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GREGGS BAKERY, TWICKENHAM RESIDENTIAL LEAD SCHEME

EXTENDED PHASE 1 HABITAT SURVEY REPORT, UPDATED

Project	Prepared & Checked by	Approved by	Client	Status	Date
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		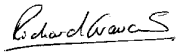			

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1 Summary

Instruction

Richard Graves Associates Ltd was commissioned by London Square Developments Ltd in 2018 to undertake a Phase 1 Habitat Survey of the 'Greggs Bakery Site' in Twickenham, London (hereafter referred to as 'the site'). This report was updated in response to comments received from the local planning authority in June 2020 and has been further updated following a site visit in March 2022.

Development Proposal

The survey was required to support London Square Developments Ltd in their undertaking of Due Diligence surveys prior to submitting a planning application for a proposed development which will comprise "*Demolition of existing buildings (with retention of a single dwelling) and redevelopment of the site to provide up to 116 residential units and 175 sqm commercial floorspace (Use Class E) with associated hard and soft landscaping, car parking and highways works and other associated works*."

Habitats

The site was dominated by buildings and hardstanding; the only vegetation present was limited to occasional stands of buddleia *Budleja davidii*, ivy *Hedera helix* and bramble *Rubus fruticosus* agg. as well as ruderal vegetation in the cracks of the hard standing and one small rear garden.

Protected Species: Based on the review of the:

- ecological desktop study records; and
- the findings of the Extended Phase 1 Habitat Survey:

this report includes the following further surveys / recommendations for the ecological constraints on / near the site:

Protected Species

Further surveys were recommended for bats[1] and nesting birds (including precautionary checks for black redstarts *Phoenicurus ochruros* during construction).

Statutory Protected Sites

- Three European designated sites are located within 10km of the site: Wimbledon Common SAC, Richmond Park SAC, and South West London Waterbodies Ramsar Site & SPA. South West London Waterbodies Ramsar Site & SPA and Richmond Park SAC are located under 5km from the site boundary and, given the proximity of these two European designated sites to the Greggs Bakery Site, it is possible that the competent authority (likely to be the Local Planning Authority) may require a Habitats Regulations Assessment (HRA) to be undertaken.

- There are no records of sites with a National statutory designation (SSSI) or (NNR) within 2km of the site. Natural England's Magic Map indicates that the site does fall within two SSSI 'Impact Risk Zones' (IRZ)[2]. Residential development within the IRZs, however, is excluded from the list of proposals that prompt consultation with Natural England.

- There is one Local Nature Reserve (LNR), Ham Lands LNR, within the 2km desktop search radius, located 900m from the site.

[1] The recommended bat surveys were conducted in July, August and September 2019 and are reported in: Richard Graves Associates (2019) Greggs Bakery, Twickenham 2019 Bat Activity Survey Report.

[2] Due to the scale of the mapped information, and the number of IRZs, it is not possible to state, with confidence, which IRZs relates to which SSSIs.

Non-Statutory Protected Sites

- There are 18 Sites of Importance for Nature Conservation (SINC) within the 2km desktop search radius including the 'M076 Crane Corridor Site of Metropolitan Importance' which is contiguous with the section of the River Crane located adjacent to the northern boundary of the site. We note that Mereway Nature Park was added as an extra parcel to the SINC in April 2019.

Minimising Impacts & Recommendations

In addition to the protected species further survey recommendations listed above, site-wide measures will include:

- Consultation with a Bird Deterrent Expert to reduce the risk of nesting birds occupying the buildings on site during demolition, where necessary;
- A pre-cautionary site walkover undertaken by a suitably qualified Ecologist(s), prior to the start of any site construction works (this should be repeated should works be paused for more than approx. 2 weeks between March and November);
- An Ecological Tool-box Talk for the site team, prior to the start of works;
- Good practise during construction activities to minimise impacts to nearby designated sites, focused on protecting the River Crane corridor;
- Implementation of the bespoke sensitive lighting strategy to ensure the 'dark corridor' status of the River Crane is not impacted[3];
- The sensitive timing of works during site clearance to avoid the nesting bird season;
- The production of a Pre-Occupation Landscape & Ecological Management Plan (LEMP); and
- Liaison with the local Natural England Team, Local Planning Authority, Friends of the River Crane Environment, (FORCE) and the London Wildlife Trust regarding good construction practice with regards to protecting designated sites.

