Ecological Impact Assessment

Logicor Park Reading, Rose Kiln Court

Presented to: Redwood (Light Industrial) Propco Sarl

Issued: September 2024

Lucion Delta-Simons Project No: 91193.557186

Protecting people and planet

Report Details

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Non-Technical Summary

Lucion Delta-Simons Ltd was instructed by Redwood (Light Industrial) Propco Sarl (the 'Client') to undertake an Ecological Impact Assessment (EcIA) of an area of land at Rose Kiln Court (Logicor Park Reading), Rose Kiln Lane, Reading RG2 0BY (hereafter referred to as the 'Site') to inform a planning application for demolition of the existing Class E(g)(i) (Office) building and the construction of three buildings for Class E(g)(iii) (Light Industrial)/Class B2 (General Industrial)/Class B8 (Storage or Distribution) uses, including the provision of a new substation, parking, landscaping, and associated works (the 'Proposed Development') at the Site.

This EcIA addresses the potential effects of the Proposed Development on ecology and nature conservation. The Report describes the methods used to assess the effects; the baseline conditions currently existing at the Site and within the immediate surrounding area; the mitigation measures required to prevent, reduce or offset any significant adverse effects and the likely residual effects after these measures have been adopted, as well as any proposed enhancement measures. A summary of residual effects is provided overleaf.

An ecological desk study undertaken in January 2023 identified no internationally designated statutory sites within 6 km of the Site, no nationally or county designated statutory sites within 2 km of the Site. The Site falls within one or more Site of Special Scientific Interest (SSSI) Impact Risk Zones (IRZ). However, as the Proposed Development does not meet any of the criteria for which the Local Planning Authority (LPA) would need to consult with Natural England over risks posed by development (for internationally and nationally designated statutory sites), and due to the development's type, scale and distance from these designated sites, it is considered unlikely that the Proposed Development would have any adverse impact on statutory designated sites.

Six non-statutory designated sites were identified within 2 km of the Site centre, all of which are designated Local Wildlife Sites (LWS), the closest is Holy Brook which is located adjacent to the northern Site boundary. With the application of standard environmental best practice, maintenance of a buffer to the associated water course and the proposed sensitive lighting scheme, the Proposed Development is considered to have a negligible effect.

The habitats on Site were surveyed and assessed for their suitability to support protected/otherwise notable species by Lucion Delta-Simons on 8th February 2023. The Site covers an area of 0.7 ha and comprises an office building and associated hardstanding with scattered trees and areas of introduced shrub and grassland. A single ornamental hedgerow was located along the south-western boundary of the Site. . All habitats present on Site are widespread on both a local and national scale, with none of the habitats being considered rare. The habitats are of low ecological value and will be largely lost to facilitate the redevelopment. The hedgerow and selected trees are to be retained and protected during the redevelopment and any removed cotoneaster plants (an invasive species listed on Schedule 9 of the Wildlife and Countryside Act, 1981 as amended) are to be appropriately disposed of to prevent its spread. The proposed landscape scheme incorporates flowering lawn mix, wildflower grassland mix suitable for areas of shading, and six additional trees, and with the application of a Landscape and Ecology Management Plan (LEMP), has the potential to result in a biodiversity net gain significantly higher than the required 10 % in area and linear (Hedgerow) habitats, resulting in a beneficial effect.

Whilst itself off-Site, the riparian zone of Holy Brook to the north of the Site is considered to fall on-Site and as such a River Condition Assessment through completion of a Modular River Physiology (MoRPh) assessment was undertaken on 8th November 2023 (see Appendix A). The River Condition Assessment scored the section of Holy Brook adjacent to the Site to be of 'fairly poor' condition and makes recommendations to improve the overall area and elevate the score. Whilst some of the identified measures are considered unachievable/disproportionate within the scope of the proposed development, since the works proposed are downstream, falling outside the Site boundary, it is considered that improvements could be made to target a 'moderate' condition both in regard to the Morph assessment score and to achieve a Biodiversity Net Gain in watercourse units. Due to the watercourse and its banks falling outside the ownership of the Client, and the presence of a Tree Preservation Order, any such improvement measures and the mechanism for their application would need to be determined with the relevant authorities.

The construction phase will result in the loss of suitable bird nesting habitat including trees and introduced shrubs. Suitable habitat will be removed either outside the main nesting bird season, or subsequent to a nesting bird check by a suitably experienced ecologist immediately prior to removal, and with the proposed soft landscaping and application of an appropriate LEMP, the residual effects are considered to be negligible.

The Site itself did not offer any roost potential for bats, and whilst, three off-Site trees that overhang the northern Site boundary were identified to contain features suitable to support roosting bats, nocturnal bat surveys in May 2023 recorded the likely absence of a roost. The Site itself provided limited opportunities for foraging and commuting bats, however Holy Brook and the treeline corridor bordering the Site to the north and west offer greater habitat value and connectivity to the surrounding landscape. With the application of the proposed sensitive lighting plan, the Proposed Development is considered to have a negligible effect.

Holy Brook is considered to provide suitable opportunities for water vole and otter. Whilst a previous survey in 2021 did not record any evidence of these species, records associated with Holy Brook and the wider watercourse network were returned by the data search. With the application of standard environmental best practice and a buffer between development and the riparian habitat no adverse impacts are anticipated.

The Site offers limited opportunities for hedgehog, however, with a precautionary approach to vegetation clearance and best practice regarding open trenches and pipework, residual effects are considered to be negligible.

Whilst there is likely to be a temporal delay in achieving the biodiversity objectives for the Site (i.e. whilst new habitats become established), it is anticipated that in the long term there will be no significant residual effects on habitats or protected species resulting from the Proposed Development.

Summary of Residual Effects

Important Ecological Feature	Geographic Value	Characterisation of Unmitigated Impact	Significance Before Mitigation	Avoidance, Mitigation and Compensation	Residual Effect Significance
Holy Brook LWS	County	Habitat degradation (dust/pollution) Change to the lighting scheme	Moderate adverse Significant at a local level	Application of standard environmental practice Maintenance of a buffer to the riparian habitat (assisted by the presence of a public footpath) Sensitive lighting	Negligible
Habitats	Local	Habitat loss Damage to structure, roots and health of habitat Spread of cotoneaster	Minor adverse Non-significant	Adherence to BS5837:2012 Landscape enhancements Landscape and Ecology Management Plan (LEMP) Appropriate disposal of cotoneaster	Minor beneficial Non-significant
Birds	Local	Habitat loss Nest destruction/ disturbance Noise and vibration Inappropriate management	Minor adverse Non-significant	Sensitive timing of works and/or watching brief with regards to the removal of, and works within close proximity to, suitable nesting habitat. LEMP	Negligible
Bats	Local	Change to the lighting scheme on Site. Potential disturbance to roosting bats through management of off-Site trees	Minor adverse Non-significant	Sensitive lighting scheme Precautionary approach with regards to any required management of trees overhanging the northern Site boundary.	Negligible

Important Ecological Feature	Geographic Value	Characterisation of Unmitigated Impact	Significance Before Mitigation	Avoidance, Mitigation and Compensation	Residual Effect Significance
Otter and Water Vole	Local	Habitat degradation (Pollution/dust) Risk of harm from open excavations	Minor adverse Non-significant	Buffer retention Environmental best practice Best practice regarding covering excavations overnight	Negligible
Hedgehogs	Local	Risk of harm during Site clearance and open excavations/pipe work	Minor adverse Non-significant	Precautionary approach to clearance Best practice regarding covering excavations overnight	Negligible

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1.0 Introduction

1.1 Purpose and Scope of the Survey

Lucion Delta-Simons Ltd was instructed by Redwood (Light Industrial) Propco Sarl (the 'Client') to undertake an Ecological Impact Assessment (EcIA) of an area of land at Rose Kiln Court (Logicor Park Reading), Rose Kiln Lane, Reading RG2 0BY (hereafter referred to as the 'Site') to inform a planning application for demolition of the existing buildings and the construction of three industrial buildings and the provision of a new substation, parking, landscaping, and associated works.

The purpose of this report is to:

Establish baseline ecological conditions at the Site.

- Provide details of ecological mitigation measures incorporated through design evolution as an intrinsic part of the project design.
- Detail any ecological mitigation measures to be implemented during Site clearance, construction and operation.
- Identify any residual ecological effects after avoidance and mitigation measures have been considered.
- Identify any compensation measures required to offset residual effects.
- Provide recommendations for how mitigation and compensation may be secured and monitored.
- Set out details of ecological enhancement measures to be included within the Proposed Development.
- Provide sufficient information to determine whether the project accords with relevant nature conservation policies and legislation and, where appropriate, to allow conditions or obligations to be proposed by the relevant authority.

The Site location and the red line boundary are shown in Figure 1.

1.2 Site Description

The Site is centred at Ordnance Survey (OS) grid reference SU 71319 72330, to the south-west of Reading in Berkshire. The Site covers an area of 0.7 ha and comprises an office building and associated hardstanding with scattered trees and areas of introduced shrub. Adjacent to the northern boundary lies Holy Brook, a tree lined watercourse leading to the River Kennet to the east The Site is bounded by mixed commercial and residential habitats on all aspects of the Site. The A33 is located adjacent to the eastern boundary.

The habitats present on Site are shown in Figure 2.

1.3 Proposed Development

The Proposed Development will comprise the demolition of the existing Class E(g)(i) (Office) building and the construction of three buildings for Class E(g)(iii) (Light Industrial)/Class B2 (General Industrial)/Class B8 (Storage or Distribution) uses, including the provision of a new substation, parking, landscaping, and associated works (Drawing 1).

The construction phase will comprise:

- Demolition of the existing buildings and clearance of habitats on Site;
- Retention and protection of trees and hedgerows on/off-Site; and
- Construction of the new build and installation of soft landscaping.

The operational phase will comprise:

- Use of buildings for commercial purpose; and
- Management of retained and newly planted habitats in accordance with a Landscape and Ecological Management Plan (LEMP).

2.0 Legislation & Policy Summary

Planning guidelines, international commitments, legislation and planning policies relevant to the protection, conservation and enhancement of nature conservation interests are detailed below.

2.1 National Policy and Guidance

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

- National Planning Policy Framework (NPPF, revised 2021);
- The Conservation of Habitats and Species Regulations 2017 (as amended);
- The Wildlife and Countryside Act (WCA) 1981 (as amended);
- The Countryside and Rights of Way (CRoW) Act 2000;
- The Natural Environment and Rural Communities Act (NERC) 2006;
- The Hedgerow Regulations 1997; and
- The Protection of Badgers Act 1992.

Where relevant, this assessment takes account of the legislative and policy protection afforded to specific habitats and species. Lucion Delta-Simons does not purport to provide specialist legal advice and where necessary the reader should also consult the original legislation, references to which are included in Appendix B.

2.2 Local Policy and Guidance

Local planning policies relating to ecology are generally based on national planning policy, the conservation of species protected under the above legislation and the protection of designated sites. However, relevant local policy and guidance documents are outlined below.

The Local Plan for Reading was adopted on 4th November 2019. The Local Plan document contains the policies for how Reading will develop up to 2036.

The principal planning policies relating to nature conservation are as follows:

<u>EN11: WATERSPACES</u>

Reading's waterspaces will be protected and enhanced, so that they can continue to contribute to local and regional biodiversity and ecology, flood mitigation, local character, heritage and visual amenity, the provision of accessible leisure and recreational opportunities and, where appropriate, navigation. There will be no adverse impact on the functions and setting of any watercourse and its associated corridor. Where development in the vicinity of watercourses is acceptable, it will:

- Provide appropriate, attractive uses and buildings that enhance the relationship of buildings, spaces and routes to the watercourse, including through creating or enhancing views of the watercourse, and create a high quality public realm;
- Make positive contributions to the distinct character, appearance, historic significance, landscape and amenity of the watercourses;
- Provide a strengthened role for watercourses as important landscape features, wildlife corridors, historic features and recreation opportunities;
- Wherever practical and consistent with its biodiversity role, provide good, level access to and along the waterside for all those who want to use it;

- Be set at least ten metres back from the watercourse wherever practicable and appropriate to protect its biodiversity significance;
- Improve the quality of watercourse environment through protecting and enhancing habitats and ensuring that habitat creation is balanced with access and urban uses; and
- Pursue opportunities for deculverting of watercourses.

