from the proposed development.*

Following current best practice considering the national roll out of District Level Licencing (DLL) a proportionate assessment of the pond range within 250m from site was applied.

- 4.19 No ponds exist on site; continuous water bodies exist within 250 metres to the west on the opposite side of the rail track adjacent to site and the Manchester, Bolton & Bury Canal.
- 4.20 In order to quantify risks to GCN in a PEA, a range of factors need to be considered (see below and Figure 4.3):
- Presence of ponds on site, and impacts to those ponds,
 - Site proximity to any additional ponds within 250-500m,
 - Pond quality (suitable for breeding, or not),
 - Nature, extent, and connectivity of available terrestrial habitat around the pond(s), considering core, intermediate and distant ranges,
 - Presence of significant barriers between ponds and site,
 - Area of site habitat loss and permanence of that loss.

Increases risk to GCN	Decreases risk to GCN
large population size, high local pond density, good terrestrial habitat, low pre-existing habitat fragmentation, large development footprint, long construction period	small population size, low local pond density, poor terrestrial habitat, substantial pre-existing dispersal barriers, small development footprint, short construction period

Figure 4.3 - Factors that can increase/decrease risk of committing an offence

Reptiles

- 4.21 The site and its surroundings were assessed for suitability for use by reptiles, with particular attention paid to features that could be used as basking areas (e.g. south-facing slopes), hibernation sites (e.g. banks, walls, piles of hardcore) and opportunities for foraging (e.g. rough grassland and scrub). *Beebee & Griffiths* (2000) state specific habitat preferences of common UK reptiles:
- Common Lizards (*Zootoca vivipara*) use a variety of habitats from woodland glades to heaths, walls and pastures, as well as brownfield sites,

In assessment of a site for reptiles several important habitat characteristics are considered, outlined in Table 4.2 below, as derived from the *Reptile Habitat Management Handbook* (Edgar, 2010).

Table 4.2 - Important habitat characteristics for reptiles

1. Location (in respect of species range)	7. Connectivity to good quality habitat
2. Vegetation structure	8. Prey abundance
3. Insolation	9. Refuge opportunity
4. Aspect	10. Hibernation habitat potential
5. Topography	11. Disturbance regime
6. Surface geology	12. Egg-laying site potential

- 4.22 The results, conclusions and recommendations of this report are based on a number of factors i.e.
- Skills and experience of the surveyor,
 - Knowledge of flora and fauna relevant to the site location and geographical range,
 - Nature of the immediate and surrounding habitat in relation to shelter, foraging and commuting opportunities.
- 4.23 All aspects of the field survey were undertaken in line with the current government and CIEEM standing guidance during the COVID-19 'Coronavirus' pandemic.
- 4.24 The results, conclusions and recommendations of this report have been assessed by Mrs. K. Wilding, Director of Tyrer Ecological Consultants Ltd, and her assessment concurs with the findings and recommendations of.

5.0 Limitations

- 5.1 This report does not contain a comprehensive list entailing the totality of botanical taxa on site. Species listed within Appendix II are recorded from a combination of the seasonal timing the survey took place and botanical identification skills of the survey team. Many plant species are only evident at certain times of the year; consequently, it is possible that some plant species may have gone undetected.
- 5.2 The optimal period of the year to carry out a preliminary ecological appraisal / phase 1 survey is April to October; therefore, the survey was carried out in a sub-optimal period; notwithstanding, the nature of the habitats on site could be accurately assessed irrespective of this factor and seasonal timing is not considered a major constraint.
- 5.3 No significant access limitations were experienced on site and taking everything into consideration no significant constraint affected the survey effort that would affect the integrity of the results, conclusions and recommendations in this report.

6.0 Desk Study Results

- 6.1 The land off Orkney Close (“the application site”) is situated between a live metro link to the west, Orkney Close south-west and Bury Road to the south-east, within Radcliffe, Manchester, approximately 3.2 kilometres south of Bury town centre (see Figure 6.1).

