



***EASTERLY ALTERNATION
INFRASTRUCTURE PROJECT***

***APPENDIX A. PRELIMINARY ECOLOGICAL
APPRAISAL REPORT***

OCTOBER 2023

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1. *Executive summary*

- 1.1.1 Heathrow Airport are proposing to develop an area of land northwest of Heathrow Airport, in Longford, Hillingdon, West London. The proposals will facilitate the operation of full Easterly Alternation of take-offs and landings between the North and South runway, which includes a proposal for a newly constructed acoustic barrier to mitigate against increased air traffic passing over the village of Longford.
- 1.1.2 WSP UK Ltd have been appointed to complete a Preliminary Ecological Appraisal of the Site. The objectives of the assessment are to identify habitats on Site and determine the suitability for any protected or notable species that may occur on Site, with consideration of the potential impacts on nearby designated sites. The assessment aimed to identify any ecological constraints or potential need for any further ecological survey prior to the Proposed Development.
- 1.1.3 This Preliminary Ecological Appraisal (PEA) has been informed by the completion of a desk study and an extended UK Habitat Classification survey. The Site supports a range of habitats, with the dominant habitats being semi-improved neutral grassland, semi-natural woodland and scrub, with bordering treelines. The Duke of Northumberland River flows through the Site from east to west, with adjacent land predominantly urban expanse associated with the village of Longford to the north, and west, with further infrastructure associated with Heathrow Airport to the south and east.
- 1.1.4 There are three internationally designated statutory sites within 10km of the Site boundary, a further two nationally designated statutory sites within 2km, and three non-statutory designated sites within the same distance. The closest internationally designated site is the Southwest London Waterbodies SPA and Ramsar site, located 1.93km southwest. The closest designated site is the Lower Colne (M059) Site of Metropolitan Importance (SoMI), located just 0.14km southwest of the Site boundary. None of eight designated sites detailed in the following report are considered susceptible to adverse impacts as a result of the Proposed Development.
- 1.1.5 To facilitate any future planned development, detailed recommendations have been made for further survey work and required mitigation for multiple protected species that the Site has been deemed suitable to support, namely, badgers, bats, otters, and nesting birds. Further survey work in relation to the presence of invasive species has also been recommended. The results of these surveys will determine the requirement for any mitigation, this will be presented within the Biodiversity section (**Section 12**) of the Environmental Statement produced for this development.

2. Introduction

2.1 Overview

- 2.1.1 WSP UK Ltd has been commissioned to undertake an ecological assessment of an area of land northwest of Heathrow Airport, in Longford, Hillingdon, West London. The assessment aimed to identify any ecological constraints or potential need for any further ecological survey prior to the required construction and changes to operation.
- 2.1.2 Heathrow Airport Limited (hereafter referred to as “the Client”) are seeking planning permission from Hillingdon Council for proposed infrastructure changes on Heathrow Airport’s airfield and adjacent areas outside of the main airport boundary (and hereafter referred to as “the Proposed Development”), located in West London. The Proposed Development will allow departures and arrivals in an easterly direction to alternate between the northern and southern runways, as they currently do on westerly operations. Runway alternation in an easterly direction has not occurred at the Airport routinely because it was prevented by a historic agreement known as the Cranford Agreement. The Cranford Agreement was ended by the Government in January 2009, and the Proposed Development will provide the infrastructure required to enable full alternation of the runways during easterly operations. Full runway alternation would provide a fairer, more equitable distribution of noise around the Airport. The need for an acoustic barrier to the south of the village of Longford is uncertain at this early stage and will be dependent on the results of ground noise modelling, landscape and visual assessment and stakeholder engagement.
- 2.1.3 This Preliminary Ecological Appraisal (PEA) has been informed by the completion of a desk study and an extended UK Habitat Classification survey. The approach taken broadly follows that detailed in the Guidelines for Preliminary Ecological Appraisal¹, with the standard UK Habitat Classification survey² methodology being extended to identify the presence, or potential presence, of legally protected species, habitats and species that are of importance for biodiversity conservation, and legally controlled species as detailed in the Guidelines for Baseline Ecological Assessment³.

2.2 Purpose of this report

- 2.2.1 The purpose of this report is to provide background information in relation to ecological constraints which are present, or likely to be present, within and adjacent to the surveyed area, northwest of Heathrow Airport.

1 CIEEM (2017). Guidelines for Preliminary Ecological Appraisal. Chartered Institute of Ecology and Environmental Management, Winchester.

2 Butcher, B., Carey, P., Edmonds, R., Norton, L., and Treweek, J. (2020). UK Habitat Classification – Habitat Definitions V1.1 at <http://ukhab.org>

3 IEA (1995) Guidelines for Baseline Ecological Assessment. E & F Spon, London.

- 2.2.2 This report details the methods adopted and results of the extended UK Habitat Classification survey which inform detailed recommendations for any further work in relation to establishing the ecological baseline for the Proposed Development.

2.3 *Site context*

- 2.3.1 The survey area, hereafter referred to as “the Site” is in Longford, Hillingdon, West London, immediately northwest of Heathrow Airport (central grid reference: TQ 05006 76774). The Site measures approximately 3ha in size. **Figure 2.1** shows the location and Site boundary.
- 2.3.2 The Site primarily comprises of semi-improved neutral grassland, semi-natural woodland, scrub, and semi-mature treelines, with small areas of amenity grassland. The Duke of Northumberland River flows through the Site from east to west, transitioning through various stages of channelisation along its route.

2.4 *Survey limitations*

- 2.4.1 Although an extended UK Habitat Classification assessment can be undertaken at any time of year, the optimal survey period is between April and October (depending on seasonal conditions). The survey of the Site was undertaken in late February, at a time when plant species may be in their dormant state and not be visible to the surveyor. Furthermore, some species of fauna are absent or less active during the winter months, reducing the likelihood of field signs being evident. Where there is the potential for unrecorded species to occur, recommendations for further survey work at the correct time of year have been made.
- 2.4.2 Land access was largely restricted to the habitats within the Site boundary. This meant that access to adjacent habitats, including an area of dense, unmanaged scrub to the north, and an extent of the Duke of Northumberland River flowing outside of the Site, could not be fully accessed. An assessment of their potential to support ecological features of interest has been made based on observations from within the Site boundary or based on sections that were accessible at the time of survey, with these assessments considered sufficiently representative of the wider habitat, as such, the limitation is not considered significant.
- 2.4.3 Land access was not possible to the seven waterbodies off-Site (see **Table 5.4**) at the time of survey and therefore have not been assessed for their potential to support Great Crested Newts (GCN). The closest waterbody (WB2) is approximately 130m north of the Site boundary. Given the significant barriers to movement that are present in the surrounding area, namely major roads and other large sections of bare ground, this limitation is not considered significant for the Proposed Development.

3. Legislative and policy context

3.1.1 Policies relevant to biodiversity conservation are listed in **Table 3.1**, below, together with a description of the policies and how they will influence any ecological assessment. Further details of the relevant legislation are provided in **Annex A**.

Table 3.1 Summary of relevant policy

Policy	Description
<p>National Planning Policy Framework (February 2021)</p>	<p>Section 15 (paragraph 174), states that: <i>“Planning policies and decisions should contribute to and enhance the natural and local environment by: protecting and enhancing ...”sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan)...” and “minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures...”</i></p> <p>Paragraph 175 states that <i>“Plans should: distinguish between the hierarchy of international, national and locally designated sites; allocate land with the least environmental or amenity value, where consistent with other policies in this Framework; take a strategic approach to maintaining and enhancing networks of habitats and green infrastructure; and plan for the enhancement of natural capital at a catchment or landscape scale across local authority boundaries.</i></p>
<p>Noise Policy Statement for England</p>	<p>The first aim of the Noise Policy Statement for England aims to <i>“Avoid significant adverse impacts on health and quality of life from environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development”.</i></p> <p>The second aim of the Noise Policy Statement for England aims to <i>“Mitigate and minimise adverse impacts on health and quality of life from environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development.”</i></p>
<p>Hillingdon Local Plan</p>	<p>Strategic Objective S03: <i>“Improve the quality of, and accessibility to, the heritage value of the borough’s open spaces, including rivers and canals as areas for sports, recreation, visual interest, biodiversity, education, health and well being. In addition, address open space needs by providing new spaces identified in Hillingdon’s Open Space Strategy.”</i></p> <p>Strategic Objective S08: <i>“Protect and enhance biodiversity to support the necessary changes to adapt to climate change. Where possible, encourage the development of wildlife corridors.”</i></p> <p>Strategic Objective S025: <i>“Maintain support for operational uses within the existing airport boundary that do not increase environmental impacts and continue to reduce existing impacts.”</i></p>

4. Methodology

4.1 Desk study

4.1.1 A data-gathering exercise was undertaken to obtain information relating to statutory and non-statutory nature conservation sites, habitats and species of principal importance, and legally protected and controlled species (see **Boxes 1 and 2**).

4.1.2 For the purposes of this PEA, the zone of influence (ZoI) with regard to impacts to statutory designated sites of international importance (as described in Box 1) has been limited to 10km. This is in line with recommended guidance and is considered to be appropriate for the scale and anticipated impacts of the Proposed Development in particular with respect to the required construction activities proposed.

4.1.3 This ZoI has been extended within the Habitats Regulations Assessment (HRA) report produced for the Proposed Development to 18 km from the airport boundary, specifically to account for potential impacts on European Sites relating to air quality, disturbance of species associated with European Sites and the risk of bird strike.. This has been derived from peer-reviewed scientific literature, and systematically collected and verified data. Any Likely Significant Effects to these internationally important sites will be discussed further within the HRA screening report, and any required mitigation will be detailed within the Environmental Statement chapter.

4.1.4 The data was obtained from Greenspace Information for Greater London (GiGL) and Thames Valley Environmental Records Centre (TVERC), from the MAGIC website⁵, and from aerial photographs⁶. Data was gathered for:

- Statutory designated biodiversity sites of international nature conservation interest within 10km of the Site.
- Statutory designated biodiversity sites of national nature conservation interest within 2km of the Site.
- Non-statutory designated biodiversity sites areas within 2km of the Site.
- Records of protected/notable species within 2km of the site.
- European Protected Species Mitigation Licences (EPSMLs) within 2km of the Site.
- Water bodies within 500m of the Site.

4.1.5 Water bodies were identified by reference to 1:25,000 scale Ordnance Survey mapping and the MAGIC website. In the absence of significant barriers to movement, 500m is the maximum distance that great crested newts (GCNs) generally move from their breeding ponds to occupy surrounding areas of suitable terrestrial habitats. Natural England (NE) therefore recommends that, where a proposed development is located within 500m of a

4Habitat Regulations Assessment – Screening Report (2023) Easterly Alternation Infrastructure Project.

5 Magic Map (Accessed 2023) <https://magic.defra.gov.uk/magicmap.aspx>

6 “Longford” 51°28'44.96" N 0°29'29.17" W. Google Earth. March 2nd 2023

water body, consideration be given to the potential for the water body to support breeding GCNs.

Box 1 Designated Wildlife Sites, and Priority Habitats and Species

Statutory nature conservation sites

Internationally important sites: Special Areas of Conservation (SACs) and candidate SACs, Special Protection Areas (SPAs) and proposed SPAs, Sites of Community Importance, Ramsar sites and European offshore marine sites.