EN12: Biodiversity and The Green Network

"All development should:

a) *The identified Green Network, the key elements of which are shown on the Proposals Map, shall be maintained, protected, consolidated, extended and enhanced. Permission will not be granted for development that negatively affects the sites with identified interest or fragments the overall network. The Green Network comprises:*

- Sites with identified biodiversity interest - Local Wildlife Sites, Local Nature Reserves, Biodiversity Opportunity Areas, protected and priority species and their habitats, Priority and Biodiversity Action Plan habitats, and the River Thames and all its tributaries (including the River Kennet and the Kennet & Avon Canal); and
- Areas with potential for biodiversity value and which stitch the Green Network together – designated Local Green Space and open green spaces, and existing and potential Green Links. New development shall demonstrate how the location and type of green space, landscaping and water features provided within a scheme have been arranged such that they maintain or link into the existing Green Network and contribute to its consolidation. Such features should be designed to maximise the opportunities for enhancing this network. All new development should maximise opportunities to create new assets and links into areas where opportunities are as yet unidentified on the Proposals Map.

b) On all sites, development should not result in a net loss of biodiversity and geodiversity, and should provide a net gain for biodiversity wherever possible. Development should:

- Protect and wherever possible enhance features of biodiversity interest on and adjacent to the application site, incorporating and integrating them into development proposals wherever practicable; and

c) Provide new tree planting, wildlife friendly landscaping and ecological enhancements (such as wildlife ponds, bird and bat boxes) wherever practicable. In exceptional circumstances where the need for development clearly outweighs the need to protect the value of the site, and it is demonstrated that the impacts cannot be:

- 1) avoided;
- 2) mitigated or;
- 3) compensated for on-site; then new development will provide off-site compensation to ensure that there is "no net loss" of biodiversity. Provision of off-site compensation shall be calculated in accordance with nationally or locally recognised guidance and metrics. It should not replace existing alternative habitats and should be provided prior to development.
- EN14: Trees, Hedges and Woodlands

"All development should:

Individual trees, groups of trees, hedges and woodlands will be protected from damage or removal where they are of importance, and Reading's vegetation cover will be extended. The quality of waterside vegetation will be maintained or enhanced.

New development shall make provision for tree retention and planting within the application site, particularly on the street frontage, or off-site in appropriate situations, to improve the level of tree coverage within the Borough, to maintain and enhance the character and appearance of the area in which a site is located, to provide for biodiversity and to contribute to measures to reduce carbon and adapt to climate change. Measures must be in place to ensure that these trees are adequately maintained.

3.0 Methodology

The baseline for the EcIA has been established through a combination of desk study and field surveys.

3.1 Scope of the Assessment and Zone of Influence

The features considered for this assessment were designated sites, Habitats and Species of Principal Importance for conservation, and species protected by wildlife legislation.

Given the size and location of the Site, the zone of influence was taken to be the Site boundary and its immediate environs only. The exception for this was for designated sites and great crested newt (GCN) *Triturus cristatus*, details of the zone of influence for these features is provided in Section 3.2, below.

3.2 Desk Study

3.2.1 Data Search

In January 2023, available records of protected and notable species were collated from the local record centre, Thames Valley Environmental Record Centre (TVERC) along with the non-statutory designated sites from within 2 km of the Site centre.

A search for internationally, nationally and county designated statutory sites for nature conservation was undertaken using the Multi-Agency Geographic Information for the Countryside (MAGIC) website. The search radius was 6 km from the Site for internationally important designated sites and 2 km from the Site for nationally and county designated statutory sites. A search for non-statutory ancient woodland was undertaken within 2 km of the Site centre, and an assessment was made regarding the location of Habitats of Principal Importance (HPIs) on or near the Site using MAGIC.

A search for species data available on the MAGIC website was undertaken (i.e. granted European Protected Species Licence applications, GCN Class Survey Licence Returns and Natural England GCN Pond Survey Data 2017-2019).

In addition, free and publicly accessible Ordnance Survey maps and aerial photographs were searched for waterbodies on, or within, 500 m of the Site boundary. This information has been used to assess the Site for its potential to support great crested newts, the results of which are found in Section 4.3.

3.2.2 Previous Reports

Where available, previous reports for the Site were reviewed for any pertinent information that may be relevant to this impact assessment. The reports are:

- E3p (2022) Rose Kiln Court, Reading, Preliminary Ecological Appraisal dated January 2022.

3.3 Preliminary Ecological Appraisal Survey

The habitats on Site, were surveyed on 8th February 2023 by a Lucion Delta-Simons ecologist. Where access was not permitted to the surrounding land, it was visually assessed from the Site boundary.

The following was undertaken during the survey:

- Habitats were classified and mapped using the standard UK Habitat Classification and methodology (Butcher *et al.,* 2020). Dominant plant species were recorded in each different habitat. The plant species nomenclature followed that of Stace (2010). The list of plant species was compiled in accordance with methodology required to establish UK Habitat Classification types up to at least level 3, and to levels 4 or 5 wherever possible. Care was taken to accurately record all habitats of priority importance (if present). Secondary codes were added to polygons where deemed appropriate, taking special care to map mandatory codes for habitat mosaic, complex and origin. Survey was undertaken at the fine scale minimum mapping unit (MMU) of 25 m^2 (polygons) and 1 m width and 5 m long (lines). Key ecological

features below the MMU in either area or length were mapped as points; Habitats were classified and assessed in terms of both their conservation importance and potential to support notable and/or protected species, and widespread invasive plants (based on habitat suitability and/or field signs/evidence);

- Habitats on-Site were surveyed for the presence of, or field signs to indicate the presence of protected or notable birds, amphibians, reptiles, mammals and widespread invasive plants. This included an external visual assessment of any trees/buildings on the Site for potential bat roost features and any evidence of bat activity, and an assessment of the Site's suitability to support commuting and foraging bats (Appendix C), in line with Collins (2016); and
- If Habitats of Principal Importance (HPIs) under the NERC Act 2006 were found to be present these were recorded. Further, an assessment of any hedgerows at the Site, which will be adversely affected by the proposed development, was undertaken using the hedgerow criteria outlined in the Hedgerow Regulations 1997. The purpose of the assessment was to ascertain whether the hedgerows are classified as 'nationally important' and, therefore, protected under the Hedgerow Regulations 1997. The assessment involves a scoring system which relies on particular features, number of woody and floral species present within the hedgerow habitat, and the age of the hedgerow.

3.4 Bat Survey

3.4.1 Roost Presence/Likely Absence Surveys

A dusk emergence and a dawn return survey were carried out on 4th May 2023 and 18th May 2023 to determine bat activity associated with the tree at the northern Site boundary assessed as having moderate Bat Roost Potential (BRP). The surveys were undertaken to current guidance: Collins ed. (2016) Bat Surveys for Professional Ecologists Good Practice Guidelines.

The dusk survey commenced approximately fifteen minutes prior to sunset and ceased approximately one and a half hours following sunset. The dawn survey commenced approximately one and a half hours prior to sunrise and finished at sunrise, or fifteen minutes after depending on light, weather conditions and bat activity. The surveyors were equipped with Echo Meter Touch 2 Pros bat detectors. Recordings were made of any bats seen and/or heard and the species, the timing, activity, location and direction of flight. Any bat calls that could not be identified in the field at the time of the individual surveys were subject to analysis.

Table 1 provides details of the surveys and locations of the surveyors.

Table 1 - Timings, Weather Conditions and Location of Surveyors of the Tree Surveys

Structure	Date	Timing	Weather	Surveyor Location
Tree (T) 2	04/05/2023	20.14 - 22:01 (sunset 20:31)	15 °C, 3/8 cloud cover, F1 wind	1 – Western aspect of tree 2- Eastern aspect of tree
	18/05/2023	03.37 - 05:08 (sunrise 05:08)	11 °C, 2/8 cloud cover, F1 wind	1 – Western aspect of tree 2- Eastern aspect of tree

With reference to the Bat Mitigation Guidelines (2004), Collins (2016) and professional judgement, the weather conditions during both the dusk and dawn surveys were considered suitable for bat activity.

3.5 River Condition Assessment

A River Condition Assessment Report, consisting of a Modular River Physiology (MoRPh) assessment of Holy Brook, which lies adjacent to the northern Site boundary, was completed by Surrey Wildlife Trust (SWT) on behalf of Lucion Delta-Simons, on 8th November 2023. The detailed scope and methodology is provided in Appendix A.

3.6 Survey Limitations

The PEA survey was undertaken during the sub-optimal time of year for identifying plant species, however, given the nature of the Site and its formal landscaping, this is not considered to represent a significant limitation to the identification of habitat type or their value.

The baseline conditions described in this report were accurate at the time at which the survey was undertaken. Should at least two years pass by, and/or conditions on Site/Site usage change prior to the commencement of works, an update survey should be undertaken.

There were no limitations to the PEA or bat surveys in terms of access, timing and weather conditions.

It was only possible to enter one section of the river due to high flows, therefore all channel assessments were done from the bank side. This also may have obscured some features from view, which therefore means these features were not recorded. The MoRPh assessment is valid for a period of one year.

3.7 Ecological Impact Assessment Methodology

An ecological impact assessment has been carried out following the principles set out within the Guidelines for Ecological Impact Assessment (EcIA) in the UK and Ireland; Terrestrial, Freshwater, Coastal and Marine updated by the Chartered Institute of Ecology and Environmental Management (CIEEM) in 2019, the full details of which are provided in Appendix D.

4.0 Baseline Conditions

The following section describes the baseline ecological conditions at the Site, outlining the results of the desk study and field survey findings. Current management is anticipated to remain unchanged up until development and, therefore, baseline conditions at the time of writing this Report are anticipated to reflect those at the commencement of the Proposed Development. The conservation importance of the features identified have been evaluated using the geographical scale outlined in the previous section.

The pertinent information from the data search is set out in section 5.1 below for designated sites, whilst data search records and any information gathered from previous reports for the species are discussed in the relevant species sections. Full results of the data searches are available to the Client on request.

4.1 Desk Study

4.1.1 Designated Sites

The results of the MAGIC data search and the TVERC desk search indicate:

- No internationally designated statutory sites within 6 km of the Site;
- No nationally or county designated statutory sites within 2 km of the Site; and
- Six non-statutory designated sites within 2 km of the Site centre. All of which are designated Local Wildlife Sites (LWS).

Tables 2, below set out the non-statutory designated sites identified and considered relevant to the Site.

Table 2 - Non-Statutory Designated Sites within 2 km of the Site Centre

Site Name	Designation	Distance and Direction from Site Boundary	Designation Criteria Summary
Holy Brook	LWS	Immediately adjacent to the northern Site boundary	The Holy Brook is a stream that carries water from and emptying back into the River Kennet, a chalk river. Alder *Alnus* sp. and willows *Salix* sp. line the banks and a variety of wetland species are found along the banks. A number of notable invertebrates have been recorded in Holy Brook and water vole has been recorded in the central and western sections.
River Kennet/Kennet and Avon Canal	LWS	0.08 km	Marginal vegetation is variable along the length of the site, with some sections being more diverse than others. Bankside trees and shrubs, varying in density, are also present along the watercourse.
Fobney and Kennet Valley Meadows	LWS	0.26 km south-west	A series of meadows within the Fobney & Kennet valley floodplain. Habitats range from mesic grassland through wetter grasslands to swamps and are dissected by drainage ditches variously associated with hedgerows and trees.

Whitley Park Farm/St Patricks Hall Pond	LWS	0.26 km south-east	The LWS is important in holding mixed broadleaved semi-natural woodland and a range of associated habitats, including two ponds, both very different in character – one open and one enclosed. The site is important however, for its bird fauna holding a number of species listed on both the red and amber lists as "birds of conservation concern", although the date of most of these records are unknown.
Fobney Island	LWS	1.39 km south-west	The habitats on the island comprise created standing water bodies bounded by grassland and tall ruderal based habitats and a wetland mosaic dedicated to wildlife.
Cow Lane Depot	LWS	1.61 km north-west	The site is bounded by a railway track, situated towards the centre of Reading. The site forms a mosaic of habitats ranging from willow scrub with mature trees, to open standing water with swamp to ruderal and tall herb grassland. Cow Lane Depot provides a wildlife corridor in an urban landscape.

4.1.2 SSSI Impact Risk Zones

The Site falls within several Site of Special Scientific Interest (SSSI) Impact Risk Zones (IRZ) that require the Local Planning Authority (LPA) to consult with Natural England for certain development types. As the criteria listed are not relevant to the development proposals, this is not considered further within this Report.

4.1.3 Priority Habitats

The MAGIC Maps website suggested that no Priority/HPI habitats were present on-Site or within 50 m of the Site.

4.1.4 Review of Previous Surveys

The results of the Preliminary Ecological Appraisal reported by E3p in January 2022 are comparable to the current assessment, and as such any additional pertinent information is considered in the sections below.

4.2 Habitats

Figure 2 shows the extent of habitat types and boundary features. Descriptions of the habitat types and dominant plant species found at the Site are provided below. Habitat descriptions and codings are as listed in the UK Habitat Classification: Habitat Definitions Version 1.1 (Butcher *et al.,* 2020). Photographs of the Site survey are located in Appendix E.

Habitats recorded on Site are:

U1b5- Buildings

The Site comprised of an empty two-storey brick-built office building with a pitched tiled roof (Photographs 1-3), and five small structures used to hold plant, comprising single-storey brick and metal structures with flat roofs.

U1b- Developed land; Sealed Surface

A paved hardstanding carpark characterised the southern area of the Site (Photograph 3). Due to the disused nature of the Site at the time of the survey, self-seeded buddleia *Buddleja davidii* was noted growing through the gaps in the paving stones.

h-Heathland and Shrub (Introduced Shrubs)

Introduced shrubs occurred around the boundaries of the Site and two small areas were noted at the southern aspect of the main building. Small-leaved cotoneaster *Cotoneaster microphyllus* and entire leaved cotoneaster *Cotoneaster integrifolius* was noted adjacent to the south of the building and at the entrance to the Site (Target Notes 1 and 2), both of which are listed on Schedule 9 of the WCA. Other species included coralberry *Symphoricarpos orbiculatus*, cherry laurel *Prunus laurocerasus*, buddleia, dogwood *Cornus* sp. rose *Rosa* sp and gorse *Ulex europaeus* (Photographs 4). Colonising forbs included common ragwort *Jacobaea vulgaris,* daisy *Bellis perennis, bindweed Calystegia sp., poppy* Papaver sp., and dandelion *taraxacum* sp.