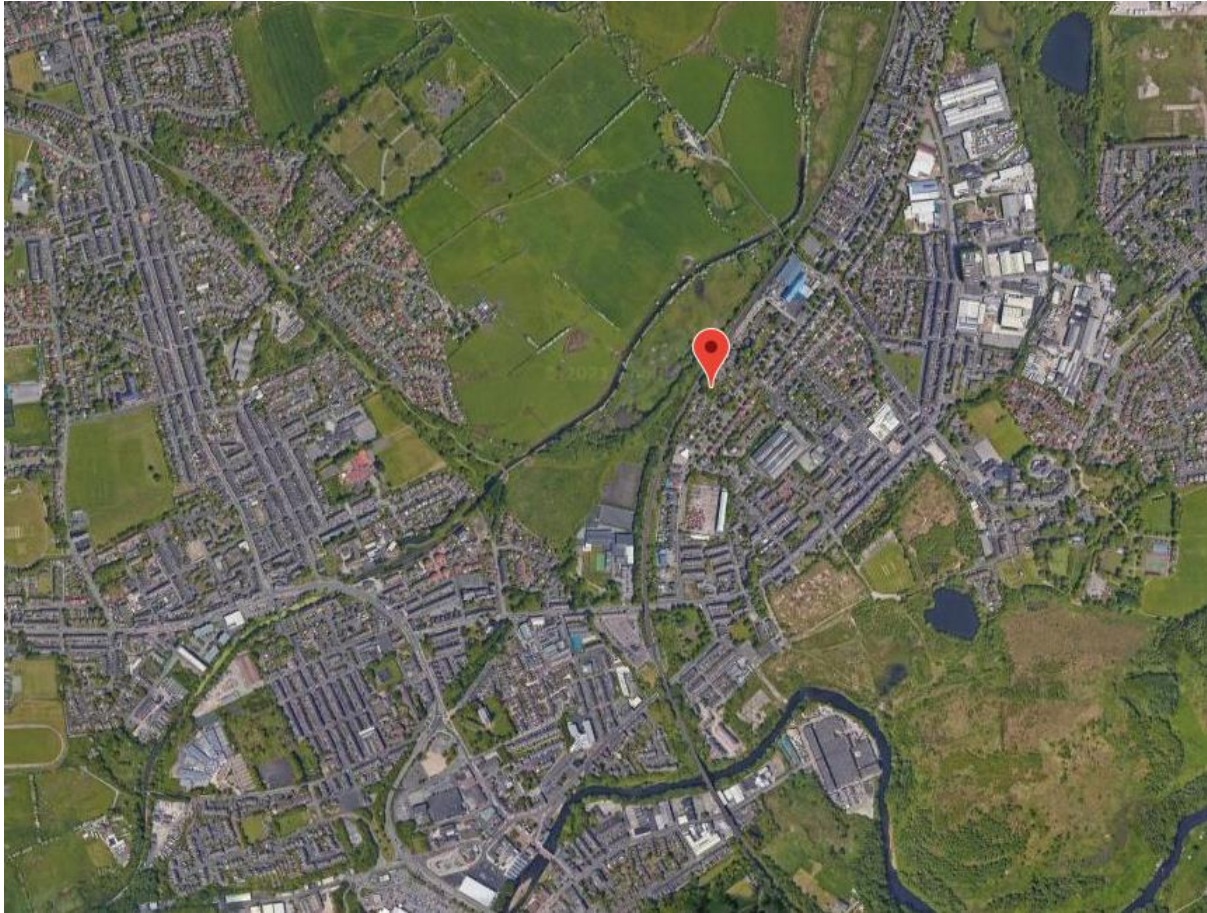


Figure 6.1 - Location of application site within the surrounding landscape (Source: Google 2021)

- 6.2 Immediate environs include residential development and industrial associated infrastructure to the east and south represented by housing and warehouses with concomitant gardens and amenity areas, whilst a live metro link is immediately adjacent to the western boundary extending north x south. The metro is flanked by broadleaf woodland, linear windbreak shelterbelt and scrub, with an extensive wetland and marsh on the western side. The wetland is a continuous mosaic of fen, rush pasture and floodplain grazing marsh, high quality semi-improved grassland, open water bodies and wet woodland on the eastern side of the Manchester, Bolton & Bury Canal site of local biological importance (SLBI).
- 6.3 Urban sprawl continues north along Bury Road and south towards Radcliffe town; despite the built-up features there exists semi-natural habitats such as brooks, tributaries, brownfield land, open mosaic habitats on active and previously developed land such as the East Lancs Paper Mill site to the south-east and in a wider context several reservoirs throughout the contiguous landscape.
- 6.4 There is one statutory designated site for nature conservation within 2.0 kilometres of the application site, see Table 6.1.

Table 6.1 - Statutory designated sites in the area

Site name	Designation type	Interest features
Chapelfield 1.35 kilometres south	Local Nature Reserve (LNR)	The large triangular shaped reservoir is the central feature of the nature reserve and it has been recorded as a Grade B Site of Biological Importance (SBI). The SBI status has been awarded for the aquatic plants that can be found within it, and in particular, the locally rare Water Violet (<i>Hottonia palustris</i>). Water birds like coot and moorhen are permanent residents on the reservoir. In the woodland areas, Oak, Ash, Sycamore and Hawthorn can be found with Willow around the edge of the reservoirs. The woodland is an important refuge for wildlife and many typical bird species including Jay, Great Spotted Woodpecker, Great Tit, Wren, Chaffinch and Nuthatch have been recorded here.