Nationally important sites: Sites of Special Scientific Interest (SSSIs) that are not subject to international designations, and National Nature Reserves (NNRs)

Local Nature Reserves (LNRs) are statutory sites that are of importance for recreation and education as well as nature conservation. Their level of importance is defined by their other statutory or any non-statutory designation (e.g. if an LNR is also an SSSI but is not an internationally important site, it will be of national importance). If an LNR has no other statutory or non-statutory designation it should be treated as being of district-level importance for biodiversity (although it may be of greater socio-economic value).

Non-statutory nature conservation sites

Non-statutory biodiversity Sites in Hillingdon are designated as Berkshire Local Wildlife Sites (LWS), Biodiversity Opportunity Areas (BOA) and Sites of Metropolitan Importance (SoMI)

Priority habitats and species

In this report, the geographic level at which a species/habitat has been identified as a priority for biodiversity conservation is referred to as its level of 'species/habitat importance'. For example, Habitats of Principle Importance are identified as being of national importance reflecting the fact that these species/habitats have been defined at a national level. The level of importance therefore pertains to the species/habitat as a whole rather than to individual areas of habitat or species populations, which cannot be objectively valued, other than for waterfowl, for which thresholds have been defined for national/international 'population importance'.

- International importance: populations of species or areas of habitat for which European sites are designated.
- International importance: populations of birds meeting the threshold for European importance (1% of the relevant international population).
- National importance: Habitats and Species of Principal Importance for the conservation of biological diversity in the UK. These are listed on: <http://jncc.defra.gov.uk/page-5705>. These include those former UK Biodiversity Action Plan (UK BAP) priority habitats and species that occur in the UK.
- National importance: Species listed as being of conservation concern in the relevant UK Red Data Book (RDB) or the Birds of Conservation Concern⁷ Red List.
- National importance: Nationally Scarce species, which are species recorded from 16-100 10x10km squares of the national grid.

⁷ Stanbury, A., Eaton, M., Aebischer, N., Balmer, D., Brown, A., Douse, A., Lindley, P., McCulloch, N., Noble, D. and Win, I., 2021. The status of our bird. *British Birds*, 114, pp.723-747.

Box 1 Designated Wildlife Sites, and Priority Habitats and Species

- National importance: Populations of birds comprising at least 1% of the relevant British breeding/wintering population (where data are available).
- National importance: Ancient woodland (i.e. areas that have been under continuous woodland cover since at least 1600).
- County importance: Species and habitats listed in the Priority Habitat Inventory (England).

Box 2 Legally Protected and Controlled Species

Legal Protection

Many species of animal and plant receive some degree of legal protection. For the purposes of this study, legal protection refers to:

- Species included on Schedules 1, 5 and 8 of the Wildlife and Countryside Act 1981 (as amended), excluding:
 - Species that are only protected in relation to their sale (see Section 9[5] and 13[2]), reflecting the fact that the proposed development does not include any proposals relating to the sale of species.
 - Species that are listed on Schedule 1 but that are not likely to breed on or near the site, given that this schedule is only applicable whilst birds are breeding.
- Species included on Schedules 2 and 5 of The Conservation of Habitats and Species Regulations 2010 (as amended).
- Badgers, which are protected under the Protection of Badgers Act 1992.

A summary of the legislation pertaining to faunal species that may occur on the site is provided in **Annex A**.

Legal control

Schedule 9 of the *Wildlife and Countryside Act 1981* (as amended) lists species of animal that it is an offence to release or allow to escape into the wild and species of plant that it is an offence to plant or otherwise cause to grow in the wild

4.2 Field survey

- 4.2.1 An Extended UK Habitat classification survey of the Site was undertaken by an ecologist⁸ from WSP on the 28th of February 2023, weather conditions during the Site visit were cold and dry with a gusty, persistent wind and temperatures of 6°C. During the survey, distinct habitats were identified, and any features of interest subjected to a more detailed description were recorded as target notes (TN), see **Annex C**.

⁸ Samuel Bray, Consultant Ecologist, (QCIEEM)

- 4.2.2 A second Extended UK Habitat survey of a small area of land immediately east of the Site was undertaken by the same ecologist from WSP on the 24th of October 2023. Weather conditions during the visit were cool and dry with minimal wind, with a temperature of 11°C, survey methodology was as described above. The survey was required to confirm which habitats may be impacted by a proposed extension to the acoustic barrier to the south of the village of Longford. These habitats were not assessed under the scope of the original survey of the Site in February 2023.
- 4.2.3 The surveys utilised the UK Habitats Classification methodology (UKHabs), in which distinct habitats were identified and mapped, as shown in **Figure 3.1**. UKHabs is a new, unified and comprehensive approach to classifying habitats, designed to provide a simple and robust approach to survey. It has the added benefit of being the approach approved by Defra for inclusion in Biodiversity Net Gain (BNG) matrices. As the standard UKHabs survey methodology is, in the main, concerned only with vegetation communities, the survey was extended to allow for the provision of information on other ecological features, particularly to identify the presence/potential presence of legally protected species.
- 4.2.4 Plant species abundance is described using the DAFOR scale, where species composition is recorded based on if that species is dominant, abundant, frequent, occasional, or rare within a particular habitat type.
- 4.2.5 The survey area included the entirety of the Site and adjoining areas of land up to 30m from the Site boundary, where access was possible. As the standard UKHabs survey methodology is mainly concerned with vegetation communities, the survey was “extended” to allow for the provision of information on other ecological features, including identification of the presence or potential presence of legally protected and otherwise notable species.
- 4.2.6 It should be noted that while every effort has been made to provide a comprehensive description of the Site, this survey is intended to identify habitat types and does not constitute a full botanical survey.

Protected and notable species

- 4.2.7 The methodologies used to establish the presence or potential presence of specific species and/ or species groups are summarised below. These relate to those species or biological taxa that the desk study and habitat types present indicated could occur on the Site.
- 4.2.8 The survey methods that were employed during the extended UKHabs habitat survey to identify presence of legally protected/priority species are detailed below. **Annex A** summarises relevant legislation relating to these species. Species are referred to by common name in the main text of the report, with scientific names provided in **Annex B**.

Badger

- 4.2.9 During the survey the habitats on the Site were assessed for their potential to provide suitable areas for sett excavation and badger foraging. Any evidence of badger activity was also recorded⁹, such as:

⁹ Harris S, Cresswell P & Jefferies D 1989. *Surveying Badgers*. Mammal Society Occasional Publication N^o 9, The Mammal Society, London.

- Setts - comprising either single holes or a series of holes likely to be connected underground.
- Hairs - usually with a white root, black band, white tip (often caught in sett entrances/ fences/ vegetation).
- Footprints – located in soft mud, often in sett entrances.
- Evidence of foraging – usually in the form of ‘snuffle holes’ (small scrapes created by badgers searching for insects and earthworms).
- Latrines - badgers usually deposit faeces in holes or scrapes in the ground.
- Paths - particularly around setts or leading to feeding areas.

4.2.10 Mammal paths and snuffle holes were assumed to be created by badgers if the character of the path (in terms of size) was appropriate, and if other field signs were in close vicinity.

Bats

4.2.11 A general assessment of the suitability of the habitats on the Site to support roosting, foraging, and commuting bats was made¹⁰. During the survey, an initial assessment of the trees and buildings on and bordering the Site was undertaken to determine if further, more detailed preliminary roost assessments would be required to identify features with the potential to support roosting bats.

Dormouse

4.2.12 The extent and the quality of the habitats within and adjacent to the Site were assessed for their potential to support dormouse, which involved looking for suitable areas of habitat that occur on Site e.g. woodlands and hedgerows which are connected to surrounding areas of suitable habitat within the vicinity of the Site.¹¹

Otter

4.2.13 The Site was assessed for its potential to support otter¹². Such habitats may include the presence of any drainage ditches, streams, rivers, water bodies and other foraging habitat. Water of a significant depth and the presence of fish are important for foraging; however, otters will use sub-optimal habitat to commute through.

Water vole

4.2.14 Water courses and waterbodies on and bordering the Site were assessed for their suitability and potential to support water voles. This involved considering the size and connectivity of

¹⁰ Collins, J. (ed) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn). The Bat Conservation Trust, London.

¹¹ Bright et al. (2006). The Dormouse Conservation Handbook. English Nature, Peterborough.

¹² Chanin, P. (2003). Ecology of the European Otter. Conserving Natura 2000 Rivers Ecology Series No.10. English Nature, Peterborough.

any watercourse or waterbody present on-Site (or within the vicinity), as well as the potential presence of suitable foraging resources and burrowing substrate along the banks¹³

Great crested newt

- 4.2.15 The Site was assessed for its potential to provide suitable aquatic and terrestrial habitat that could support GCN. This involved considering the provision of potential breeding and foraging habitats, as well as the provision of potential refugia e.g. log piles, hedgerows, grassland, ruderal and scrub habitat etc.
- 4.2.16 A Habitat Suitability Index (HSI) assessment was completed for any ponds on Site. HSI methodology is described in guidance by Oldham et al (2000)¹⁴ and is based on the correlation between habitat quality and GCN population size. It is a quantitative measure of habitat quality that produces a score between 0 and 1. This is derived from an assessment of ten habitat variables (indices) known to influence the presence of newts, such as water quality and emergent vegetation. An HSI of 1 is optimal habitat (high suitability for breeding GCN), while a HSI of 0 is unsuitable habitat, and scores relate to a scale of categories: excellent, good, average, below average and poor. The HSI is calculated on a single pond basis but takes into account surrounding terrestrial habitat and local pond densities. Natural England states that if a pond has a very low HSI score (<0.5, which equates to poor suitability or below), then there would typically be a minimal chance of GCN presence¹⁵.

Reptiles

- 4.2.17 The Site and its surroundings were assessed for their potential to provide sheltering, foraging, and breeding habitats¹⁶ for the four widespread reptile species: slow worm, viviparous lizard, grass snake and adder.

Birds

- 4.2.18 An assessment was made of the buildings and habitats on Site for their potential to support breeding birds. Any identifiable species seen were recorded as Target Notes.

Other notable/priority species

- 4.2.19 An assessment was made of the potential for the Site to support any other species considered to be of value for biodiversity conservation, including those that were identified as occurring within the local area during the desk study.

¹³ Strachan, R., Moorhouse, T. and Gelling, M. (2011). Water vole Conservation Handbook. Third edition. Wildlife Conservation Research Unit, Oxford

¹⁴ Oldham RS, Keeble J, Swan MJS & Jeffcote M (2000). Evaluating the suitability of habitat for the Great Crested Newt (*Triturus cristatus*). Herpetological Journal 10(4): 43-155.

¹⁵ ARG UK Advice Note 5: Great Crested Newt Habitat Suitability Index (2010)

¹⁶ Froglife (1999). Froglife Advice Sheet 10 Reptile Survey: An Introduction to Planning, Conducting, and Interpreting Surveys for Snake and Lizard Conservation. Froglife, Suffolk.

Legally controlled species

4.2.20 The presence of any non-native, invasive plant species (see **Box 2**), such as Japanese knotweed, giant hogweed and Himalayan balsam was noted.

5. Results

5.1 Desk study

International statutory designated sites

5.1.1 There are three statutory designated biodiversity sites of international importance within 10km of the Site, as shown in **Figure 4.1**. The closest sites being South West London SPA and Ramsar site, both of which are located 1.9km south-west of the Site boundary, further detail for all three sites and their designations are described in further detail within **Table 5.1**.