Broadleaved Scattered Trees

Immature scattered trees were noted along the eastern boundary consisting of ash *Fraxinus excelsior*, silver birch *Betula pendula,* lime *Tilia* sp. wild cherry *Prunus avium* and alder *Alnus* sp. (Photograph 5). Semi-mature trees occurred both on-Site and immediately adjacent to the western and northern Site boundary, including alder, ash, willow and oak *Quercus* sp.

G4- Modified Grassland

Areas of grassland occurred along the western Site boundary, and along the road verge at the eastern Site boundary. The grassland was dominated by perennial rye grass *Lolium perenne* and dandelion, with occasional ribwort plantain *Plantago lanceolata*, yarrow *Achillea millefolium*, common nettle *Urtica dioica,* daisy, buttercup *Ranunculus sp,* dandelion, and cock's foot *Dactylis glomerata* (Photograph 6).

H2b- Other Hedgerows

A hedgerow was present along the south-western boundary of the Site. The hedgerow consisted of scarlett firethorn *Pyracanthus coccinea* with occasional ivy *Hedera helix*. The hedgerow was approximately 30 m in length, 2 m tall and 0.5 m wide (Photograph 7).

Habitats at the Site are considered to be of no more than local value.

Off-Site Holy Brook

Holy Brook lies within approximately 5 m of the northern Site boundary. Whilst featuring sections of natural earth banks, artificial bank faces are present to the east and west, including a weir. The watercourse appears to have been heavily straightened and deepened. The channel is overshaded by bankside trees, resulting in no visible aquatic vegetation. Both buddleia and round leaf dogwood *Cornus rugosa* were recorded along the banks of the Brook, and though not listed on Schedule 9 of the WCA, are considered to be invasive. The Morph assessment scored the section of watercourse surveyed to be of 'fairly poor' condition.

Due to its non-statutory designation Holy Brook is considered to be of County Value.

4.3 Species

Amphibians

There were no records of GCN returned by the records centre within 2 km of the Site centre and within the last 10 years. Six records of common toad *Bufo bufo* were recorded within 2 km of the Site in the past 10 years. The closest record was 1.4 km south-west of the Site in 2019, which was also the most recent record provided.

The nearest granted EPS licence/licence return data was approximately 1.7 km south-east of the Site.

A review of aerial photographs and OS maps revealed that there are no ponds on Site or within 500 m of the Site to support breeding amphibians. The Site comprised mainly buildings, hardstanding and formal landscaping providing sub-optimal terrestrial habitat for amphibians and is predominately isolated from suitable habitat by the surrounding road network. Holy Brook on the northern site boundary was recorded to support fast flowing sections which is considered to limit the potential for amphibian species. Amphibians are, therefore, not considered to be a constraint at this Site and are not considered further.

Reptiles

The data search provided two records of common lizard *Zootoca vivipara* within 2 km of the Site centre within the last 10 years. Both records were 1.7 km north-west of the Site in 2013.

Twenty-three records of grass snake *Natrix helvetica* were recorded within 2 km of the Site centre in the past 10 years. The closest record was 1.2 km south-west of the Site in 2020, which was also the most recent record provided.

Sixty-seven records of slow worm *Anguis fragilis* were recorded within 2 km of the Site in the past 10 years. The closest record was 853 km south-west of the Site in 2014. The most recent record provided was 1.4 km south-west of the Site in 2020.

The Site lacked the structure, diversity and habitat quality suitable to support reptiles and is isolated from suitable habitat the surrounding road network. Therefore, reptiles are not considered to be a constraint at this Site and are not considered further.

Birds

The data search identified 19 species listed on Schedule 1 of the WCA (1981, as amended) and 28 species listed on the Red List of Birds of Conservation Concern (BoCC);Stanbury *et al.,* 2021) within 2 km of the Site centre and within the last 10 years. The majority of these were recorded to be associated with the LWSs and none are considered of particular note to the habitats and setting of the Site itself.

Habitats featured on the Site suitable for nesting birds, include scattered trees, hedgerow and introduced shrub.

No birds were recorded at the time of the survey.

The geographic value of birds at the Site is considered to be local.

Bats

Data records provided five species of bats roosting within 2 km of the Site centre in the past 10 years, including:

- One record of unidentified bat Chiroptera species recorded 1.7 km north of the Site in 2019;
- Five records of brown long-eared (BLE) *Plecotus auratus* bats, the closest record was 880 m west of the Site in 2015, the most recent record was in 2020, 1.9 km west of the Site;
- Nineteen records of common pipistrelle *Pipistrellus pipistrellus* bats, the closest record was 900 m west of the Site in 2020, this was also the most recent record provided;
- Two records of unidentified pipistrelle *Pipistrellus* species, both records were recorded in 2015, 560 m north of the Site;
- Six records of soprano pipistrelle *Pipistrellus pygmaeus* bats were recorded, the closest 1.3 km north-west of the Site in 2017, the most recent record provided was in 2019, 1.3 km north-east of the Site; and

- As well as roost records the data search also provided extensive field records of at least nine bat species, including BLE, common pipistrelle, soprano pipistrelle, Daubenton's *Myotis daubentoniid,* Leisler's *Nyctalus leisleri,* unidentified myotis *Myotis* species, Nathusius pipistrelle *Pipistrellus nathusii,* noctule *Nyctalus noctule* and serotine *Eptesicus serotinus*. The closes record was of an unidentified pipistrelle species, 430 m north-east of the Site in 2018.

Preliminary Roost Assessment

The buildings on-Site were assessed as offering negligible bat roost potential (BRP), since they were all in a good state of repair, lacking the structural and/or climatic conditions suitable to support a roost. The main office building featured metal framed windows and doors that were well sealed, and wooden fascia's at the eaves with no gaps identified. Brickwork, stone features and the roof structure were in good condition with no potential bat access points noted. Security lighting around the building was also noted and considered to limit the suitability for bats.

None of the trees within the Site itself were recorded to provide features suitable to support roosting bats and as such were assessed as having negligible BRP.

However, three mature alder trees immediately adjacent, and overhanging the northern Site boundary were identified as having BRP. Trees (T) 1 and T3 (see Figure 2) were assessed as having low BRP due to the dense ivy growth. T2 was assessed as having moderate BRP due to several rot holes located in the middle of the truck leading to a cavity (Photograph 8). In addition, several trees at a greater distance from the Site boundary, along the bank of Holy Brook supported ivy growth and may offer BRP.

Preliminary Commuting and Foraging Habitat Assessment

The Site mainly comprised of buildings and hardstanding with vegetation predominately limited to the boundaries. The Site itself provided low value foraging habitat for bats, particularly when considering the surrounding urban development and existing artificial lighting both on-Site and associated with the surrounding road network. However Holy Brook and the treeline bordering it, are anticipated to provide a suitable foraging resource for bats and anticipated to act as a commuting corridor for bats in the local habitat.

Roost Presence/Absence Surveys

The results of the dusk emergence and dawn return surveys are summarised below, full results can be found in Appendix F.

The features on T2 were noted to be heavily covered by ivy growth during the first survey visit. No bats were recorded to emerge. The first bat call was at 20.34, four minutes after sunset. Two soprano pipistrelles were seen foraging up and down the brook, and by 20.42 there were a total of four soprano pipistrelle bats. Soprano and common pipistrelles were noted continuously foraging for the duration of the survey along the riparian corridor. Five commuting noctule passes were also recorded (unseen and likely above the Site at height) as well as a single commuting unseen BLE.

No bats were recorded to return to roost during the dawn return survey. Continuous foraging of both common and soprano pipistrelles was recorded up and down the brook, with two commuting noctule pass and a single daubenton's commuting pass.

Various areas of the brook corridor were heavily lit up by the security lighting from the building on Site.

The geographic value of bats at the Site is considered to be local

Badgers

There were five records of badgers found within 2 km of the Site centre within the last 10 years, the location of which has not been included in this Report due to welfare issues.

No evidence of badger was identified during the survey. The Site offers negligible potential for this species and is located in an urban area, with limited connectivity to other suitable habitat for badger, such that it is anticipated that badger would be unlikely to venture onto the Site. Badgers are not considered to be a constraint and the Site and are not considered further.

Otter

Three records of Eurasian otter *Lutra lutra* were noted in the data search within 2 km of the Site centre within the past 10 years. The closest record was 590 m north of the Site in 2020, this was also the most recent record provided.

The Preliminary Ecological Appraisal prepared by E3p for the Site reported on a previous absence/presence survey undertaken to assess Holy Brook suitability to otters in June 2021. The survey showed no signs of otters. However, Holy Brook was assessed as likely being used by commuting otters.

The current assessment found Holy Brook to provide a suitable commuting corridor for this species and may offer foraging opportunities, should suitable prey be available. The Site itself offers negligible potential for otter, however, individuals may venture across the Site from the adjacent riparian corridor.

The geographic value of otter at the Site is considered to be local.

Water Vole

Fifteen records of water voles *Arvicola amphibius* were noted in the data search within 2 km of the Site centre within the past 10 years. The closest record was 500 m south of the Site in 2020, this was also the most recent record provided. The citation for Holy Brook LWS also identifies water vole presence.

During the 2021 ep3 survey no signs of water voles were found. However, Holy Brook was assessed to be suitable to support the species.

The current assessment found the brook to offer opportunities for water vole, however, fast flowing water to some sections of the water course may limit distribution.

The geographic value of water vole at the Site is considered to be local.

Other Protected or Otherwise Notable Species

The data search identified 22 records of west European hedgehog *Erinaceous europaeus* within 2 km of the Site centre within the last 10 years. The closest record is 987 m north-west of the Site in 2020, this was also the most recent record provided. The soft landscaping at the Site offers suitable foraging and shelter opportunities for hedgehogs, such that they may inhabit, or venture onto, the Site.

The geographic value of hedgehog at the Site is considered to be local.

Neither the PEA, nor the subsequent River Condition Assessment identified any other rare, protected or otherwise notable species on-Site or associated with the adjacent Holy Brook.

Invasive Species

Small-leaved cotoneaster and entire-leaved cotoneaster were identified within the introduced shrub areas. These species of cotoneaster are listed on Schedule 9 of the WCA (1981, as amended).

4.4 Summary of Important Ecological Features and Geographic Value

The species scoped out as important ecological features above due to their likely absence from Site cannot experience effects from the Proposed Development and are not therefore considered below.

The 'important ecological features' identified above with the potential to experience effects as a result of the Proposed Development are listed in Table 3 below, along with their geographic importance. These features will be the subject of the ecological impact assessment in section 5.0.

Table 3 - Identified Important Ecological Features

Important Ecological Feature	**Geographic Value**
Non-Statutory Designated Sites	County
Habitats (on-Site)	Local
Holy Brook (off-Site)	County
Nesting Birds	Local
Bats	Local
Water Vole and Otter	Local
Hedgehog	Local

5.0 Assessment of Effects

The evaluation in this section is based on the baseline information presented above, review of design proposals, consultation with the design team, knowledge of likely construction practices to be employed, and reasonable assumptions regarding operation.

For purposes of the assessment, it is assumed there has been no change in the condition of the Site since the Site surveys (unless otherwise stated).

5.1 Important Ecological Features for Which No Effect is Anticipated

Owing to the size and existing nature/use of the Site, the type of development, the urban location and the relative separation of the Sit, no impacts are anticipated to the majority of designated sites.

5.2 Important Ecological Features and Potential Effects

5.2.1 Holy Brook LWS

Potential Impacts and Effects During Construction and Operation

<u>During Construction</u>

Holy Brook LWS is situated adjacent to the northern boundary of the Site, and there is therefore potential, without mitigation, for minor adverse impacts, which are non-significant, resulting from pollution events (water runoff) and dust deposition.

It is understood that no direct habitat loss within the LWS is proposed.

With reference to local planning policy, the built form of the development (building elevations) are approximately 8 m from the bank tops of Holy Brook at their closest points, with no-dig zone to feature a permeable ecoblock system surrounding the buildings where this falls within the 8 m riparian zone (approximately 6 m from Holy Brook at its closest point). Due to the layout of the proposed units, this represents less built development within the 8 m buffer than currently exists at the Site, and with ridge heights no greater than those currently present on-Site, overall levels of shading to the Brook is anticipated to be reduced.

<u>During Operation</u>

The LWS is currently impacted by artificial lighting originating from the Site, however, the proposed redevelopment has the potential to change the existing light levels and potentially result in an increase in some areas. Without mitigation this is considered to have a minor adverse impact that is not significant.

With reference to the Flood Risk Assessment and Drainage Strategy (Lucion Delta-Simons, May 2023), the proposed drainage strategy for the Site aims to provide a betterment to the existing situation through controlled surface water discharge (1 in 2 year brownfield run off rate compared to the current unrestricted 1 in1 year run off rate). Whilst a detailed drainage strategy is not yet available, the existing connection to Holy Brook has been identified as feasible to utilise or replicate to discharge surface water run off from the proposed development (subject to the consent of the EA). In order to control the discharge rate, on-Site attenuation (in the form of underground storage) is likely to be required.

