



United Utilities

United Utilities Better Rivers Programme: Boothroyden Road

Preliminary Ecological Appraisal





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Executive summary

WSP UK Ltd. (WSP) was commissioned by United Utilities (the 'Client') to undertake a Preliminary Ecological Appraisal (PEA) and Daytime Bat Walkover (DBW) of land at the Boothroyden Combined Sewer Overflow, located in Blackley, Manchester (the 'Site'). The Site is defined by the red line boundary shown in **Figure 1** and is located at Ordnance Survey (OS) Grid Reference SD 85030 05002.

At the time of writing, no finalised design was available for the works to be undertaken on the Site. However, it is understood that the 'Proposed Works' comprise the construction of a below ground storage tank within which storm flows from the combined sewer network would be attenuated before being released back into the sewer network. This will be completed under Permitted Development rights. Furthermore, a temporary bridge is to be constructed to facilitate works throughout the Site, for which planning permission will be required.

The PEA comprised a desk-based study alongside a field survey comprising a UK Habitat Classification (UKHab) survey and DBW. The DBW included a Ground Level Tree Assessment (GLTA) of all trees and Preliminary Roost Assessment (PRA) of structures within the Site. These provided baseline ecological information for the Site and informed assessment of whether legally protected and/or otherwise notable species or habitats were present or likely to be present. A background data search for protected and/or notable species records and non-statutory designated sites was undertaken as part of a desk study, alongside a search of publicly available resources for statutory designated sites of national and international importance.

The Site visit was undertaken in November 2023 and comprised the entire Site and the inclusion of a 30m buffer (the 'Survey Area'). Habitats identified within the Survey Area during the survey included grassland, scrub, woodland, lines of trees, and urban habitat.

The DBW assessed the Site to be of high suitability to support commuting and foraging bats. All trees on Site were assessed and no suitable potential roosting features for bats were recorded. The PRA of structures precautionarily assessed two bridges as high roosting suitability, due to access limitations.

Further surveys and/or mitigation and avoidance measures have been recommended for great crested newt (GCN) *Triturus cristatus*, birds, bats, water vole *Arvicola amphibius*, otter *Lutra lutra*, badger *Meles meles*, and invasive non-native species.



Specific recommendations and mitigation have been prescribed to ameliorate potential impacts of the Proposed Works to ensure compliance with relevant legislation and planning policy, which are referenced within this report. Recommendations include the retention and enhancement of habitats where possible and creation of compensatory habitats where loss occurs.

1 Introduction

1.1 Background

- 1.1.1. WSP UK Ltd. (WSP) was commissioned by United Utilities (the 'Client') to undertake a Preliminary Ecological Appraisal (PEA) and Daytime Bat Walkover (DBW) of land at the Boothroyden Combined Sewer Overflow, located in Blackley, Manchester (the 'Site').
- 1.1.2. The Site is defined by the red line boundary shown in **Figure 1** and is located at Ordnance Survey (OS) Grid Reference SD 85030 05002.
- 1.1.3. At the time of writing, no finalised design was available for the works to be undertaken on the Site. However, it is understood that the 'Proposed Works' comprise the construction of a below ground storage tank within which storm flows from the combined sewer network would be attenuated before being released back into the sewer network. This will be completed under Permitted Development rights. Furthermore, a temporary bridge is to be constructed to facilitate works throughout the Site, for which planning permission will be required.

1.2 Scope of Report

- 1.2.1. WSP was commissioned by the Client to complete a PEA and DBW in October 2023, and comprised the entire Site and the inclusion of a 30m buffer (the 'Survey Area').
- 1.2.2. The scope of the assessment was:
 - To provide baseline ecological information about the Survey Area concerning habitats and protected and/or notable species presence/potential to be present;
 - To complete a DBW of the Survey Area, including a Ground Level Tree Assessment (GLTA) of all trees and Preliminary Roost Assessment (PRA) of all structures within the Survey Area, to identify the potential or otherwise for bat roosts to be present;
 - To provide recommendations to enable compliance with relevant nature conservation legislation and planning policy;
 - To identify the need for further ecological surveys relating to specific habitats or species which may be present within the Survey Area; and
 - To recommend preliminary avoidance, mitigation, compensation, or enhancement measures, so they can be designed into the Proposed Works at an early stage.

1.3 Relevant Legislation and Policy

1.3.1. This report has been prepared with reference to the following relevant nature conservation legislation and the UK Biodiversity Framework from which the protection of sites, habitats and species is derived in England. The context and applicability of each item is explained as appropriate in the relevant sections of the report and additional details are presented in **Appendix A**.

- The Conservation of Habitats and Species Regulations 2017 (as amended)¹ (the 'Habitats Regulations') (His Majesty's Stationery Office (HMSO), 2017);
- The Wildlife and Countryside Act 1981 (as amended) (WCA) (HMSO, 1981);
- Countryside Rights of Way Act 2000; (HMSO, 2000);
- The Natural Environment and Rural Communities (NERC) Act 2006 (HMSO, 2006);
- The Protection of Badgers Act 1992 (HMSO, 1992);
- The Hedgerows Regulations 1997 (HMSO, 1997);
- The Wild Mammals (Protection) Act 1996 (HMSO, 1996);
- Biodiversity 2020: A strategy for England's wildlife and ecosystem services (Department for Environment, Food and Rural Affairs (DEFRA), 2011);
- UK Biodiversity Action Plan (UKBAP)² (Joint Nature Conservation Committee (JNCC), 2008);
- Environment Act 2021 (HMSO, 2021);
- The National Planning Policy Framework (NPPF) 2023 (Department for Levelling Up, Housing and Communities, 2023); and
- The Greater Manchester Biodiversity Action Plan (Greater Manchester Record Centre, 2009).

¹ As updated by the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 (HMSO, 2019)

² The UK BAP has now been replaced by the UK Post-2010 Biodiversity Framework, however, it contains useful information on how to characterise important species assemblages and habitats which is still relevant.

2 Methods

2.1 Overview

- 2.1.1. This report has been prepared with reference to current good practice guidance published by the Chartered Institute for Ecology and Environmental Management (CIEEM, 2017a and 2017b, 2019 and 2020), UK Habitat (UKHab) classification document (UKHab Ltd, 2023) and guidance contained in the British Standard – Code of Practice for Biodiversity and Development BS42020:2013 (British Standards Institution (BSI), 2013).
- 2.1.2. This PEA is based on the following data sources:
- An ecological desk study;
 - A habitat survey; and
 - A protected/notable species assessment, specifically including a DBW and roosting suitability assessment for bats.

2.2 Desk study

- 2.2.1. The desk study was undertaken in November 2023 and comprised a review of existing ecological baseline information for the Site available in the public domain, in addition to obtaining information held by relevant third parties. For the purpose of the desk study, records were collated within various proportionate radii around the Site. This approach is consistent with current good practice guidance published by CIEEM (CIEEM, 2017a and 2020). To provide the baseline data for the ecological desk study, the following information was requested from Greater Manchester Record Centre:
- Records of legally protected and notable species from the previous 10 years within 2km of the Site; and
 - Non -statutory designated wildlife sites within 2km of the Site (as shown on **Figure 4**).

- 2.2.2. Publicly available downloadable datasets (available from Natural England) were consulted for information regarding Habitats of Principal Importance (HPI³) and woodland listed on the Ancient Woodland Inventory⁴ within 2km of the Site, the findings of which are shown on **Figure 4**. Nationally and locally designated statutory sites⁵ (as shown on **Figure 3**) were also identified within 2km of the Site, and within 10km of the Site for internationally designated statutory sites⁶ (as shown on **Figure 2**).
- 2.2.3. In addition, Publicly available downloadable datasets (such as the MAGiC tool⁷) were also used to search for European Protected Species (EPS) licences within 2km of the Site.
- 2.2.4. In addition, open source 1:25,000 Ordnance Survey mapping and Google Earth were used to identify any mapped waterbodies and watercourses within 500m of the Site.
- 2.2.5. The results of the desk study are available in **Section 3.3** and **Appendix B**.

2.3 Habitat survey

- 2.3.1. A UKHab classification survey of the Survey Area was carried out in November 2023 by two ecologists with extensive experience of completing PEAs of similar sites, both of whom are members of CIEEM.
- 2.3.2. The survey covered the Survey Area including boundary features. Habitats were described and mapped following methodology outlined within the UKHab Habitat Classification Version 2.0 (UKHab Ltd, 2023).
- 2.3.3. The UKHab system classifies habitats according to their vegetation types and structure, following a principal hierarchy of 'Primary Habitats' (Chart 2-1). Primary Habitats include ecosystems (level 1); broad habitat types (level 2 and 3); defined habitats, including Priority Habitats⁸ (level 4); and further defined habitats, including Annex 1 Habitats⁹ (level 5). Each Primary Habitat has an alpha-numeric code, unique to UKHab i.e., different to other habitat survey methods such as Phase 1 habitat survey (JNCC, 2016).

³ Mapped locations of HPI are usually not available, but HPI aligns in most part with UKBAP Habitats. Inventories of UKBAP habitat have been prepared by a variety of organisations and at a national (Environment (Wales) 2016 priority habitat inventory) and local scale (e.g. by Local Record Centres). In some instances these are primarily based on aerial photograph analysis rather than field survey.

⁴ The Ancient Woodland Inventory in England lists areas over two hectares in size which have been continuously wooded since at least 1600.

⁵ Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR) and Local Nature Reserves (LNR).

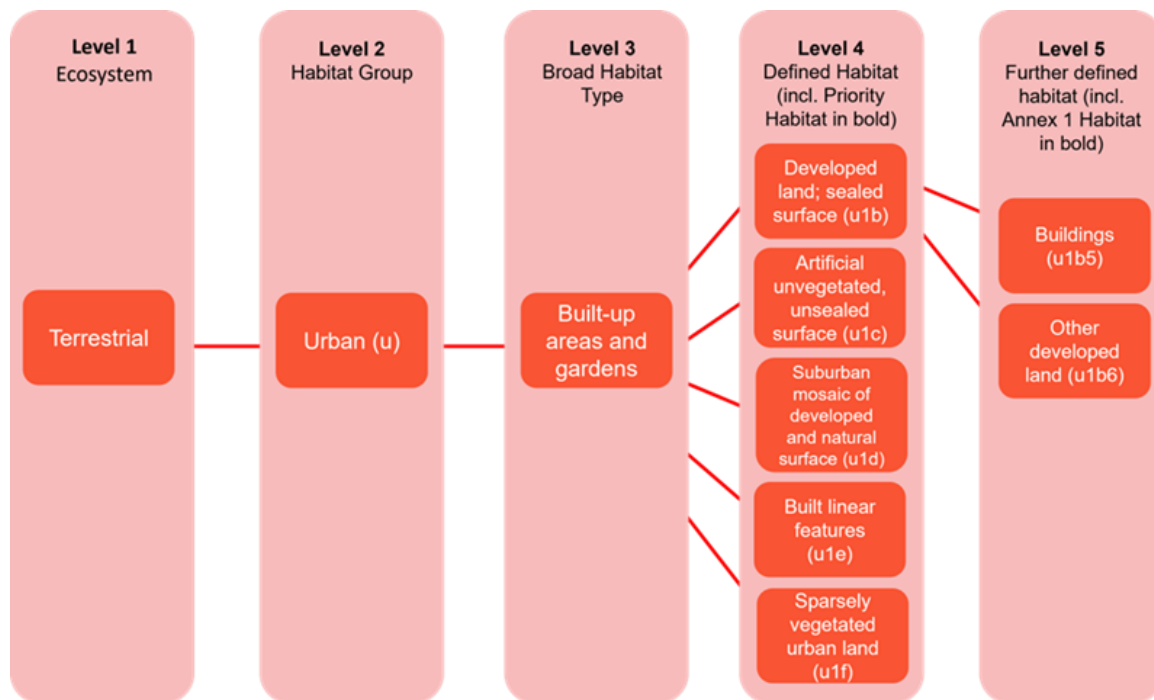
⁶ Special Area of Conservation (SAC), Special Protection Area (SPA) and Ramsar sites.

⁷ MAGiC Tool: <https://magic.defra.gov.uk/MagicMap.aspx>

⁸ UK Biodiversity Action Plan (UK BAP) priority habitats (Biodiversity Reporting and Information Group, 2011).

⁹ European Union Habitats Directive 92/43/EEC Annex 1.

Chart 2-1 – UKHab Primary Hierarchy – Urban Example



2.3.4. A non-hierarchical system of numeric codes ('Secondary Codes') can then be used to provide more information on a habitat, these codes are split into the following categories:

- Grassland and Heathland
- Woodland Types
- Freshwater
- Wetland
- All Habitats
- Farming
- Coast
- Built Environment

- 2.3.5. Primary Habitat and Secondary Codes were assigned to each polygon and line feature within the Survey Area. Relevant Secondary Codes are stated alongside the Primary Habitat are shown within **Section 3.2** and as shown on **Figure 5**. Text descriptions including plant species for each habitat type were also recorded. A list of plant species was compiled with relative plant species abundance estimated using the DAFOR¹⁰ scale. The scientific names for plant species follow those in the New Flora of the British Isles (Stace, 2019) and are also listed in **Appendix E**.
- 2.3.6. Habitats were marked on a mobile mapping tablet and were subsequently digitised using a Geographical Information System (GIS).
- 2.3.7. Target notes were made to provide information on specific features of ecological interest or habitat features too small to be mapped. A list of target notes is included in **Appendix C** and shown on **Figure 5**.
- 2.3.8. Any non-native invasive plant species listed on Schedule 9 of the WCA which were evident and incidentally recorded during the habitat survey were also noted. However, detailed mapping of such species or a full survey of the Site for all invasive plant species was beyond the scope of this commission.

2.4 Protected Species Assessment

- 2.4.1. The potential for the Survey Area to support legally protected and notable species was assessed using desk study results and combined with field observations during the habitat survey. The assessment of habitat suitability for protected and notable species was based on professional experience and judgement. This was supplemented by standard sources of guidance on habitat suitability assessment for key faunal groups. These included (of relevance to this PEA): Great Crested Newt *Triturus cristatus* (Gent and Gibson, 2003; English Nature, 2001), birds (Gilbert *et al*, 1998 and Bibby *et al*, 2000), bats (Collins, 2023), hedgehog *Erinaceus europaeus* (British Hedgehog Preservation Society, undated), water vole *Arvicola amphibius* (Dean *et al*, 2016), otter *Lutra lutra* (Chanin, 2003), badger *Meles meles* (Harris *et al*, 1991 and Roper, 2010), and other mammals (Cresswell *et al*, 2012).
- 2.4.2. In addition, the following species-specific survey was also undertaken.