6.5 Ten sites of local biological interest (SLBI) are present within 2.0 kilometres:

- 123 metres south-west, WETLAND NEAR RADCLIFFE,
- 150 metres west, MANCHESTER, BOLTON & BURY CANAL EAST,
- 610 metres north, ELTON GOYT,
- 590 metres north, WITHINS RESERVOIR,
- 712 metres north-east, SWAN LODGE,
- 855 metres north-west, MARL PITS AT BLACK LANE,
- 903 metres south, SAILORS BROW & SPRINGWATER PARK,
- 975 metres north, ELTON RESERVOIR,
- 1.60 kilometres south, RESERVOIRS AT CHAPELFIELD,
- 1.77 kilometres north, DAISYFIELD

6.6 The described ecological frameworks are considered to offer a reasonably diverse range of habitats with mixed inter-connectivity in the landscape and to the application site, which is of low-moderate benefit to several species/groups for which the survey was undertaken, notably flight-based animals such as bats and birds associated with rural settings, whilst small mammals are also likely present to some capacity. Herptile commuting would be significantly affected by barriers posed by busy roads and to some extent live rail links.

6.7 The protected species most typically associated with the habitats described is the Common Pipistrelle (*Pipistrellus pipistrellus*) bat, frequently associated with roosting in buildings in urbanised settings, and this species presence in the landscape is likely.

6.8 Two European Protected Species Mitigation licences (EPSML) have been granted within 2.0 kilometres, both affect bats namely Common Pipistrelle, the nearest is at 180 metres south granted for a maternity roost.

7.0 Field Survey Results

7.1 Habitat Survey

- 7.1.1 The application site is a cleared area of former broadleaf woodland now in seral succession to scrub with low numbers of mature mixed scattered trees to the peripheries. Over 50% of the site was dominated by Japanese Knotweed (*Reynoutria japonica*) during the PEA, and a large spoil pile was present in the south-east region, along with a Utility power box. A mix of timber and cage fencing surrounded the site which was locked/secure as such little prone to human disturbance but suffers from fly tipping and invasive non-native species (INNS) presence. The vegetation composition was significantly limited, and the ground contained mostly leaf litter testament to former woodland, though several indicator species of previous damper, shaded conditions remain.
- 7.1.2 See Table 7.1 (below) for habitat descriptions. Refer to Appendix IV - Phase 1 Habitat Map for the location of all described habitats & Target Notes (TN). Species nomenclature follows Stace, C. (2019) – definitive English names; scientific names are given in Appendix II. Refer to Appendix I for supporting imagery.

Table 7.1 - Phase 1 habitat types within the survey area with target notes

Habitat Code	Broad Habitat	Description
A2.1 - A2.2	Scrub - dense /	Trees, mainly willows including Grey willow, White willow, Goat willow, along with Poplar sp., Beech and Ash, all reaching between 2.0 - 3.0 metres, were regenerating most of the north-west and south-west of the site; ground flora was limited to sporadic patches of bryophytes such as <i>Kindbergia praelonga</i> , <i>Calliergonella cuspidata</i> and <i>Grimmia pulvinata</i> and areas of Creeping Buttercup, Red fescue, Annual meadow-grass, Yorkshire-fog and Willow-herbs occur in areas free of Japanese Knotweed.
A3.1	Broadleaved trees - scattered	A group of five Birch trees were situated along the west fence line. Localised patches of Wood-avens, Herb-robert and Tufted hair-grass were testament to former woodland prior to clearance.
A3.2	Coniferous trees - scattered	Mature Leyland cypress trees formed part of the north-eastern boundary; areas below are dominated by Japanese Knotweed.
J1.4	Introduced shrub	Japanese Knotweed dominated over 50% of the site from the centre of site extending along the north and south eastern boundary.
J5	Other habitat	A large spoil heap composed of bare earth, stone, timber waste, rubble and assorted other aggregates was located along the eastern side of the site. Variegated yellow-archangel occurs at the base of the spoil heap to the western side. Coloniser species such as Annual meadow-grass, Canadian Fleabane, Sycamore saplings and Large bitter-cress were present.

7.2 Vegetation

7.2.1 No botanical species of conservation importance were identified at the site or stand to be impacted by proposals.

Invasive Species (INNS)

7.2.2 Two Invasive Non-Native Species (INNS) were identified at the application site:

- Japanese Knotweed (*Reynoutria japonica*) - occurs over 50% of the site from the centre of site extending along the north and south eastern boundary,
- Variegated yellow-archangel (*Lamium galeobdolon ssp. argentatum*) - a small area of growth located centrally.

7.2.3 Given the movement of soils on site evidenced by former site clearance and presence of a large spoil heap, and extent of Japanese Knotweed cover in particular, Figure 7.1 below cannot be relied upon alone to map extent of INNS cover, though is provided to demonstrate distribution as was recorded during the PEA.