Pollutant hazards from the proposed development have been identified as being 'Low' level, however, water treatment measures are to be incorporated into the detailed design, including a suitably sized separator.

The proposed drainage strategy is therefore considered to represent a betterment to the current situation and is not anticipated to result in any adverse impacts on Holy Brook or its associated riparian habitats or the fauna it supports.

Avoidance and Mitigation

During Construction

Environmental best practise measures, in relation to dust suppression and pollution prevention will be applied during the construction phase of works to minimise impacts on the LWS. A buffer will be maintained from the riparian corridor. This is to be enforced during demolition and construction, using appropriate barriers where necessary to protect to LWS habitats.

Measures should be detailed within an appropriate Construction Environmental Management Plan (CEMP) and should include:

- All operational plant to be kept well maintained;
- Dust control measures for all plant and operational areas;
- Measures to prevent pollutants from entering ground and surface water, through the use of standard measures including bunded fuel storage and refuelling area away from the watercourse, and spill management procedures;
- All litter appropriately controlled and on-Site materials adequately stored; and
- A Site induction for all operatives should include reference to the LWS, its ecological importance and the measures in place to protect it.

During Operation

A lighting scheme for the Site (prepared by Light 360) has been designed with input from Lucion Delta-Simons ecologists, to avoid increased light levels along the northern boundary, and where possible to reduce light spill onto the LWS corridor.

Assessment of Residual Effects

Following the application of the above mitigation measures, the potential residual effects are considered to be negligible and, therefore, neutral.

With reference to the River Condition Assessment (Appendix A), in 2022 the Environment Agency (EA) rated Holy Brook as Moderate according to the Water Framework Directive (WFD). In consideration of the development layout and design, and with the application of the above mitigation, the proposed development is not anticipated to result in deterioration of the WFD quality elements or prevent Holy Brook achieving 'good' status.

5.2.2 Habitats

Potential Impacts and Effects During Construction and Operation

During Construction

The habitats present on Site are widespread on both a regional and national scale, with none of the habitats being considered rare. The development will result in the loss of existing buildings and hardstanding of negligible value, as well as the loss of modified grassland, introduced shrubs and selected trees.

Any construction works within close proximity to the retained hedgerow and trees have the potential to cause damage to the structure and roots.

Without mitigation, the construction phase also has the potential to spread cotoneaster, which is listed on Schedule 9 of the WCA as invasive non-native species.

This is considered to have a minor adverse effect that is not significant.

During Operation

If habitats retained and/or planted during construction are not managed appropriately during operation, then there is the potential for additional biodiversity loss from the Site.

This is considered to have a minor adverse impact that is not significant.

Avoidance and Mitigation

During Construction

The retained hedgerows and trees are to be protected during the construction phase, with the use of physical barriers, where appropriate to prevent accidental damage from machinery and equipment working in proximity.

Cotoneaster plants are to be removed and appropriately disposed of to prevent their spread and to minimise their future dominance of landscape areas at the Site.

During Operation

The loss of hedgerow habitat will be compensated through the inclusion of new native hedgerow planting along the western and northern boundary. The Biodiversity Net Gain (BNG) assessment for the Site indicates this represents a net gain of linear biodiversity units of +0.41 (1481.96%).

The landscaping scheme for the Site also includes flowering lawn mix and a wildflower grassland hedgerow mix suitable for shaded areas. The BNG assessment for the Site indicates the development has the potential to achieve net gain in area habitats of +0.50 (24.27%).

Furthermore, the watercourse assessment for the Site indicates that there will be an net gain of +0.16 units (40.12%).

An appropriate landscape management plan will be followed to promote the long-term biodiversity value of the retained and proposed habitats.

Assessment of Residual Effects

Following the application of the above mitigation measures, the potential residual effects are considered to be minor beneficial and non-significant.

5.2.3 Birds

Potential Impacts and Effects During Construction and Operation

During Construction

Several trees at the Site and areas of introduced shrub are to be removed to facilitate the development. There is potential for direct adverse effects on nesting birds that are permanent in nature as a result of such clearance. In addition, construction works being carried out within proximity to nesting birds may affect them indirectly, depending on the works being carried out, and the species of bird affected. Noise and vibration disturbance effects may result in birds being repeatedly flushed off nests, causing disruption to feeding activity, or even abandonment of nests. This is considered to be a temporary impact.. Further to the potential direct effects on birds whilst they are actively nesting, the removal of suitable vegetation will result in the direct loss of available bird nesting habitat.

The construction phase of works is considered to have a minor adverse effect that is non-significant.

During Operation

During operation, if habitats retained and/or planted during construction are not managed appropriately, then there is the potential for the direct temporary disturbance of nesting birds. This is considered to have a minor adverse effect that is non-significant.

Avoidance and Mitigation

During Construction

Where practicable, vegetation clearance at the Site will be undertaken outside of the main nesting bird season (i.e. clearance carried out between September and February inclusive). Conflict with the development can be avoided by managing the land to discourage nesting birds up to the works commencing.

If these works cannot be restricted to within this period, an Ecological Watching Brief will be maintained during the main bird breeding season to ensure that no nesting birds are adversely affected. This will entail checking all suitable habitat for nesting birds due to be removed, and a buffer of at least 5 m beyond that area, by a suitably qualified ecologist prior to the commencement of works. If, during the Ecological Watching Brief, birds are found to be within the area due to be cleared or the buffer zone, measures to prevent any disturbance to breeding birds, including the cessation of tree and vegetation clearance, or construction works in areas close to breeding sites until the birds have completed breeding, will be put in place until the chicks have fledged.

The retained hedgerow and trees to be protected from damage during construction, including where necessary the use of physical barriers to prevent accidental damage from equipment and machinery working in close proximity. This is expected to further reduce any impacts on nesting birds from the associated noise and vibration effects.

During Operation

The proposed planting plan includes additional hedgerow planting to compensate for the loss of bird nesting habitat. An appropriate management plan will be in place in order to ensure retained and newly planted habitats are managed to maximise foraging opportunities for birds, and to prevent destruction or damage to nests in-use.

Assessment of Residual Effects

The potential residual impacts are expected to have a negligible effect that is of neutral significance.

5.2.4 Bats

Potential Impacts and Effects During Construction and Operation

During Construction

Whilst surveys of the overhanging trees concluded the likely absence of roosting bats, bats are mobile animals which often change roost sites on a regular basis during varying times of the year. As such, should any pruning works be required to the overhanging trees, there remains a risk of direct harm to any individual bats that may be present at the time of the works. This is considered to have a minor adverse effect that is not significant.

During Operation

The areas of greater habitat suitability for bats (i.e. Holy Brook corridor along the northern boundary and the tree line in the west) are currently impacted by artificial lighting originating from the Site and adjacent street lighting, however, the proposed redevelopment has the potential to change the existing light levels and potentially result in an increase in some areas. Without mitigation this is considered to have a minor adverse impact that is not significant.

Avoidance and Mitigation

During Construction

The boundary habitats identified as offering greatest value to foraging and commuting bats, are to be retained and protected and will continue to provide opportunities for bats.

Should any management works be required to the trees overhanging the northern Site boundary, a precautionary approach will be applied with respect to the limited potential to support roosting bats. The works will be undertaken following the advice of a suitably experienced/licenced ecologist and where appropriate a pre-commencement inspection and/or watching brief will be maintained.

During Operation

The lighting scheme for the Site has been designed to be functional and directional and in line with current guidance (BCT and ILP, 2018), with input from a suitably experienced ecologist. Light spill onto the northern Site boundary has been minimised.

Assessment of Residual Effects

Subsequent to the application of the above mitigation, the residual effects are considered to be negligible and of neutral significance.

5.2.5 Water Vole and Otter

Potential Impacts and Effects During Construction and Operation

During Construction

It is understood that works are proposed to the banks of Holy Brook, and that a buffer (retention of the existing public footpath) is to be maintained such that no direct impacts are anticipated. Should this change, further assessment of the impacts to riparian mammals and associated mitigation measures must be undertaken.

Without mitigation there is the potential for pollution incidents and dust deposition during the demolition/construction phase of the redevelopment which could adversely impact upon habitat quality and result in temporary indirect impacts on water vole and otter within Holy Brook and the wider riparian network.

There is also the risk of harm to otter should individuals venture across the Site during the construction phase and fall into pits or trenches left open overnight during the works. Should any become trapped they may be at greater risk of injury, starvation and susceptibility to extreme weather conditions.

When considering the risks and magnitude of any effects, the potential impact to water voles and otter during the construction phase is considered to have a minor adverse effect that is non-significant.

During Operation

The operational phase of the development is not considered likely to have any effects on water voles and otter.

Avoidance and Mitigation

During Construction

Best practice measures will be followed during the construction phase with regards to pollution prevention and dust deposition. The buffer to the brook will be maintained and enforced during construction and no open pits or trenches will be left uncovered or alternatively without a mammal escape ramp overnight. This can be secured through the implementation of a Construction Environmental Management Plan (CEMP), which is submitted as part of the application.

Assessment of Residual Effects

Subsequent to the application of mitigation, the residual effects are considered to be negligible and, therefore, of neutral significance.

5.2.6 Hedgehog

Potential Impacts and Effects During Construction and Operation

During Construction

Whilst no evidence of this species was recorded during the survey, hedgehogs may disperse across the Site. Therefore, there is the direct risk of harm during vegetation clearance and should they fall into pits or trenches left open overnight during the works. Should any become trapped they may be at greater risk of predation, starvation and susceptibility to extreme weather conditions.

This is considered to have a minor adverse effect that is non-significant.

During Operation

The operational phase of the development is not considered to have any impacts to this species, since the use of the Site will be comparable to its current form.

Avoidance and Mitigation

During Construction

During the construction phase of works, no open pits or trenches will be left uncovered or alternatively without a mammal escape ramp overnight, and pipework will be capped overnight to prevent hedgehogs accessing and becoming trapped.

Clearance of the vegetation should be undertaken with an awareness for the potential presence of hedgehog. Clearance should be undertaken during the active season (May-September, inclusive), and any individuals found moved carefully with gloved hands to an area of suitable habitat away from the working area.

Assessment of Residual Effects

The potential residual impacts are expected to have a negligible effect of neutral significance.

5.3 Cumulative Effects

Given the nature of the development and the assessment of impacts, no other schemes have been identified for which the Site may contribute to an in-combination cumulative effect on ecologically important features within the ZOI of the Site.

5.4 Enhancement

The revised National Planning Policy Framework (NPPF), sets out, amongst other points, how *"Planning policies and decisions should contribute to and enhance the natural and local environment by:*

'Minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressure'.

As demonstrated within the biodiversity net gain calculations for the Site, provided the target habitat conditions are met, the Proposed Development will result in a net gain in excess of 10% for area and linear (hedgerow) units, over and about the required by national and local planning policy.

The River Condition Assessment scored the section of Holy Brook adjacent to the Site to be of 'fairly poor' condition and makes recommendations to improve the overall area and elevate the score. Whilst some of the identified measures are considered unachievable/disproportionate within the scope of the proposed development, since the works proposed are downstream, falling outside the Site boundary, it is considered that improvements could be made both in regard to the Morph assessment score and to achieve a Biodiversity Net Gain in watercourse units. This includes:

- Native soft landscaping along the northern boundary of the Site (this has been incorporated into the proposed landscape design);
- Removal of litter/building material from the water channel and banks adjacent to the Site boundary (from the footbridge to the north-east corner of the Site to the Rose Kiln Lane bridge). NB: Large woody debris and trees in the channel should be left unless they pose a significant flood risk;
- Selected tree management (pollarding or coppicing) of the trees immediately adjacent to the Site boundary to enabling more light to penetrate and in turn encourage a greater range of species in the channel and on the bank top/face; and
- Removal of buddleia and round leaf dogwood (considered invasive species) adjacent to the Site boundary (from the footbridge to the north-east corner of the Site to the Rose Kiln Lane bridge) to promote diversity of other flora.

Due to the watercourse and its banks falling outside the ownership of the Client, and the presence of a Tree Preservation Order, any such improvement measures and the mechanism for their application would need to be determined with the relevant authorities.

6.0 Conclusions

The habitats present on Site are widespread, in both a local and national context. Those habitats with the greatest ecological value (i.e. trees) are to be retained within the development, where possible. Whilst there is likely to be a temporal delay in achieving the biodiversity objectives for the Site (i.e. whilst new habitats become established), it is anticipated that in the long term there will be no significant residual effects on habitats or protected species resulting from the Proposed Development. In fact, due to the anticipated biodiversity net gain the proposal will improve the ecological value of the Site.