¹⁰ The DAFOR scale has been used to estimate the frequency and cover of the different plant species as follows: Dominant (D) - >75% cover, Abundant (A) – 51-75% cover, Frequent (F) – 26-50% cover, Occasional (O) – 11-25% cover, Rare (R) – 1-10% cover., The term 'Locally' (L) is also used where the frequency and distribution of a species are patchy and 'Edge' (E) is also used where a species only occurs on the edge of a habitat type.

Bat Assessment

- 2.4.3. A DBW, including a GLTA of trees and PRA of structures, was undertaken on 20 and 24 October 2023 within the Survey Area (where accessible), in accordance with best practice guidance (Collins, 2023).
- 2.4.4. During the DBW, the Survey Area was assessed for its suitability to provide potential flight-paths and foraging habitat and was assigned a suitability category based on **Table 2-1** below, in line with good practice guidance (Collins, 2023).

Table 2-1 - Categorisation of habitat suitability

Category	Description
High	Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by bats for flight-paths 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.
Moderate	Continuous habitat connected to the wider landscape that could be used by bats for flight-paths 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.
Low	Habitat that could be used by small numbers of bats as flight-paths such as a gappy hedgerow or unvegetated stream, but isolated, i.e. not very well connected to the surrounding landscape by other habitat.
Negligible	No obvious habitat features on site likely to be used as flight-paths or by foraging bats; however, a small element of uncertainty remains in order to account for non-standard bat behaviour.
None	No habitat features on site likely to be used by any commuting or foraging bats at any time of the year (i.e. no habitats that provide continuous lines of shade/ protection for flight-lines or generate/ shelter insect populations available to foraging bats).

- 2.4.5. A visual inspection of trees and structures from the ground and externally (in relation to structures), using binoculars and a high-powered torch was completed to search for Potential Roost Features (PRFs) that may provide roosting opportunities for bats. Where suitable features were noted, their location and a brief description of their character was recorded. Additionally, each feature was visually inspected for evidence indicating use by roosting bats such as droppings, urine staining, and scratch marks/characteristic staining (from fur oils).

- 2.4.6. Trees were categorised in line with good practice guidance (Collins, 2023) on their potential to contain PRFs as detailed in **Table 2-2** below.

Table 2-2 - Guidelines for assessing tree suitability

Suitability	Description
NONE	Either no PRFs in the tree, or highly unlikely to be any
FAR	Further Assessment Required (FAR) to establish if PRFs are present in the tree
PRF	A tree with at least one PRF present

- 2.4.7. Where possible, any PRF on trees identified during the GLTA are categorised as in **Table 2-3** below, in line with good practice guidance (Collins, 2023).

Table 2-3 - Guidelines for categorising the potential suitability of PRFs

Suitability	Description
PRF-I	PRF is only suitable for individual bats or a small number of bats, either due to size or lack of suitable surrounding habitats
PRF-M	PRF is suitable for multiple bats and may therefore be used by a maternity colony

- 2.4.8. Structures were categorised in line with the descriptions in **Table 2-4**. Based on the features present and the location of the structure, the potential for different types of bat roost was also considered.

Table 2-4 – Categorisation of potential roost suitability in structures

Category	Description
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 ¹¹ , and surrounding habitat.

¹¹ For example, in terms of temperature, humidity, height above ground level, light levels or levels of disturbance.

Category	Description
	These structures have the potential to support high conservation status roosts, e.g. maternity or classic cool/stable hibernation sites.
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 the species conservation status, which is established after presence is confirmed).
Low	A structure with one or more potential roost sites 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 habitat 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).
Negligible	Structure displaying no obvious features 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.
None	Structure with no features 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).

2.5 Notes and Limitations

- 2.5.1. Ecological survey data is typically valid for two years unless otherwise specified, for example if conditions are likely to change more quickly due to ecological processes or anticipated changes in management (CIEEM, 2019).
- 2.5.2. Records held by local biological record centres and local recording groups are generally collected on a voluntary basis. Therefore, the absence of records does not demonstrate the absence of species, it may simply indicate a gap in recording coverage.
- 2.5.3. The survey was carried out over the period of a single day, as such only a selection of all species that occur within the Survey Area may have been recorded. However, through use of desk study information to supplement site survey data, it is considered that an accurate assessment of the potential for the Site to support protected species or those of conservation concern was possible.
- 2.5.4. The UKHab survey was undertaken in November, which is outside optimal time for botanical identification. As such, it is recognised that some plant species may have been missed, or identified to genus only. However, sufficient species were present and able to be identified to inform habitat classification. Therefore, it is not considered to have formed a constraint to this assessment.

- 2.5.5. The UKHab survey results map (as shown on **Figure 5**) has been reproduced from field notes and plans. Whilst this provides a sufficient level of detail to fulfil the requirements of a PEA, the maps are not intended to provide exact locations of key habitats.
- 2.5.6. The survey was carried out after heavy rainfall, which made the watercourse unsafe to access and may have washed away any signs of riparian mammals (otter and water vole). The absence of evidence of riparian mammals does not indicate an absence of the species from the Survey Area. This constraint has been considered within the recommendations of this report.
- 2.5.7. The underside of bridge Br1 (**Figure 6**) was not able to be accessed for inspection of PRF's due to health and safety concerns working within a watercourse. Therefore, a precautionary approach has been applied which is considered proportionate to the habitat suitability of the Survey Area and characteristics of the structure. This limitation has also been considered within the recommendations of this report.
- 2.5.8. A parcel of woodland present in the southern portion of the Survey Area was not able to be fully surveyed due to a lack of access associated with the M60 fencing to the south. This is not considered to have formed a major constraint to this assessment due to the lack of connectivity present between the woodland parcel and the Proposed Works.

3 Results

3.1 Designated Sites

Statutory Sites

- 3.1.1. The desk study identified a single statutory designated site of international importance within 10km of the Site, a SAC. A description of the internationally designated site is detailed in **Table 3-1** below and their location shown in **Figure 2**.

Table 3-1 – Statutory designated sites of international importance

Site Name	Designation	Size (ha)	Approximate distance and orientation from Site	Description
Rochdale Canal	SAC	24.86	3.7km east	Designated for the presence of Annex II floating water-plantain <i>Luronium natans</i> , indicative of its mesotrophic water quality.

- 3.1.2. The desk study identified two statutory designated sites of national importance within 2km of the Site (both LNRs). A description of each designated site is detailed in **Table 3-2** below and their location shown in **Figure 3**.

Table 3-2 – Statutory designated sites of national importance

Site Name	Designation	Size (ha)	Approximate distance and orientation from Site	Description
Alkrington Woods	LNR	49.4ha	0.51km northeast	Habitats include woodland, grassland, marsh, standing water and amenity areas. Species include sessile oak <i>Quercus petraea</i> , horse chestnut <i>Aesculus hippocastanum</i> , common spotted orchid <i>Dactylorhiza fuchsii</i> and marsh orchid <i>Dactylorhiza</i> sp and greater spotted woodpecker <i>Dendrocopos major</i> .

Site Name	Designation	Size (ha)	Approximate distance and orientation from Site	Description
Blackley Forest	LNR	34.21ha	0.94km southwest	The woodland makes up the majority of the LNR along with grassland. The River Irk flows through the LNR and is a main feature. Habitats include broadleaved and plantation woodland, grassland, lake, marsh and a river. Species recorded on the LNR included kingfisher <i>Alcedo atthis</i> , wren and brown hawker dragonfly <i>Aeshna grandis</i> , marsh marigold <i>Caltha palustris</i> and yellow water lily <i>Nuphar lutea</i> .

Non-Statutory Sites

- 3.1.3. The desk study identified seven non-statutory sites within 2km of the Site, all designated as a Site of Biological Importance (SBI). A description of these sites is detailed in **Table 3-3** and their locations shown in **Figure 4**.

Table 3-3 – Non-statutory designated sites

Site Name	Designation	Approximate distance and orientation from Site	Description
Boardman Brook	SBI	0.45km east	A small valley supporting a mosaic of habitats including woodland, scrub, marsh, swamp and a stream. The canopy is dominated by oak <i>Quercus</i> sp and birch <i>Betula</i> sp with rarely occurring sycamore <i>Acer pseudoplatanus</i> , beech <i>Fagus sylvatica</i> and poplar <i>Populus</i> sp. The ground flora is generally sparse, dominated by creeping soft-grass <i>Holcus mollis</i> with wavy hairgrass <i>Deschampsia flexuosa</i> , purple moor-grass <i>Molinia caerulea</i> ,

Site Name	Designation	Approximate distance and orientation from Site	Description
			and mat grass <i>Nardus stricta</i> have been recorded. Invasive Himalayan balsam <i>Impatiens glandulifera</i> and hybrid bluebell <i>Hyacinthoides non-scripta x hispanica</i> are also present.
Streams and Flushes near Bradley Hall Farm	SBI	0.47km northwest	The SBI is noted for its grassland.
Alkrington Woods & Rhodes Lodges	SBI	0.51km northeast	The SBI comprises areas of both semi-natural and plantation woodland, including lowland broadleaved woodland and waterbodies and lodges. On drier soils the woodland is mainly oak/birch with locally dominant beech <i>Fagus sylvatica</i> and sycamore <i>Acer pseudoplatanus</i> . The invasive rhododendron <i>Rhododendron</i> sp is also present.
Blackley Forest & Heaton Vale Reservoirs	SBI	1.1km southwest	The SBI is noted for its plantation woodland and lodges
Hazlitt Wood	SBI	1.3km west	The SBI is noted for its woodland, reedbed, swamp & fen, waterbodies, small lodges and aquatic invertebrates
Lakeside Woodland in Heaton Park	SBI	1.4km southwest	The SBI is noted for its woodland and grassland.
Heaton Park Reservoir (East)	SBI	1.8km west	The SBI is noted for its birds.

Other habitats of conservation importance

- 3.1.4. Four HPI were recorded within 2km of the Site including;
- Deciduous woodland – 41 parcels;
 - Lowland dry acid grassland – one parcel;
 - Lowland fen – one parcel; and
 - “No main habitat but additional habitats present” – 7 parcels.
- 3.1.5. HPI deciduous woodland, i.e. Lowland Mixed Deciduous Woodland, was identified as being present within the Survey Area (adjacent to the southwestern border of the Site) during the data search, with the River Irk that flows within the Site identified as HPI freshwater river during the field survey. HPI present on Site and within 2km are shown in **Figure 4**.
- 3.1.6. No areas of ancient woodland as listed on the Ancient Woodland Inventory were identified within 1km of the Site. A single waterbody was identified within 500m of the Site during the desk study, located approximately 315m southwest. The location of the pond is shown in **Figure 4**.

3.2 Habitat Survey

Overview

- 3.2.1. A total of 11 UKHab Primary Habitat types were identified within the Survey Area, which are mapped on **Figure 5** and listed in **Table 3-4** along with areas in hectares (or metres for linear features). A description of the species, composition and management of each habitat is provided further below. The abundance of each species is detailed by the DAFOR rating in parentheses. Target notes are listed in **Appendix C** and photographs shown in **Appendix D**. Numeric codes used in this section refer to the UKHab Classification Primary Habitats (UKHab Ltd, 2023). The order of the habitat descriptions below are listed alphabetically, based on their UKHab primary coding, and does not reflect habitat importance.

Table 3-4 - UKHab Habitat Areas

Primary UKHab Habitat	Secondary UKHab Codes	Area (ha)	Length (m)	% of Survey Area
g3c – Other neutral grassland	10 – Scattered scrub 128 – Tall or tussocky sward 502 – Seasonally wet	0.66	-	21.75

Primary UKHab Habitat	Secondary UKHab Codes	Area (ha)	Length (m)	% of Survey Area
	503 – Wet			
g4 – Modified grassland	517 – Recent management	0.15	-	4.88
h3d – Bramble scrub	-	0.04	-	1.22
h3h – Mixed scrub	32 – Scattered trees 503 – Wet 524 – Invasive non-native species	0.71	-	23.30
r2a – Rivers (priority habitat)	-	0.24	-	7.82
u1 – Built up areas and gardens	81 – Ruderal or ephemeral 524 – Invasive non-native species 839 – Track 847 – Introduced shrub	0.12	-	4.03
u1b – Developed land; sealed surface	800 - Road	0.53	-	17.36
u1d – Suburban mosaic of developed/natural surface	-	0.27	-	8.88
u1e – Built linear features	69 – Fence	-	376.71	-
w1g – Other woodland; broadleaved	33 – Line of trees	-	128.25	-

Primary UKHab Habitat	Secondary UKHab Codes	Area (ha)	Length (m)	% of Survey Area
w1g – Other woodland; broadleaved	10 – Scattered scrub	0.24	-	7.82
w1f – Lowland mixed deciduous woodland	-	0.09	-	2.94
Total:		3.03	504.96	-

g3c – Other neutral grassland

- 3.2.2. Other neutral grassland was present within the Survey Area, located south of the River Irk on a steep northward slope. Hardstanding footpaths dissected the habitat into three parcels, featuring a varied sward height and seasonal wetness, with some scattered scrub comprising dogwood *Rosa canina* and bramble *Rubus fruticosus* agg, encroaching from the southwest. The habitat was assessed not to constitute HPI grassland status, such as lowland meadow.
- 3.2.3. Species identified present within the habitat comprised abundant red fescue *Festuca rubra*, cock's-foot *Dactylis glomerata*, with occasional meadow vetchling *Lathyrus pratensis*, dock species *Rumex* sp, creeping buttercup *Ranunculus repens*, cow parsley *Anthriscus sylvestris*, and creeping thistle *Cirsium arvense*. Reed canary grass *Phalaris arundinacea*, hairy willowherb *Epilobium hirsutum*, and common nettle *Urtica dioica* were all locally abundant in areas (**Photographs 1-3**).

g4 – Modified grassland

- 3.2.4. A parcel of modified grassland was present within the Survey Area, located along the north of the Site, functioning as an amenity field recently managed by cutting, with an average of four species per m². This habitat lacked the distinctiveness and species diversity to be classified as HPI grassland.
- 3.2.5. Species identified present within the habitat comprised abundant Yorkshire fog *Holcus lanatus*, with occasional dandelion *Taraxacum* sp., frequent creeping buttercup and meadow-grass *Poa* sp. Cock's-foot occurred rarely within the habitat (**Photographs 4-5**).

h3d – Bramble scrub

- 3.2.6. A length of bramble scrub was present within the west of Survey Area, forming part of the River Irk's riparian corridor. This habitat does not constitute a HPI.