Enhancements

Opportunities for biodiversity gain, as well as avoiding impacts, have been considered as part of the development proposal and will include:

- Tree planting as part of a landscaping scheme (using native species / species of value to biodiversity[4]);
- Incorporation of native species / species of biodiversity value in landscaping proposals[5];
- Installation of bird and bat boxes and bug hotels in the new buildings / landscaping;
- Installation of a stag beetle loggery;
- Creation of a structurally diverse green roof[6];
- Improvements to the River Crane including enhancement of the river edge landscape, in-channel river enhancements and / or funding of local conservation projects; and
- Addition of Schwegler (or suitable alternative) Kingfisher/Sand Martin Nest Tunnels / nest boxes at suitable locations.

Conclusion

If the recommendations of this report, and any subsequent species-specific survey reports, are undertaken at the appropriate stage there are no undue constraints, with respect to ecology, to potential development.

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[3] Desco (2019) London Square Developments Ltd. Former Greggs Bakery Site Twickenham TW2 6RT. Exterior Lighting Assessment Supplementary Report Updated October 2019

[4] Assael (2019) Greggs Bakery, Twickenham Proposed Planning Addendum Changes, 26.09.19 To Be Updated (TBU)

[5] Assael (2019) Greggs Bakery, Twickenham Proposed Planning Addendum Changes, 26.09.19 TBU

[6] Assael (2019) Greggs Bakery, Twickenham Proposed Planning Addendum Changes, 26.09.19 TBU

2 Introduction

2.1 Instruction

Richard Graves Associates Ltd (RGA) was commissioned by London Square Developments Ltd to undertake a Phase 1 Habitat Survey of the 'Greggs Bakery Site' in Twickenham, London (hereafter referred to as 'the site') in 2019. The report was updated in June 2020, to note the inclusion of an additional parcel to the River Crane SMI and has been further updated in 2022 following an additional site visit.

2.2 Survey Objectives

The aims of the study and survey work were to:

- Undertake a desktop study consulting the local biological records centre and online resources to obtain an ecological baseline for the site;
- Undertake a Phase 1 Habitat Survey of the site to determine the extent of habitats and highlight the potential for protected species to be present, identifying any ecological constraints. This survey was extended to note the potential for any protected species on the site;
- Undertake a Preliminary Ground Level Roost Assessment of the buildings on site in order to determine the actual or potential presence of bats and the need for further survey / and or mitigation;
- Outline appropriate mitigation and any further survey effort considered necessary to support planning requirements;
- Where possible, highlight any initial ecological enhancement opportunities; and
- In 2022 to assess any significant changes in habitats on site since 2019.

2.3 Site Location and Setting

The Greggs Bakery Site covers approx. 1.1 hectare (ha)[7], centred at Ordnance Survey (OS) grid reference: TQ 15321 73342, and is located in the London Borough of Richmond upon Thames in South West London. The site is situated in a largely residential neighbourhood. Immediately north of the site is the River Crane and the railway line and to the south of the site are a number of light industrial buildings (Figure 1).

Figure 1: Site location indicated by red marker © Google Earth 2019

[7] Assael (2018) Greggs Bakery / Twickenham Consultants Pack October 2018 A2817 2-10R1

The site is located between two residential terraced streets, Crane Road and Norcutt Road. To the north it wraps around Crane Road and to the south it borders Edwin Road. (Figure 2).

Figure 2: Aerial Mapping indicating the Greggs Bakery Site (outlined in red) © Google Earth 2019

2.4 Rationale for the Survey

The survey was required to support London Square Developments Ltd in their undertaking of Due Diligence surveys prior to submitting a planning application for a proposed development which will comprise "*Demolition of existing buildings (with retention of a single dwelling) and redevelopment of the site to*

provide up to 116 residential units and 175 sqm commercial floorspace (Use Class E) with associated hard and soft landscaping, car parking and highways works and other associated works".

2.5 Assessment

The assessment is an Extended Phase 1 Habitat Survey which includes an assessment of evidence of, and suitable features for, protected species. Protected species are those, which are fully or partially protected by legislation. The relevant legislation includes:

- The Conservation of Habitats and Species Regulations 2017, (as amended)[8];
- The Wildlife and Countryside Act 1981 (as amended)[9];
- The Natural Environment and Rural Communities Act 2006[10].