7.0 Disclaimer

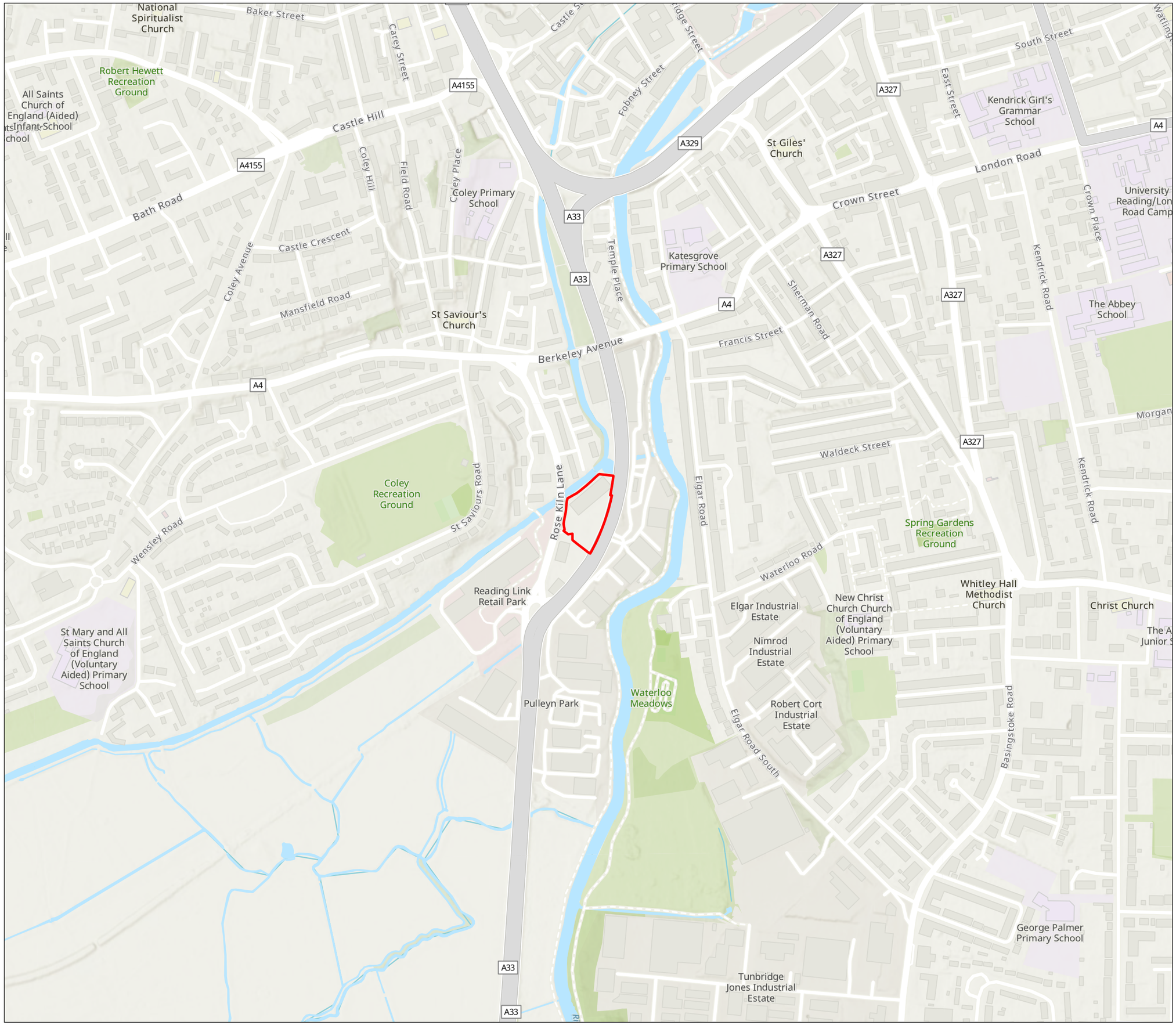
The recommendations contained in this report represent Lucion Delta-Simons' professional opinions, based upon the information referred to in Section 1.0 of this report, exercising the duty of care required of an experienced Ecology Consultant. Lucion Delta-Simons does not warrant or guarantee that the Site is free of bats or other protected species.

The behaviour of animals can be unpredictable and may not conform to characteristics recorded in current scientific literature. This report, therefore, cannot predict with absolute certainty that animal species will or will not occur in apparently suitable locations or habitats or that they will not occur in locations or habitats that appear unsuitable.

No part of the survey included an assessment of the materials and conditions of any buildings. No part of the survey included an asbestos assessment, nor did it represent an appraisal of other deleterious materials or hazardous substances.

This report was prepared by Lucion Delta-Simons for the sole and exclusive use of the Client and for the specific purpose for which Lucion Delta-Simons was instructed as defined in Section 1.0 of this report. Nothing contained in this report shall be construed to give any rights or benefits to anyone other than the Client and Lucion Delta-Simons, and all duties and responsibilities undertaken are for the sole and exclusive benefit of the Client and not for the benefit of any other party. In particular, Lucion Delta-Simons does not intend, without its written consent, for this report to be disseminated to anyone other than the Client or to be used or relied upon by anyone other than the Client. Use of the report by any other person is unauthorised and such use is at the sole risk of the user. Anyone using or relying upon this report, other than the Client, agrees by virtue of its use to indemnify and hold harmless Lucion Delta-Simons from and against all claims, losses and damages (of whatsoever nature and howsoever or whensoever arising), arising out of or resulting from the performance of the work by the Consultant.

Figure 1 – Site Location Plan



Legend

Site boundary

0 60 120 180 240 Meters

N

Figure	Site Location Plan		
Job	Logicor Park Reading, Rose Kiln Court		
Client	Redwood (Light Industrial) Propco Sarl		
Figure No. 1	Revision A	Date 06/04/2023	
Drawn BB	Checked BH	Scale 1:6,000 @ A3	
Job No. 22-1640.02		Central GR 471311E 172332N	

DO NOT SCALE.
NOT FOR CONSTRUCTION.

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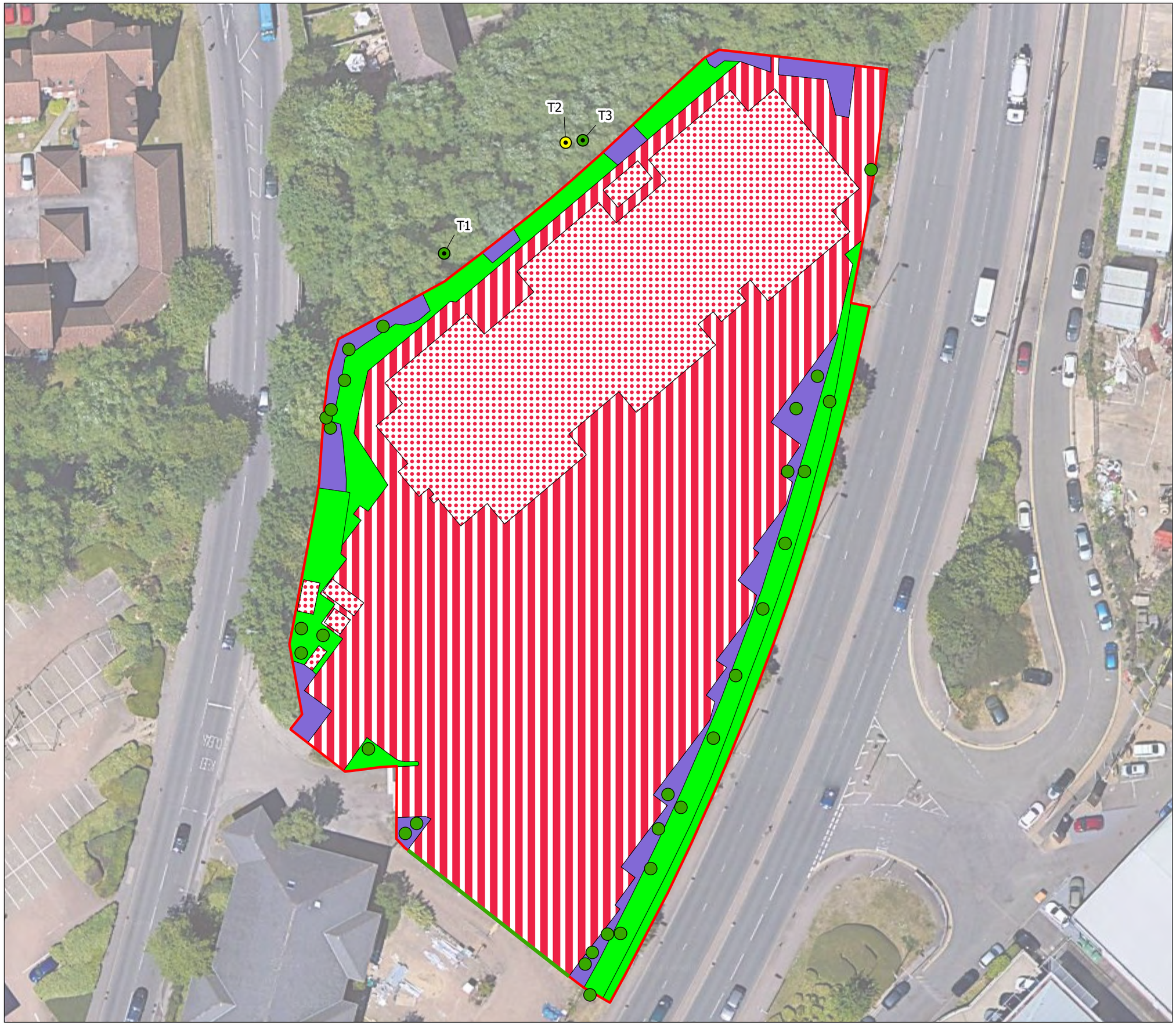
Figure 2 – UK Habitat Plan



Legend

- Site boundary
- g4 - modified grassland
- h - heathland and shrub
- u1b - developed land, sealed surface
- u1b5 - buildings
- h2b - Other hedgerows
- Broadleaved scattered tree - Moderate BRP
- Broadleaved scattered tree - Low BRP
- Broadleaved scattered tree

0 5 10 15 20 Meters

N

Figure	UK Habitat Plan		
Job	Logicor Park Reading, Rose Kiln Court		
Client	Redwood (Light Industrial) Propco Sarl		
Figure No. 2	Revision A	Date 06/04/2023	
Drawn BB	Checked BH	Scale 1:500 @ A3	
Job No. 22-1640.02		Central GR 471311E 172332N	

DO NOT SCALE.
NOT FOR CONSTRUCTION.

DeltaSimons

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Drawing 1 – Landscape Proposals Plan

KEY

- EXISTING TREES TO BE RETAINED
- EXISTING HEDGE TO BE RETAINED
- PROPOSED EXTRA HEAVY STANDARD TREE PLANTING
- PROPOSED WILDFLOWER GRASSLAND EL1 FLOWERING LAWN MIX - 195m²
- PROPOSED WILDFLOWER GRASSLAND EH1 HEDGEROW MIX - 975m²
- PROPOSED A22 AMENITY GRASS MIX IN PERMEABLE ECOBLOCK SYSTEM (NO DIG CONSTRUCTION) - 525m²
- PROPOSED NATIVE HEDGE MIX - 215lin m
- PROPOSED ROOT PROTECTION BARRIER - 85lin m

NOTES:

PLANTING OPERATIONS SPECIFICATION

TOPSOIL
Imported topsoil for tree pits and hedge shall comply with BS 3882 and shall be good quality, medium topsoil loam, acid or slight acid (ph not less than 5.0), stones not greater than 50mm in any dimension, perennial weeds and any other foreign matter, free from chemical or other polluted subsoil, weeds, straw, sticks, stones, clay lumps and other deleterious material. Topsoil containing a significant proportion of subsoil or other foreign matter will not be accepted on the site. On no account shall topsoil be brought on the site in excessively wet conditions or in a water logged state. It shall be from an approved source, shall be fertile with a humus and fibre content and shall have a good crumb structure with medium texture.

All areas of wildflower grass seeding shall be made up of low nutrient sub-soil to assist establishment and maintenance of the meadow grasslands.

TREE PLANTING
Extra Heavy Standard tree pits shall be 1m x 1m x 0.75m.
The bottom 150mm of each tree pit to be broken up to assist drainage.
Compacted ground to be broken up. Backfill shall be excavated material with 50:50 mixed with peat free tree planting compost (Sample to be approved) for the top 300mm and excavated sub soil for the bottom 450mm. 4No Sierrablen gro tabs to be incorporated into each planting pit.

All EHStd trees shall be short double staked, 300mm to be driven into the ground and 600mm maximum above ground. A flexible webbing cross bar within 25mm of the top of the stake shall be used and fixed to the trunk with expandable ties. Each tree shall have a 50mm diameter perforated plastic irrigation pipe, with plastic cap, wrapped in a circle above and around the sides of the rootball.

NATIVE HEDGE PLANTING
Whip planting areas shall be cultivated to the full depth of the topsoil and bare root stock notch planted to accommodate the full depth of the roots. Planting density shall be as set out in the accompanying schedules and the layout shall be random, in groups of no less than 3 or more than 7 of the same species, ensuring that no three plants are aligned in any one direction. Each whip shall be protected with a biodegradable spiral tree guard, 0.6m high x 130mm diameter, supported by a single timber stake placed to prevent the natural movement of the tree being impeded or restrict growth.

WILDFLOWER SEEDING
Over seeding to occur during August / September. Any areas of failure to be re-seeded. Grass seed mix shall be Emorsgate (or similar approved by the LPA) EL1 Flowering Lawn Mix, 195m² and Emorsgate (or similar approved by the LPA) EH1 Hedgerow Mix, 975m², sown at a rate of 5g/m².

First Year Management:
Mow newly sown flowering lawn regularly (every 7 -10 days during growing season) throughout the first year of establishment. Cut to a height of 40-60mm, removing cuttings if dense. This will gradually develop a good sward structure, help maintain balance between faster growing grasses and slower developing wild flowers, and control annual weeds.
Dig out any residual perennial weeds such as docks.