- 3.2.7. Bramble was dominant within the habitat, with occasional willow species *Salix* sp., common nettle, and creeping thistle, alongside rarely occurring hogweed *Heracleum sphondylium*, herb Robert *Geranium robertianum*, buddleja *Buddleja davidii*, and rowan *Sorbus aucuparia*. **(Photographs 6-7).**

h3h – Mixed scrub

- 3.2.8. The southwestern portion of the Survey Area featured a large parcel of mixed scrub, bound to the east and west by footpaths and to the south by Lowland Mixed Deciduous Woodland. The habitat featured a diverse range of age classes across the present flora, with no single species dominating. Sheltered glades were interspersed throughout, with tall forbs bordering the habitat's edges. This habitat does not constitute a HPI.
- 3.2.9. Species identified present within the habitat comprised abundant dogwood, willow species and bramble, occasional rushes *Juncus* sp, reed canary grass, and hairy willowherb, and rarely occurring young to semi-mature cherry *Prunus* sp. **(Photographs 8-9).**
- 3.2.10. Three additional parcels of mixed shrub were present within the Survey Area, bordering the northwestern and southern bank of the River Irk and dominated by Japanese knotweed *Reynoutria japonica*. Bramble and willow species were present occasionally within these habitats **(Photographs 15-16)**. One bush of *Cotoneaster* species was also present within the parcel present to the northwest of the River Irk.

r2a – Rivers (priority habitat)

- 3.2.11. A section of the River Irk was present within the Survey Area, intersecting along its centre, flowing west and featuring a fast flow and shallow depth. The riverbank was generally heavily vegetated, with the exception of areas where the bank had broken away, and was dominated by Japanese knotweed along large areas of the bank **(TN1, Figure 5)**. Himalayan balsam *Impatiens glandulifera* **(TN2, Figure 5)**, bramble, nettle and ivy *Hedera helix* were all also present. No in channel vegetation was present within the watercourse **(Photographs 10-11)**. This habitat was assessed to constitute HPI freshwater river.

u1 – Built up areas and gardens

- 3.2.12. A footpath track, comprising both hardstanding and unsealed gravel material, was present throughout the Survey Area, passing along the southern boundary of the River Irk and intersecting the neutral grassland **(Photograph 12-13)**.

u1b – Developed land; sealed surface

- 3.2.13. A hardstanding path was present intersecting the neutral grassland in the south of the Survey Area. This connected to a motorway bridge to the south, which spanned the width of the M60, present along the southern Survey Area boundary **(Photograph 14)**.
- 3.2.14. An area of hardstanding featuring a sealed metal kiosk was located within the western section of the other neutral grassland and bound on all sides by fencing **(Photograph 17)**.

- 3.2.15. In the northeast of the Survey Area, a public road and adjacent area of hardstanding was also present (**Photograph 18**).

u1d – Suburban mosaic of developed/natural surfaces

- 3.2.16. A row of residential properties and associated gardens was present along the northern Survey Area boundary, adjacent to the Site boundary.

u1e – Built linear features

- 3.2.17. A total of five fences were present within the Survey Area. Four were located adjacent to or near the southern boundary, with another surrounding an area of hardstanding present within the other neutral grassland.

w1f – Lowland mixed deciduous woodland

- 3.2.18. A parcel of Lowland Mixed Deciduous Woodland was present within the south of the Survey Area, bordering the motorway and an area of mixed scrub. Identified as HPI, the surveyed section formed part of a larger stretch of woodland located to the west of the Survey Area, bordering the M60 adjacent to the south.
- 3.2.19. The habitat was not fully surveyed due to a lack of access from the presence of fencing and the M60. However, species identified remotely comprised abundant semi-mature oak species *Quercus sp.* and abundant semi-mature ash *Fraxinus excelsior*.

w1g – Other broadleaved woodland

- 3.2.20. A total of two parcels of other broadleaved woodland were present within the Survey Area, the largest of which functioned as part of the River Irk riparian corridor, being located along the northern bank. Species identified within the habitat comprised abundant willow species, with occasional birch species, and sycamore, and rarely occurring field maple *Acer campestre*, alder *Alnus glutinosa*, cherry, Norway maple *Acer platanoides*, elder *Sambucus nigra* and ash. Neither parcel featured a level of distinctiveness as to be classified as HPI woodland.
- 3.2.21. A second woodland parcel was located north of the other neutral grassland, south of the River Irk. Trees within this habitat were limited to two age classes, with the majority semi-mature and occasional saplings. No browsing damage or invasive non-native species were present, and evidence of nutrient enrichment was not present within the ground layer species composition. Species identified within the habitat comprised abundant birch and willow species, with occasional Norway maple, ash, and cherry. The ground layer was dominated by bramble (**Photographs 21-24**).

w1g 33 – Lines of trees

- 3.2.22. Three lines of trees were present within the Survey area. At the northern extent, within the modified grassland in the north of the Survey Area, trees were mature and comprised occasional ash, elder, hawthorn *Crataegus monogyna*, and snowberry *Symphoricarpos albus*, with frequent willow species (**Photographs 19-20**). These habitats lacked the structure and distinctiveness to be classified as HPI woodland.
- 3.2.23. Two lines of trees also bordered the River Irk in the east of the Survey Area. The line of trees to the north of the River Irk Supported abundant mature poplar, sycamore, and cherry were abundant. The line of trees the south of the River Irk was dominated by mature willow, with the ground layer featuring abundant Japanese knotweed and nettle, frequent bramble, and occasional creeping buttercup.

3.3 Protected and Notable Species Assessment

- 3.3.1. The potential for the Survey Area to support legally protected species and notable species has been assessed using the results of the desk study in combination with information recorded during the field survey. A summary of desk study records, returned within the last ten years, is included within **Appendix B**. Further consideration is given below to the likelihood for these species to be present within the Survey Area:
- Invertebrates;
 - Amphibians;
 - Birds;
 - Bats;
 - Hedgehog *Erinaceus europaeus*;
 - Water vole;
 - Otter;
 - Badger;
 - Aquatic receptors (fish and aquatic invertebrates); and
 - Invasive Non-Native Species (INNS).
- 3.3.2. The Survey Area does not provide suitable habitat for other protected or notable species. As such, other species beyond those listed above will not be considered further in this PEA.

Invertebrates

- 3.3.3. The desk study returned eight records of notable invertebrates within 2km of the Site, namely white-letter hairstreak *Satyrrium w-album*, cinnabar *Tyria jacobaeae*, and shaded broad-bar *Scotopteryx chenopodiata*. The closest record pertained to cinnabar, located 1.06km southwest from the Site in 2018.

- 3.3.4. White-letter hairstreak feed exclusively on elm *Ulmus procera*, of which none was identified present within the Survey Area. As such, the species it not anticipated to utilise the Survey Area. Cinnabar most often feed on common ragwort *Jacobaea vulgaris*, as well as other ragworts and groundsels, while shaded broad-bar are known to feed on clovers and vetches. No such species were identified during the habitat survey. However, this may be as a result of perennial seasonality and the timing of the survey.
- 3.3.5. Whilst no site is devoid of invertebrate interest, the habitats recorded on Site would be anticipated to support a common and widespread assemblage of invertebrates. As such, invertebrates are not considered further within this report.

Amphibians

- 3.3.6. A total of seven records of common toad *Bufo bufo*, a Species of Principal Importance, were returned within the data search, with the closest record located approximately 623m east of the Site in 2014.
- 3.3.7. No records of GCN or EPS licences for the species were identified within 2km of the Site.
- 3.3.8. A single waterbody was identified within 500m of the Site, located to the north of the River Irk and approximately 315m southwest Site. The waterbody features no connectivity to any other waterbodies within 1km due to major barriers to dispersal present on all sides, namely the M60 to the south and west, residential developments to the north, and the River Irk to the east. Nevertheless, the waterbody does feature terrestrial connectivity to the northern section of the Site, north of the River Irk, with areas of grassland, scrub, and woodland present providing the potential for GCN and other amphibians to utilise for foraging, commuting and hibernation.

Birds

- 3.3.9. A total of 425 records of bird species were returned within the data search, pertaining to 20 species. Records included species listed under Schedule 1 of the WCA, namely barn owl *Tyto alba* and kingfisher *Alcedo atthis*.
- 3.3.10. The River Irk provided suitable foraging and commuting habitat for kingfisher and 52 records within 2km of the Site were returned, with the closest record located 0.05km northwest (downstream) from the Site. The sloping banks of the River Irk located within the Survey Area provided limited potential for the species to nest, and it is not anticipated for breeding kingfisher to occur within the Survey Area. The angle of the riverbank varied, predominantly gently sloping at less than 45 degrees towards the west of the Survey Area, but increasing to greater than 45 degrees immediately east of the footbridge. Despite these variations all banks were heavily vegetated. Furthermore, concrete reinforcement along

much of the riverbank further reduces the potential for kingfisher to create nesting chambers within the Survey Area. The River Irk is also followed by a public footpath, and is disturbed by human activities, particularly dog walking.

- 3.3.11. No trees within the Survey Area were identified with features suitable for nesting barn owl *Tyto alba* and no incidental evidence of barn owl was recorded during the survey.
- 3.3.12. Dense scrub, trees, and tussocky, tall grassland within the Survey Area provided suitable nesting and foraging habitat for breeding birds.

Bats

- 3.3.13. A total of 116 records of bat species were returned within the data search, including 24 records of bat roost records. Bat roost records pertained to common pipistrelle *Pipistrellus pipistrellus* and soprano pipistrelle *Pipistrellus pygmaeus* while other non-roost records also included Daubenton's bat *Myotis daubentonii*. The closest roost records pertained to a common pipistrelle, located 0.88km east of the Site, in 2021.
- 3.3.14. A single EPS licence relating to bats was present within 2km of the Site (Ref: 2014-1364-EPS-BDX), located 1.4km to the southwest of the Site. This licence allowed for the destruction of a breeding site and resting place for common pipistrelle between 2014-2015.
- 3.3.15. The Survey Area contained suitable foraging and commuting habitat in the form of lines of trees, grassland, scrub, woodland, and the River Irk. In the wider landscape, the River Irk connects the Survey Area to likely suitable roosting, foraging, and commuting habitat in Alkington Wood to the east. As such, the Survey Area was considered to be of High suitability to provide flight paths and foraging habitat for bats.
- 3.3.16. All trees within the Survey Area were initially assessed during the DBW for their suitability to support roosting bats, where access was possible and safe to do so. As detailed in **paragraph 2.5.8** above, access was not possible to a parcel of woodland in the south of the Survey Area. All accessible trees within the Survey Area were categorised as 'NONE' (with reference to **Table 2-2**), meaning trees either had no PRFs or were highly unlikely to contain PRFs. Therefore, no further assessment was undertaken in relation to trees and roosting bats. During the DBW, two structures were identified within the Survey Area and were subject to further assessment.
- 3.3.17. Two bridges (Br1 and Br2) within the Survey Area were subject to a PRA (as shown on **Figure 6**). No features suitable for roosting bats were recorded. However, the undersides of both bridges were unable to be viewed due to access restrictions. As such, both bridges have been precautionary assessed as High roosting suitability, based on the habitat assessment and the potential for the bridge to support PRF.

Hedgehog

- 3.3.18. The desk study returned 29 recent records of hedgehog, with the most recent record located approximately 275m northeast of the Site in 2020.
- 3.3.19. Dense scrub, woodland and tussocky grassland within the Survey Area were assessed to provide suitable foraging and sheltering habitat for hedgehog.

Water Vole

- 3.3.20. No records of water vole were returned within the data search.
- 3.3.21. The River Irk was assessed as providing poor suitability for the species due to a lack of emergent vegetation within the channel, areas of heavy shading, fast-flowing conditions of the watercourse, and likely frequent changes in water levels. Furthermore, the banks were dominated by Japanese knotweed and Himalayan balsam, with limited bankside flora suitable for foraging opportunities. The bank angle was varied, predominantly gently sloping at less than 45 degrees towards the west of the Survey Area but increasing to more than 45 degrees immediately east of footbridge (**Figure 6, Br1**). Furthermore, concrete and stone reinforcement along much of the bank further reduced the potential for the species to create burrows within the Survey Area. Given the habitat characteristics recorded along the River Irk within the Survey Area, water vole are considered likely absent.

Otter

- 3.3.22. A single record of otter was returned within the data search, located approximately 643m east of the Site, at Alkrington Woods Lake in 2018. The river within the Survey Area was assessed as suitable for foraging and commuting otter. Dense scrub present along the river offered some potential for holt creation. The Survey Area was highly disturbed by human activity, such as frequent dog walking, limiting the potential for holts to be established within the Survey Area. However, otter can become habituated to anthropogenic disturbance.

Badger

- 3.3.23. Ten records of badger were returned within the data search, pertaining to observations of field signs (including snuffle holes and faeces) and setts. The closest record pertaining to the presence of a sett was located approximately 1.3km west of the Site.
- 3.3.24. No evidence of badger was recorded within the Survey Area during the survey and no setts were incidentally observed. However, areas of dense scrub and woodland within the Site provided suitable habitat for sett creation and the Site also contained suitable foraging habitat.

Aquatic receptors

- 3.3.25. No records of aquatic receptors, such as fish species including European eel *Anguilla anguilla* and aquatic invertebrates including white clawed crayfish *Austropotamobius pallipes* were returned by the desk study. However, the River Irk has the potential to support

fish species and aquatic invertebrates and white-clawed crayfish have been recorded in the Rochdale Canal SAC.

Invasive Non-Native Species (INNS)

- 3.3.26. Records of Himalayan balsam and hybrid bluebell were returned within Boardman Brook (0.45km east of the Site) and Rhododendron was also recorded within Alkrington Woods & Rhodes Lodges (0.51km northeast of the Site). No records of invasive non-native fauna were returned within the data search.
- 3.3.27. Japanese knotweed and Himalayan balsam were recorded abundantly within the Survey Area, as described in **Section 3.2**. Cotoneaster was also present within the Survey Area.

4 Discussion and Recommendations

- 4.1.1. This section considers the potential for impacts on designated sites, legally protected species, notable species and notable habitats as a consequence of the Proposed Works. Where further surveys or detailed assessment of potential impacts are required in order to design suitable mitigation, this is identified.
- 4.1.2. As detailed in **paragraph 1.1.3**, a finalised design for the Proposed Works was not available at the time of writing. As such, the discussion and recommendations detailed within this report are based on information currently available. Once a finalised design is available, it is recommended that the recommended made within this report be reviewed and, if required, updated.