[8] HMG, 2017. The Conservation of Habitats and Species Regulations. London: HMSO

[9] HMG, 1981. The Wildlife and Countryside Act 1981. HMSO

[10] HMG, 2006. The Natural Environment and Rural Communities Act, London: HMSO

3 Methods

3.1 Extended Phase 1 Habitat Survey

The Extended Phase 1 Habitat Survey is described in *Guidelines for Baseline Ecological Assessment* (Institute of Environmental Assessment, 1995). This approach is based on: *A Handbook for Phase 1 Habitat Survey*[11], which includes classification of basic habitats and standard mapping, to which are added a desktop study and a protected species walkover. Target notes (TN) are used to denote features of interest. By combining a desktop study information and field survey results, it is possible to identify and evaluate the ecological value of each site in order to determine the potential effects of development on sensitive ecological receptors.

3.2 Desktop Study

3.2.1 Sources of Ecological Information

The following sources of information were reviewed as part of the site desktop study:

- Local Records Centre Data (Greenspace Information for Greater London (GiGL));
- Ordnance Survey (OS) Online Mapping and Google Earth 2022;
- MAGIC (Multi-Agency Geographic Information for the Countryside) - this is a web-based interactive mapping service that provides information on key environmental schemes and designations; and
- Natural England's Local Nature Reserves Database[12].

3.2.2 Local Records Centre Data

Richard Graves Associates obtained the following information from GiGL with a 2 km search radius of the OS Grid Reference (TQ 15321 73342):

- Statutory and Non-statutory site designations (including Ancient Woodland);
- Protected and Notable Species records; and
- Notable / BAP habitats.

3.2.3 MAGIC Data Search

This web-based data set was interrogated for the following designated sites:

- National Statutory Sites (Sites of Special Scientific Interest (SSSIs) and National Nature Reserves (NNR)) and Local Nature Reserves (LNR) within a 2km radius of OS Grid Reference: TQ 15321 73342; and
- International Designated Sites: Special Areas of Conservation (SAC), Special Protection Areas (SPA) & Ramsar sites within a 10km radius of OS Grid Reference: TQ 15321 73342.

3.2.4 Ponds

OS Online Mapping and Google Earth were used to facilitate the identification of ponds within 250m of the site.

3.2.5 Protected Species Licences

Magic was used to search for granted European Protected Species Licence Applications relating to the following taxa: amphibians, bats, cetaceans, invertebrates, other mammals, plants and reptiles within 2km of the site.

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[11] JNCC, 2010. Handbook for Phase 1 habitat survey - a technique for environmental audit.

[12] Natural England. 2017. Local Nature Reserves. [ONLINE] Available at: http://www.lnr.naturalengland.org.uk/Special/lnr/lnr_search.asp. [Accessed 11 March 2022].

3.3 Protected Species Walkover and Phase 1 Habitat Survey

The site was visited for the Phase 1 Habitat Survey and Protected Species Walkover by Richard Graves CEcol CEnv FCIEEM and Dr Suzy Cardy BSc (Hons) MSc CEcol MCIEEM on the 28th November 2018 with a further site visit by Richard Graves on the 10th March 2022. Habitats were identified and are plotted on a Phase 1 Habitat map (Figure 3); botanical species were recorded and were noted in the text using nomenclature in accordance with (Stace, 2010)13 and (Stace, 2010)[14]. Features on the site suitable for, or indicating evidence of, protected species and species of nature conservation significance were recorded using a Global Positioning System (GPS) application (Petosoft, 2010)[15].

3.4 Preliminary Bat Roost Assessment

The buildings within the site were subject to an external inspection for evidence of, and potential to support, bats (Figure 4, Table 1).

During the external inspection, the exterior walls and roofs of the buildings were viewed from ground level and features providing potential bat access points or roosting places were noted. An endoscope (Explorer Premium, Wireless Inspection Camera) and binoculars were available during the survey, but not required.

Where safe access permitted, an initial internal inspection of the buildings for bats / signs of bats was also conducted.

Areas where bat droppings may accumulate, such as on the ground, ledges, window sills and walls, were also inspected. Any features that could be used by bats were identified and any bat roosting features or evidence of bat activity as listed below were noted.