Management Once Established:
Mow regularly as a lawn to between 25-40mm. To permit flowering, mowing can be relaxed from late June. Cut again when the sward gets untidy (after 4-8 weeks). Mowing may be suspended earlier in the year to allow cowslips to flower. Heavy quantities of cuttings should be collected and removed from site.

EL1 Flowering Lawn Mix

%	Species	Common name
Wild Flowers		
4	Galium verum	Lady's Bedstraw
0.5	Leontodon hispidus	Rough Hawkbit
1	Leucanthemum vulgare	Oxeye Daisy - (Moon Daisy)
3.7	Lotus corniculatus	Birdsfoot Trefoil
3	Primula veris	Cowslip
4	Prunella vulgaris	Selfheal
3.5	Ranunculus acris	Meadow Buttercup
0.3	Trifolium pratense	Wild Red Clover
20		
Grasses		
8	Agrostis capillaris	Common Bent
40	Cynosurus cristatus	Crested Dogstail
28	Festuca rubra	Red Fescue
4	Phleum bertolonii	Smaller Cat's-tail
80		

EH1 (Hedgerow Mix)

%	Latin name	Common name
Wild Flowers		
0.5	Achillea millefolium	Yarrow
1.2	Agrimonia eupatoria	Agrimony
1.5	Alliaria petiolata	Garlic Mustard
0.4	Arctium minus	Lesser Burdock
0.5	Betonica officinalis	Betony
1.5	Centaurea nigra	Common Knapweed
0.4	Chaerophyllum temulum	Rough Chervil
2	Galium album	Hedge Bedstraw
1	Galium verum	Lady's Bedstraw
0.3	Geranium pyrenaicum	Hedgerow Crane's-bill
0.6	Hypericum perforatum	Perforate St John's Wort
0.3	Lathyrus sylvestris	Narrow-leaved Everlasting-pea
0.8	Leucanthemum vulgare	Oxeye Daisy - (Moon Daisy)
0.5	Origanum vulgare	Wild Marjoram
0.7	Plantago lanceolata	Ribwort Plantain
1	Primula veris	Cowslip
2.5	Silene dioica	Red Campion
0.5	Silene latifolia	White Campion
2	Torilis japonica	Upright Hedge-parsley
0.5	Verbascum thapsus	Great Mullein
0.5	Vicia cracca	Tufted Vetch
0.8	Vicia sativa ssp. segetalis	Common Vetch
Grasses		
%	Latin name	Common name
10	Agrostis capillaris	Common Bent
2	Anthoxanthum odoratum	Sweet Vernal-grass (w)
7	Brachypodium sylvaticum	False Brome (w)
20	Cynosurus cristatus	Crested Dogstail
1	Deschampsia cespitosa	Tufted Hair-grass (w)
28	Festuca rubra	Slender-creeping Red-fescue
12	Poa nemoralis	Wood Meadow-grass

EXTRA HEAVY STANDARD TREE PLANTING

Name	Girth	Height	Root Condition	Number
Acer campestre 'Louisa Red Shine'	14-16cm	425-600cm	Containerised	1
Acer cappadocicum subsp 'Lobelii'	14-16cm	425-600cm	Containerised	1
Betula nigra	14-16cm	425-600cm	Containerised	1
Carpinus betulus 'Fastigiata'	14-16cm	425-600cm	Containerised	1
Celtis australis	14-16cm	425-600cm	Containerised	1
Corylus colurna	14-16cm	425-600cm	Containerised	1
Crataegus x lavalleei	14-16cm	425-600cm	Containerised	1
Fagus sylvatica 'Dawyck'	14-16cm	425-600cm	Containerised	1
Liquidamber styraciflua 'Lane Roberts'	14-16cm	425-600cm	Containerised	1
Liriodendron tulipifera 'Fastigiatum'	14-16cm	425-600cm	Containerised	1
Populus alba 'Pyramidalis'	14-16cm	425-600cm	Containerised	1
Pyrus calleryana 'Chanticleer'	14-16cm	425-600cm	Containerised	1
Robinia pseudoacacia 'Pyramidalis'	14-16cm	425-600cm	Containerised	1
Sorbus aucuparia 'Shearwater Seedling'	14-16cm	425-600cm	Containerised	1
Tilia cordata 'Greenspire'	14-16cm	425-600cm	Containerised	1

NATIVE HEDGE MIX 215 lin m

Name	% of Mix	Height	Root Condition	Number
Acer campestre	10	60-90cm	BR	105
Corylus avellana	15	60-90cm	BR	160
Crataegus monogyna	35	60-90cm	BR	375
Ligustrum vulgare	10	60-90cm	BR	105
Ilex aquifolium	10	60-90cm	RB	105
Prunus spinosa	5	60-90cm	BR	55
Rosa arvensis	5	60-90cm	BR	55
Sambucus nigra	5	60-90cm	BR	55
Viburnum opulus	5	60-90cm	BR	55

Double Staggered Row @400mm ctrs in groups of 3, 5, or 7

Rev E	11.09.24	Layout amended	DR	AG
Rev D	22.06.24	Layout amended	DR	AG
Rev C	31.10.23	Layout amended	DR	AG
Rev B	17.10.23	Layout amended	DR	AG
Rev A	30.03.23	Layout amended	DR	AG

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Also in Glasgow & Edinburgh

Project	LOGICOR PARK: READING ROSE KILN COURT
Title	LANDSCAPE PROPOSALS

Date	Scale	Drawn	Checked
15.03.23	1:250 @ A1	DR	AG

Job	Suitability	No.	Issue	Revision
D342	-	D342.L.001	EXT	E

LI WORKSTAGE: 0/1 ☐ 2 ☐ 3 ☐ 4 ☒ 5 ☐ 6 ☐

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Drawing to be read in conjunction with related TGP drawings, consultants drawings and any other relevant information.
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Appendix A – River Condition Assessment

River Condition Assessment Report

Rose Kiln Lane, Reading

Site Name	**Rose Kiln Lane**
Client Name (where relevant)	Delta Simons
Date Report Completed	15/11/2023 Updated 22/11/23
Survey Date	**08/11/2023**
Survey Completed By	**Joshua Bowes BSc MSc – Wetland Officer** **Emma Pelham – Project Officer**
Reported Completed By	**Joshua Bowes BSc MSc – Wetland Officer**
Report Approved By	**Zoe Channon – Director of NBS and Partnerships**

The contents of this report were correct at the time of the site visit. The report is provided for the sole use of the named client and is confidential.

All recommended works performed would be subject to relevant permissions from the EA and local planning authority.

Recommendations made are in an ideal scenario and not subject to budget or permissions restraints.

Habitat surveys can be undertaken at any time of year, with the optimal season being between May and October, when most aquatic and riparian vegetation is visible but not too developed to obscure access or visibility of physical features. Surveys should also be completed during low flow conditions for safety and to ensure bed visibility. Where feasible, all efforts were made to schedule the habitat survey in optimal weather conditions and time of year. Nevertheless, field surveys usually fail to record all species present for various reasons, including the seasonal absence of some species, and short survey duration. Rare or cryptic species are often missed in short surveys.

Background

The Surrey Wildlife Trust were commissioned to undertake a River Condition Assessment by Delta Simmons on Holy Brook in Reading. This survey was undertaken on the 8th November 2023 and the following reports sets out an assessment of the current condition of the river, followed by a series of recommendations.

Scope of work

The scope of work included:

- A desk-based exercise to review best practices for improvement areas and to identify the river type.
- A site visit to review the current condition of the river and identify areas for improvement.
- Analysis of the data collected during the survey and how the score can be improved.
- Delivery of a written report detailing the findings and recommendations

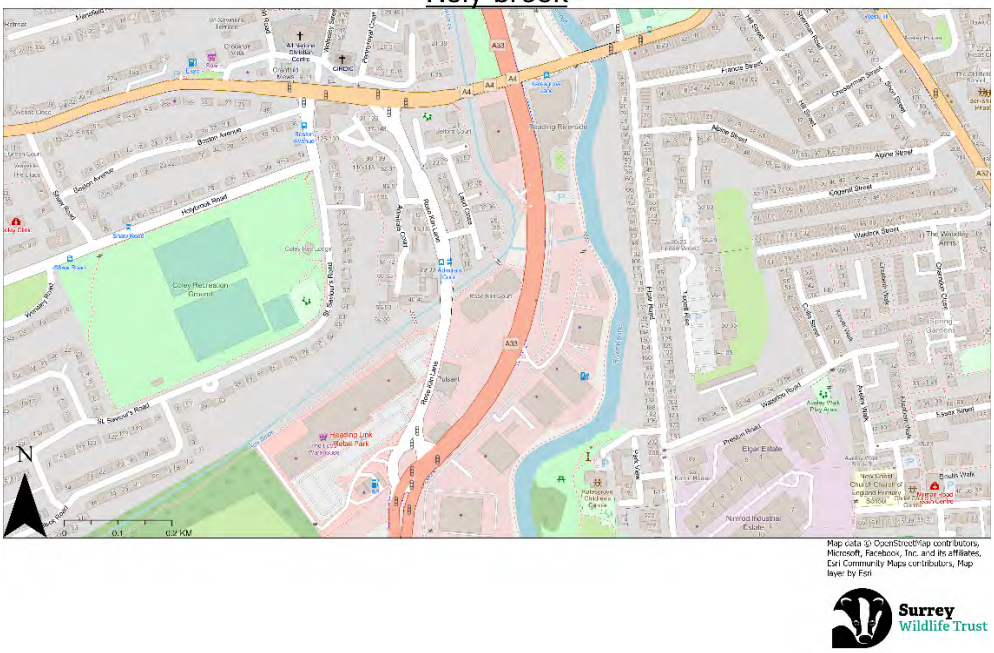
It should be noted that the scope of this work does not include a Biodiversity Net Gain (BNG) assessment of the river using the Defra metric.

It should also be noted that it was only possible to enter the river in section one due to high flows, therefore all channel assessments were done from the bank side. This also may have obscured some features from view, which therefore means these features were not recorded.

Survey area

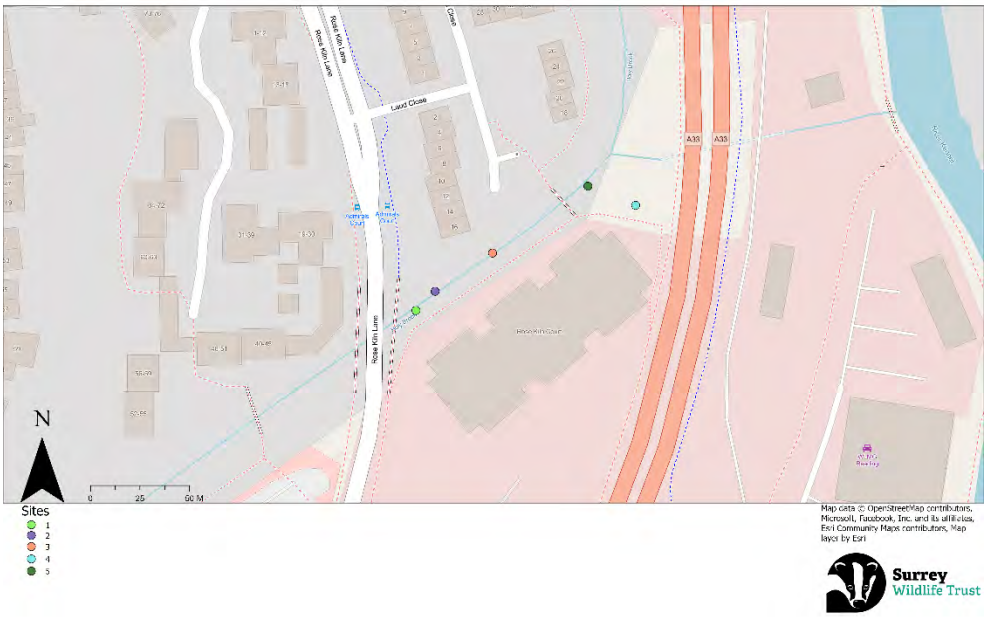
The site is situated on the southern edge of Reading. Flanked by residential properties to the north, the A33 to the east, Rose Kiln Court to the south and Rose Kiln Lane to the west.

Holy brook



The Survey area is noted below in the context of the site using a series of coloured indicators. The extent of the survey area was agreed with Delta Simmons on 19th October 2023. Pictures of each survey area can be found in Appendix 1.

Holy brook



Methodology

The River Condition Assessment (RCA) is a field and desk-based study used to assess the habitat and morphological condition of rivers. River morphology describes the physical and hydrological processes in a river which identifies its physical characteristics, which influence the habitats that can be established within a river or stream.

The Modular River (MoRPh) survey is the field element of the RCA. This survey is used on at least 20% of the project area to methodically record all physical features and habitat types. As well as any artificial features which may be affecting the river.

The desk study element is a reach-based survey identifying the river type. Together, the field and desk study give each individual stretch of the river an RCA score of 1= Good, 2= Fairly Good, 3= Moderate, 4= Fairly Poor, 5= Poor.

In this case a Morph 5 (5 continuous MoRPh surveys) was performed covering 100m of stream, each Morph survey covered a 20m stretch. This covered the whole project area allowing for a range of solutions to be identified.

Once the scores had been calculated, best practices were applied, and new scores were predicted based on what is reasonable to achieve.