4.2 Statutory Designated Sites

- 4.2.1. The Habitats Regulations provide strict protection to sites of European and international importance. This includes requiring projects or plans to be screened for likely significant effects upon SPAs, SACs, and candidate SACs (cSACs). Guidance also requires potential SPAs (pSPAs) and Ramsars to be subject to the same assessment.
- 4.2.2. The Rochdale Canal SAC is located 3.7km east of the Site. There is no hydrological connection between the Site and the SAC (River Irk appears to be culverted beneath the Rochdale Canal). Due to a lack of connectivity between the River Irk and the SAC, impacts as a result of hydrology are not predicted. and a Habitats Regulations Assessment (HRA) screening is not anticipated to be required.
- 4.2.3. SSSIs are subject to strict protection under the WCA. This requires landowners to maintain these sites in favourable condition and works within these sites are managed by the appropriate national statutory body via the consent process. Certain operations within SSSIs require consent; these are specific to each SSSI.
- 4.2.4. No SSSIs were located within 2km of the site. The Site does fall within an Impact Risk Zone for the Rochdale Canal SSSI (associated with the SAC), located approximately 3.7km east of the Site. This Zone pertains to planning for aviation proposals and developments which may cause air pollution or relate to general combustion processes. As such, impacts are not predicted as a result of the Proposed Works.
- 4.2.5. Alkington Wood LNR and Blackley Forest LNR are present approximately 500m northeast and 950m southwest, respectively. Due to a lack of connectivity between these designated sites and the Site, it is not anticipated that any direct or indirect impacts would occur as a result of the Proposed Works. Therefore, no further recommendations are provided within this report with respect to the LNRs.

4.3 Non-Statutory Designated Sites

- 4.3.1. The closest non-statutory designation to the Site was Streams and Flushes near Bradley Hall Farm, 0.47m northwest.
- 4.3.2. Due to a lack of terrestrial or hydrological connectivity between non-statutory designated sites and the Site, it is not anticipated that any direct or indirect impacts would occur as a result of the Proposed Works. Therefore, no further recommendations are provided within this report with respect to non-statutory designated sites.

4.4 Habitats

- 4.4.1. Under Section 40 of the NERC Act 2006, every public body (including statutory undertakers) must, *'in exercising its functions, have regard so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity'*.
- 4.4.2. The River Irk, a HPI, flows through the Site. No works are anticipated within the channel of the river (therefore no direct impacts) in relation to the Proposed Works, with no works within the channel required for the installation of the temporary bridge. However, indirect impacts may occur due to working above and near the watercourse. This may be as a result of accidental pollution or contamination events. As such, it is recommended that environmental best practice measures are implemented during the Proposed Works, as discussed further in **Section 4.6**.
- 4.4.3. A parcel of Lowland Mixed Deciduous Woodland, a HPI, was present adjacent to the southwestern Site Boundary. No works are anticipated within or adjacent to the woodland, and as such no direct impacts are anticipated. Nevertheless, indirect impacts may occur as a result of the Proposed Works, including accidental pollution or contamination. As such, it is recommended that environmental best practise measures discussed in **Section 4.6** be implemented with consideration to the presence of HPI woodland.
- 4.4.4. The line of trees and dense scrub within the Site were assessed as habitats suitable to support protected and notable species. Some trees along the northern bank of the River Irk will be lost to facilitate the installation of the temporary bridge. It is recommended that any habitat or tree loss be kept to a minimum, as described in **Section 4.6**.

4.5 Protected and Notable Species

Amphibians

- 4.5.1. GCN are protected from killing, injury and disturbance and their places of rest or shelter (occupied habitat) protected from damage or destruction under the Habitats Regulations. Protection is also afforded under the WCA with respect to disturbance of individuals occupying places of rest or shelter and obstruction of access to these. Activities that would otherwise constitute an offence under this legislation may be licenced by Natural England for certain purposes.

- 4.5.2. GCN and common toad are also listed as Species of Principal Importance (SPI) in accordance with Section 41 of the NERC Act 2006. Public bodies (including statutory undertakers) have an obligation under Section 40 to have regard for these species when carrying out their functions.
- 4.5.3. No suitable waterbodies were located within the Survey Area, although a single waterbody was located approximately 315m southwest of Site and connected by terrestrial habitats parallel to the River Irk. Habitats within the Site were also suitable for terrestrial amphibians (shelter and foraging).
- 4.5.4. Due to the potential for the Proposed Works to impact GCN and their habitat, further survey is recommended in relation to the waterbody to the southwest to confirm the presence/likely absence of GCN (as detailed within **Table 4-1**). In addition, preliminary avoidance and mitigation measures are recommended in **Section 4.6**.

Bird

- 4.5.5. The Habitats Regulations Part 1 Regulation 10(2) & (3) state that local authorities '*must take such steps in the exercise of their functions as they consider appropriate to contribute to...the preservation, maintenance and re-establishment of a sufficient diversity and area of habitat for wild birds in the UK including by means of the upkeep, management and creation of such habitat...*'. The legislation continues to state that economic and recreation requirements must be taken into consideration in considering which measures are appropriate.
- 4.5.6. Under the WCA, all wild birds are protected from killing and injury, and their nests and eggs protected from taking, damage and destruction whilst in use. Additional protection is extended to species listed under Schedule 1 of the Act, meaning it is also an offence to disturb these species at or near the nest, or whilst they have dependent young.
- 4.5.7. Due to habitat suitability, kingfisher are not considered likely to be nesting within the Survey Area and therefore impacts to nesting kingfisher are not predicted.
- 4.5.8. It is anticipated that vegetation clearance will be required as part of the Proposed Works across areas of the Site that may have potential to support other nesting birds, namely the grassland, scrubland, and woodland. Therefore, recommendations for mitigation are provided within **Section 4.6**.

Bats

- 4.5.9. All species of bats recorded within the UK are European Protected Species and protected from killing, injury and disturbance¹² and their roosts protected from damage or destruction under the Habitats Regulations. Protection is also afforded under the WCA with respect to disturbance of individuals occupying places of rest or shelter and obstruction of access to these. Activities that would otherwise constitute an offence under this legislation may be licensed by Natural England (NE) for certain purposes.
- 4.5.10. Certain species of bats, including noctule, brown long-eared bat and soprano pipistrelle, are also listed as SPI for the conservation of biodiversity in England in accordance with Section 41 of the NERC Act 2006, of which Section 40 obliges public bodies to have due regard.
- 4.5.11. The two bridges (Br1 and Br2, **Figure 6**) present within the Survey Area were precautionarily assessed as High roosting suitability due to lack of access to make a full assessment. As such, there is the potential for the Proposed Works to indirectly impact roosting bats on Site through disturbance via lighting, vibration, and noise pollution. Recommendations for further survey are provided within **Table 4-1**.
- 4.5.12. All accessible trees within the Survey Area were assessed as NONE, with negligible potential to support a bat roost. The HPI Lowland Mixed Deciduous Woodland parcel, located adjacent to the southwest of the Site boundary, was not fully assessed due to a lack of access. However, it is currently understood that there would be no works within or adjacent to this woodland. As such, no impacts to the trees or roosting bats (if present) are predicted. Should the finalised design of the Proposed Works include activities within the woodland or within approximately 30m of the woodland, further survey and/or mitigation may be required to address any direct and indirect (disturbance) impacts.
- 4.5.13. The Site and wider landscape provide suitable roosting, foraging, and commuting habitat, such as woodland, grassland and scrub and the River Irk. There is potential to indirectly disturb potential commuting and foraging bats within the Site, primarily through light pollution. Therefore, mitigation recommendations are provided within **Section 4.6**.

Hedgehog

- 4.5.14. Hedgehog are listed on Schedule 6 of the WCA, which makes it illegal to kill or capture wild hedgehogs. They are also protected under the Wild Mammals (Protection) Act 1996 which prohibits cruel treatment of hedgehogs. Hedgehogs are also listed as a SPI in accordance with Section 41 of the NERC Act 2006

¹² Disturbance is defined within the Habitats Regulations as that which is likely to impair a species ability to survive, breed or reproduce, hibernate or migrate or to significantly affect the local distribution or abundance of the species.

- 4.5.15. The scrub, woodland, and tall, tussocky grassland present within the Site provided suitable habitat to support commuting and sheltering hedgehog. As vegetation clearance is required for the Proposed Works, mitigation recommendations are provided in **Section 4.6**.

Water vole

- 4.5.16. Water vole are protected from killing and injury and their place of rest or shelter (burrow) is protected from damage, destruction or obstruction under the WCA. Additional protection from disturbance is extended to individuals occupying places of rest or shelter. Activities that would otherwise constitute an offence under this legislation may be licensed by Natural England for certain purposes.
- 4.5.17. Water voles are listed as a SPI in accordance with Section 41 of the NERC Act 2006. Public bodies (including statutory undertakers) have an obligation under Section 40 to have regard for these species when carrying out their functions.
- 4.5.18. As detailed in **paragraph 3.3.21**, water vole are considered likely absent from the Survey Area due to the absence of suitable burrowing habitat and poor quality foraging habitat available. As such, no recommendations for further survey or mitigation specific to the species is outlined within this report.

Otter

- 4.5.19. Otter are listed as a European Protected Species under Appendix IV of the EC Habitats Directive transposed by the Habitats Regulations, and as such are afforded protection protected from killing, injury and disturbance, and their place of rest or shelter (holt) is protected from damage, destruction or obstruction under the WCA. Under this act, it is also illegal to possess or transport otter, or parts of one unless acquired legally, and sell, exchange, advertise or barter for otter. Activities that would otherwise constitute an offence under this legislation may be licensed by Natural England for certain purposes.
- 4.5.20. Otters are also listed as a SPI in accordance with Section 41 of the NERC Act 2006. Public bodies (including statutory undertakers) have an obligation under Section 40 to have regard for these species when carrying out their functions.
- 4.5.21. The River Irk is suitable for foraging and commuting otter. Dense scrub present along the river also offers some suitability for holt creation.
- 4.5.22. The Proposed Works include the installation of a temporary bridge over the River Irk. Therefore otter may be subject to direct and indirect disturbance impacts (such as noise, light and/or vibration), if present. As such, recommendations for further survey are provided within **Table 4-1** of this report, with preliminary mitigation outlined in **Section 4.6**.

Badger

- 4.5.23. The Protection of Badgers Act 1992 (as amended) makes it illegal to wilfully kill, injure or take any badger, or attempt to do so. It also makes it an offence to intentionally or recklessly damage, destroy or obstruct access to any part of a badger sett. Activities that would otherwise constitute an offence under this legislation may be licensed by NE for certain purposes.
- 4.5.24. No evidence of badger was identified within the Survey Area during the survey, although the dense scrub and woodland within the Site is suitable for sett creation and badgers are likely present within the wider landscape (desk study records).
- 4.5.25. Due to the highly mobile nature of badgers and accounting for any delays between the time of the survey and commencement of the Proposed Works, recommendations are provided within **Section 4.6** of this report in relation to a pre-commencement walkover and prevention of entrapment in voids.

Aquatic receptors

- 4.5.26. White-clawed crayfish receive partial protection under Schedule 5 of the WCA. This prohibits the taking of any native crayfish for any purpose except under licence. They are listed on Annex II and V of the European Communities Habitats Directive 1992, which allows sites to be designated on the basis of the species being present. White clawed crayfish are also a SPI in England and Wales under Section 41 and Section 42 respectively of the NERC Act 2006.
- 4.5.27. Fish are protected under the Salmon and Freshwater Fisheries Act 1975. Under the act it is an offence to kill or take fish and prohibits the killing of fish through poisoning or polluting effluent.
- 4.5.28. In addition, the Eels (England and Wales) Regulations 2009 requires the establishment of measures for the recovery of European eels. Under the Regulations, the regulators (the Environment Agency) can serve notice to companies detailing their legal obligation to screen intakes and outfalls for eel and/or to remove or modify obstructions to eel migration. It gives powers to the regulators to implement recovery measures in all freshwater and estuarine waters in England and Wales.
- 4.5.29. The River Irk runs through the Site, and while it is not anticipated that the river will be directly affected as a result of the Proposed Works, it may be subject to indirect impacts such as noise, light and/or vibration during construction. As such, recommendations for preliminary mitigation in regard to aquatic receptors are provided in **Section 4.6**.

Invasive Non-Native Species

- 4.5.30. In the UK, it is an offence to plant or cause to grow in the wild plants listed on Schedule 9 of the WCA. These plants should not be planted or caused to grow in the wild and, in addition, are banned from sale and where these identified, measures must be implemented to control them.

- 4.5.31. Incidental observations of INNS were recorded during the survey, including Japanese knotweed and Himalayan balsam. Both species are listed under Schedule 9 of the WCA. In addition, a cotoneaster species was recorded on Site. It was not possible to confirm the cotoneaster to species level and therefore confirm whether it represented a cotoneaster species listed under Schedule 9 of the WCA. Therefore, for the purpose of this report, it is assumed that the cotoneaster on Site is an INNS.
- 4.5.32. There is the potential for the Proposed Works to result in the spread of INNS which could result in an offence under the Wildlife and Countryside Act 1981 (as amended). Therefore, recommendations relating to biosecurity are provided in **Section 4.6**.

Further Assessment & Survey Requirements

- 4.5.33. Potential ecological constraints for which further assessment and surveys are recommended to minimise the risk of inadvertently breaching the governing legislation and planning policy compliance are listed in **Table 4-1**.

Table 4-1 – Key Ecological Constraints and Further Assessment & Survey Requirements

Ecological Receptor	Potential Constraints	Further Assessment & Survey Requirements	Seasonal Constraints
GCN	There is the potential for GCN to occur terrestrially on Site, and for terrestrial habitat supporting GCN to be lost as a result of the Proposed Works.	Habitat Suitability Index (HSI) Assessment of the waterbody to the west of the Site to determine its suitability to support populations of GCN. It is recommended that this assessment be supplemented by environmental DNA (eDNA) survey, as to determine the presence or likely absence of the species from the waterbody.	HSI Surveys can be undertaken at any time of year, however certain indices are best measured during summer months. eDNA surveys are carried out between mid-April to the end of June.
Roosting bats	Potential disturbance of bat roosts (if present) within the bridges within the Survey Area Potential disturbance of bat roosts (if present) within the inaccessible trees of the woodland in the southwest of the Survey Area. This is dependent on the proximity of the Proposed Works	Once suitable and safe access is identified, a full PRA of the bridges should be completed to identify if any PRFs are present and confirm the roosting suitability of the bridges. If PRF are present, further survey may be required to confirm the presence/likely absence of roosting bats. This may comprise endoscope and aerial inspections or bat roost emergence surveys. The survey effort would be determined by the roosting suitability and be in accordance with best practice (Collins, 2023). Depending on the proximity of the Proposed Works to the trees in the southwest of the Survey Area (not accessible during the survey), further survey may be required to confirm the presence/likely absence of roosting bats and inform mitigation requirements.	A PRA can be undertaken at any time of year. Surveys to confirm the presence/absence of a roost are undertaken between May and September (inclusive).
Otter	Potential disturbance and/or destruction to otter and their resting places.	Otter surveys should be undertaken along the length of the River Irk contained within the Survey Area, as well as 150m up and downstream. This would include a search for any relevant field signs indicating presence of these species.	Otter surveys can be undertaken at any time of year, however the spring and summer months between May-September, during which water levels generally recede and vegetation is still relatively low, are optimal. Surveys should be conducted in good weather conditions, with no heavy rainfall within the prior 24 hours.