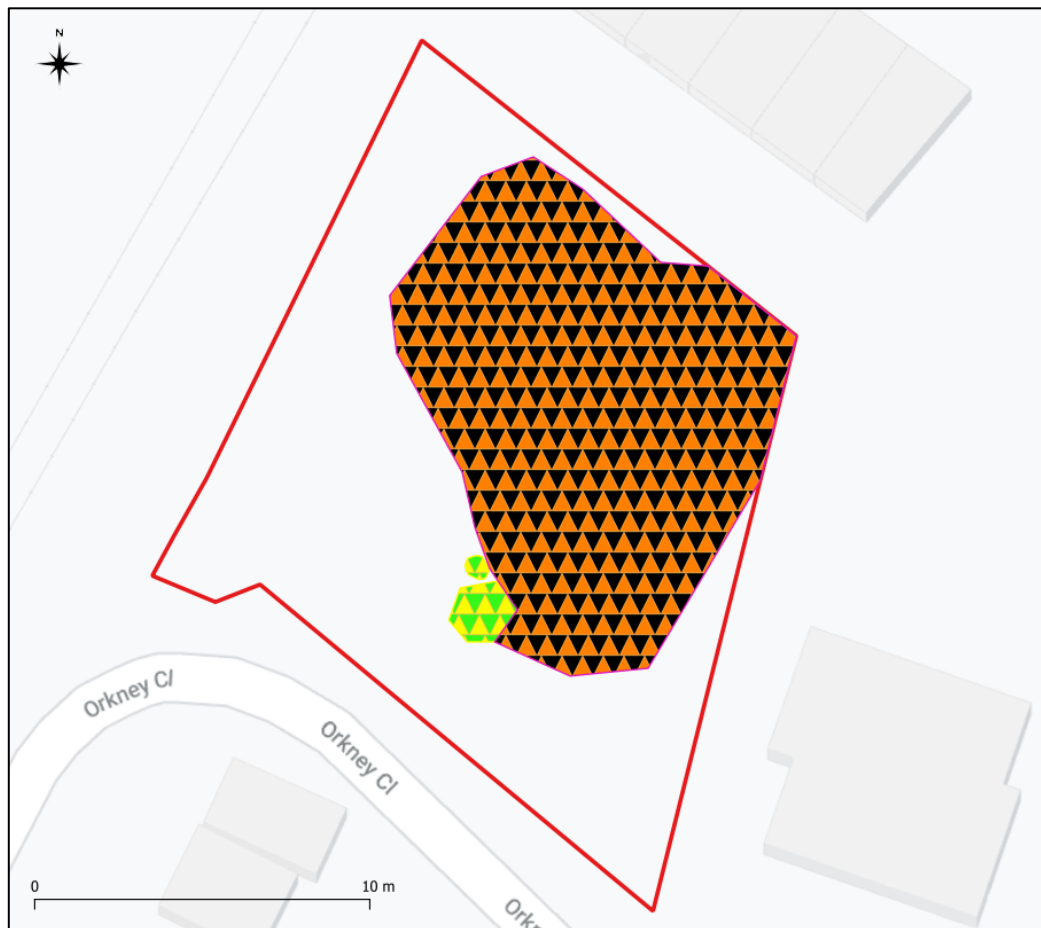


Figure 7.1 – Orange/black denotes distribution of INNS Japanese Knotweed; Green/yellow denotes distribution of INNS Variegated Yellow-archangel

7.3 Bats

- 7.3.1 No particular trees were identified to have bat roost value given perceived absence of suitable potential roost features (typically including holes, splits, cracks, fissures, collaring etc.). However, the small group of broadleaf trees overhanging the north-western boundary from the direction of the railway track (see Figure 7.2) offer small boreholes, likely too small to be of any real value to bats for frequent roost use, though opportunity for ingress/egress use nonetheless, particularly given the condition of the trees, as decay around these features could improve the roost prospects for bats.
- 7.3.2 All trees present on site and immediately surrounding the site should be considered valuable to bats in a local context in that they likely provide valuable foraging/commuting habitat.



Figure 7.2 – Location of off-site trees overhanging the site described in 7.3

7.4 Breeding Birds

- 7.4.1 In relation to Schedule 1 (WCA) specially protected bird species such as Black Redstart, though this species is typically linked with abandoned sites close to water, railways and industry sites, habitat such as forest, meadow and areas of dense vegetation of any height are typically avoided, and the habitats present including mixed tall trees are more likely to support species such as Robin and other more abundant food source competitors; habitat suitability for Black Redstart is thus considered negligible and no evidence of use was located, along with any other Schedule 1 listed species.
- 7.4.2 In relation to more common bird species, nesting possibilities exist within surrounding tree cover as described; introduced shrub on site along with scattered scrub offer much lower nest value. Impacts to ground-nesting species and other more untypical nesting species can be ruled out.
- 7.4.3 The following bird species were encountered during the survey (see Table 7.2).

Table 7.2 - Bird species encountered during the survey

Species	Scientific Name	Conservation Status	Context (where relevant)
Wren	<i>Troglodytes troglodytes</i>	Common	-
Great Tit	<i>Parus major</i>	Common	-
S.41 - a bird listed on section 41 of the Natural Environment Rural Communities Act 2006 (NERC Act) LBAP - A local biodiversity action plan listed species Q - Qualifying species of nearby SSSI site(s) SPEC - a bird of conservation concern, Amber or Red, Red being the highest conservation priority			

7.5 Other Terrestrial Mammals

- 7.5.1 No field signs were located to suggest the presence of Badgers, including any setts, latrines, pathways, hairs, footprints or feeding signs such as snuffle holes and scratched trees/logs; no feasible areas exist on site that could hide a sett and it is highly unlikely Badgers would be impacted by the development.
- 7.5.2 In relation to European Hedgehog, value of the site to this species as it currently exists is negligible, though its presence in the landscape is likely.