Table 5.1 International statutory designated sites within 10km of the site

Site	Location	Summary of interest features
Southwest London Waterbodies SPA	1.9km SW	A ~830ha site comprising a number of reservoirs and former gravel pits in the Thames Valley adjacent to Heathrow Airport between Windsor and Hampton Court which support internationally important numbers of Gadwall and Shoveler.
Southwest London Waterbodies Ramsar site	1.9km SW	A ~830ha site comprising a number of reservoirs and former gravel pits in the Thames Valley adjacent to Heathrow Airport between Windsor and Hampton Court which support internationally important numbers of Gadwall Anas and Shoveler Anas.
Windsor Forest & Great Park SAC	7.5km SW	A ~1680ha site primarily designated due to the presence old acidophilous oak woods in the south-eastern part of its UK range. It has the largest number of veteran oaks in Britain (and probably in Europe), a consequence of its management as wood-pasture. It is of importance for its range and diversity of saproxylic invertebrates, including many rare species (e.g., the beetle), some of which are known in the UK only from this site, and has recently been recognised as having rich fungal assemblages

National statutory designated sites

5.1.2 There are two statutory designated biodiversity sites of national importance within 2km of the Site, as shown in **Figure 4.2**. The closest site is Staines Moor SSSI, located 1.7km south-west of the Site boundary. Further information on the designations for both sites are described in further detail within **Table 5.2**.

Table 5.2 National statutory designated sites within 2km of the site

Site	Location	Summary of interest features
Staines Moor SSSI	~ 1.7km SW	The land chiefly consists of Staines Moor, a semi-natural stretch of the River Colne which flows through it, and three adjacent reservoirs. Staines Moor represents the largest area of alluvial meadows in Surrey and supports a rich flora, with the likes of Opposite-leaved Pondweed, Whorl-grass and Round-fruited rush being nationally rare. The

Site	Location	Summary of interest features
		reservoirs also hold nationally important populations of wintering wildfowl.
Wraysbury Reservoir SSSI	1.9km SW	Wraysbury reservoir regularly supports nationally important numbers of wintering Cormorant, Great crested grebe and Shoveler Anas

Non-statutory designated sites within 2km of the site

5.1.3 There are three non-statutory designated sites within 2km of the Site, as shown in **Figure 4.3**. The closest site is Lower Colne SoMI, which is located 0.14km southwest of the Site boundary. The interest features of these sites are summarised in **Table 5.3**.

Table 5.3 Non-statutory designated sites within 2km of the site

Site	Location	Summary of interest features
Lower Colne (M059) SoMI	0.14km SW of the Site	The site is roughly 140ha in area and consists of one of the finest river systems in London, including sections of the rivers Colne, Wraysbury and Frays. These originate as chalk streams and collectively support a diverse aquatic and marginal flora, including several plants with a restricted London distribution, such as river water-dropwort. Associated habitats include wet meadows, flooded gravel pits, ponds, alder-willow woodland and an old orchard, which host further botanical interest, including London's only native population of the nationally rare and specially-protected pennyroyal.
Old Slade Lake LWS	~ 1.27km NW of the Site	The site consists of a complex of flooded gravel pits fringed by secondary woodland, scrub, ruderal grassland, tree planting and a stretch of the Colne Brook. The lakes appear eutrophic and aquatic species include Canadian pondweed, common duckweed, ivy-leaved duckweed with areas of rigid hornwort and spiked water-milfoil. Old Slade Lake appears to be the most diverse of the lakes where fan-leaved water-crowfoot and an area of common stonewort are present
Colne Valley Reservoirs and Gravel Pits BOA	1.93km SW of the Site	Area of extensive standing water in the reservoirs and gravel pits (includes Staines Moor SSSI and Wraysbury Gravel Pits SSSI. These areas are important sites for birds. Also included is the Arthur Jacobs Nature Reserve. Lowland meadow and wet grassland are also extensive, with wet grassland present on infilled land that is now part of Wraysbury Gravel Pits SSSI. There is lowland meadow habitat at Staines Moor SSSI. The River Colne and the Colne Brook flows through the area.

Habitats of Principal Importance

5.1.4 Data from MAGIC¹⁷ suggests that at least three Habitats of Principal Importance (HPI) are within 2km of the Site, as shown in **Figure 4.4**. Habitats include deciduous woodland, traditional orchards, and lowland meadows. Of these three habitats, none are found within

¹⁷ MAGIC (2023) [online] available at: <https://magic.defra.gov.uk/MagicMap.aspx> [Accessed 2nd March 2023].

the Site boundary, with the closest habitat being deciduous woodland located 0.12km west of the Site boundary.

Waterbodies

5.1.5 Analysis of Ordnance Survey 1:25,000 maps indicate the presence of eight waterbodies within 500m¹⁸ of the Site boundary, albeit seven are located off-Site and are separated by either the Colnbrook By-Pass to the north, Bath Road to the west or the urban expanse of Heathrow to the south. A single waterbody is present within the Site boundary, which is the Duke of Northumberland River (WB1). Further details of each waterbody are provided in **Table 5.4** and their locations are shown on **Figure 4.5**

Table 5.4 Waterbodies on the site and within 500m of the site

Waterbody	Grid Reference	Distance and direction from the Site	Separated from the Site by significant barrier to Great Crested Newt movement?
WB1	TQ 05006 76774	On-Site	n/a
WB2	TQ 05179 77068	130m north of the Site	Yes
WB3	TQ 04758 76339	212m south of the Site	Yes
WB4	TQ 04472 76732	243m northwest of the Site	Yes
WB5	TQ 05074 77241	325m northwest of the Site	Yes
WB6	TQ 05150 77304	373m north of the Site	Yes
WB7	TQ 05059 77322	396m northwest of the Site	Yes
WB8	TQ 04299 76724	404m west of the Site	Yes

Protected and notable species records

5.1.6 **Table 5.5** provides a summary of the key species records that are dated within the last 10 years, namely protected species, species of principle importance and nationally rare or red-list species and other records notable in a local context (e.g. Local BAP species; species other than those above, which are identified by the data provider as being locally significant; records suggesting potentially significant local populations). Note a full list of species returned by the record centre is presented in **Annex B**.

¹⁸ 500m is the distance within which, in the absence of barriers to movement, GCN will generally move from their breeding water bodies to utilise suitable areas of surrounding habitat which may occur on-site, such that the presence of off-site water bodies should be considered.

Table 5.5 Key species records from past 10 years

Species	Scientific name	Status	No. of records	Most recent record	Distance to the nearest record from the Site
BIRDS					
Cuckoo	<i>Cuculus canorus</i>	S41; RL; LPS; LSoCC	16	2019	0.96km north of the Site boundary
Curlew	<i>Numenius arquata</i>	S41; RL; LSoCC	5	2016	1.05km southwest of the Site boundary
Fieldfare	<i>Turdus pilaris</i>	WCA1; RL	28	2021	0.69km southwest of the Site boundary
Golden Plover	<i>Pluvialis apricaria</i>	BD1	24	2017	1.03km north of the Site boundary
Greenfinch	<i>Chloris chloris</i>	RL	59	2021	0.68km south west of the Site boundary
Green Sandpiper	<i>Tringa ochropus</i>	WCA1	366	2013	1.13km south of the Site boundary
Grey Wagtail	<i>Motacilla cinerea</i>	LSoCC	88	2021	1.12km northeast of the Site boundary
Herring Gull	<i>Larus argentatus</i>	S41; RL	13	2018	0.96km north of the Site boundary
House Martin	<i>Delichon urbicum</i>	RL; LPS	18	2019	0.96km north of the Site boundary
House Sparrow	<i>Passer domesticus</i>	S41; RL; LPS; LSoCC	8	2019	1.78km southwest of the Site boundary
Kingfisher	<i>Alcedo atthis</i>	WCA1; BD1; LPS	89	2021	0.33km east of the Site boundary
Lapwing	<i>Vanellus vanellus</i>	S41; RL; LPS; LSoCC	91	2021	1.03km north of the Site boundary
Lesser Redpoll	<i>Acanthis cabaret</i>	S41	6	2019	0.69km southwest of the Site boundary

Species	Scientific name	Status	No. of records	Most recent record	Distance to the nearest record from the Site
Little Ringed Plover	<i>Charadrius dubius</i>	WCA1; LPS	81	2013	1.14km southeast of the Site boundary
Marsh Tit	<i>Poecile palustris</i>	S41; RL	1	2017	0.8km northwest of the Site boundary
Mistle Thrush	<i>Turdus viscivorus</i>	RL; LPS; LSoCC	34	2021	1.05km southwest of the Site boundary
Nightingale	<i>Luscinia megarhynchos</i>	RL; LSoCC	1	2019	1.27km north of the Site boundary
Peregrine	<i>Falco peregrinus</i>	WCA1	1	2020	1.57km northwest of the Site boundary
Pochard	<i>Aythya ferina</i>	RL; LPS; LSoCC	142	2013	1.71km northwest of the Site boundary
Red Kite	<i>Milvus milvus</i>	WCA1; BD1	35	2021	1.03km north of the Site boundary
Redwing	<i>Turdus iliacus</i>	WCA1	53	2021	0.68km southwest of the Site boundary
Reed Bunting	<i>Emberiza schoeniclus</i>	S41; LSoCC	86	2021	0.68km southwest of the Site boundary
Skylark	<i>Alauda arvensis</i>	S41; RL; LPS; LSoCC	114	2021	0.68km southwest of the Site boundary
Shag	<i>Gulosus aristotelis</i>	RL	1	2013	1.51km northwest of the Site boundary
Smew	<i>Mergellus albellus</i>	RL; BD1	28	2014	1.27km north of the Site boundary
Spotted Flycatcher	<i>Muscicapa striata</i>	S41; RL; LPS; LSoCC	4	2019	1.27km north of the Site boundary

Species	Scientific name	Status	No. of records	Most recent record	Distance to the nearest record from the Site
Starling	<i>Sturnus vulgaris</i>	RL; LPS; LSoCC	20	2021	1.13km south of the Site boundary
Swift	<i>Apus apus</i>	RL; LPS	27	2019	0.94km north of the Site boundary
Whinchat	<i>Saxicola rubetra</i>	RL; LSoCC	33	2015	1.14km southeast of the Site boundary
Yellow Wagtail	<i>Motacilla flava</i>	RL; SoCC	42	2014	1.14km southeast of the Site boundary
TERRESTRIAL MAMMALS					
Brown long-eared Bat	<i>Plecotus auritus</i>	HR2; WCA5; S41; LPS; LSoCC	8	2019	0.76km north of the Site boundary
Common pipistrelle	<i>Pipistrellus pipistrellus</i>	HR2; WCA5 LSoCC	28	2019	0.17km east of the Site boundary
Daubenton's bat	<i>Myotis daubentonii</i>	HR2; WCA5; LPS; LSoCC	28	2019	0.76km north of the Site boundary
Harvest Mouse	<i>Micromys minutus</i>	S41; LPS; LSoCC	1	2013	1.49km south of the Site boundary
Lesser Noctule	<i>Nyctalus leisleri</i>	HRA2; WCA5; LPS; LSoCC	2	2019	0.89km northeast of the Site boundary
Myotis Bat	<i>Myotis</i>	HRA2, WCA5; S41; LSoCC	1	2015	0.78km north of the Site boundary
Noctule Bat	<i>Nyctalus noctula</i>	HRA2, WCA5, S41; LPS; LSoCC	8	2019	0.53km northeast of the Site boundary
Soprano Pipistrelle	<i>Pipistrellus pygmaeus</i>	HR2; WCA5,	57	2019	0.09km northeast of the Site boundary