Table 1: External Bat Roosting /Access Features / Direct Evidence of Bats

External Inspection Features	Internal Inspection – Features and Direct Evidence
Gaps between roof tiles or ridge tiles	Live bats or bat corpses
Gaps under the eaves	Droppings
Cracks and crevices in the brickwork	Bat sounds
Gaps around windows	Potential access points
Gaps under the lead flashing seals	Potential roosting sites
Potential access points	Clean, cobweb free gaps around potential entrance points

3.5 Surveyor Qualifications and Experience

Richard Graves

Richard Graves BSc (Hons) MSc PGDip CEcol CEnv FCIEEM has over twenty-seven years' experience as a practising ecologist and has undertaken, commissioned and reviewed several hundred Extended Phase 1 Habitat Survey and protected species surveys all over the UK. Richard is a fellow of the Chartered Institute of Ecology and Environmental Management

[13] Stace, C., 2010. New Flora of the British Isles 3rd Edition. Cambridge: Cambridge University Press

[14] Stace, C.A., van der Mejiden, R. and de Kort, I. (2010) Mobile Interactive Flora of the British Isles - A Digital Encyclopaedia.

[15] Petosoft, 2010. GPS Version 1.3, Petosoft.

(CIEEM) a chartered ecologist and a chartered environmentalist. Richard is also class licenced for great crested newt surveys, a class licenced bat surveyor and a contributor to current good practice guidelines for bat surveys.

Dr Suzy Cardy
Dr Suzy Cardy BSc (Hons) MSc CEcol MCIEEM has over seventeen years' experience in the management and execution of the ecological elements of large-scale development projects including major rail infrastructure developments and one of the UK's largest translocation of protected species. Suzy has a Natural England licence to survey for great crested newts and dormice and has a Level 1 Bat survey licence. Suzy has worked with a variety of Clients across multiple sectors (transport, industrial, education, government, healthcare, commercial, leisure and power / energy).

3.6 Limitations

- An Extended Phase 1 Habitat Survey only provides a snapshot of the broad habitats and species present in an area at the time the survey is undertaken.
- Species are mobile and can move in to and out of an area quickly. The survey relies on evidence such as tracks and droppings to provide evidence that a species is present.
- The locations of all features and target notes within the report and the figures are indicative and approximate only.
- The data provided from consultees and meta-databases is based on existing records but does not necessarily constitute a comprehensive list of protected and notable species records. These records are not exhaustive as there is currently no national or regional policy for systematic data gathering. Therefore, absence of data does not constitute evidence of absence (i.e. it may be that the Site has not previously been surveyed). It is also possible that other data exist within this area that has not been made available to Richard Graves Associates.
- Whilst any incidental sightings of non-native invasive species are recorded, a full invasive species survey is not with the scope of the survey.
- The survey included an external inspection of the accessible parts of the buildings on site. However, not all of the internal sections of the buildings on the site were accessed. A pre-demolition internal inspection has been included in the recommendations, where safe access permits.
- The rear garden of Number 2 Gould Road was not accessed, but much of the garden was viewed from adjacent locations. A walkover inspection of the garden (including checks of the trees for nesting birds and potential bat roosts) should be included in the pre-clearance walkover.
- Development /works on or near a river / flood defence structure / flood plain can require an Environment Permit and consultation / approval from the relevant statutory body. These items are beyond the scope of this report.

4 Results: Desktop Study

4.1 Introduction

The desktop study ecological records report requested from GiGL was received on the 7th December 2018[16] and updated in March 2022. The following sections summarise the findings from the records centre, MAGIC and the other information sources.

4.2 Statutory Protected Sites

4.2.1 International Sites

International and European sites are designated for particular habitat and / or species interest and receive the highest level of protection in law under the Conservation Regulations[8]. It is also necessary to consider impacts on these sites from development proposals even at some distance.

Three European designated sites are located within 10km of the site: Wimbledon Common SAC, Richmond Park SAC, and South West London Waterbodies Ramsar Site & SPA. South West London Waterbodies Ramsar Site & SPA and Richmond Park SAC are located under 5km from the site boundary. Given the proximity of these European designated sites to the Greggs Bakery Site, it is possible that the competent authority (likely to be the Local Planning Authority) may require a Habitats Regulations Assessment (HRA).