7.6 Herpetofauna

- 7.6.1 No ponds were present on site; however a wetland is located on the far side of the adjacent live metro link to the west. This area is likely to support a range of herpetofauna given the mosaic of habitats present, and there is little by way of impetus or habitat value to attract species within this group of animals to cross the rail link into the application site, which is significantly contaminated and susceptible to fly-tipping in its existing state.
- 7.6.2 The site, in its current state and condition, offers no value to herpetofauna of any variety ranging from amphibians to reptiles, given an absence of any long-term refuge, foraging, commuting, breeding or hibernation habitat. No evidence of herpetofauna was found.

8.0 Conclusions & Recommendations

Habitats & Vegetation

- 8.1 No significant botanical assemblages were identified and no botanical species of conservation importance were found as to warrant specific attention.
- 8.2 Two Invasive Non-Native Species (INNS) were identified at the application site:
- Japanese Knotweed (*Reynoutria japonica*) - occurs over 50% of the site from the centre of site extending along the north and south eastern boundary,
 - Variegated yellow-archangel (*Lamiastrum galeobdolon* ssp. *argentatum*) - a small area of growth located centrally.

Additionally, given the movement of soils on site evidenced by a former site clearance and extant presence of a large spoil heap, and extent of Japanese Knotweed cover in particular at the site, Figure 7.1 below cannot be relied upon alone to map extent of INNS cover, though is provided to demonstrate distribution as was recorded during the PEA.

- 8.3 A full scheme of invasive species eradication is required to remove and control Japanese Knotweed before any development works take place, to prevent the spread of this species any further to local environments which includes neighbouring gardens and a live metro link. The level of work required should be carried out by a professional invasive species contractor. Any spoil on site should be treated as controlled waste, and removed from site responsibly, to be disposed at a landfill site authorised and licenced to accept controlled waste.
- 8.4 A scheme of native species landscaping is recommended as part of the proposals.

Bats

- 8.5 No particular trees were identified to have bat roost value given perceived absence of suitable potential roost features (typically including holes, splits, cracks, fissures, collaring etc.). However, the small group of broadleaf trees overhanging the north-western boundary from the direction of the railway track (see Figure 7.2) offer small boreholes, likely too small to be of any real value to bats for frequent roost use, though opportunity for ingress/egress use nonetheless, particularly given the condition of the trees as decay around the features could improve the roost prospects for bats. All trees present on site and immediately surrounding the site should be considered valuable to bats in a local context in that they likely provide valuable foraging/commuting habitat.
- 8.6 In accordance with Bat Conservation Trust - Bat Surveys for Professional Ecologists: Good Practice Guidelines, 3rd ed. (2016), the trees are categorised as offering 'Low' bat roost potential. Proposals (Figure 1.2) indicate the trees will be retained; if instead this group of trees are to be felled or managed (including removal of overhanging limbs), it should be carried out using reasonable avoidance measures; under ecological supervision the trees should be soft felled in sections which are lowered to the ground and left on site overnight (not stacked) before removal. Should a bat (or nesting bird) be found during this process then works should cease immediately and an ecologist contacted for advice.
- 8.7 As a potential post-development impact the installation of overly harsh artificial lighting as part of any development that exceeds current levels of the site may have a negative impact upon foraging/commuting bats in the landscape, particularly if increased light spillage occurs in areas of that are currently free from illumination such as the site boundaries. A bat-sensitive lighting plan is therefore recommended in order to avoid potential impacts to bats

that may use the surrounding boundary features. Several options to consider have been listed below, though the reader is referred to the Bat Conservation Trust Lighting Guidelines for further information.

Type of lamp (light source): The impact on bats can be minimized by the use of low pressure sodium lamps or high pressure sodium instead of mercury or metal halide lamps where glass glazing is preferred due to its UV filtration characteristics.

Lighting should be directed to where it is needed and light spillage avoided. This can be achieved by the design of the luminaire and by using accessories such as hoods, cowls, louvres and shields to direct the light to the intended area only. Planting can also be used as a barrier or manmade features that are required within the build can be positioned so as to form a barrier.

Predicting where the light cone and light spill will occur: There are lighting design computer programs that are widely in use which produce an image of the site in question, showing how the area will be affected by light spill when all the factors of the lighting components listed above are taken into consideration. This should be a useful tool to inform the mitigation process.

Light levels: The light should be as low as guidelines permit. If lighting is not needed in any particular area, do not light. Numerous software programmes are currently available which can be used inform lighting plans, demonstrating how lighting decisions will illuminate a site.

Reader can also refer to the 'Landscape and urban design for bats and biodiversity' (Gunnell *et. al.*, 2012, Bat Conservation Trust) for further information.