Species	Scientific name	Status	No. of records	Most recent record	Distance to the nearest record from the Site
		S41; LPS; LSoCC			
West European Hedgehog	<i>Erinaceus europaeus</i>	S41; LPS; LSoCC	2	2020	1.12km northwest of the Site boundary
REPTILES					
Grass Snake	<i>Natrix helvetica</i>	WCA5; S41; LPS; LSoCC	7	2019	0.68km southwest of the Site boundary
INVERTEBRATES					
Adonis' Ladybird	<i>Hippodamia variegata</i>	NN	2	2017	1.13km south of the Site boundary
A True Fly	<i>Dioxya bidentis</i>	NN	1	2017	1.13km south of the Site boundary
Beaded Chestnut	<i>Agrochola lychnidis</i>	S41	17	2014	0.78km north of the Site boundary
Blood-vein	<i>Timandra comae</i>	S41	13	2016	0.68km southwest of the Site boundary
Buff Ermine	<i>Spilosoma lutea</i>	S41	19	2017	0.78km north of the Site boundary
Centre-barred Sallow	<i>Atethmia centrigo</i>	S41	8	2020	0.78km north of the Site boundary
Cinnibar	<i>Tyria jacobaeae</i>	S41	36	2017	0.58km north of the Site boundary
Dusky Thorn	<i>Ennomos fuscantaria</i>	S41	49	2019	0.78km north of the Site boundary
Green-brindled Crescent	<i>Allophyes oxyacanthae</i>	S41	2	2017	1.19km southwest of the Site boundary
Hollyhock Seed Moth	<i>Pexicopia malvella</i>	NN; LSoCC	1	2018	1.13km south of the Site boundary

Species	Scientific name	Status	No. of records	Most recent record	Distance to the nearest record from the Site
Jersey Tiger	<i>Euplagia quadripunctaria</i>	HRA2	1	2019	1.21km south of the Site boundary
Knot Grass	<i>Acronicta rumicis</i>	S41	5	2013	0.69km southwest of the Site boundary
Lackey	<i>Malacosoma neustria</i>	S41	3	2018	1.13km south of the Site boundary
Large Tortoiseshell	<i>Nymphalis polychloros</i>	RE; LSoCC	1	2022	1.60km southwest of the Site boundary
Lobe-spurred Furrow Bee	<i>Lasioglossum pauxillum</i>	NN; LSoCC	2	2017	1.06km south of the Site boundary
Mottled Rustic	<i>Caradrina morpheus</i>	S41	6	2018	0.78km north of the Site boundary
Painted Nomad Bee	<i>Nomada fucata</i>	NN; LSoCC	1	2017	1.06km south of the Site boundary
Red-shanked Carder Bee	<i>Bombus ruderarius</i>	S41; LPS; LSoCC	1	2013	1.19km southwest of the Site
Rustic	<i>Hoplodrina blanda</i>	S41	10	2013	0.78km north of the Site boundary
Sallow	<i>Cirrhia icteritia</i>	S41; LPS; LSoCC	14	2017	0.78km north of the Site boundary
Scarce Grass-veener	<i>Crambus pratella</i>	NN	15	2019	0.69km southwest of the Site boundary
Shaded Broad-bar	<i>Scotopteryx chenopodiata</i>	S41	17	2018	0.68km southwest of the Site boundary
Shoulder-striped Wainscot	<i>Leucania comma</i>	S41	1	2017	1.19km southwest of the Site boundary

Species	Scientific name	Status	No. of records	Most recent record	Distance to the nearest record from the Site
Small Heath	<i>Coenonympha pamphilus</i>	S41; NT; LPS; LSoCC	135	2022	0.24km northeast of the Site boundary
Small Square-spot	<i>Diarsia rubi</i>	S41	21	2018	0.68km southwest of the Site boundary
Spined Hylaeus	<i>Hylaeus cornutus</i>	NN; LSoCC	2	2015	1.05km southwest of the Site boundary
Stag Beetle	<i>Lucanus cervus</i>	HRA2; WCA5; S41	17	2021	0.67km northeast of the Site boundary
Sulphur Pearl	<i>Sitochroa palealis</i>	NN; LSoCC	4	2018	1.19km southwest of the Site boundary
Swollen-thighed Blood Bee	<i>Sphecodes crassus</i>	NN; LSoCC	1	2017	1.06km south of the Site boundary
White Ermine	<i>Spilosoma lubricipeda</i>	S41	27	2015	0.78km north of the Site boundary
PLANTS					
Bluebell	<i>Hyacinthoides non-scripta</i>	WCA8	3	2017	1.19km southwest of the Site boundary
Common Cudweed	<i>Filago vulgaris</i>	NT	3	2014	1.13km south of the Site boundary
Cornflower	<i>Centaurea cyanus</i>	S41; LPS; LSoCC	4	2013	0.85km north of the Site boundary
Corn Marigold	<i>Glebionis segetum</i>	VU; LSoCC	2	2013	1.49km south of the Site boundary
Dittander	<i>Lepidium latifolium</i>	NS; LSoCC	4	2017	1.36km south of the Site boundary
Wild Pansy	<i>Viola tricolor</i>	NT; LSoCC	1	2013	1.49km south of the Site boundary

Species	Scientific name	Status	No. of records	Most recent record	Distance to the nearest record from the Site
Yellow Vetchling	<i>Lathyrus aphaca</i>	VU; NS; LSoCC	1	2017	1.49km south of the Site boundary
INVASIVE SPECIES					
Chinese Muntjac	<i>Muntiacus reevesi</i>	WCA9	9	2021	0.83km southwest of the Site boundary
Demon Shrimp	<i>Dikerogammarus haemobaphes</i>	WCA9	2	2019	1.14km west of the Site boundary
False-acacia	<i>Robinia pseudoacacia</i>	WCA9	10	2020	0.87km northeast of the Site boundary
Japanese Knotweed	<i>Fallopia japonica</i>	WCA9	1	2016	1.26km west of the Site boundary
Ring-necked Parakeet	<i>Psittacula krameri</i>	WCA9	36	2019	0.64km northeast of the Site boundary

Key: WCA1 = listed on Schedule 1 of the Wildlife and Countryside Act 1981, as amended; RL = red listed on Birds of Conservation Concern 5; S41 = Species of Principal Importance included on Section 41 of the NERC Act 2006; LPS = London Priority Species; LSoCC = Local Species of Conservation Concern; WCA5 = listed on Schedule 5 of the Wildlife and Countryside Act 1981, as amended; WCA8 = listed on Schedule 8 of the Wildlife and Countryside Act 1981, as amended WCA9 = listed on Schedule 9 of the Wildlife and Countryside Act 1981, as amended HR2 = listed on Schedule 2 of Conservation of Habitats and Species Regulations 2017 (as amended); NS = Nationally Scarce; NN = Nationally Notable; NT = Near Threatened; RE = Regionally Extinct; VU = Vulnerable; DD = Data Deficient

European protected species records

5.1.7 The following European Protected Species Licences (EPSL) were granted within 2km of the Site in the last 10 years, with their location shown in **Figure 4.6**:

- 2014-5172-EPS-MIT for Brown-Long Eared and Soprano Pipistrelle, 0.91km NE

5.2 Field survey

Habitats

5.2.1 The Site supports a range of habitats, but the dominant habitats are semi-improved neutral grassland, semi-natural woodland and scrub, with bordering treelines and the Duke of Northumberland River that flows through the centre of the Site. A summary of the key habitats recorded on-Site in February 2023 is shown in

5.2.2 Table 5.6. The target notes (TN) are provided in **Annex C**.

Table 5.6 Summary of habitats

UKHABS habitat	Section 41 habitat/LBAP	Area (Ha) or length (m) (within redline boundary)	Notes
AREA HABITATS			
Grassland-Modified grassland	No	0.08ha	Three separate parcels of poor-semi-improved grassland were present within the Site, mainly within the Heathrow biodiversity site in the north, as well as a small section of amenity grassland to the south where the Site adjoins with Wright Way Road. Sward height was short and appears to be regularly mown, with species composition consisting of dominant perennial rye, frequent Yorkshire fog, doves-foot cranesbill and cow parsley, with occasional bristly oxtongue, and rare hairy bittercress and common daisy.
Grassland-Other neutral grassland	No	0.58ha	Much of the Site is made up of grassy access routes, walkways, and margins, all of which varied in sward height and overall condition depending on the level of recent access. Sward height was generally shorter along the access routes, with tussocky margins present in peripheral areas. Species composition composed of dominant cocks' foot and frequent Yorkshire fog, mat-grass was overall occasional, albeit it was locally dominant in the northeast, along with rare wild carrot. Herb species consisted of frequent black medic, hawkweed oxtongue, bristly oxtongue, and occasional meadow buttercup.
Other woodland; broadleaved	No	0.64ha	Broadleaved woodland was widespread along the fringes of the Site, often as narrow strips, but wider and denser in parts (TN5). The woodland was semi-mature in age and consisted of frequent pussy willow, common hornbeam, common hazel, with occasional silver birch and ash. Ground flora was dominated by common nettle, with frequent bramble scrub and cleavers, with occasional purple deadnettle, doves-foot cranesbill and snowdrops.
Other woodland; mixed	No	0.08ha	One parcel of mixed woodland was present on-Site, this was also semi-mature in age, but was more established in size and appeared less restricted by management e.g., an absence of fences and coppicing. As a result, access was only possible along the fringes of the habitat (TN4), where

UKHABS habitat	Section 41 habitat/LBAP	Area (Ha) or length (m) (within redline boundary)	Notes
			<p>common hazel was observed as dominant, with occasional pussy willow and hawthorn. Coniferous species were present further within the woodland parcel, albeit the lack of access meant species identification was not possible. Ground flora consisted of frequent bramble scrub and cleavers, with occasional common nettle.</p>
<p>Heathland and shrub – mixed scrub</p>	<p>No</p>	<p>0.31ha</p>	<p>Several separate sections of scattered scrub were present within the Site, with the majority dominated by bramble. Discrete sections consisted of semi mature willow trees and occasional butterfly bush. Some sections showed signs of recent clearance, particularly in the north of the Site.</p>
<p>Wetland – Aquatic marginal vegetation</p>	<p>No</p>	<p>0.58ha</p>	<p>Much of the watercourse that runs through the Site is bordered by marginal vegetation, except for the heavily canalised section (TN2) in the centre of the Site whereby marginal vegetation is limited in comparison. As the watercourse enters the Site in the east, it is heavily choked by common reed and reed canary grass along its entire length. As it flows west, the watercourse becomes canalised on both sides and is netted, and as such access was not possible, albeit an assemblage of widespread reed, sedge and rush species appear to dominate. Species composition includes frequent common reed, common club-rush, soft rush, and lesser pond sedge.</p>
<p>Rivers and lakes – Other rivers and streams</p>	<p>No</p>	<p>0.48ha</p>	<p>The watercourse that enters the Site in the east was narrow and shallow, with slow moving water, water quality appeared poor and the channel itself was heavily choked. The banks were relatively steep and well-vegetated with little to no transition zone between the watercourse and wider habitats. Further along the watercourse, the channel widened slightly as it emerges from a much wider canalised section, now absent of choking, the channel appeared deeper with a faster flow, water quality appeared to be the same, albeit banksides were predominantly more gradual in their slope and transition between habitats, with marginal vegetation able to establish well.</p>

UKHABS habitat	Section 41 habitat/LBAP	Area (Ha) or length (m) (within redline boundary)	Notes
Rivers and lakes – Canals	No	0.29ha	The centre of the Site is characterised by the canalisation of the watercourse (TN2), with it widening considerably and divided via a man-made wall. Banks here were artificial and gently sloping. Water depth appears to be much deeper given the channel modification with no obvious changes to water quality.
Sparsely vegetated land – Ruderal/ephemeral		0.01ha	
Urban – Developed land; sealed surface	No	0.04ha	Two discrete areas of built-up infrastructure pass over the Site, both of which are Heathrow Pod overhead transport routes connecting to Heathrow.
Urban – Artificially unvegetated; unsealed surface	No	0.008ha	This is again limited to discrete sections of modification that link to the canalisation of the watercourse and access between both banks via narrow steel-based walkways.
Line of trees	No	388.4m	The most eastern parts of the watercourse are bordered on both sides by semi-mature willow sp., silver and red birch.