4.6 Preliminary Avoidance, Mitigation, and Compensation Measures

- 4.6.1. To enable compliance with relevant legislation and planning policy, as described above, the following avoidance, mitigation and compensation measures are recommended in relation to the Proposed Works. Recommendations should be reviewed and finalised following the completion of surveys and assessments listed above in **Table 4-1** and once a detailed design of the Proposed Works is available proposals.
- It is recommended that direct loss/impacts to HPI woodland habitat are avoided, wherever possible. Where HPI habitat is lost as a result of the Proposed Works, it is recommended that like-for-like compensation is provided as a minimum (in terms of area and condition); additional new native woodland could be planted to achieve no net loss of biodiversity.
 - The loss of other trees from the Proposed Works should be reduced as far as practically possible. Where removal is unavoidable, appropriate mitigation and compensation should be developed. Retained trees should be protected in accordance with BS5837 (BSI, 2012).
 - It is recommended that vegetation clearance is undertaken outside the bird breeding season, March to August (inclusive), where possible to avoid damage or disturbance to active nests. If this is not feasible, it is recommended that an Ecological Clerk of Works (ECoW) undertake pre-commencement checks of areas proposed for clearance, a maximum of 48 hours before the commencement. Where nests or nesting behaviour are encountered, an appropriate exclusion buffer would be erected within which no works can take place (the size of the buffer would be at the discretion of the ECoW and vary by species).
 - It is recommended that a pre-commencement walkover is undertaken to verify the absence of badger setts within the area of the Proposed Works plus at least 30m. Should an active badger sett be encountered, an ecologist should be contacted to provide recommendations for mitigation (which may include licensing).
 - Due to the potential for amphibians on Site, it is recommended that a Precautionary Working Method Statement (PWMS) be prepared and implemented. The PWMS should outline measures to be implemented prior to and during the Proposed Works, notably vegetation clearance, to reduce impacts to terrestrial amphibians. This should include the appropriate timing of clearance activities (importantly outside of the winter period in areas where there is potential for hibernating amphibians).
 - It is recommended that vegetation clearance this is undertaken sensitively and with hand tools in areas of dense scrub due to the potential to encounter sheltering wildlife, including hedgehog.

- It is recommended that any excavations and void are backfilled within the same day to avoid the entrapment of wildlife (notable mammals such as badger and otter). Where this is not possible, all voids should be securely covered overnight and/or provided with a suitable means of egress (such as a ramp at no greater than a 45° angle). Any void should be inspected the following morning by site personnel prior to continuing works or backfilling. If any wildlife is encountered, the ECoW should be contacted for further advice.
- Given the confirmed presence of INNS within the Survey Area, it is recommended that a specialist contractor is engaged in advance of any work commencement, in order to provide advice on the identification, treatment and/or removal options, for any INNS that could interact with construction. In addition the Check-Clean-Dry procedure to address biosecurity should be implemented at all times.
- It is recommended that the Proposed Works are undertaken during daylight hours where possible to avoid the need for artificial lighting. Where night working is required, it is recommended that a sensitive lighting design is implemented, in consideration of best practice guidelines relating to bats (Bat Conservation Trust and Institution of Lighting Professionals, 2023). This should include:
 - Dark corridors along the boundaries of the Proposed Works, and the boundaries of the River Irk where possible. Lighting should be avoided in locations of roosts (if identified during the recommended further survey).
 - Use hoods, louvres or other luminaire design features to avoid light spill onto retained vegetation likely to be used by foraging and commuting bats.
 - Use of narrow spectrum light sources should be used where possible to lower the range of species affected by lighting, specifically avoiding shorter wavelength blue light, using instead warm/neutral colour temperature <4,200 kelvin lighting.
- To mitigate for indirect impacts of the Proposed Works on aquatic receptors, it is recommended that the Proposed Works adhere to the best practice pollution prevention guidance outlined by the Construction Industry Research and Information Association (CIRIA) guidance (CIRIA, 2015). Specific measures are not limited to, but should include the following:
 - Construction materials should be stored and maintained away from the River Irk. Silt fences or similar should be placed around exposed ground and stockpiles, and early revegetation of the completed elements of the scheme should be undertaken to reduce further erosion.
 - Surface water runoff from the construction sites into the River Irk must be avoided and a system of cut-off ditches, silt fencing and/or bunds should be installed if required.

- Chemicals and fuels must be stored in secure containers located away from the River Irk. No refuelling of plant or machinery should take place near the watercourse, and spill kits should be readily available.
 - Noise and vibration must be controlled and kept to the minimum necessary to prevent potential negative effects on fish and eels.
 - Lighting used for construction must be switched-off when not in use and, where possible, positioned so as not to spill on to the River Irk.
- In addition to the above, the following environmental best practice measures are recommended in relation to other habitats/ecological receptors on and surrounding the Site:
- Measures must be taken to prevent dust and other emissions from construction affecting land beyond the Survey Area.
 - Measures must be taken to prevent silt and other materials from construction affecting land beyond the Survey Area.

4.7 Ecological Enhancement Opportunities

- 4.7.1. The NPPF states that at an overview level the *‘planning system should contribute to and enhance the national and local environment by... minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government’s commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures’*.
- 4.7.2. Ecological enhancements will also deliver other green infrastructure benefits such as storm water attenuation and reducing the urban heat island effect.
- 4.7.3. To encourage compliance with planning policy, the following measures are recommended for inclusion within the Proposed Development; where possible:
- Enhancement of existing and retained habitat, through native species planting and appropriate long-term management; and
 - Good horticultural practice should be employed, such as the use of peat-free composts, mulches and soil conditioners and native plants of local provenance should be sought for planting whilst avoiding the use of invasive plants, listed on Schedule 9 of the WCA.
 - Installation of bird and bat boxes on retained trees to provide nesting and roosting provision.
 - Vegetative material removed during clearance for the Proposed Works may be utilised to create habitat piles, providing shelter for terrestrial species such as hedgehog.

5 Conclusions

- 5.1.1. Given the localised nature of the Proposed Works and the distance of the Site from any designated site, no impacts on statutory or non-statutory designated sites are anticipated as a result of the Proposed Works.
- 5.1.2. The PEA identified a range of habitats (including other neutral grassland, woodland, dense scrub and a river) located within the Survey Area which have the potential to support protected species including amphibians, birds, bats, otter, badger and aquatic species. In addition, INNS species (Japanese knotweed, Himalayan balsam and cotoneaster) were also identified on the Site.
- 5.1.3. Recommendations have been made for further targeted species survey for:
 - GCN;
 - Bats; and
 - Otter.
- 5.1.4. Mitigation and enhancements, to enable compliance with relevant legislation and planning policy, have also been recommended.

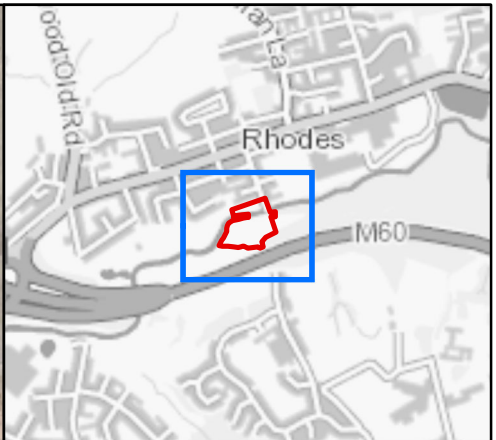
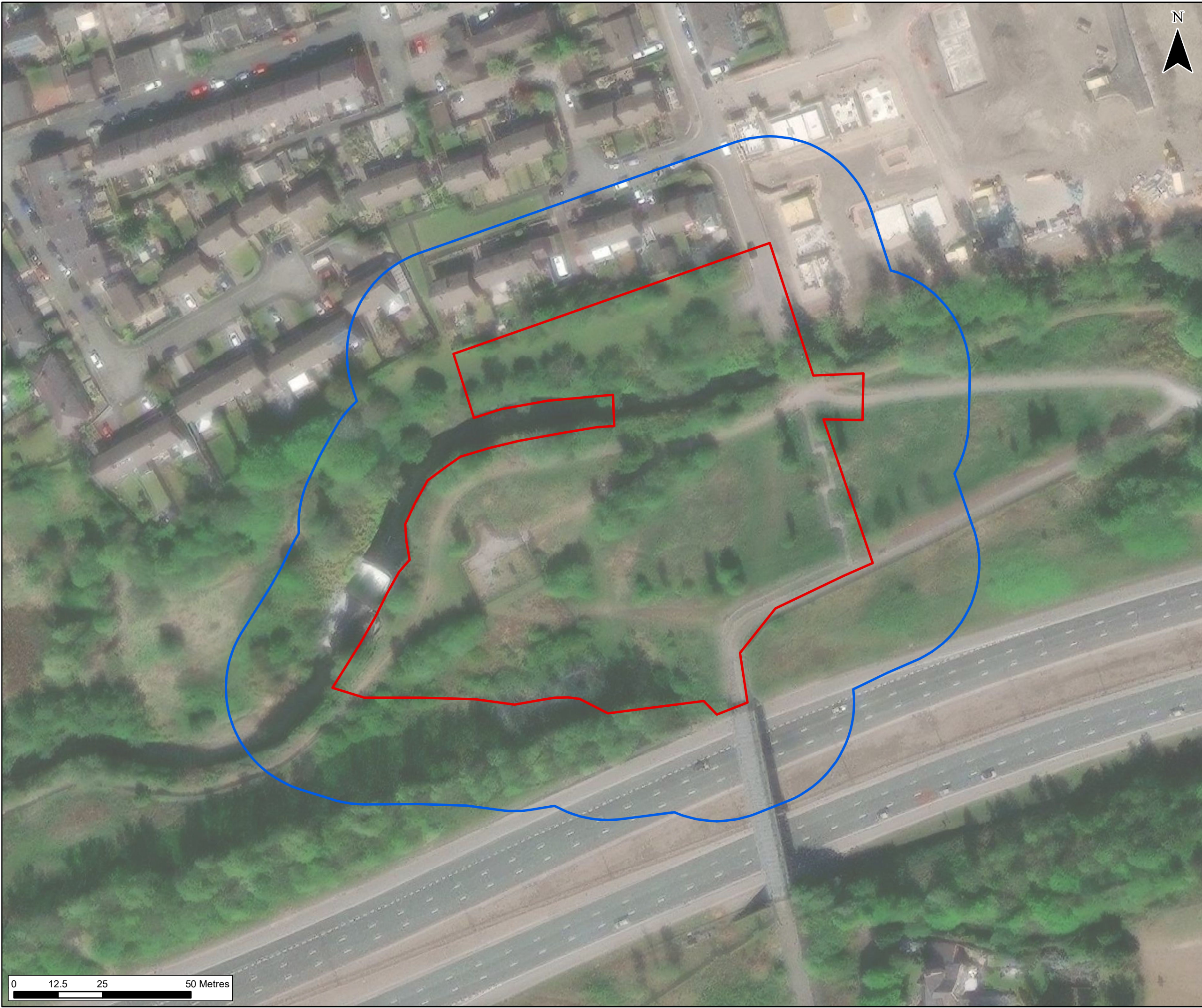
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Figures

Figure 1 - Site Boundary



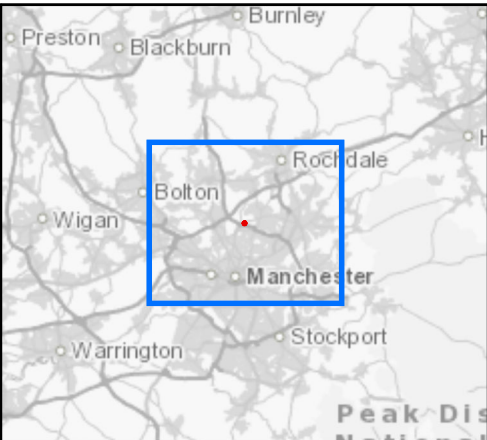
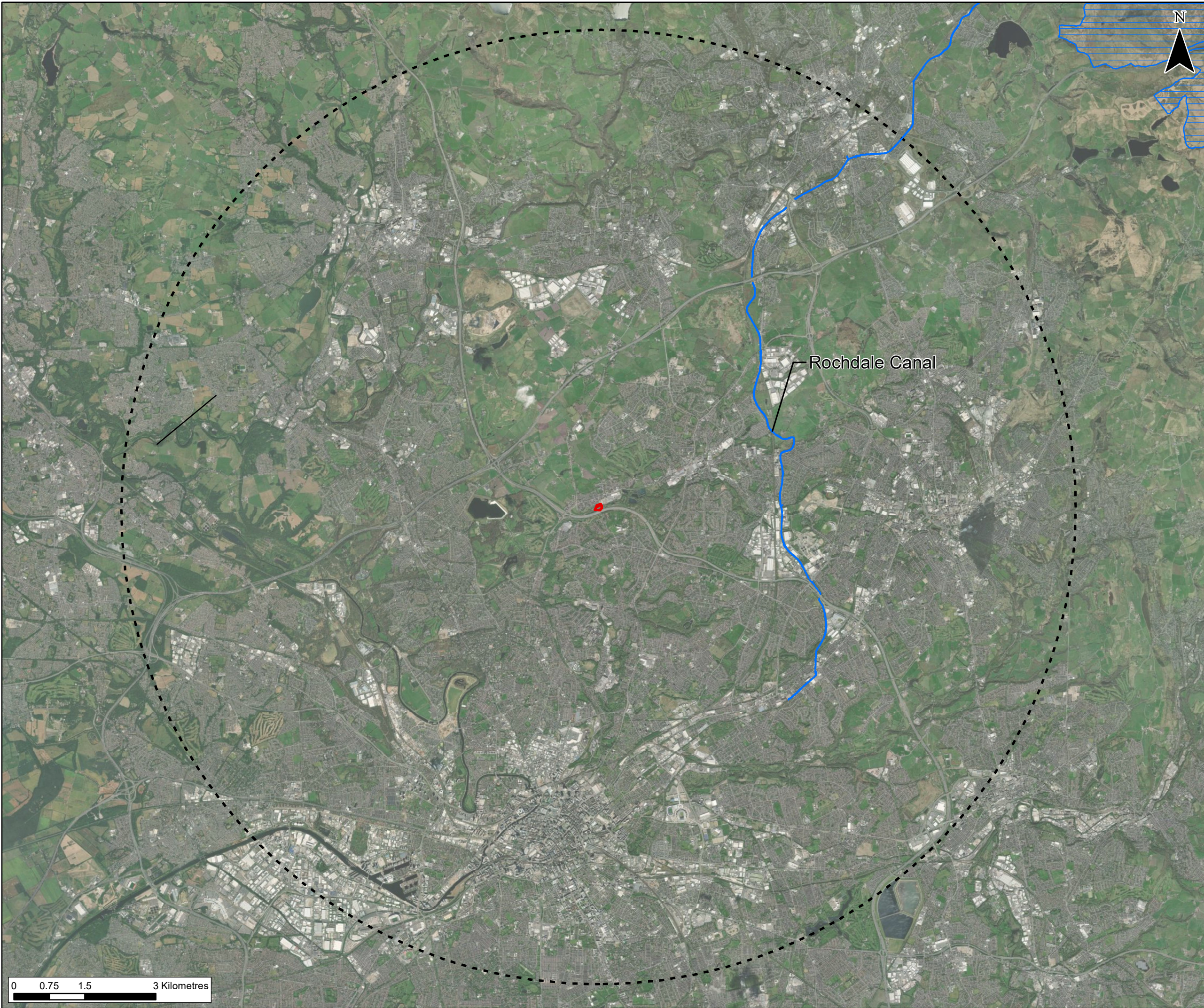
Key
 Site Boundary
 Survey Area