Breeding Birds

- 8.8 No impacts are applicable in relation to protected bird species such as Black Redstart, and no recommendations need be applied in relation to any WCA Schedule 1 protected species.
- 8.9 In relation to common birds nesting possibilities exist within on-site and surrounding tree cover as described; any tree removal or management should therefore be undertaken outside of the breeding bird season. The breeding bird season is weather dependent but generally extends between March and September inclusive (peak period March-August). For tree works within this window then should be checked by a suitably qualified ecologist for nesting birds within 48 hours of works commencing. If birds are found to be nesting any works which may affect them would have to be delayed until the young have fledged and the nest has been abandoned naturally.

NB: *All wild birds (with only minor exceptions) and their nests whilst being built or containing eggs or dependant young are protected from destruction, damage and disturbance under the Wildlife & Countryside Act 1981 (as amended). It is a punishable offence to interfere in any way with an active nest.*

Other terrestrial mammals

- 8.10 Despite likely presence in the wider landscape no implications are anticipated in relation to land-based mammals such as Badgers or Hedgehogs, given an absence of field signs, location of setts or likelihood of impacts from the proposals respectively.

Herpetofauna

- 8.11 No ponds were present on site; however a wetland is located on the far side of the adjacent live metro link to the west. This area is likely to support a range of herpetofauna given the mosaic of habitats present, and there is little by way of impetus or habitat value to attract species within this group of animals to cross the rail link into the application site, which is significantly contaminated and susceptible to fly-tipping in its existing state. The site, in its current state and condition, offers no value to herpetofauna of any variety ranging from amphibians to reptiles, given an absence of any long-term refuge, foraging, commuting, breeding or hibernation habitat.
- 8.12 Proposals may consider incorporation of a sustainable urban drainage system (SUDS), which could improve the value of the site for biodiversity generally, including amphibians.
- 8.13 If in the unlikely event any frogs or toads are encountered during site operations that are at risk of harm, operators are advised that using wet gloves they should be removed from harm by being carefully handled and removed off the work site to be placed in nearby like-for-like habitat. At no point should any contractor handle a newt. If a newt is found it is advised the animal should be left undisturbed, work is to cease, and an Ecologist/ECOW be contacted to appraise the finding and provide further guidance.
- 8.14 No impacts will occur to reptiles given unsuitable habitat on site; as such no recommendations will be given at this time.

Biodiversity net-gain

- 8.15 Recommended measures to enhance the site and improve biodiversity in accordance with Chapter 15 of the National Planning Policy Framework (Conserving and Enhancing the Natural Environment) are presented in Appendix III.

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Appendix I: Site Photographs



Plate 1 - South of the site looking north - Spoil heap (Target Note 1) in foreground with Japanese Knotweed (Target Note 2) in the background



Plate 2 - Japanese Knotweed (Target Note 2) dominates most of the east side of the site, here it meets the Spoil heap (Target Note 1) extending into the north-eastern corner



Plate 3 - Further extent of Japanese Knotweed where it meets scattered scrub centrally



Plate 4 - Variegated Yellow-archangel (Target Note 3) in centre of the site



Plate 5 - Typical scattered Willow scrub located in the central west of site



Plate 6 - The north of the site where scattered scrub meets dense Privet



Plate 7 - Northern boundary fence line



Plate 8 - Leyland Cypress group of trees along the north-east boundary, with Japanese Knotweed in the foreground



Plate 9 - North-eastern fence line / base of trees with local dominance of Japanese Knotweed



Plate 10 - Typical area free of Japanese Knotweed in the west of site



Plate 11 - Site western boundary as viewed from Orkney Close



Plate 12 - Birch trees along the western fence line



Plate 13 - Trees in poor condition overhanging the north-western fence line from the direction of the metro link



Plate 14 - Dumped asbestos along the western boundary



Plate 15 - *Polytrichum commune* moss (Top) and Tufted hair-grass (Bottom) evidence damper, shaded conditions have occurred fairly recently prior to a site clearance

Appendix II: Botanical Species List

Each species recorded was given an abundance value according to the standard DAFOR scale, where:

D	=	Dominant
A	=	Abundant
F	=	Frequent
O	=	Occasional
R	=	Rare

*These values can be prefixed by the letter L (locally), to provide more subtle biogeographical data. P, meaning Present, is given where an abundance value has not been calculated. Invasive non-native species (INNS) are denoted by the acronym.