5.2.3 The second Extended UK Habitat survey confirmed the presence of a single hedgerow with trees, approximately 90m in length. The hedgerow is characterised by dominant field maple, occasional grey willow, holm oak, poplar sp., common hazel, and ash. Semi-mature ash, poplar sp., and grey willow trees are frequent along its length, with a limited ground flora, heavily shaded, supporting abundant English ivy.

Protected and notable species

5.2.4 **Table 5.7** provides a summary of findings in relation to protected species and recommended steps for further survey and/or requirements ahead of constructions.

Table 5.7 Summary of protected species walkover survey

Species	Field notes
Badger	No active badger setts or signs of badger activity were recorded within the Site boundary.

Species	Field notes
	<p>The woodland parcels and scrub all provide moderate suitability for sett building, notably along parts of the Site boundary where embankments are present. The woodland parcels and associated margins, as well as the scrub and semi-improved neutral grassland, all provide suitable foraging opportunities for badgers.</p> <p>Habitats surrounding the site are mostly limited to residential housing with gardens and Heathrow Airport. There is limited chance of badger dispersal onto the Site due to the presence of major roads, however the river corridor will provide some connectivity with the surrounding area.</p>
Bats	<p>Areas of broadleaved/mixed woodland, Duke of Northumberland River, and other neutral grassland within the Site provide value as a foraging habitat. The Duke of Northumberland River likely acts as an important commuting feature across the local environment, connecting the Site to areas of high quality habitat within the surrounding area.</p> <p>Trees present on Site were assessed to provide negligible bat roost potential due to the young age and lack of suitable features present.</p> <p>Residential houses and associated outbuildings are present bordering the Site to the north. It was not possible to access these structures for a detailed survey due to limited access and visibility, however they did appear to contain some features that could have suitability to support a bat roost (TN1).</p>
Dormouse	<p>The habitats on Site are of limited value to hazel dormice due to an absence of extensive areas of woodland and scrub. Woodland parcels containing hazel are present on Site, however these are small in extent and isolated from the wider landscape by built-up areas. No records of this species were returned during the desk study. This species can be considered reasonably discounted from the Site and is not discussed further within this report.</p>
Otter	<p>Although the Duke of Northumberland River is relatively narrow for much of its length (~<5m), there are discrete sections of suitable bankside structure that could support holt creation, albeit none were observed during the survey. The abundance of fish/potential prey is considered limited given the size and nature of the watercourse. Notwithstanding the above, there is suitable habitat in the wider landscape, notably to the north, south and west, and thus it is possible that otters use the watercourse to commute to/migrate across their territories. As such it cannot be assumed that otters are absent from the watercourse.</p>
Water Vole	<p>The Duke of Northumberland River that flows through the Site provides highly sub-optimal habitat for water vole and no evidence of water vole was recorded during the survey. Given the large proportion of the banks of the river comprise of unsuitable burrowing substrate given the artificial composition, combined with an absence of foraging resources, the likelihood of water vole occurring is assessed to be low and the species is not considered further in this report.</p>
Great crested newt	<p>There is one waterbody on-Site (WB1) in the form of the Duke of Northumberland River, large sections of which offer negligible aquatic suitability for GCN given the depth, flow rate and artificial nature. Limited discrete sections offer some suitability to support breeding due to the presence of emergent vegetation and slow flow rates. However, the waterbody is</p>

Species	Field notes
	<p>surrounded by fencing, and the artificial banks present will limit GCN ingress and egress into the waterbody.</p> <p>As a precaution, a Habitat Suitability Index (HSI) assessment was conducted on WB1 to reflect the sections deemed suitable for breeding GCN, scoring 0.69 (Average), see Appendix D for information relating to indices scored.</p> <p>The areas of woodland, grassland, and scrub provide suitable terrestrial habitat and refugia that could support populations of GCN.</p>
Reptiles	<p>The woodland and associated margins, sections of the watercourse, grassland, and scattered scrub all provide suitable potential foraging habitat and/or refuge that could support populations of common reptile species. The grassy margins, woodland fringes, and watercourse embankments all also provide further suitable areas that could support basking behaviours.</p> <p>The north-east section of grassland exhibited evidence of prior survey efforts (TN3) for reptile species given the presence of felt tiles.</p>
Invertebrates	<p>There is suitable habitat on-Site that has limited potential to support small populations of notable invertebrate species, particularly the woodland and watercourse. However, habitats present on site were limited in extent and subject to regular anthropogenic disturbance. These habitats were also considered to be widespread within the surrounding area and therefore of limited value to notable invertebrates. This species group is therefore not considered further within this report.</p>
White-clawed crayfish	<p>The watercourse that flows through the Site is considered sub-optimal for white-clawed crayfish, on the basis that whilst some discrete sections of the bank may support burrow creation, most of the banks are artificial in nature, with an absence of cobbles and suitable instream vegetation. In view of this, it is unlikely that white-clawed crayfish occur on-Site, and they are not considered further in this report.</p>
Birds	<p>The woodland and scrub that are widespread across the Site offer an array of suitable nesting habitat, with the same habitats, combined with the grassland and watercourse, offering an abundance of suitable foraging habitat.</p>
Other species	<p>The woodland and scrub across the Site provide shelter, foraging and commuting habitat for hedgehog, which has the potential to be present in low numbers.</p>
Invasive species	<p>No invasive species were recorded during the survey.</p>

6. Summary

- 6.1.1 There are three statutory designated sites of international importance within 10km of the Site, namely the Southwest London Waterbodies SPA, Southwest London Waterbodies Ramsar site, and Windsor Forest & Great Park SAC. The closest designated site is located 1.93km south-west of the Site boundary, and forms part of both the SPA and Ramsar designations. Impacts to these designated sites as a result of the Proposed Development will be assessed further within the HRA report and any mitigation to be required will be detailed within the Environmental Statement.
- 6.1.2 There are a further two statutory designated sites of national importance within 2km of the Site boundary, namely Staines Moor SSSI and Wraysbury Reservoir SSSI, the closest of which is Staines Moor, located 1.7km southwest of the Site boundary. There is also three non-statutory designated sites within 2km of the Site boundary, namely Lower Colne SoMI, Old Slade Lake LWS and Colne Valley Reservoirs and Gravel Pits BOA, the closest being the Lower Colne SoMI, which is located 0.14km southwest of the Site boundary. Given the current understanding of the works programme, which includes the extent, type and timeframe for the proposed construction, any associated land-loss, and the distance between the Site and the designated areas, there are no potential impacts from the Proposed Development deemed significant to warrant any mitigation for any of the five designated sites above.

Habitats

- 6.1.3 The Site largely consists of semi-improved neutral grassland, with separate parcels of broadleaf and mixed woodland, scattered scrub and discrete areas of amenity grassland. The Duke of Northumberland River flows from east to west through the Site, supporting a good amount of marginal vegetation throughout as it transitions through various stages of canalisation. Grassland is characterised by the widespread nature of Cock's foot and Yorkshire fog, with herb species comprising of frequent black medic, hawkweed oxtongue, bristly oxtongue and occasional meadow buttercup. The semi-mature trees on-Site largely comprised of pussy willow and other salix sp., along with common hazel, hornbeam, and ash.

Badgers

- 6.1.4 No active badger setts or signs of badger activity were recorded within the Site boundary; however the woodland parcels and scrub do provide moderate suitability for sett building, notably along parts of the Site boundary where embankments are present. Furthermore, the woodland parcels and associated margins, as well as the scrub and semi-improved neutral grassland, all provide suitable foraging opportunities for badgers. However, the Duke of Northumberland River is likely to significantly restrict the movement of badgers towards the southern end of the Site, within proximity to the works area.
- 6.1.5 Given the suitable habitat present for sett building and foraging within the Site boundary, combined with the fact that parts of the Duke of Northumberland River in the east of the Site are narrow enough to allow badgers to cross, their presence within the Site boundary cannot

be ruled out going forward, and as such, a pre-works check for badger activity should be conducted prior to any construction associated with the Proposed Development.

- 6.1.6 Suitable protection methods to be employed during the construction phase of the Proposed Development will be detailed within the Environmental Statement and enforced through the production of a Construction Environment Management Plan (CEMP).

Bats

- 6.1.7 The woodland and treelines on Site are well maintained, and given their age and condition, are not currently deemed capable of supporting potential roosting features. The buildings within and adjacent to the Site, although only viewed from a distance, also largely look void of potential roosting features. There is one notable stretch of outbuildings and garages approximately 15m north of the Site boundary that may offer some suitability for roosting bats, albeit these structures were again only viewed from a distance. There is an abundance of suitable habitat present that provides commuting and foraging opportunities for bats, this includes the woodland, tree lines, grassland, scrub, and watercourse.
- 6.1.8 Given the current scope of works, the distance from structures perceived to offer suitability for roosting bats and the works area, as well as the loss of little to no terrestrial habitat, no further surveys are anticipated prior to any proposed works programme. However, given the likely proximity of works to the watercourse, standard noise and light abatement strategies should be implemented during the construction phase.

Otter

- 6.1.9 The watercourse that traverses through Site is well-established, and although canalised in parts, may provide sub-optimum foraging and commuting habitat for otter, with the nearby woodland parcels also providing suitable areas for holt-building. A review of aerial imagery also indicates the presence of a network of waterbodies and watercourses in the wider area that offer potential foraging and commuting opportunities for otter. This includes the gravel pits to the south and north of Heathrow and the watercourses associated with the River Colne and River Wraysbury.
- 6.1.10 The section of watercourse that runs adjacent to the proposed sound barrier location is already subject to high baseline levels of disturbance in respect of noise, light, pollution, and human disturbance given the heightened activity associated with Heathrow Airport. This said, the proposed works could result in a further increase to all the aforementioned indirect effects during construction.
- 6.1.11 Whilst no further surveys for otter are recommended, standard noise and light abatement strategies should be implemented during the construction phase, and a lighting strategy should be incorporated to avoid illumination of habitats within 20m of the watercourse habitat where possible, to retain a dark corridor. Suitable protection methods to be employed during the construction phase will be detailed within the Environmental Statement for the Proposed Development and enforced through the production of a CEMP.

Great crested newts

- 6.1.12 Suitable aquatic habitat to support GCN is limited within the site due to the artificial nature of the waterbody and limited patches of suitable vegetation.
- 6.1.13 Suitable terrestrial habitat to support GCN on-Site is present within the woodland and its margins, scrub, treelines and tussocky grassland present on site. There are seven waterbodies located within 500m of the Site, the closest of these is located 130m north of the Site boundary. All off-Site waterbodies were inaccessible at the time of survey, however all seven are separated from Site via significant barriers to movement, in the form of major roads and urban expanse.
- 6.1.14 Given the very limited suitable aquatic habitat, the lack of connectivity between the on-Site terrestrial habitat and off-Site waterbodies, combined with no GCN records within 2km of the Site in the last 10 years, no further survey work for GCN is recommended.