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Figure 2 - Internationally Designated Sites



Key

- Site Boundary
- 10km Buffer Area
- Special areas of conservation (SAC)

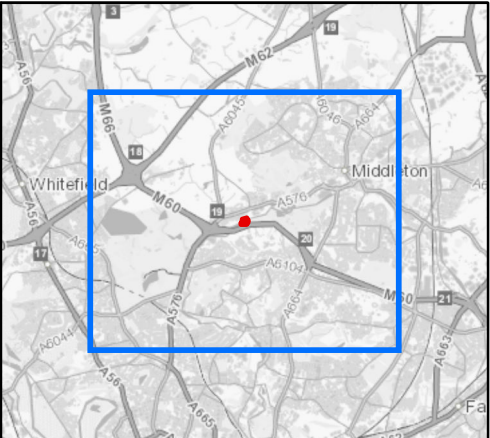
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Figure 3 - Local Nature Reserves within 2km



Key

Site Boundary

2km Buffer Area

Local Nature Reserves

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PROJECT TITLE:
Boothroyden

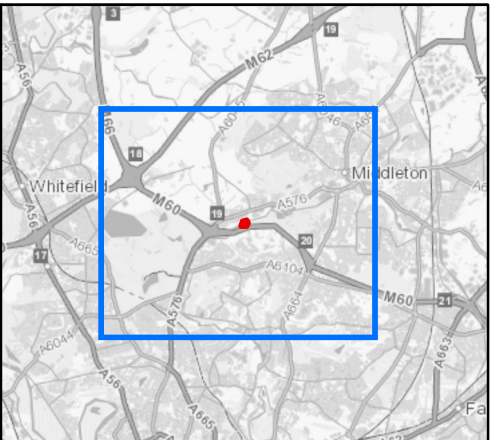
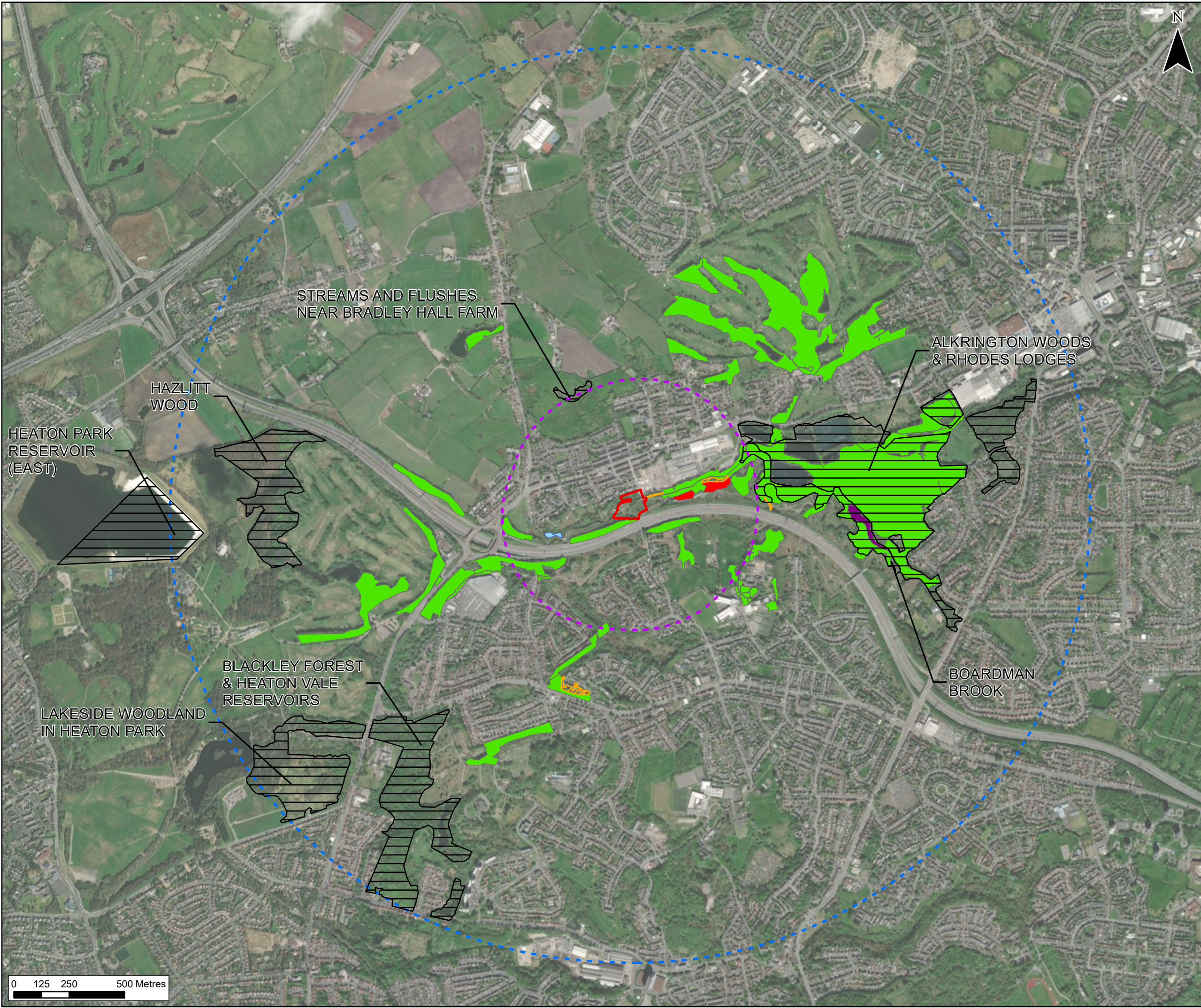
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Figure 3
Local Nature Reserves within 2km

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Figure 4 - Non-Statutory Designated Sites, Habitats of Principal Importance, and waterbodies



Key

- Site Boundary
- 500m Buffer Area
- 2km Buffer Area
- Ponds
- Non-Statutory Designated Sites

Habitats of Principal Importance

- Deciduous woodland
- Lowland dry acid grassland
- Lowland fens
- No main habitat but additional habitats present

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Client Name:			
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PROJECT TITLE:			
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Figure 4 Non-Statutory Designated Sites, Habitats of Principal Importance, and Waterbodies			
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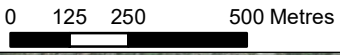
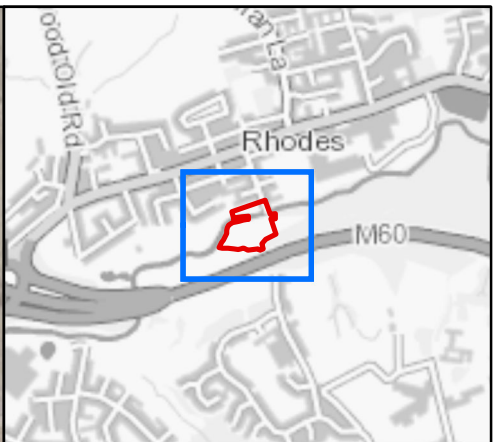


Figure 5 - UKHab Results

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Document Path: \\uk.wspgroup.com\central_data\Projects\70114\053 - United Utilities Better Rivers Morrisons Batch 203\WIP\Boothroyden Rat\Ecology\gis\mxdl\Figure 5 UKHab Map.mxd



Key

- Site Boundary
- Survey Area
- u1d – suburban mosaic of developed/natural surface
- h3d – bramble scrub
- w1f Lowland mixed deciduous woodland
- w1g - other woodland, broadleaved
- g3c - other neutral grassland
- h3h - mixed scrub
- u1b - developed land, sealed surface
- r2a - Rivers (priority habitat)
- u1 - built-up areas and gardens
- g4 - modified grassland
- u1e - built linear features
- w1g 33 – line of trees
- Target Note

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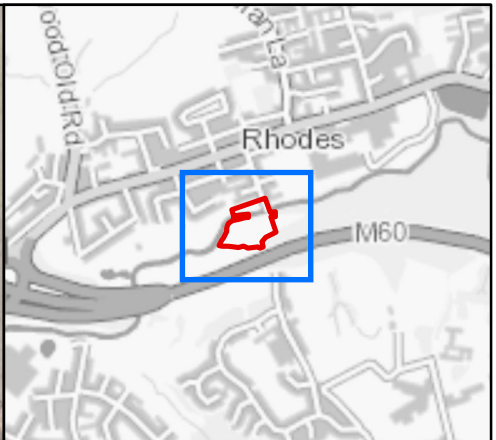
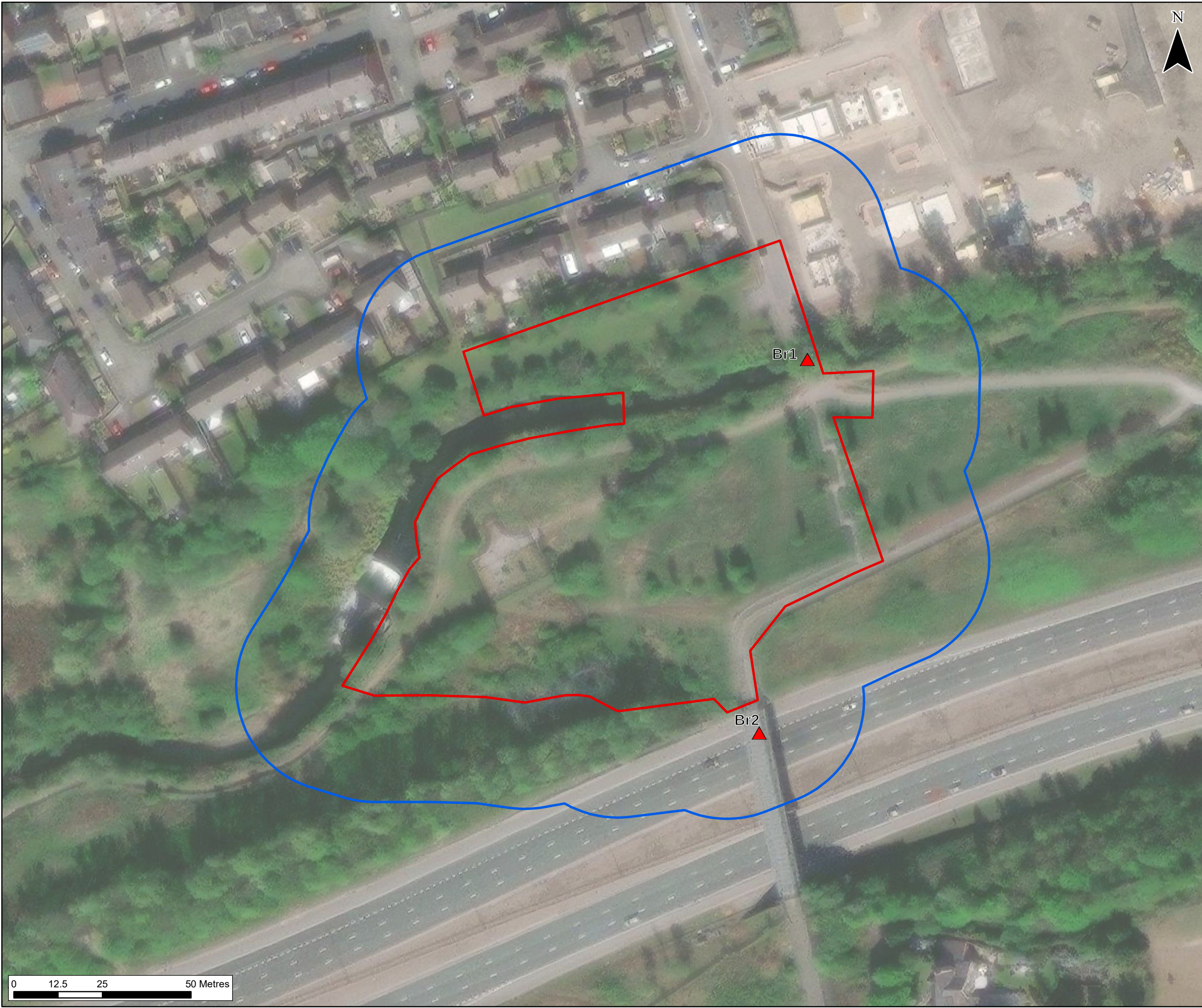


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Figure 6 – PRA Results

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- Key**
- Site Boundary
 - Survey Area
- Bridge PRA**
- High

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Appendix A

Relevant Legislation

WSP

ENGLAND & WALES LEGISLATION AND POLICY CONTEXT

This report has been compiled with reference to relevant wildlife legislation, and the UK Biodiversity Framework. An overview and context of relevant legislation is provided, with the relevant protection each species groups or species receives summarised in **Table A-1**.

The Wildlife and Countryside Act 1981, (as amended) (WCA)

Protected birds, animals and plants are listed under Schedules 1, 5, 8 and 9 respectively of the WCA, a description of these Schedules and their meaning is provided below.

Under the WCA (England and Wales) all birds, their nests and eggs (with exception of species listed under Schedule 2) are protected by the WCA. It is an offence to:

- Intentionally kill, injure, or take any wild bird,
- Take or destroy an egg of any wild bird.
- Damage or destroy the nest of any wild bird (whilst being built, or in use). Under the WCA the clearance of vegetation within the Site boundary, or immediately adjacent to the Site during the bird nesting season could result in an offence occurring by the disruption or destruction of nest sites. The bird breeding season can be taken to occur between March - August inclusive, although is subject to variations based on species, geographical and seasonal factors.

Schedule 1

Birds listed under Schedule 1 of the WCA¹³ are afforded additional protection with regard to intentional or reckless disturbance whilst nest-building, or at a nest containing eggs or young, or disturb the dependent young of such a bird.