Results – current state assessment

River condition scores range from ≤-1.0-2.4 with ≤-0.9 being poor, 2.8 being good.

The table below provides the current condition scores for the section of river that was surveyed with the condition being scored as 'Moderate' however the stretch has been overdeepend, which means the score has to be reduced by 1 to fairly poor.

Current score: Fairly Poor

Preliminary Condition Score	0.32
Average of Positive Scores	1.63
Average of Negative Scores	-1.31

Recommendations

Please note two sets of recommendations have been made. The full recommendations are what have been made to improve the to its potential without any budgetary constraints. This may not be possible without significant investment. But are worth considering for future improvements to the stretch. The

moderate section provides improvements that are cheaper financially and still meet biodiversity net gain. These improvements would still provide a wide range of benefits to the river over its current state.

On visiting the survey area, recommendations have been made that will improve the overall area and therefore elevate the condition score from 'Fairly Poor' to 'Fairly Good/Good.'

Total score after full recommendations implemented: Fairly Good/Good

Preliminary Condition Score	**1.96**
Average of Positive Scores	**2.42**
Average of Negative Scores	**-0.46**

Total score after moderate recommendations have been implemented: Moderate

Preliminary Condition Score	**1.23**
Average of Positive Scores	**2.16**
Average of Negative Scores	**-0.92**

Location	**Code**	**Indicator**	**Scores**	**Moderate Improved Scores**	**Improved Scores**
Bank top	B1	Bank top vegetation structure	2	3	3
	B2	Bank top tree feature richness	3	3	3
	B3	Bank top water-related features	2	3	3
	B4	Bank top NNIPS cover	-2	0	0
	B5	Bank top managed ground cover	-4	-3	-3
Bank face	C1	Bank face riparian vegetation structure	2	3	3
	C2	Bank face tree feature richness	1	2	2
	C3	Bank face natural bank profile extent	2	2	2
	C4	Bank face natural bank profile richness	2	2	2
	C5	Bank face natural bank material richness	1	1	1
	C6	Bank face bare sediment extent	4	4	4
	C7	Bank face artificial bank profile extent	0	0	0
	C8	Bank face reinforcement extent	-2	-2	-1
	C9	Bank face reinforcement material severity	-2	-2	-1
	C10	Bank face NNIPS cover	0	0	0
Channel – water margin	D1	Channel margin aquatic vegetation extent	0	2	2

	D2	Channel margin aquatic morphotype richness	0	2	2
	D3	Channel margin physical feature extent	1	1	2
	D4	Channel margin physical feature richness	1	1	2
	D5	Channel margin artificial features	-1	-1	-1
Channel Bed	E1	Channel aquatic morphotype richness	0	2	2
	E2	Channel bed tree features richness	4	4	4
	E3	Channel bed hydraulic features richness	2	2	3
	E4	Channel bed natural features extent	1	1	1
	E5	Channel bed natural features richness	1	1	2
	E6	Channel bed material richness	2	2	3
	E7	Channel bed siltation	0	0	0
	E8	Channel bed reinforcement extent	-1	0	0
	E9	Channel bed reinforcement severity	-1	0	0
	E10	Channel bed artificial features severity	-4	-4	0
	E11	Channel bed NNIPS extent	0	0	0
	E12	Channel bed filamentous algae extent	0	0	0

Full Recommendations

Bank Top

The whole channel and bank top is heavily overshaded. This can be improved by tree pollarding and coppicing. This would let in more light creating dappled shade and in turn encouraging a greater range of species in channel and on the bank top/face. Possible species include common reed, purple loosestrife and yellow flag iris. Pollarding is where only the upper branches are removed encouraging new growth; coppicing is where the tree is cut near the base keeping the tree in a juvenile state creating a stool in which multiple trunks will grow. This should be done in stages to prevent the loss of too much habitat at once. Trees selected to be cut should also be checked for signs of bat activity by an ecologist.

Ponds, backwaters and scrapes will create more water related features and encourage wetland species through an increase of wet and marginal habitats resulting in a diverse habitat structure; they will also act as water storage reducing flood risk downstream. This would be part of the removal of the offices and built on the land being developed. These can be implemented into the new development site within 10m of the bank top.

Creating a wildflower rich grassland would also greatly help with improving bank top vegetation structure, however this would also have to be planned into the development, however this would also have to be planned into the development within 10m of the bank top.

It was noted that buddleia and round leaf dogwood was present, which should be removed as it is considered invasive and will spread quickly.

Bank Face

The coppicing and pollarding of trees on the bank top will allow for more light on the bank face and increase the amount of tree feature richness and vegetation structure. The improved vegetation structure would help prevent erosion and over-siltation of the river through a varied root structure holding the bank together.

Other improvements to the bank face can be made through removal of the artificial bank faces at the beginning and end of the stretch. Removing this and regrading the bank face will increase flood storage, create a more natural river, natural bank extent and species richness gain. If this remains a higher score will be harder to achieve but the stretch could still improve.

Channel Water Margin

The increase in light from pollarding will allow for an increase in channel margin vegetation extent, with species like reed, sedges, and water mint (found on the other side of the bridge upstream).

The introduction of gravel to the channel will help increase the channel margin physical features such as side bars. This will happen through natural river dynamics depositing the gravel in different places in channel.

Channel Bed

Light within the channel will increase the aquatic morphotype richness encouraging plants such as water mint. Builders waste was discovered in the first section, removal of this will heavily improve the channel bed score.

To increase the score the river can be returned to more natural levels through the addition of gravel into the stream, creating pools and riffles sequences. This will increase hydraulic feature richness and hopefully natural feature richness. It also provides spawning habitat for fish and reintroduces natural processes into the river.

Channel bed artificial features severity is severely affected by the two weirs at the end of the stretch. These are impacting silt levels in the brook, preventing fish migration and could potentially increase flooding through holding water back. The removal of the weir would help return natural processes to the river, allow fish to migrate up stream and would drop the river levels. This, however, would be an expensive endeavor and would require scoping, planning, costing and permissions.

Other improvements

On the bank top, bank face and instream a large amount of litter has been dumped. This needs to be actioned as its likely to be contributing to pollutants in the river and have an impact on wildlife. Visually this is also unappealing. Reducing litter and increasing light would make the area feel more open, making it better for wildlife and humans.

This stretch of the brook and the previous km upstream have been heavily straightened. Adding meanders back to the channel, either through realignment or the addition of berms would increase flow diversity, re engage natural processes and prevent water rushing straight through. This could be through the creation of a low flow that meanders through at the level the river normally flows. A second stage channel

would then allow for increased storage capacity preventing the river from overflowing. Examples of this can be found here: https://www.therrc.co.uk/manual-river-restoration-techniques

The large woody debris and trees in channel should also be left unless they pose a significant flood risk. Wood in channel can provide key benefits such as pools and riffles from scouring the bed, hiding areas for juvenile fish, food for a range of species and habitat for some riverfly species.

Moderate Recommendations

Bank Top

The whole channel and bank top is heavily overshaded. This can be improved by tree pollarding and coppicing. This would let in more light creating dappled shade and in turn encouraging a greater range of species in channel and on the bank top/face. Possible species include common reed, purple loosestrife and yellow flag iris. Pollarding is where only the upper branches are removed encouraging new growth; coppicing is where the tree is cut near the base keeping the tree in a juvenile state creating a stool in which multiple trunks will grow. This should be done in stages to prevent the loss of too much habitat at once. Trees selected to be cut should also be checked for signs of bat activity by an ecologist.

Ponds, backwaters and scrapes will create more water related features and encourage wetland species through an increase of wet and marginal habitats resulting in a diverse habitat structure; they will also act as water storage reducing flood risk downstream. These can be implemented into the new development site within 10m of the bank top.

Creating a wildflower rich grassland/ wild edge would also greatly help with improving bank top vegetation structure and Bank top managed ground cover, however this would also have to be planned into the development within 10m of the bank top.

It was noted that buddleia and round leaf dogwood was present, which should be removed as it is considered invasive and will spread quickly. This action will also improve Bank top NNIPS cover.

Bank Face

The coppicing and pollarding of trees on the bank top will allow for more light on the bank face and increase the amount of tree feature richness and vegetation structure. The improved vegetation structure would help prevent erosion and over-siltation of the river through a varied root structure holding the bank together.

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The large woody debris and trees in channel should also be left unless they pose a significant flood risk. Wood in channel can provide key benefits such as pools and riffles from scouring the bed, hiding areas for juvenile fish, food for a range of species and habitat for some river fly species.

Notes

Due to the channel being straightened and over deepened the overall score is reduced by 1. This means to reach a score of moderate (without introducing gravels and bring up the bed height) you must reach an overall score of >1.2 (for this river). What has been suggested above is the minimum amount required to reach this score. This is subject to change as rivers are natural and constantly evolving, which means the suggested score could be exceeded or may not be reached. Therefore, it is recommended that further enhancements from the main document are performed to ensure river health and mitigate against negative changes.

Biodiversity Net gain

The pre-intervention Biodiversity Net Gain (BNG) units are worth 0.41 units. 0.45 units are required to meet 10% net gain. To reach these scores below the **whole stretch** would need to be restored on site.

- If you were to increase the site to **good,** 0.32 units would be gained resulting in a total of 0.73 and meeting net gain.
- If you were to increase the site to **fairly good,** 0.25 units would be gained resulting in a total of 0.66 and meeting net gain.
- If you were to increase the site to **moderate,** 0.16 units would be gained resulting in a total of 0.57 and meeting net gain.

Additional Points

Rare Species

No rare species were noted. Although it was noted that there was a general lack of Wetland species generally such as common reed, fools water cress, water mint, unbranched burr reed, yellow flag iris, Hemp agrimony and sedges. This list is not extensive, and these are just common river and wetland species you are likely to find.

Importance of features

The Kennet catchment partnership recognizes the Holy Brook as an important spawning habitat for coarse fish, especially barbel and chub. However due to the impoundment, silt and inaccessibility caused by the weir the presence of spawning habitat is greatly reduced on this stretch. Removal of the weir would be key to this. Any building work causing excess silt and or removal of habitat will impact this further.

Water framework Directive

In 2022 the Environment Agency (EA) rated the Holy Brook as Moderate according to the WFD. Please note all UK rivers have failed on chemical so it is not included for the purposes of this report.

Classification Item	2019	2022
Ecological	**Moderate**	**Moderate**
Biological quality elements	**Moderate**	**Moderate**
Invertebrates	**High**	**High**
Macrophytes and Phytobenthos Combined	**Moderate**	**Moderate**
Macrophytes Sub Element	**Moderate**	**Moderate**
Physico-chemical quality elements	**Moderate**	**Moderate**
Ammonia (Phys-Chem)	**High**	**High**
Dissolved oxygen	**Moderate**	**Moderate**
Phosphate	**Good**	**Good**
Temperature	**Good**	**Good**
pH	**High**	**High**
Hydromorphological Supporting Elements	**Supports good**	**Supports good**
Hydrological Regime	**Supports good**	**Supports good**

The improvements mentioned in this document could facilitate the Holy Brook moving towards achieving a good status for biological quality and physio-chemical quality through the improvements to macrophyte structure and better flow improving dissolved oxygen.

However, any increased shading from the scheme will reduce the chance of macrophytes recovering. Any reduction in habitat would also affect biological elements, potentially reducing them. Potential pollution would also affect all the physio-chemical elements.

Adverse Impacts

By preventing the development from being within 10m of the bank top adverse impacts can be avoided. Reduction in building height would prevent any over shading impacts. Having a bunded concrete area for chemical usage can prevent leaching into the river. Correct plumbing will prevent access pollution from entering the brook through mis-connections i.e. connected to the correct pipes for waste disposal rather than run off.

Conclusion

The suggested scores are not as aggressive as they could have been or will end up being. This is to give flexibility in case of score changes. There will be score changes that have not been mentioned once works have been completed due to the river adapting and improving. Improved scores provided are also a prediction and are not guaranteed, they may also be exceeded if the recommendations are implemented.

This stretch of the Holy Brook is plagued with various issues and scores poorly. However, it has the potential to rise to a fairly good to good level. Reinforcements in the bank, weirs, and over deepening back are preventing some natural river functions. Once removed the score will increase greatly. The same can be said with the pollarding and coppicing of trees. This will let more light in and increase floral biodiversity in and out of channels. The encroachment from both residential and commercial properties greatly affects the scores as well. By making sure the new development is 10m+ away from the brook and

including a natural buffer strip this will be reduced. Finally bank top water related features such as ponds and back waters will have a large increase on the score and improve the river as a whole.

But there are issues such as pollution, which are not recorded in the river condition assessment. These also need to be addressed and will have a large impact on the brook. Once all these issues have been solved this has the potential to be a fantastic stretch of water for wildlife and people.

Post Management Monitoring

It is recommended that monitoring surveys, in the form of the River Condition Assessment survey, is completed every two years from year 0 of management. These surveys will involve monitoring the same modules that have been monitored to obtain the baseline river condition data, to see if management and recommendations is achieving the objectives. Where objectives are not being met, or unforeseen outcomes are occurring, management and recommendations would need to be altered.