Reptiles

- 6.1.15 Grassland habitats on Site are primarily short-sward, semi-improved neutral grassland, dominated by cocks'-foot, Yorkshire fog and occasional mat-grass, broad-leafed doc, birds-foot cranesbill, cow parsley and black medic are all frequent. The woodland and its margins, treelines, tussocky grassland, scrub and watercourse all provide opportunity for foraging, commuting and basking reptiles, such as slow worm, common lizard and grass snake.
- 6.1.16 Considering the size and location of the suitable habitat on-Site in relation to the proposed work area, as well as the very limited records of reptiles within 2km of the Site in the last 10 years, no further reptile surveys are required. Suitable protection methods to be employed during the construction phase will be detailed within the Environmental Statement for the Proposed Development and enforced through the production of a CEMP.

Invertebrates

- 6.1.17 Several notable terrestrial invertebrate species have been recorded within 2km of the Site. Whilst none have been recorded within the Site boundary, the Site does contain some suitable habitat, such as the areas of grassland, woodland, scrub, marginal vegetation, and the watercourse to support notable invertebrates. No loss of suitable habitat is anticipated within the current scheme design, albeit there is the potential for higher levels of disturbance in respect of noise, light, pollution, and human disturbance during proposed construction.
- 6.1.18 The habitats on site have limited potential to support important invertebrate populations, and are considered to be extensive within the wider landscape. Habitats of most value to invertebrates i.e. the waterbody and woodland, will not be impacted by the Proposed Development, as such no further survey for terrestrial invertebrates is considered to be necessary.

Birds

- 6.1.19 There are no desk study records for legally protected or notable bird species being present within the Site boundary. However, there are multiple records of legally protected and notable species within 2km of the Site boundary. There is also an array of suitable habitat for both nesting and foraging birds throughout the Site, notably in the form of woodland,

treelines, scrub and the watercourse. Although the survey confirmed the presence of nesting and foraging habitat, populations of important bird species are unlikely to be impacted by the Proposed Development given the limited habitat disturbance/clearance works or small-scale, transient increase in human disturbance associated with the scheme design.

- 6.1.20 All breeding birds receive protection under the Wildlife and Countryside Act 1981 (as amended) so any habitat clearance/disturbance works would need to be carried out avoiding the bird nesting period, which is generally taken to occur between February and the end of August. If this is not possible, any vegetation to be removed would need to be checked for the presence of nesting birds in advance of the onset of works, by a suitably qualified ECoW. Suitable protection methods to be employed during the construction phase will be detailed within the Environmental Statement for the Proposed Development and enforced through the production of a CEMP.

Other notable species

- 6.1.21 There is a single desk study record of hedgehog within 2km of the Site boundary, with the woodland, grassland, scattered scrub all offering suitable habitat that could support this species.
- 6.1.22 Although the current scheme design is not anticipated to result in the loss of areas of habitat supporting these species, there remains the possibility of heightened disturbance on-Site through increased light, noise and pollution during construction. In view of this, precautionary avoidance measures would need to be implemented for the duration of the construction works. These will be detailed further within the Environmental Statement for the Proposed Development and enforced through the production of a CEMP.

Invasive species

- 6.1.23 There are no records of invasive plant species occurring on Site and none were recorded during the survey, although these would be less visible to the surveyor during a February survey. There was one record of Japanese Knotweed within 2km of the Site boundary in the last 10 years. Invasive species such as Japanese knotweed are notifiable under Schedule 9 of the Wildlife and Countryside Act 1981, such that it is an offence to plant or otherwise cause these species to grow in the wild. If present, habitat disturbance associated with the sound barrier construction may result in the unintentional spread of invasive species across the Site and to off-site areas.
- 6.1.24 Depending on the final scheme design, it is recommended that an invasive species survey be carried out. This would ideally be undertaken during April-May or October to November when the vegetation is lower, to assist in the location of invasive species. Should Japanese knotweed (or any other invasive species be found), it would be necessary to include precautionary avoidance measures and/or implement an eradication programme so as to prevent the spread of these species.

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Annex A - Legislation

Statutory designated sites

Council Directive 92/43/EEC on the Conservation of Natural habitats and of wild fauna and flora, known as the Habitats Directive was adopted in 1992. The Conservation (Natural Habitats, &c.) Regulations 1994 transposed the Habitats Directive into UK national law, covering the designation and protection of European sites and the protection of European protected species. The Conservation of Habitats and Species Regulations 2017 consolidate all the various amendments made to the 1994 Regulations in respect of England and Wales.

Within the UK, sites that are nationally important for plants, animals or geological or physiological features are protected by law as Sites of Special Scientific Interest (SSSIs) and Marine Nature Reserves (MNRs). This system provides the underpinning statutory protection for all sites, including those which are also of international importance.

Statutory designated sites

There are numerous areas of high biodiversity value that receive no legal (statutory) protection

Habitats and species of principal importance

The Natural Environment and Rural Communities (NERC) Act (2006), Section 40(1) imposes a duty to conserve biodiversity. The duty applies to all local authorities and extends beyond just conserving what is already there to carrying out, supporting and requiring actions that may also restore or enhance biodiversity.

Section 41 (S41) of the Natural Environment and Rural Communities (NERC Act 2006) requires the Secretary of State to publish a list of habitats and species that are of principal importance for the conservation of biodiversity in England. The list (including 56 habitats and 943 species) has been drawn up in consultation with Natural England and draws upon the UK BAP List of Priority Species and Habitats.

Breeding birds

With certain exceptions, all wild birds, their nests and eggs are protected by section 1 of the Wildlife and Countryside Act 1981 (as amended). Therefore, it is an offence, inter alia, to:

- Intentionally kill, injure or take any wild bird.
- Intentionally take, damage or destroy the nest of any wild bird while it is in use or being built.
- Intentionally take or destroy the egg of any wild bird.

Bird species listed on Schedule 1 of the Act receive further protection, thus for these species it is also an offence to:

- Intentionally or recklessly disturb any bird while it is nest building, or is at a nest containing eggs or young.

- Intentionally or recklessly disturb the dependent young of any such bird.

Bats

All British bat species are listed in Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and Schedule 2 of the Conservation of Habitats and Species Regulations 2017. They are afforded full protection under Section 9(4) of the Act and Regulation 43 of the Regulations. These make it an offence, inter alia, to:

- Deliberately capture, injure or kill a bat.
- Deliberately disturb a bat (this applies anywhere, not just at its roost), in particular in such a way as to be likely to:
 - Impair their ability to survive, breed or reproduce, or rear or nurture their young.
 - Impair their ability to hibernate or migrate.
 - Affect significantly the local distribution or abundance of that bat species.
- Damage or destroy a breeding site or resting place of any bat.
- Intentionally or recklessly disturb a bat while it is occupying a structure or place that it uses for shelter or protection.
- Intentionally or recklessly obstruct access to any place that a bat uses for shelter or protection (this is taken to mean all bat roosts whether bats are present or not).

In addition, five British bat species are listed on Annex II of the Habitats Directive. These are:

- Greater horseshoe bat (*Rhinolophus ferrumequinum*).
- Lesser horseshoe bat (*Rhinolophus hipposideros*).
- Bechstein's bat (*Myotis bechsteinii*).
- Barbastelle (*Barbastella barbastellus*).
- Greater mouse-eared bat (*Myotis myotis*).

Badgers

Badgers are protected under the Protection of Badgers Act 1992. In summary, this makes it a criminal offence to kill, injure or take a badger, or attempt to do so; to damage, destroy or obstruct access to a badger sett; and to disturb a badger when it is occupying a sett.

Great crested newts

Great crested newts and their habitats are fully protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and under The Conservation of Species and Habitats Regulations 2017.

Under the Wildlife and Countryside Act 1981 (as amended) it is illegal to:

- Recklessly or intentionally kill, injure or take any such animal.

- Recklessly or intentionally damage or destroy, or obstruct access to any structure or place which any such animal uses for shelter or protection.
- Recklessly or intentionally disturb any such animal while it is occupying a structure or place which it uses for shelter or protection.

Under Regulation 43 of the Conservation of Habitats and Species Regulations 2017 it is illegal to:

- Deliberately capture, injure or kill any such animal.
- Deliberately disturb any such animal (affecting ability to survive, breed or rear young) – disturbance of animals includes in particular any disturbance which is likely to impair their ability to survive, breed or reproduce, or to rear or nurture their young.
- Deliberately disturb any such animal (impairing ability to migrate or hibernate) – disturbance of animals in particular any disturbance which is likely to impair their ability in the case of hibernating or migratory species to hibernate or migrate.
- Deliberately disturb any such animal (affecting local distribution and abundance) – disturbance of animals includes in particular any disturbance which is likely to affect significantly the local distribution or abundance of the species to which they belong.
- Damage or destroy a breeding site or resting place of any such animal.

Where offences under the Conservation of Habitats and Species Regulations 2017 cannot be avoided Licences from Natural England can be obtained to legitimise works. Licences cannot be obtained to provide protection under offences under the Wildlife & Countryside Act 1981 (as amended).

Reptiles

There are two different levels of legal protection for reptiles in the UK. The adder, common lizard, grass snake and slow worm are protected from killing and injuring under Schedule 5 (Section 9) of the Wildlife and Countryside Act 1981 (as amended).

The sand lizard and smooth snake and their respective habitats are fully protected under Schedule 5 (Section 9) of the Wildlife and Countryside Act 1981 (as amended) and under Conservation of Habitats & Species Regulations 2017. It is illegal to kill, injure, capture, handle or disturb them, and the places they use for breeding, resting, shelter and protection are protected from being damaged or destroyed. It is also illegal to obstruct these animals from using such areas.

Otters

European otter are listed in Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and Schedule 2 of the Conservation of Habitats and Species Regulations 2017. They are afforded full protection under Section 9(4) of the Act and Regulation 43 of the Regulations. These make it an offence, inter alia, to:

- Deliberately capture, injure or kill any such animal.

- Deliberately disturb any such animal, in particular in such a way as to be likely to.
- Impair their ability to survive, breed or reproduce, or rear or nurture their young.
- Impair their ability to hibernate or migrate.
- Affect significantly the local distribution or abundance of that species.
- Damage or destroy a breeding site or resting place of any such animal.
- Intentionally or recklessly disturb any of these animals while it is occupying a structure or place that it uses for shelter or protection.
- Intentionally or recklessly obstruct access to any place that any of these animals uses for shelter or protection.

Water voles

Water voles are protected under the Wildlife and Countryside Act 1981 (as amended). This makes it a criminal offence to:

- Kill, injure or take (capture) a water vole.
- Possess or control a live or dead water vole, or any part of a water vole.
- Damage, destroy or obstruct access to any structure or place which water voles use for shelter or protection or disturb water voles while they are using such a place.
- Sell, offer for sale or advertise for live or dead water voles.