Common Name	Scientific Name	DAFOR
a moss	<i>Brachythecium rutabulum</i>	R
a moss	<i>Calliergonella cuspidata</i>	R
a moss	<i>Grimmia pulvinata</i>	R
a moss	<i>Kindbergia praelonga</i>	R
a moss	<i>Polytrichum commune</i>	R
a poplar	<i>Populus sp.</i>	R
a rose	<i>Rosa sp.</i>	R
a vetch	<i>Vicia sp.</i>	R
a willow-herb	<i>Epilobium sp.</i>	F
Annual meadow-grass	<i>Poa annua</i>	O
Annual Wall-rocket	<i>Diplotaxis muralis</i>	R
Ash	<i>Fraxinus excelsior</i>	O
Birch	<i>Betula sp.</i>	P
Bramble	<i>Rubus fruticosus agg.</i>	O
Broad-leaved Dock	<i>Rumex obtusifolius</i>	O
Butterfly-bush	<i>Buddleja davidii</i>	R
Canadian Fleabane	<i>Conyza canadensis</i>	LF
Cherry Laurel	<i>Prunus laurocerasus</i>	R
Common Ivy	<i>Hedera helix</i>	O
Common Whitlowgrass	<i>Draba verna</i>	R
Creeping Bent	<i>Agrostis stolonifera</i>	O
Creeping Buttercup	<i>Ranunculus repens</i>	F
Creeping Soft-grass	<i>Holcus mollis</i>	O
Dandelion	<i>Taraxacum officinale agg.</i>	O
Elder	<i>Sambucus nigra</i>	R
Garden Privet	<i>Ligustrum ovifolium</i>	P
Goat willow	<i>Salix caprea</i>	F
Grey poplar	<i>Populus × canescens</i>	O
Grey willow	<i>Salix cinerea</i>	F
Hairy bitter-cress	<i>Cardamine hirsuta</i>	O
Herb-robert	<i>Geranium robertianum</i>	R
Himalayan Giant	<i>Rubus armeniacus</i>	R
Holly	<i>Ilex aquifolium</i>	R
Japanese Knotweed (INNS)	<i>Reynoutria japonica</i>	LD
Leyland cypress	<i>Cupressus × leylandii</i>	P
Male-fern	<i>Dryopteris filix-mas</i>	R
Mugwort	<i>Artemisia vulgaris</i>	R
Nipplewort	<i>Lapsana communis</i>	R

East of Orkney Close, Radcliffe, Manchester, M26 2WR
Preliminary Ecological Appraisal

Pedunculate oak	<i>Quercus robur</i>	O
Red Fescue	<i>Festuca rubra</i>	O
Rosebay willow-herb	<i>Chamerion angustifolium</i>	O
Rough Meadow-grass	<i>Poa trivialis</i>	R
Selfheal	<i>Prunella vulgaris</i>	R
Stinging Nettle	<i>Urtica dioica</i>	R
Sycamore	<i>Acer pseudoplatanus</i>	R
Tufted Hair-grass	<i>Deschampsia cespitosa</i>	R
Variegated Yellow-archangel (INNS)	<i>Lamium galeobdolon ssp. argentatum</i>	P
White clover	<i>Trifolium repens</i>	R
White willow	<i>Salix alba</i>	O
Wood-avens	<i>Geum urbanum</i>	LO
Yorkshire-fog	<i>Holcus lanatus</i>	F

Appendix III: Biodiversity Enhancement: Recommendations

Rain garden water catchment area and permeable paving - a sustainable urban drainage system (SUDS) is proposed. Any SUDS provision should be of both amenity and biodiversity value, to serve as an area of recreational enjoyment whilst providing an area of high biodiversity interest for wildlife, featuring areas of permeability created with use of native botanical species. Planting of native species will be of long-term benefit to biodiversity; species selected should be planted at variably sloped margins and be gradient suitable to fluctuating aquatic conditions. The area could be of other means of enhancement for wildlife, through use of insect hotels etc. Additionally, any road surface areas should aim to use permeable pavement which allows rainwater to collect and filter into a water reserve area as opposed to impervious paving which would accelerate runoff into off-site areas. Suitable species for planting are given below. An example of Rain Garden areas is presented overleaf.

	Common Name	Scientific Name	Planting Preference
Ferns	Male Fern	<i>Dryopteris filix-mas</i>	Semi-shade or shaded
	Soft Shied-fern	<i>Polystichum setiferum</i>	Semi-shade or shaded
	Maidenhair Fern	<i>Adiantum capillus-veneris</i>	Suitable for rockeries / walled gardens
	Royal Fern	<i>Osmunda regalis</i>	Full sun in moist-damp areas
	Field Horsetail	<i>Equisetum arvense</i>	Full sun in moist-damp areas
Herbaceous plants	Bloody Crane's-bill	<i>Geranium sanguineum</i>	Dry soils - suitable for rockeries
	Columbine	<i>Aquilegia vulgaris</i>	Semi-shade or open areas
	English Bluebell	<i>Hyacinthoides non-scripta</i>	Moist soils in semi-shade or open areas
	Giant Bellflower	<i>Campanula latifolia</i>	Semi-shade or open areas
	Greater Knapweed	<i>Centaurea scabiosa</i>	Dry-moist soils. Suitable for borders
	Greater Woodrush	<i>Luzula sylvatica</i>	Moist soils in semi-shade or open areas
	Meadow Crane's-bill	<i>Geranium pratense</i>	Humid-moist soils. Suitable for borders
	Musk Mallow	<i>Malva moschata</i>	Dry-moist soils. Suitable for borders and rockeries
	Sea Campion	<i>Silene uniflora</i>	Dry soils - suitable for rockeries
	Stinking Hellebore	<i>Helleborus foetidus</i>	Semi-shade or open areas
Aquatic/marginal plants	Common Water-crowfoot	<i>Ranunculus aquatilis</i>	Ponds
	Marsh Marigold	<i>Caltha palustris</i>	Marginal vegetation
	Ragged Robin	<i>Silene flos-cucculi</i>	Marginal vegetation
	Brooklime	<i>Veronica beccabunga</i>	Marginal vegetation
	Water Mint	<i>Mentha aquatica</i>	Marginal vegetation
	Water-violet	<i>Hottonia palustris</i>	Ponds
	White Water-lily	<i>Nymphaea alba</i>	Ponds
	Cuckooflower	<i>Cardamine pratensis</i>	Marginal vegetation
	Yellow flag iris	<i>Iris pseudacorus</i>	Marginal vegetation
	Soft-rush	<i>Juncus effusus</i>	Marginal vegetation