Schedule 5

Species listed in Schedule 5 can either be fully protected or be partially protected under Section 9, which makes it unlawful to intentionally:

- Part 1: kill, injure or take;

¹³ To view the current list of Schedule 1 listed birds visit: <http://www.legislation.gov.uk/ukpga/1981/69/schedule/1> [Accessed June 2023]



- Part 2: possess or control (live or dead animal, part or derivative);
- Part 4 (a): damage or destruct any structure used for shelter or protection;
- Part 4 (b): disturb them in a place of shelter or protection;
- Part 4 (c): obstruct access to place of shelter or protection;
- Part 5 (a): sell, offer for sale, possess or transport for the purpose of sale (live or dead animal, part or derivative);
- Part 5 (b): advertise for buying or selling.

Schedule 8

The Act makes it an offence (subject to exceptions) to pick, uproot, trade in, or possess (for the purposes of trade) any wild plant listed in Schedule 8, and prohibits the unauthorised intentional uprooting of such plants.

Schedule 9

Invasive species listed under Schedule 9 are prohibited from release into the wild and the Act prohibits planting or “causing to grow” in the wild of any plant species listed in Schedule 9. It should be noted that certain bird species listed on Schedule 1 of the WCA are also listed on Schedule 9 to prevent release of non-native and captive individuals, this includes barn owl, red kite, goshawk and corncrake.

Countryside Rights of Way Act 2000 (CRoW Act)

The CRoW Act has amended the WCA in England and Wales strengthening the protection afforded to Sites of Special Scientific Interest (SSSI) and the legal protection for threatened species. It adds the word ‘reckless’ to the wording of the offences listed under Section 9(4) of the WCA. This alteration makes it an offence to recklessly commit an offence, where previously an offence had to be intentional to result in a breach of legislation.

Natural Environment and Rural Communities (NERC) Act 2006

Species and Habitats of Principal Importance in England and Wales are listed under Section 41 and Section 42 respectively of the NERC Act. The Section 41 and 42 lists detail species that are of principal importance for the conservation of biodiversity in England and Wales, and should be used to guide decision-makers such as local and regional authorities when implementing their duty to have regard for the conservation of biodiversity in the exercise of their normal functions – as required under Section 40 of the NERC Act 2006.



The Protection of Badgers Act (1992)

It is an offence to wilfully take, kill, injure, possess or ill-treat a badger. Under the Act their setts are protected against intentional or reckless interference. Sett interference includes damaging or destroying a sett, obstructing access to any part of the sett, or disturbance of a badger whilst it is occupying a sett. The Act defines a badger sett as 'any structure or place, which displays signs indicating the current use by a badger' and Natural England (NE) takes this definition to include seasonally used setts that are not occupied but that show sign of recent use by badgers (Natural England, 2009¹⁴)

If impacts to badgers or their setts are unavoidable then authorised sett disturbance requires a licence.

The UK Post-2010 Biodiversity Framework (2011-2020) (JNCC and DEFRA, 2012)

This Framework lists the UK's most threatened species and habitats and sets out targets and objectives for their management and recovery. The UK Biodiversity Action Plan (BAP) process is delivered nationally, regionally and locally and should be used as a guide for decision-makers to have regards for the targets set by the framework and the goals they aim to achieve. The UK BAP has now been replaced by the UK Post-2010 Biodiversity Framework, however, it contains useful information on how to characterise important species assemblages and habitats which is still relevant (UK Post-2010 Biodiversity Framework, 2012¹⁵).

The Conservation of Habitats and Species Regulations 2017

The Conservation of Habitats and Species Regulations 2017 consolidate the Conservation of Habitats and Species Regulations 2010 with subsequent amendments. The Regulations transpose Council Directive 92/43/EEC, on the conservation of natural habitats and of wild fauna and flora (EC Habitats Directive), into national law. They also transpose

¹⁴ Natural England, June 2009, Protection of Badgers Act 1992 (as amended), Guidance on 'Current Use' in the definition of a Badger Sett WMLG17, Natural England, Peterborough.

¹⁵ JNCC and Defra (on behalf of the Four Countries' Biodiversity Group), July 2012, UK Post-2010 Biodiversity Framework, Available from: [UK Post-2010 Biodiversity Framework | JNCC - Adviser to Government on Nature Conservation](#) [Accessed December 2023]



elements of the EU Wild Birds Directive in England and Wales. The Regulations came into force on 30th November 2017, and extend to England and Wales (including the adjacent territorial sea) and to a limited extent in Scotland (reserved matters) and Northern Ireland (excepted matters). In Scotland, the Habitats Directive is transposed through a combination of the Habitats Regulations 2010 (in relation to reserved matters) and the Conservation (Natural Habitats &c.) Regulations 1994. The Conservation (Natural Habitats, &c) Regulations (Northern Ireland) 1995 (as amended) transpose the Habitats Directive in relation to Northern Ireland.

All species listed under Appendix IV of the Habitats Directive require strict protection and are known as European Protected Species (EPS). Under Regulation 42 of the Habitats Regulations it is unlawful to:

- Deliberately kill, capture or disturb;
- Deliberately take or destroy the eggs of; and
- Damage or destroy the breeding site/resting place of any species protected under this legislation.

If the Ecologist determines that impacts to an EPS are unavoidable then the works may need to be carried out under a site specific mitigation licence from Natural England (NE) or Natural Resources Wales (NRW). Low Impact Class licences are also available in both England and Wales for bats and great crested newts. This enables Registered Low Impact Consultants to undertake certain low impact activities reducing the EPS application paperwork and process length.

Certain EPS are also listed under Appendix II of the Habitats Directive and are afforded protection by the establishment of core areas of habitat known as Special Areas of Conservation. This means these species are a relevant consideration in a Habitats Regulations Assessment (HRA).

The Birds Directive seeks to maintain populations of all wild bird species across their natural range (Article 2). All bird species listed under Appendix I¹⁶ of the Birds Directive are rare or vulnerable and afforded protection by the classification of Special

¹⁶ To view birds listed under Annex I visit: http://ec.europa.eu/environment/nature/conservation/wildbirds/threatened/index_en.htm [accessed December 2023]



Protection Areas (SPAs), these are also designated under all regularly occurring migratory species, with regard to the protection of wetlands of international importance (Article 4). This means these bird species and communities are a relevant consideration in HRA.

Table A-1 - Key Species and National Wildlife Legislation, Policy and Biodiversity Framework Applicable in England

Species	Legislation, Planning Policy and UK Biodiversity Framework							
	Wildlife and Countryside Act 1981 (as amended), (WCA)				The Conservation of /Habitats and Species Regulations 2010 (as amended) (Habitats Regulations) - Regulation 41	Natural Environment and Rural Communities (NERC) Act 2006	The Protection of Badgers Act 1992	The UK Post-2010 Biodiversity Framework 2011-2020 (JNCC and DEFRA, 2012)
	Schedule1	Schedule 5	Schedule 8	Schedule 9	European Protected Species (Annex IV of the EC Habitats Directive)			
Badger							X	

Species	Legislation, Planning Policy and UK Biodiversity Framework							
Bats		X ¹⁷ (part)			X ¹⁸	X ¹⁹		X ²⁰
Hazel Dormouse		X 5(part)			X	X		X
Otter		X 5(part)			X	X		X
Water vole		X ²¹ (full)				X		X

¹⁷ These species are partially protected under section 9(4)(b), (4)(c) and (5).

¹⁸ Only Barbastelle (*Barbastella barbastellus*), Bechstein's bat (*Myotis bechsteinii*), greater horseshoe bat (*Rhinolophus ferrumequinum*) and lesser horseshoe bat (*Rhinolophus hipposideros*) are listed on Annex II of the Habitats Directive.

¹⁹ Greater horseshoe bat, lesser horseshoe bat, Bechstein's bat, noctule (*Nyctalus noctula*), soprano pipistrelle (*Pipistrellus pygmaeus*), brown long-eared bat (*Plecotus auritus*) and barbastelle are listed as Species of Principal Importance in England with the addition of common pipistrelle (*Pipistrellus pipistrellus*) in Wales listed under Section 7 of the Environment (Wales) Act (2016) <http://www.legislation.gov.uk/ukpga/2006/16/contents>. [Accessed December 2023]

²⁰ Barbastelle bat, Bechstein's bat, noctule, soprano pipistrelle, brown long-eared bat, greater horseshoe bat, lesser horseshoe bat are listed as UK BAP species of bat.

²¹ Class Licences are available to Registered Consultants to intentionally disturb, damage or destroy water vole burrows or to displace water voles from their burrows in relation to a development proposal where the licensed action provides a conservation benefit for water voles. Certain displacement operations may be carried out under a Class licence by a registered person in England, however in Wales all displacement operations must be carried out under a site specific licence.

Species	Legislation, Planning Policy and UK Biodiversity Framework							
Birds	X			X ²²		X ²³		X ²⁴
Reptiles		X ²⁵ (part)□		X ⁹	X ²⁶	X ²⁷		X ²⁸
Amphibians		X		X	X	X ³³		

²² To view plants and animals listed on Schedule 9 Part 1 visit <http://www.legislation.gov.uk/ukpga/1981/69/schedule/9> [Accessed December 2023]

²³ There are 49 species of birds listed as Species of Principal Importance in England in Section 41 of the NERC Act 2006 and 51 species in Wales under Section 7 of the Environment (Wales) Act (2016) <http://www.legislation.gov.uk/ukpga/2006/16/contents>. [Accessed Decemembr 2023]

²⁴ To view the current list of UK BAP priority birds visit: <https://hub.jncc.gov.uk/assets/98fb6dab-13ae-470d-884b-7816afce42d4#UKBAP-priority-birds.pdf> 3 [Accessed Decemembr 2023]

²⁵ The four common reptile species, Adder (*Vipera berus*), Grass snake (*Natrix natrix*), Common lizard (*Zootoca vivipara*) and Slow worm (*Anguis fragilis*) are offered partial protection under section 9(5). The rarer UK reptile species (Smooth snake (*Coronella austriaca*) and Sand lizard (*Lacerta agilis*)) are partially protected under section 9(4)(b) and (c) and (5).

²⁶ Smooth snake (*Coronella austriaca*) and Sand lizard (*Lacerta agilis*) are the only reptiles to be designated as European Protected Species.

²⁷ All 6 reptile species are listed as Species of Principal Importance in England listed under Section 41 of the NERC Act 2006 and 5 species, excluding smooth snake, listed under Section 7 of the Environment (Wales) Act (2016) <http://www.legislation.gov.uk/ukpga/2006/16/contents>. [Accessed Decemembr 2023]

²⁸ To view the current list of UK BAP priority herptile species visit: <https://hub.jncc.gov.uk/assets/98fb6dab-13ae-470d-884b-7816afce42d4#UKBAP-priority-herptiles.pdf> [Accessed December 2023]

³³ Great crested newt, Natterjack toad and Common toad are listed as Species of Principal Importance in England in Section 41 of the NERC Act 2006 and under Section 7 of the Environment (Wales) Act (2016) <http://www.legislation.gov.uk/ukpga/2006/16/contents>. [Accessed December 2023]

Species	Legislation, Planning Policy and UK Biodiversity Framework							
		²⁹ (part)		³⁰	^{31, 32}			
White-clawed Crayfish		X ³⁴ (partial)			X ³⁵	X		X

²⁹ The four common reptile species, Adder (*Vipera berus*), Grass snake (*Natrix natrix*), Common lizard (*Zootoca vivipara*) and Slow worm (*Anguis fragilis*) are offered partial protection under section 9(5). The rarer UK reptile species (Smooth snake (*Coronella austriaca*) and Sand lizard (*Lacerta agilis*)) are partially protected under section 9(4)(b) and (c) and (5).

³⁰ Common frog (*Rana temporaria*), Common toad (*Bufo bufo*), Smooth newt (*Lissotriton vulgaris*) and Palmate newt (*Lissotriton helveticus*) are offered partial protection under section 9(5). Great crested newt (*Triturus cristatus*) and Natterjack toad (*Epidalea calamita*) are offered partial protection under section 9(4)(b) and (c) and (5). Pool frog (*Pelophylax lessonae*) is offered partial protection under section 9(4)(b) and (c)(1) only and with respect to England only.

³¹ Great crested newt, Natterjack toad and Pool frog are the only amphibians to be designated European Protected Species.

³² Great crested newt is the only amphibian listed on Annex II of the Habitats Directive.

³⁴ Under the Wildlife and Countryside Act it is illegal to take or sell white clawed crayfish under the WCA. A licence is required to survey (hand net or trap) for the species. To undertake work within WCC inhabited rivers a Class Licence maybe issued by the relevant authority to move WCC away from harm prior to works. Although WCC are not protected from killing or injury Natural England state in their Class licence that due to declining numbers all efforts should be made to conserve the species.

³⁵ White clawed crayfish are listed under Annex II and V of the Habitats Directive.

Species	Legislation, Planning Policy and UK Biodiversity Framework							
Invertebrates		X ³⁶ (full/part)		X	X ^{37, 38}	X ³⁹		X ⁴⁰

³⁶ To view the current list of invertebrates that are protected under this Act either in part or full visit:

<http://www.legislation.gov.uk/ukpga/1981/69/schedule/5> [Accessed October 2023]

³⁷ The Large blue butterfly (*Maculinea arion*), Fisher's estuarine moth (*Gortyna borelii lunata*) and Lesser whirlpool ram's-horn snail (*Anisus vorticulus*) are the only invertebrates to be designated European Protected Species.

³⁸ There are currently twelve invertebrates listed in Annex II of the Habitats Directive; White-clawed crayfish (*Austropotamobius pallipes*), Southern damselfly (*Coenagrion mercuriale*), Marsh fritillary butterfly (*Eurodryas aurinia*), Violet click beetle (*Limonicus violaceus*), Stag beetle (*Lucanus cervus*), Freshwater pearl mussel (*Margaritifera margaritifera*), Narrow-mouthed whorl snail (*Vertigo angustior*), Round-mouthed whorl snail (*Vertigo genesii*), Geyer's whorl snail (*Vertigo geyeri*), Desmoulin's whorl snail (*Vertigo moulinsiana*), Lesser whirlpool ram's-horn snail (*Anisus vorticulus*) and Fisher's estuarine moth (*Gortyna borelii lunata*).

³⁹ There are currently 379 invertebrate species (not including marine species) listed as Species of Principal Importance in England

<https://www.gov.uk/government/publications/habitats-and-species-of-principal-importance-in-england> and 188 species in Wales http://www.eryri-npa.gov.uk/_data/assets/pdf_file/0003/486156/SpeciesList.pdf listed under Section 41 of the NERC Act 2006 and listed under Section 7 of the of the Environment (Wales) Act 2016. [Accessed December 2023]

⁴⁰ To view the current list of UK BAP priority invertebrates visit: <https://hub.jncc.gov.uk/assets/98fb6dab-13ae-470d-884b-7816afce42d4#UKBAP-priority-terrestrial-invertebrates.pdf> [Accessed December 2023]

Species	Legislation, Planning Policy and UK Biodiversity Framework							
Fish		X ⁴¹ (full/part)		X9	X ^{42, 43}	X ⁴⁴		X ⁴⁵
Plants			X ⁴⁶	X9	X ^{47, 48}	X ⁴⁹		X

⁴¹ To view the current list of fish either part or fully protected under the Act visit: <http://www.legislation.gov.uk/ukpga/1981/69/schedule/5> [Accessed October 2023]

⁴² Sturgeon (*Acipenser sturio*) is the only fish to be designated a European Protected Species.