Annex B - Species data records/scientific names

Species	Scientific name	Status	No. of records	Most recent record	Distance to the nearest record from the Site
BIRDS					
Black-headed Gull	<i>Chroicocephalus ridibundus</i>	AL	2	2018	1.57km northwest of the Site boundary
Black Kite	<i>Milvus migrans</i>	BD1	1	2013	1.37km east of the Site boundary
Common Sandpiper	<i>Actitis hypoleucos</i>	LPS	251	2014	1.13km south of the Site boundary
Common Tern	<i>Sterna hirundo</i>	BD1	35	2016	0.96km north of the Site boundary
Cuckoo	<i>Cuculus canorus</i>	S41; RL; LPS; LSoCC	16	2019	0.96km north of the Site boundary
Curlew	<i>Numenius arquata</i>	S41; RL; LSoCC	5	2016	1.05km southwest of the Site boundary
Dunnock	<i>Prunella modularis</i>	LPS	126	2021	0.68km southwest of the Site boundary
Fieldfare	<i>Turdus pilaris</i>	WCA1; RL	28	2021	0.69km southwest of the Site boundary
Gadwall	<i>Mareca strepera</i>	AL	147	2019	0.96km north of the Site boundary
Gannet	<i>Morus bassanus</i>	AL	2	2013	1.78km southwest of the Site boundary
Golden Plover	<i>Pluvialis apricaria</i>	BD1	24	2017	1.03km north of the Site boundary

Species	Scientific name	Status	No. of records	Most recent record	Distance to the nearest record from the Site
Greenfinch	<i>Chloris chloris</i>	RL	59	2021	0.68km south west of the Site boundary
Green Sandpiper	<i>Tringa ochropus</i>	WCA1	366	2013	1.13km south of the Site boundary
Grey Wagtail	<i>Motacilla cinerea</i>	LSoCC	88	2021	1.12km northeast of the Site boundary
Herring Gull	<i>Larus argentatus</i>	S41; RL	13	2018	0.96km north of the Site boundary
House Martin	<i>Delichon urbicum</i>	RL; LPS	18	2019	0.96km north of the Site boundary
House Sparrow	<i>Passer domesticus</i>	S41; RI; LPS; LSoCC	8	2019	1.78km southwest of the Site boundary
Kingfisher	<i>Alcedo atthis</i>	WCA1; BD1; LPS	89	2021	0.33km east of the Site boundary
Lapwing	<i>Vanellus vanellus</i>	S41; RL; LPS; LSoCC	91	2021	1.03km north of the Site boundary
Lesser Black-backed Gull	<i>Larus fuscus</i>	LPS	9	2014	0.96km north of the Site boundary
Lesser Redpoll	<i>Acanthis cabaret</i>	S41	6	2019	0.69km southwest of the Site boundary
Lesser Whitethroat	<i>Curruca curruca</i>	LPS	13	2018	1.19km southwest of the Site boundary
Linnet	<i>Linaria cannabina</i>	LPS; LSoCC	110	2021	0.68km southwest of the Site boundary
Little Ringed Plover	<i>Charadrius dubius</i>	WCA1; LPS	81	2013	1.14km southeast of the Site boundary

Species	Scientific name	Status	No. of records	Most recent record	Distance to the nearest record from the Site
Mallard	<i>Anas platyrhynchos</i>	AL	2	2018	1.57km northwest of the Site boundary
Marsh Tit	<i>Poecile palustris</i>	S41; RL	1	2017	0.8km northwest of the Site boundary
Mistle Thrush	<i>Turdus viscivorus</i>	RL; LPS; LSoCC	34	2021	1.05km southwest of the Site boundary
Nightingale	<i>Luscinia megarhynchos</i>	RL; LSoCC	1	2019	1.27km north of the Site boundary
Peregrine	<i>Falco peregrinus</i>	WCA1	1	2020	1.57km northwest of the Site boundary
Pochard	<i>Aythya ferina</i>	RL; LPS; LSoCC	142	2013	1.71km northwest of the Site boundary
Red Kite	<i>Milvus milvus</i>	WCA1; BD1	35	2021	1.03km north of the Site boundary
Redwing	<i>Turdus iliacus</i>	WCA1	53	2021	0.68km southwest of the Site boundary
Reed Bunting	<i>Emberiza schoeniclus</i>	S41; LSoCC	86	2021	0.68km southwest of the Site boundary
Sand Martin	<i>Riparia riparia</i>	LPS	9	2019	1.14km southeast of the Site boundary
Skylark	<i>Alauda arvensis</i>	S41; RL; LPS; LSoCC	114	2021	0.68km southwest of the Site boundary
Shag	<i>Gulosus aristotelis</i>	RL	1	2013	1.51km northwest of the Site boundary

Species	Scientific name	Status	No. of records	Most recent record	Distance to the nearest record from the Site
Smew	<i>Mergellus albellus</i>	RL; BD1	28	2014	1.27km north of the Site boundary
Song Thrush	<i>Turdus philomelos</i>	LPS; LSoCC	95	2021	0.68km southwest of the Site boundary
Spotted Flycatcher	<i>Muscicapa striata</i>	S41; RL; LPS; LSoCC	4	2019	1.27km north of the Site boundary
Starling	<i>Sturnus vulgaris</i>	RL; LPS; LSoCC	20	2021	1.13km south of the Site boundary
Swift	<i>Apus apus</i>	RL; LPS	27	2019	0.94km north of the Site boundary
Whinchat	<i>Saxicola rubetra</i>	RL; LSoCC	33	2015	1.14km southeast of the Site boundary
Wigeon	<i>Mareca penelope</i>	AL	1	2013	1.78km northwest of the Site boundary
Woodpigeon	<i>Columba palumbus</i>	AL	2	2018	1.74km northwest of the Site boundary
Wren	<i>Troglodytes troglodytes</i>	AL	2	2016	1.25km west of the Site boundary
Yellow Wagtail	<i>Motacilla flava</i>	RL; SoCC	42	2014	1.14km southeast of the Site boundary
TERRESTRIAL MAMMALS					
Brown long-eared Bat	<i>Plecotus auritus</i>	HR2; WCA5; S41; LPS; LSoCC	8	2019	0.76km north of the Site boundary

Species	Scientific name	Status	No. of records	Most recent record	Distance to the nearest record from the Site
Common pipistrelle	<i>Pipistrellus pipistrellus</i>	HR2; WCA5I LSoCC	28	2019	0.17km east of the Site boundary
Daubenton's bat	<i>Myotis daubentonii</i>	HR2; WCA5; LPS; LSoCC	28	2019	0.76km north of the Site boundary
Harvest Mouse	<i>Micromys minutus</i>	S41; LPS; LSoCC	1	2013	1.49km south of the Site boundary
Lesser Noctule	<i>Nyctalus leisleri</i>	HRA2; WCA5; LPS; LSoCC	2	2019	0.89km northeast of the Site boundary
Myotis Bat	<i>Myotis</i>	HRA2, WCA5; S41; LSoCC	1	2015	0.78km north of the Site boundary
Noctule Bat	<i>Nyctalus noctula</i>	HRA2, WCA5, S41; LPS; LSoCC	8	2019	0.53km northeast of the Site boundary
Soprano Pipistrelle	<i>Pipistrellus pygmaeus</i>	HR2; WCA5, S41; LPS; LSoCC	57	2019	0.09km northeast of the Site boundary
West European Hedgehog	<i>Erinaceus europaeus</i>	S41; LPS; LSoCC	2	2020	1.12km northwest of the Site boundary
REPTILES					
Grass Snake	<i>Natrix helvetica</i>	WCA5; S41; LPS; LSoCC	7	2019	0.68km southwest of the Site boundary
INVERTEBRATES					
Adonis' Ladybird	<i>Hippodamia variegata</i>	NN	2	2017	1.13km south of the Site boundary

Species	Scientific name	Status	No. of records	Most recent record	Distance to the nearest record from the Site
A True Fly	<i>Dioxya bidentis</i>	NN	1	2017	1.13km south of the Site boundary
Beaded Chestnut	<i>Agrochola lychnidis</i>	S41	17	2014	0.78km north of the Site boundary
Blood-vein	<i>Timandra comae</i>	S41	13	2016	0.68km southwest of the Site boundary
Buff Ermine	<i>Spilosoma lutea</i>	S41	19	2017	0.78km north of the Site boundary
Centre-barred Sallow	<i>Atethmia centrago</i>	S41	8	2020	0.78km north of the Site boundary
Cinnibar	<i>Tyria jacobaeae</i>	S41	36	2017	0.58km north of the Site boundary
Common Darter	<i>Sympetrum striolatum</i>	DD	8	2021	0.68km southwest of the Site boundary
Dusky Thorn	<i>Ennomos fuscantaria</i>	S41	49	2019	0.78km north of the Site boundary
Essex Skipper	<i>Thymelicus lineola</i>	LPS	34	2022	0.24km northeast of the Site boundary
Green-brindled Crescent	<i>Allophyes oxyacanthae</i>	S41	2	2017	1.19km southwest of the Site boundary
Hollyhock Seed Moth	<i>Pexicopia malvella</i>	NN; LSoCC	1	2018	1.13km south of the Site boundary
Jersey Tiger	<i>Euplagia quadripunctaria</i>	HRA2	1	2019	1.21km south of the Site boundary

Species	Scientific name	Status	No. of records	Most recent record	Distance to the nearest record from the Site
Knot Grass	<i>Acronicta rumicis</i>	S41	5	2013	0.69km southwest of the Site boundary
Lackey	<i>Malacosoma neustria</i>	S41	3	2018	1.13km south of the Site boundary
Large Skipper	<i>Ochlodes sylvanus</i>	LPS	46	2022	0.58km north of the Site boundary
Large Tortoiseshell	<i>Nymphalis polychloros</i>	RE; LSoCC	1	2022	1.60km southwest of the Site boundary
Lobe-spurred Furrow Bee	<i>Lasioglossum pauxillum</i>	NN; LSoCC	2	2017	1.06km south of the Site boundary
Mottled Rustic	<i>Caradrina morpheus</i>	S41	6	2018	0.78km north of the Site boundary
Painted Nomad Bee	<i>Nomada fucata</i>	NN; LSoCC	1	2017	1.06km south of the Site boundary
Red-shanked Carder Bee	<i>Bombus ruderarius</i>	S41; LPS; LSoCC	1	2013	1.19km southwest of the Site
Rustic	<i>Hoplodrina blanda</i>	S41	10	2013	0.78km north of the Site boundary
Sallow	<i>Cirrhia icteritia</i>	S41; LPS; LSoCC	14	2017	0.78km north of the Site boundary
Scarce Grass-veneer	<i>Crambus pratella</i>	NN	15	2019	0.69km southwest of the Site boundary
Shaded Broad-bar	<i>Scotopteryx chenopodiata</i>	S41	17	2018	0.68km southwest of the Site boundary

Species	Scientific name	Status	No. of records	Most recent record	Distance to the nearest record from the Site
Shoulder-striped Wainscot	<i>Leucania comma</i>	S41	1	2017	1.19km southwest of the Site boundary
Small Copper	<i>Lycaena phlaeas</i>	LPS	39	2022	0.68km southwest of the Site boundary
Small Heath	<i>Coenonympha pamphilus</i>	S41; NT; LPS; LSoCC	135	2022	0.24km northeast of the Site boundary
Small Skipper	<i>Thymelicus sylvestris</i>	LPS	51	2022	0.66km north of the Site boundary
Small Square-spot	<i>Diarsia rubi</i>	S41	21	2018	0.68km southwest of the Site boundary
Spined Hylaeus	<i>Hylaeus cornutus</i>	NN; LSoCC	2	2015	1.05km southwest of the Site boundary
Stag Beetle	<i>Lucanus cervus</i>	HRA2; WCA5; S41	17	2021	0.67km northeast of the Site boundary
Sulphur Pearl	<i>Sitochroa palealis</i>	NN; LSoCC	4	2018	1.19km southwest of the Site boundary
Swollen-thighed Blood Bee	<i>Sphecodes crassus</i>	NN; LSoCC	1	2017	1.06km south of the Site boundary
White Ermine	<i>Spilosoma lubricipeda</i>	S41	27	2015	0.78km north of the Site boundary
PLANTS					
Bluebell	<i>Hyacinthoides non-scripta</i>	WCA8	3	2017	1.19km southwest of the Site boundary
Common Cudweed	<i>Filago vulgaris</i>	NT	3	2014	1.13km south of the Site boundary