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Enhancing a development for Bats (*Chiroptera*)

There are a number of options available for enhancing a building for bats if so required; such forms of enhancement replicate situations that are used by species including Pipistrelle bats; three are shown below. The roost(s) would be permanent and dedicated for bats.

1.



The integrated bat box can be installed to a gable elevation, it is a large, solid construction of insulating concrete with an internal roost space, which can be incorporated into the fabric of a building as it is built or renovated. A variety of facings can be fitted to suit any existing brick, and it is suitable for crevice dwelling species. The box is made to match the existing brickwork of the building

2.



Access in ridge tiles; the top of the ridge beam should not be covered with a breathable membrane to avoid the sharp claws of bats becoming entangled in the fine fibres; a traditional section of bitumastic underfelt could however be used over the ridge beam

3.



Enhancement a development for Swifts - Swift (*Apus apus*)

Swift (*Apus apus*) are a migratory visitor to the UK arriving to nest sites around the month of April and leaving around the month of August; Swift are an 'amber-listed species under Birds of Conservation Concern 4 (BoCC 2015) attributed to the fact they are negatively impacted locally by building renovation, conversion, re-roofing and/or building demolition which leads to loss of nest sites. Swifts nest in holes, cracks and crevices at buildings; as modern building practices have improved the quality of homes in the UK, swift nest sites are becoming increasingly scarcer, as such swifts are becoming much more dependent on nest boxes provided through the good will of humans as well as consideration by local planning during the setting of planning conditions. As such they are often a material consideration in wildlife planning.

The Vivara Pro Cambridge Brick Faced Swift Nest Box provides a low-cost and long-term nesting solution for swifts. There are two parts, a concrete nesting chamber that is designed to go into a cavity and a brick facing to blend into an external wall with a choice of either red or buff facing bricks. When installed the box is discreet and does not impact the building's aesthetic.

This nest box should be sited at a height of at least five metres, with a clear flight path to the entrance. If possible avoid south facing walls.



See - www.nhbs.com/vivara-pro-cambridge-swift-nest-box

Enhancement measure - Common Birds



These open nest boxes are suitable for wrens, robins, spotted flycatchers, pied and grey wagtails, song thrushes and blackbirds, and they are available in brown, green or grey to complement both natural woodland and garden settings. The best height for your nest box is between 1.5m and 3m high, and open nest boxes should be sited in undergrowth such as ivy to provide cover for the nest.

For more information - www.nhbs.com/vivara-pro-barcelona-woodstone-open-nest-box

Enhancement measure - Invertebrates - Bug Hotels

Bee and Bug Houses will provide valuable habitat on site for solitary bees and other insects. At a time when many of our native insects are struggling, this is a fantastic way to give them a helping hand. Top chambers can feature wooden nesting tubes in wooden blocks, together with bamboo tubes of various sizes. Alternatively holes can be drilled into existing timber to create novel designs - perfect for attracting ladybirds, earwigs and lacewings. Other chambers can be filled with miscellaneous items such as pine cones to provide nooks and crannies for insects, aiding to provide habitat for insects that predate natural garden pests such as aphids. Natural materials, such as straw or bark, will provide an excellent winter habitat for lacewings, ladybirds, woodlice, earwigs and many other bugs. A range of other novel ideas can be used.

For example, see link - www.nhbs.com/bee-and-bug-biome



Appendix IV: Phase 1 Habitat Map



Phase 1 Habitat Map

- Site_Boundary
- ⊙ Target Note
- A2.1 - Scrub - dense/continuous
- A2.2 - Scrub - scattered
- A3.1 - Broadleaved Parkland/scattered trees
- A3.2 - Coniferous Parkland/scattered trees
- J1.4 - Introduced shrub
- J5 - Other habitat

Target Notes

- 1 - Spoil and Waste (Large Pile)
- 2 - INNS - Japanese Knotweed (*Reynoutria japonica*)
- 3 - INNS - Variegated Yellow Archangel (*Lamium galeobdolon* ssp. *argenteum*)
- 4 - Utility Box

Orkney Close, Radcliffe

Survey Date: 23/02/2021
 Drawn: MJP
 Date Drawn: 02/03/2021
 Checked & Approved: KW
 Size: A3
 Scale: 1:750.00

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