Appendix 1

Holy brook

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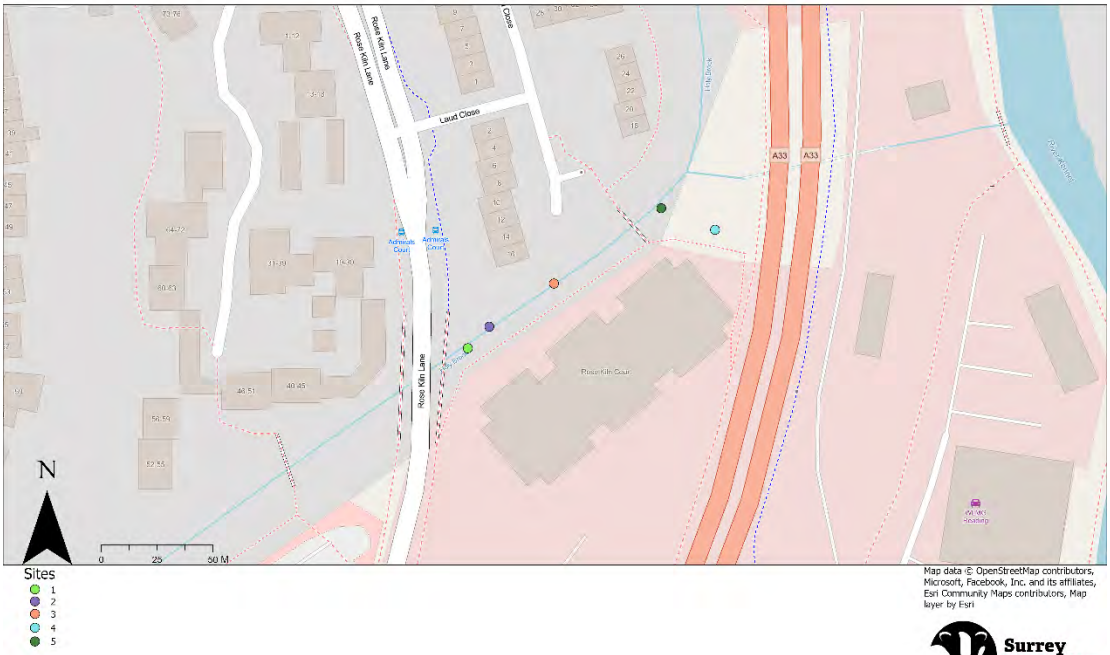
Holy brook



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Site 1

Site 2

Site 3

Site 4

Site 5

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Appendix B – References

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Appendix C – Assessment of Structures, Trees and Habitats for Bats

Assessment of Structures, Trees and Habitats for Bats

Suitability	Description	
	Roosting	**Commuting and Foraging**
Negligible	An inspected structure or tree which is considered to have no features of importance for roosting bats. No further constraints apply to the method or timing of proposed works.	Negligible habitat features on-Site to support commuting or foraging bats.
Low	A structure with at least one or more features suitable to support opportunistic individual bats. However, inadequate space, shelter, protection and conditions, and the low suitability of surrounding habitats means that it is unlikely to be used as a maternity or hibernation roost site. A tree of adequate age and stature to support potential roosting features, however, either no features, or only features of limited potential recorded from the ground.	Habitat with potential to support low numbers of commuting bats due to its quality and connectivity. For example, a gappy hedgerow or unvegetated stream that is isolated from the surrounding landscape. Alternatively, suitable but isolated habitats suitable to support low numbers of foraging bats such as a lone tree or a patch of scrub.
Moderate	A structure or tree with one or more potential roost sites that are of adequate size, shelter and protection, with suitable conditions and surrounding habitat to support a bat roost not of high conservation status (with respect to roost type not individual species conservation status).	Linear habitat continuity connecting to the wider landscape offering potential to support commuting bats, such as rows of trees and scrub or linked back gardens. Habitat such as trees, scrub, grassland or a waterbody with connectivity to the wider landscape offering foraging opportunities for bats.
High	A structure or tree with one or more potential roost sites that are suitable for use by large numbers of bats on a regular basis and for long periods of time due to their size, shelter, protection, conditions and the surrounding habitat.	Continuous high-quality habitat with strong connectivity to the wider landscape that is likely to be used by commuting bats on a regular basis, such as flowing waterbodies, hedgerows, rows of trees and woodland edges. High quality habitat with strong connectivity to the wider landscape that is likely to be regularly used by foraging bats, such as broadleaved woodland, tree-lined watercourses and grazed parkland. Site is close to, and connected to, known roost sites.

Guidance on Assessing the Potential Suitability of Development Sites to Support Bats (adapted from Collins, J. (ed)).

Appendix D - Ecological Impact Assessment Methodology

Ecological Impact Assessment Methodology

The methodology for the EcIA follows the principles set out within the Guidelines for Ecological Impact Assessment (EcIA) in the UK and Ireland; Terrestrial, Freshwater, Coastal and Marine updated by the Chartered Institute of Ecology and Environmental Management (CIEEM) in 2019 and comprises a staged approach to assessing the potential impacts resulting from the proposed development on the ecological features within the ZOI.

The EcIA has involved the following stages:

- Determination of baseline conditions;
- Identification of important ecological features;
- Identification of potential impacts and effects;
- Identifying likely significant effects;
- Designing appropriate avoidance and/or mitigation for impacts and effects;
- Assessment of residual effect significance;
- Assessment of cumulative impacts and effects; and
- Identification of compensation and enhancement measures.

Baseline Conditions

Baseline conditions have been established following the methodology outlined in the above sections.

Important Ecological Features

Important ecological features have been identified based on existing statutory, policy and conservation objectives. In accordance with the CIEEM Guidelines the value or potential value of an ecological resource has been determined within a defined geographical context in line with the table below.

Potential Impacts and Effects

The potential impacts on any important ecological features are identified during construction and operation, and prior to any mitigation, based on available baseline data, an assessment of design proposals and construction methods, and available information on the existing conservation status of the features in question.

Impacts are then characterised in terms of the following attributes:

- Positive or negative – i.e. a change that improves or reduces the quality of the environment;
- Magnitude – i.e. the size of an impact in quantitative terms where possible;
- Extent – i.e. the area over which an impact occurs;
- Duration – i.e. the time for which an impact is expected to last;
- Reversibility – i.e. is the impact permanent or temporary; and
- Timing and frequency – e.g. related to breeding seasons.

The likely effects of potential impacts on important ecological features largely depend upon their sensitivity, whilst the level of certainty that an impact will occur as predicted is based on professional judgment. Only the impacts likely to result in significant effects have been described in detail within the report. Impacts that are either unlikely to occur, or if they did occur are unlikely to be significant have been scoped out and justification for scoping out provided.

Geographic Scale	Example Criteria for Classification at each Geographic Scale
International	Habitats meeting the criteria for Wetlands of International Importance (Ramsar), Special Area of Conservation (SAC) or Special Protection Area (SPA) site. A species present in internationally important numbers (>1% of international population). Notable species which is part of the cited interest of an SPA or SAC and which regularly occurs in internationally or nationally important numbers.
National	Habitats meeting the criteria for a Site of Special Scientific Interest, Marine Conservation Zone (MCZ), or National Nature Reserve (NNR). A species present in nationally important numbers (>1% of UK population). A species which is part of the cited interest of a SSSI and which regularly occurs in internationally or nationally important numbers. Rare breeding species (e.g. birds with <300 UK breeding pairs).
Regional	A local site with important regional habitats or significant populations of Species of Principal Importance (SPIs) under the NERC act. Species present in regionally important numbers (>1% of regional population). Species listed as priority species, which are not covered above, and which regularly occur in regionally important numbers. Sustainable populations of a species that is rare or scarce within a region. Species on the Birds of Conservation Concern (BoCC) Red or Amber List and which regularly occur in regionally important numbers.
County	A local site with a habitat that is characteristic of the county or rare on a county scale, or with significant populations of locally important species. Species present in county important numbers (>1% of county population). Species listed as priority species, which are not covered above, and which regularly occur in county important numbers. Sustainable population of a species that is rare or scarce within a county. A site designated for its county important assemblage of species. Species on the BoCC Red or Amber List and which regularly occur in county important numbers.
Local	A site which has wildlife corridors likely to be essential to allow viable movement of species or improve the biodiversity of the area. Species listed as priority species, which are not covered above, and are rare in the locality. Species present in numbers just under county importance (<1% of county population). Sustainable population of a species that is rare or scarce within the locality. A site whose designation is just under for inclusion for its county important assemblage of a particular species on site. Other species on the BoCC Red or Amber List and which are considered to regularly occur in locally important numbers.

Likely Significant Effects

In accordance with the CIEEM guidelines, an ecologically significant effect is 'an effect that either supports or undermines the biodiversity conservation objectives for 'important ecological features' or for biodiversity in general'.

Using an approach to valuing impacts that involves professional judgement and reference to available conservation objectives, neutral and minor effects are considered to be not significant, while moderate and major effects are assessed to be significant. The table below provides a comparison of the terms used.

Effect Significance	Type of Effect	Equivalent CIEEM Assessment
Significant	Major beneficial	Significant positive impact on biodiversity conservation objectives at given geographical context
	Moderate beneficial	Positive impact on biodiversity conservation objectives at given geographical context
Non-significant	Minor beneficial	Limited positive impact on biodiversity conservation objectives at given geographical context
Neutral	Negligible	No significant impact on biodiversity conservation objectives at given geographical context
Non-significant	Minor adverse	Limited adverse impact on biodiversity conservation objectives at given geographical context
Significant	Moderate adverse	Adverse impact on biodiversity conservation objectives at given geographical context
	Major adverse	Significant adverse impact on biodiversity conservation objectives at given geographical context

The evaluation of significant effects has been based on the best available scientific evidence. Where sufficient evidence is not available, the precautionary principle has been applied. Therefore, where it is not possible to robustly justify a conclusion of no significant effect, a significant effect has been assumed. Any uncertainty has been acknowledged within the report.

Avoidance and/or Mitigation

Negative impacts have been avoided and/or mitigated where possible, in line with the mitigation hierarchy as presented within the CIEEM Guidelines.

Assessment of Residual Effect Significance

Once the impacts of the proposed development have been assessed, and all attempts to avoid and mitigate ecological impacts have been finalised, an assessment of the residual impacts is undertaken to determine the significance of their effects upon ecological features.

Cumulative Impact Assessment

The following types of future development within the same zone of influence have been considered as part of the cumulative impact assessment in relation to each important ecological feature:

- Proposals for which consent has been applied which are awaiting determination and are visible on the local planning portal;

- Projects which have been granted planning consent, but which have not yet been started or which have been started but are not yet completed (i.e. under construction); and
- Proposals which have been refused permission but which are subject to appeal and the appeal is undetermined.

Compensation and Enhancement

Compensation measures were taken to offset residual effects resulting in the loss of, or permanent damage to ecological features despite mitigation, where required. Compensation has only been considered as a last resort, in line with the mitigation hierarchy.

Enhancement measures have been agreed over and above any mitigation or compensation measures, in order to provide a biodiversity net gain.

Appendix E – Site Photographs

Site Photographs

Photograph 1 – Main office building, southern aspect

Photograph 2 – Main office building, northern aspect

Photograph 3 – Main office building and sealed surface

Photograph 4 – Introduced shrubs adjacent to office building

Photograph 5 – Scattered trees and shrubs along the eastern Site boundary

Photograph 6 – Trees and modified grassland in the west

Photograph 7 – South-western boundary hedgerow

Photograph 8 – Moderate BRP features on T2

Appendix F – Results of The Roost Presence/Absence Surveys

Results of The Roost Presence/Absence Surveys

Dusk Emergence Survey 04h May 2023

Surveyor Location	Time of Sighting	Location of Sighting	Species	Behaviour (e.g. swarming, foraging, commuting)	No of Bats
S1- Western aspect of T2 S2- Eastern aspect of T2	20:34	Foraging up and down the brook- continuous	Soprano pipistrelle	Foraging	2
	20:35	Heard not seen	Noctule	Commuting	1
	20:37	Heard not seen	Noctule	Commuting	1
	20:41	Foraging up and down the brook- continuous	Soprano pipistrelle	Foraging	2
	20:42	Foraging up and down the brook- continuous	Soprano pipistrelle	Foraging	4
	20:45	Heard not seen	Noctule	Commuting	1
	20:53	Foraging up and down the brook- continuous	Common pipistrelle	Foraging	1
	21:00	Heard not seen	Noctule	Commuting	1
	21:31	Heard not seen	Noctule	Commuting	1
	21:37	Heard not seen	Brown long-eared	Commuting	1

Dawn Emergence Survey 18th May 2023

Surveyor Location	Time of Sighting	Location of Sighting	Species	Behaviour (e.g. swarming, foraging, commuting)	No of Bats
S1- Western aspect of T2 S2- Eastern aspect of T2	03:35	Foraging up and down the brook- continuous	Common pipistrelle	Foraging	1
	03:38	Foraging up and down the brook- continuous	Soprano pipistrelle	Foraging	1
	03:38	Heard not seen	Daubentons	Foraging	1
	04:09	Heard not seen	Noctule	Commuting	1
	04:19	Heard not seen	Noctule	Commuting	1
	04:47	Foraging up and down the brook- continuous-continuous	Common pipistrelle	Foraging	1
	04:49	Foraging up and down the brook	Soprano pipistrelle	Foraging	1
	04:49	Foraging up and down the brook	Soprano pipistrelle	Foraging	1