Species	Scientific name	Status	No. of records	Most recent record	Distance to the nearest record from the Site
Cornflower	<i>Centaurea cyanus</i>	S41; LPS; LSoCC	4	2013	0.85km north of the Site boundary
Corn Marigold	<i>Glebionis segetum</i>	VU; LSoCC	2	2013	1.49km south of the Site boundary
Dittander	<i>Lepidium latifolium</i>	NS; LSoCC	4	2017	1.36km south of the Site boundary
Wild Pansy	<i>Viola tricolor</i>	NT; LSoCC	1	2013	1.49km south of the Site boundary
Yellow Vetchling	<i>Lathyrus aphaca</i>	VU; NS; LSoCC	1	2017	1.49km south of the Site boundary
INVASIVE SPECIES					
Chinese Muntjac	<i>Muntiacus reevesi</i>	WCA9	9	2021	0.83km southwest of the Site boundary
Demon Shrimp	<i>Dikerogammarus haemobaphes</i>	WCA9	2	2019	1.14km west of the Site boundary
False-acacia	<i>Robinia pseudoacacia</i>	WCA9	10	2020	0.87km northeast of the Site boundary
Japanese Knotweed	<i>Fallopia japonica</i>	WCA9	1	2016	1.26km west of the Site boundary
Ring-necked Parakeet	<i>Psittacula krameri</i>	WCA9	36	2019	0.64km northeast of the Site boundary

Key: WCA1 = listed on Schedule 1 of the Wildlife and Countryside Act 1981, as amended; RL = red listed on Birds of Conservation Concern 5; S41 = Species of Principal Importance included on Section 41 of the NERC Act 2006; LPS = London Priority Species; LSoCC = Local Species of Conservation Concern; WCA5 = listed on Schedule 5 of the Wildlife and Countryside Act 1981, as amended; WCA8 = listed on Schedule 8 of the Wildlife and Countryside Act 1981, as amended WCA9 = listed on Schedule 9 of the Wildlife and Countryside Act 1981, as amended HR2 = listed on Schedule 2 of Conservation of Habitats and Species Regulations 2017 (as amended); NS = Nationally Scarce; NN = Nationally Notable; NT = Near Threatened; RE = Regionally Extinct; VU = Vulnerable; DD = Data Deficient

Common name	Scientific name
AMPHIBIANS/REPTILES	
Grass Snake	Natrix helvetica
Great crested newt	Triturus cristatus
BIRDS	
Black-headed Gull	Chroicocephalus ridibundus
Black Kite	Milvus migrans
Bullfinch	Pyrrhula pyrrhula
Common Sandpiper	Actitis hypoleucos
Common Tern	Sterna hirundo
Cormorant	Phalacrocorax carbo
Cuckoo	Cuculus canorus
Curlew	Numenius arquata
Dunnock	Prunella modularis
Fieldfare	Turdus pilaris
Gadwall	Mareca strepera
Gannet	Morus bassanus
Golden Plover	Pluvialis apricaria
Great crested grebe	Podiceps cristatus
Greenfinch	Chloris chloris
Green Sandpiper	Tringa ochropus
Grey wagtail	Motacilla cinerea
Herring Gull	Larus argentatus
House Martin	Delichon urbicum
House Sparrow	Passer domesticus
Kingfisher	Alcedo atthis

Common name	Scientific name
Lapwing	<i>Vanellus vanellus</i>
Lesser Black-backed Gull	<i>Larus fuscus</i>
Lesser redpoll	<i>Acanthis cabaret</i>
Lesser Whitethroat	<i>Curruca curruca</i>
Linnet	<i>Linaria cannabina</i>
Little Ringed Plover	<i>Charadrius dubius</i>
Mallard	<i>Anas platyrhynchos</i>
Marsh Tit	<i>Poecile palustris</i>
Mistle Thrush	<i>Turdus viscivorus</i>
Nightingale	<i>Luscinia megarhynchos</i>
Peregrine	<i>Falco peregrinus</i>
Pochard	<i>Aythya ferina</i>
Red Kite	<i>Milvus milvus</i>
Redwing	<i>Turdus iliacus</i>
Redwing	<i>Turdus iliacus</i>
Reed Bunting	<i>Emberiza schoeniclus</i>
Ring-necked Parakeet	<i>Psittacula krameri</i>
Sand Martin	<i>Riparia riparia</i>
Shoveler	<i>Anas clypeata</i>
Skylark	<i>Alauda arvensis</i>
Shag	<i>Gulosus aristotelis</i>
Smew	<i>Mergellus albellus</i>
Song Thrush	<i>Turdus philomelos</i>
Spotted Flycatcher	<i>Muscicapa striata</i>
Starling	<i>Sturnus vulgaris</i>

Common name	Scientific name
Swift	<i>Apus apus</i>
Whinchat	<i>Saxicola rubetra</i>
Wigeon	<i>Mareca penelope</i>
Woodpigeon	<i>Columba palumbus</i>
Wren	<i>Troglodytes troglodytes</i>
Yellow Wagtail	<i>Motacilla flava</i>
MAMMALS	
Badger	<i>Meles meles</i>
Brown long-eared bat	<i>Plecotus auritus</i>
Common pipistrelle	<i>Pipistrellus</i>
Daubenton's bat	<i>Myotis daubentonii</i>
Harvest Mouse	<i>Micromys minutus</i>
Hedgehog	<i>Erinaceus europaeus</i>
Natterer's bat	<i>Myotis nattereri</i>
Noctule	<i>Nyctalus noctula</i>
Soprano pipistrelle	<i>Pipistrellus pygmaeus</i>
Serotine	<i>Eptesicus serotinus</i>
Western barbastelle	<i>Barbastella barbastellus</i>
INVERTEBRATES	
Adonis' Ladybird	<i>Hippodamia variegata</i>
A True Fly	<i>Dioxya bidentis</i>
Beaded Chestnut	<i>Agrochola lychnidis</i>
Blood-vein	<i>Timandra comae</i>
Buff Ermine	<i>Spilosoma lutea</i>
Centre-barred Sallow	<i>Atethmia centrargo</i>

Common name	Scientific name
Cinnibar	<i>Tyria jacobaeae</i>
Common Darter	<i>Sympetrum striolatum</i>
Dusky Thorn	<i>Ennomos fuscantaria</i>
Essex Skipper	<i>Thymelicus lineola</i>
Green-brindled Crescent	<i>Allophyes oxyacanthae</i>
Hollyhock Seed Moth	<i>Pexicopia malvella</i>
Jersey Tiger	<i>Euplagia quadripunctaria</i>
Knot Grass	<i>Acronicta rumicis</i>
Lackey	<i>Malacosoma neustria</i>
Large Skipper	<i>Ochlodes sylvanus</i>
Large Tortoiseshell	<i>Nymphalis polychloros</i>
Lobe-spurred Furrow Bee	<i>Lasioglossum pauxillum</i>
Mottled Rustic	<i>Caradrina morpheus</i>
Painted Nomad Bee	<i>Nomada fucata</i>
Red-shanked Carder Bee	<i>Bombus ruderarius</i>
Rustic	<i>Hoplodrina blanda</i>
Sallow	<i>Cirrhia icteritia</i>
Scarce Grass-veneer	<i>Crambus pratella</i>
Shaded Broad-bar	<i>Scotopteryx chenopodiata</i>
Shoulder-striped Wainscot	<i>Leucania comma</i>
Small Copper	<i>Lycaena phlaeas</i>
Small Heath	<i>Coenonympha pamphilus</i>
Small Skipper	<i>Thymelicus sylvestris</i>
Small Square-spot	<i>Diarsia rubi</i>
Spined Hylaeus	<i>Hylaeus cornutus</i>

Common name	Scientific name
Stag Beetle	Lucanus cervus
Sulphur Pearl	Sitochroa palealis
Swollen-thighed Blood Bee	Sphecodes crassus
White Ermine	Spilosoma lubricipeda
INVASVE NON-NATIVES	
Chinese muntjac	Muntiacus reevesi
Demon Shrimp	Dikerogammarus haemobaphes
False-acacia	Robinia pseudoacacia
Japanese Knotweed	Fallopia japonica
Ring-necked Parakeet	Psittacula krameri
PLANTS	
Ash	Fraxinus excelsior
Blackthorn	Prunus spinosa
Black medic	Medicago lupulina
Bluebell	Hyacinthoides non-scripta
Bramble	Montifringillais
Broad-leaf dock	Rumex obtusifolius
Canadian pondweed	Elodea canadensis
Cleavers	Galium aparine
Cock's foot	Dactylis glomerata
Common bullrush	Scirpus lacustris
Common daisy	Bellis perennis
Common Club-rush	Schoenoplectus lacustris
Common Cudweed	Filago vulgaris
Common duckweed	Lemna minor

Common name	Scientific name
Common hawthorn	<i>Crataegus monogyna</i>
Common nettle	<i>Urtica dioica</i>
Common reed	<i>Phragmites australis</i>
Common stonewort	<i>Chara vulgaris</i>
Cornflower	<i>Centaurea cyanus</i>
Corn Marigold	<i>Glebionis segetum</i>
Cow Parsley	<i>Anthriscus sylvestris</i>
Dittander	<i>Lepidium latifolium</i>
Dove's foot cranesbill	<i>Geranium molle</i>
Hairy bittercress	<i>Cardamine hirsuta</i>
Hazel	<i>Corylus avellana</i>
Hornbeam	<i>Carpinus betulus</i>
Ivy-leaved duckweed	<i>Lemna trisulca</i>
Lesser pond sedge	<i>Carex acutiformis</i>
Matt grass	<i>Nardus stricta</i>
Meadow buttercup	<i>Ranunculus acris</i>
Oak	<i>Quercus robur</i>
Opposite-leaved pondweed	<i>Groenlandia densa</i>
Pennyroyal	<i>Mentha pulegium</i>
Perennial rye grass	<i>Lolium perenne</i>
Pussy Willow	<i>Salix caprea</i>
Purple dead-nettle	<i>Lamium purpureum</i>
Ribwort plantain	<i>Plantago lanceolata</i>
Rigit hornwort	<i>Ceratophyllum demersum</i>
River water-dropwort	<i>Oenanthe fluviatilis</i>

Common name	Scientific name
Round-fruited rush	Round-fruited rush
Silver birch	Betula pendula
Soft rush	Juncus effusus
Spiked water-milfoil	Myriophyllum spicatum
Snow drops	Galanthus nivalis
Spear thistle	Cirsium vulgare
White clover	Trifolium repens
Whorl grass	Catabrosa aquatica
Wild Carrot	Daucus carota
Willow	Salix sp
Yorkshire Fog	Holcus lanatus

Annex C - Target notes

Target Note	Description
TN1	Line of outbuildings/garages within 20m of the Site boundary that look to exhibit potential roosting features given the age, condition and level of use.
TN2	Extensive signs of canalisation of the watercourse on Site given the artificial banks and division within the channel itself
TN3	Previous evidence of reptile surveys undertaken on Site
TN4	Dense parcel of mixed woodland with no access possible beyond fringes
TN5	Extensive strip of broadleaf woodland that borders much of the northern parts of the Site

Annex D - HIS assessments

HSI Criteria	WB1	
	Field Score	HSI Score
SI ¹ -Location	A	1.00
SI ² - Pond Area	1000m ²	0.95
SI ³ -Pond Drying	Rarely Dries	1
SI ⁴ - Water Quality	Poor	0.33
SI ⁵ - Shade	40%	1.00
SI ⁶ - Fowl	Minor	0.67
SI ⁷ - Fish	Possible	0.7
SI ⁸ - Ponds	>12	1
SI ⁹ - Terr'l Habitat	Poor	0.33
SI ¹⁰ – Macrophytes	25%	0.55
HSI	Average	0.69