⁴³ There are eight fish species listed on Annex II of the Habitats Directive. To view the current list visit: <https://sac.jncc.gov.uk/species/> [Accessed December 2023]

⁴⁴ There are 35 species of fish listed as Species of Principal Importance in England listed under Section 41 of the NERC Act 2006 and 10 species in Wales listed under Section 7 of the Environment (Wales) Act 2016.

⁴⁵ To view the current list of UK BAP priority fish visit: <https://hub.jncc.gov.uk/assets/98fb6dab-13ae-470d-884b-7816afce42d4#UKBAP-priority-fish.pdf> [Accessed December 2023].

⁴⁶ To view the current list of Schedule 8 listed plants visit: <http://www.legislation.gov.uk/ukpga/1981/69/schedule/8> [Accessed December 2023]

⁴⁷ There are nine plant species designated as European Protected Species. To view the current list visit: <http://www.legislation.gov.uk/uksi/2010/490/schedule/5/made> [Accessed December 2023]

⁴⁸ To view the current list of plant species on Annex II of the Habitats Directive visit: <https://sac.jncc.gov.uk/species/> [Accessed December 2023]

⁴⁹ There are currently 152 vascular plants listed as Species of Principal Importance in England listed under Section 41 of the NERC Act 2006 and 77 species in Wales listed under Section 7 of the Environment (Wales) Act 2016.³¹ To view the current list of UK BAP priority plants visit: <https://hub.jncc.gov.uk/assets/98fb6dab-13ae-470d-884b-7816afce42d4#UKBAP-priority-vascular-plants.pdf> [Accessed December 2023]



Species	Legislation, Planning Policy and UK Biodiversity Framework							
								50

⁵⁰ To view the current list of UK BAP priority plants visit: <https://hub.jncc.gov.uk/assets/98fb6dab-13ae-470d-884b-7816afce42d4#UKBAP-priority-vascular-plants.pdf>
[Accessed Decemebr 2023]

Appendix B

Summary of Ecological Desk Study Data

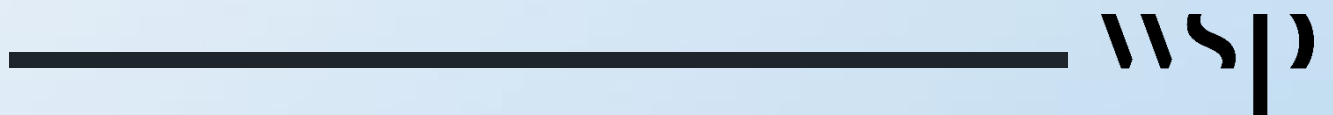


Table B-1 - Protected and notable species (excluding birds) for which records have been identified within 2km.

Species common name	Species Latin name	No. of records	Closest records distance (m) and orientation from Site	Legal / Conservation Status ⁵¹
Invertebrates				
Cinnabar	<i>Tyria jacobaeae</i>	6	1060 SW	NERC
Shaded broad-bar	<i>Scotopteryx chenopodiata</i>	1	1142 E	NERC
White-letter Hairstreak	<i>Satyrrium w-album</i>	1	929 NE	W&CA, NERC
Amphibians				
Common toad	<i>Bufo bufo</i>	7	623 E	W&CA S9(5); NERC, UKBAP
Bats				
Common Pipistrelle	<i>Pipistrellus pipistrellus</i>	96	400 N	HabReg, W&CA; NERC
Soprano Pipistrelle	<i>Pipistrellus pygmaeus</i>	1	1386 S	HabReg, W&CA; NERC
Pipistrelle Bat species	<i>Pipistrellus</i>	9	1067 SW	HabReg, W&CA; NERC
Daubenton's Bat	<i>Myotis daubentonii</i>	4	1027 NE	HabReg, W&CA; NERC
Myotis Bat Species	<i>Myotis</i>	1	844 E	HabReg, W&CA; NERC
Bat sp	N/A	5	837 E	HabReg, W&CA; NERC
Other terrestrial mammals				
Hedgehog	<i>Erinaceus europaeus</i>	27	324 NE	NERC

Species common name	Species Latin name	No. of records	Closest records distance (m) and orientation from Site	Legal / Conservation Status ⁵¹
Otter	<i>Lutra lutra</i>	1	641 E	NERC
Badger	<i>Meles meles</i>	10	986 NE	PBA

Table B-2 - Protected and notable birds for which records have been identified within 2km.

Species common name	Species Latin name	No. of records	Legal / Conservation Status ⁵²
Barn Owl	<i>Tyto alba</i>	1	BoCC Green; W&CA Sch. 1
Bullfinch	<i>Pyrrhula pyrrhula</i>	39	BoCC Amber; NERC 2006 S41; W&CA
Dunnock	<i>Prunella modularis</i>	46	BoCC Amber; NERC 2006 S41; W&CA
Grasshopper Warbler	<i>Locustella naevia</i>	1	BoCC Red; NERC 2006 S41
Herring Gull	<i>Larus argentatus</i>	33	BoCC Red*; NERC 2006 S41
House Sparrow	<i>Passer domesticus</i>	90	BoCC Red; NERC 2006 S41
Kingfisher	<i>Alcedo atthis</i>	52	BoCC Green; W&CA Sch. 1
Lapwing	<i>Vanellus vanellus</i>	28	NT; BoCC Red; NERC 2006 S41
Lesser Redpoll	<i>Acanthis cabaret</i>	5	BoCC Red; NERC 2006 S41
Linnet	<i>Linaria cannabina</i>	8	BoCC Red; NERC 2006 S41; W&CA
Marsh Tit	<i>Poecile palustris</i>	3	BoCC Red; NERC 2006 S41

⁵² HabReg = Conservation of Habitats and Species Regulations (2017), W&CA = Wildlife and Countryside Act (1981), NERC = Schedule 41 Natural Environment and Rural Communities Act (2006), LBAP = Local Biodiversity Action Plan.

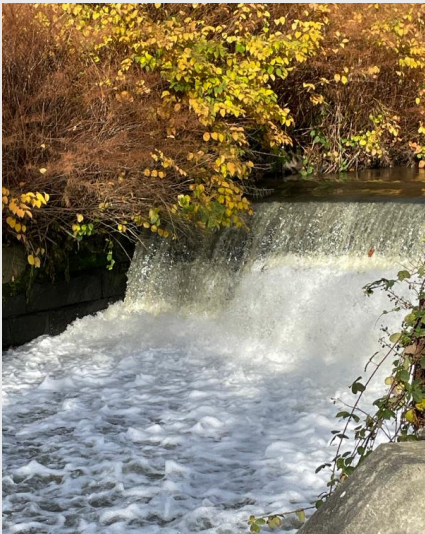
Species common name	Species Latin name	No. of records	Legal / Conservation Status ⁵²
Peregrine	<i>Falco peregrinus</i>	1	BoCC Green; NERC 2006 S41; W&CA
Reed bunting	<i>Emberiza schoeniclus</i>	8	BoCC Amber; NERC 2006 S41; W&CA
Ring Ouzel	<i>Turdus torquatus</i>	1	BoCC Red; NERC 2006 S41
Skylark	<i>Alauda arvensis</i>	5	BoCC Red; NERC 2006 S41
Song Thrush	<i>Turdus philomelos</i>	66	BoCC Amber; NERC 2006 S41; W&CA
Starling	<i>Sturnus vulgaris</i>	28	BoCC Red; NERC 2006 S41; W&CA
Tree Sparrow	<i>Passer montanus</i>	8	BoCC Red; NERC 2006 S41
Wood Warbler	<i>Phylloscopus sibilatrix</i>	1	BoCC Red; NERC 2006 S41
Yellow Wagtail	<i>Motacilla flava</i>	1	BoCC Red; NERC 2006 S41

Appendix C

Target Notes

WSP

Table C-1 – Target Notes

Ref	Description	Photography
TN1	Japanese knotweed-	
TN2	Himalayan balsam	
TN3	Weir	

TN4	Overflow pipe	
TN5	Electricity pylon	

Appendix D

Photographs

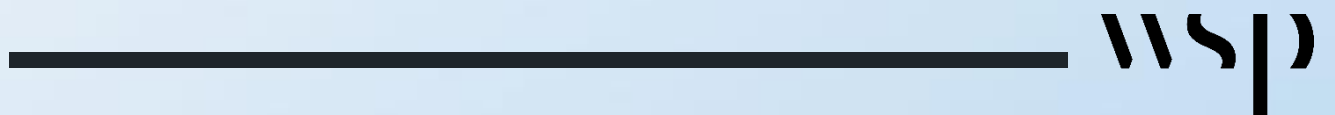


Table D-1 – Photographs

Photograph Reference	Photograph
Photograph 1 – Other neutral grassland	
Photograph 2 – Other neutral grassland	
Photograph 3 – Other neutral grassland	
Photograph 4 – Modified grassland	

Photograph 5 – Modified grassland	
Photograph 6 – Bramble scrub	
Photograph 7 – Bramble scrub	
Photograph 8 – Mixed scrub	

Photograph 9 – Mixed scrub	
Photograph 10 – The River Irk	
Photograph 11 – The River Irk	
Photograph 12 – Hardstanding footpath	

Photograph 13 – Hardstanding footpath	
Photograph 14 – Hardstanding footpath	
Photograph 15 – Japanese knotweed	
Photograph 16 -	

Photograph 17 – Hardstanding compound	
Photograph 18 – Road	
Photograph 19 – Line of trees	
Photograph 20 – Line of trees	

Photograph 21 – Other broadleaved woodland	
Photograph 22 – Other broadleaved woodland	
Photograph 23 – Other broadleaved woodland	
Photograph 24 – Other broadleaved woodland	

**Photograph 25 –
Bridge Br2**



Appendix E

Plant Species Recorded

WSP

Table E-1 - Plant Species Present

Common Name	Scientific Name	DAFOR
g3c – Other neutral grassland		
Red fescue	<i>Festuca rubra</i>	A
Cock's-foot	<i>Dactylis glomerata</i>	A
Meadow vetchling	<i>Lathyrus pratensis</i>	O
Dock	<i>Rumex</i> sp.	O
Creeping buttercup	<i>Ranunculus repens</i>	O
Cow parsley	<i>Anthriscus sylvestris</i>	O
Creeping thistle	<i>Cirsium arvense</i>	O
Reed canary grass	<i>Phalaris arundinacea</i>	Locally Abundant (LA)
Hairy willowherb	<i>Epilobium hirsutum</i>	LA
Common nettle	<i>Urtica dioica</i>	LA
g4 – Modified grassland		
Yorkshire fog	<i>Holcus lanatus</i>	A
Dandelion	<i>Taraxacum</i> sp.	O
Creeping buttercup	<i>Ranunculus repens</i>	F
Meadowgrass	<i>Poa</i> sp.	F
Cock's-foot	<i>Dactylis glomerata</i>	R
h3d – Bramble scrub		
Bramble	<i>Rubus fruticosus</i>	D

Willow	<i>Salix</i> sp.	O
Common nettle	<i>Urtica dioica</i>	O
Creeping thistle	<i>Cirsium arvense</i>	O
Hogweed	<i>Heracleum sphondylium</i>	R
Herb Robert	<i>Geranium robertianum</i>	R
Buddleja	<i>Buddleja davidii</i>	R
Rowan	<i>Sorbus aucuparia</i>	R
h3h – Mixed scrub (southwestern parcel)		
Dogwood	<i>Rosa canina</i>	A
Willow	<i>Salix</i> sp.	A
Bramble	<i>Rubus fruticosus</i>	A
Rush	<i>Juncus</i> sp.	O
Reed canary grass	<i>Phalaris arundinacea</i>	O
Hairy willowherb	<i>Epilobium hirsutum</i>	O
Cherry	<i>Prunus</i> sp.	R
h3h – Mixed scrub (riparian corridor)		
Japanese knotweed	<i>Reynoutria japonica</i>	D
Bramble	<i>Rubus fruticosus</i>	O
Willow	<i>Salix</i> sp.	O
Cotoneaster	<i>Cotoneaster</i> sp.	R
r2a – Rivers (priority habitat)		

Japanese knotweed	<i>Reynoutria japonica</i>	D
Himalayan balsam	<i>Impatiens glandulifera</i>	F
Bramble	<i>Rubus fruticosus</i>	O
Nettle	<i>Urtica dioica</i>	O
Ivy	<i>Hedera helix</i>	O
w1f – Lowland mixed deciduous woodland		
Oak	<i>Quercus</i> sp.	A
Ash	<i>Fraxinus excelsior</i>	A
w1g – Other broadleaved woodland (northern parcel)		
Birch	<i>Betula</i> sp.	O
Sycamore	<i>Acer pseudoplatanus</i>	O
Field maple	<i>Acer campestre</i>	R
Alder	<i>Alnus glutinosa</i>	R
Cherry	<i>Prunus</i> sp.	R
Norway maple	<i>Acer platanoides</i>	R
Elder	<i>Sambucus nigra</i>	R
Ash	<i>Fraxinus excelsior</i>	R
w1g – Other broadleaved woodland (southern parcel)		
Birch	<i>Betula</i> sp.	A
Willow	<i>Salix</i> sp.	A
Norway maple	<i>Acer platanoides</i>	O

Ash	<i>Fraxinus excelsior</i>	O
Cherry	<i>Prunus</i> sp.	O
Bramble	<i>Rubus fruticosus</i>	D (ground layer)
w1g 33 – Line of trees (northern line)		
Ash	<i>Fraxinus excelsior</i>	O
Elder	<i>Sambucus nigra</i>	O
Hawthorn	<i>Crataegus monogyna</i>	O
Snowberry	<i>Symphoricarpos albus</i>	O
Willow	<i>Salix</i> sp.	F
w1g 33 – Line of trees (central line)		
Poplar	<i>Populus</i> sp.	A
Sycamore	<i>Acer pseudoplatanus</i>	A
Cherry	<i>Prunus</i> sp.	A
w1g 33 – Line of trees (southern line)		
Willow	<i>Salix</i> sp.	D
Japanese knotweed	<i>Reynoutria japonica</i>	A (ground layer)
Nettle	<i>Urtica dioica</i>	A (ground layer)
Bramble	<i>Rubus fruticosus</i>	F (ground layer)
Creeping buttercup	<i>Ranunculus repens</i>	O (ground layer)



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