4.2.2 National Sites

National Nature Reserves (NNRs) were established to protect some of our most important natural features and species and to facilitate conservation and scientific research. NNRs are declared by the statutory country conservation agencies under the National Parks and Access to the Countryside Act 1949 and the Wildlife and Countryside Act 1981 (as amended).

Sites of Special Scientific Interest (SSSIs) are protected under the Wildlife and Countryside Act 1981 (as amended) and designated for their wildlife or geo-morphological interest. It is usually necessary to consider direct impacts from development within, adjacent to, or within 1 – 2 km of a such sites.

There are no records of sites with a National statutory designation (SSSI) or (NNR) within 2km of the site. Natural England's Magic Map indicates that the site does fall within two SSSI 'Impact Risk Zones' (IRZ)[17]. Residential development within the IRZs, however, is excluded from the list of proposals that prompt consultation with Natural England.

4.2.3 Local Sites

Local Nature Reserves (LNRs) are designated and protected under the National Parks and Access to the Countryside Act (HMG, 1949) and are usually owned and managed by local authorities. There is one LNR within the 2km search radius, located approx. 0.9km from the site: Ham Lands LNR (Table 2). Ham Lands LNR consists of an area of infilled gravel pits, water meadows and woodland and is separated from the site by the River Thames.

[16] GiGL eCountability (2018) An Ecological Data Search for Greggs Bakery on behalf of Richard Graves Associates Ltd. Report Ref: 12500. Prepared on the 7th December 2018.

[17] Due to the scale of the mapped information, and the number of IRZs, it is not possible to state, with confidence, which IRZs relates to which SSSIs.

Table 2: Statutory Sites within the Desktop Search Area

Site Name	Location (approx. Central Grid Ref)	Approx. Distance to the Nearest Site	Reason for Citation
European Designated Sites with 10km of Site			
Wimbledon Common SAC	Latitude: 51.43222222 Longitude: -0.234444444	6km East	Annex I habitats: Northern Atlantic wet heaths with *Erica tetralix* & European dry heaths. Annex II species: Wimbledon Common has a large number of old trees and much fallen decaying timber. It is at the heart of the south London centre of distribution for stag beetle *Lucanus cervus*.
Richmond Park SAC	Latitude 51.44083333 Longitude -0.274444444	2.8km East	Annex II species: Richmond Park has a large number of ancient trees with decaying timber. It is at the heart of the south London centre of distribution for stag beetle and is a site of national importance for the conservation of the fauna of invertebrates associated with the decaying timber of ancient trees.
South West London Waterbodies Ramsar Site & SPA	Latitude: 51 27 41 N Longitude: 00 31 27 W	3.9km SW	The South-West London Water Bodies SPA comprises a series of embanked water supply reservoirs and former gravel pits that support a range of man-made and semi-natural open water habitats. The reservoirs and gravel pits function as important feeding and roosting sites for wintering wildfowl, in particular gadwall *Anas strepera* and shoveler *Anas clypeata*, both of which occur in numbers of European importance.
National Sites within 2km of Site			
None within 2km			
Local Nature Reserves Within 2km of Site			
Ham Lands LNR	TQ 165 723	900 SE	*"Ham Lands local nature reserve is an extensive area of grassland and scrub with abundant wildlife. The site was once extensively excavated for gravel, then back-filled over time with a variety of soil types from all over London. This has created a unique mosaic of different vegetation types attracting many butterfly and bird species. In spring, the site is full of hawthorn*

			blossom and in the summer, the meadows support hundreds of wild flowers." [18]

4.3 Non-statutory Sites

Sites which are not of national significance, but may contain features important for wildlife, may be designated and given some protection under the planning system. In Greater London, these are typically known as Sites of Importance for Nature Conservation (SINCs). There are three types of SINC: 1) Sites of Metropolitan Importance (SMI); 2) Sites of Borough Importance (SBI); and 3) Sites of Local Importance (SLI).

A total 18 SINCs are present within the 2km search areas (Table 3). The nearest non-statutory site to the Greggs Bakery Site is 'RiL10 Twickenham Junction Roughs SLI' which is located just west of Twickenham station, approx. 200m east of the site:

"The site contains a typical mix of rough grassland, tall herbs, scrub and young woodland.".[16]

Also in close proximity to the site is the 'M076 Crane Corridor SMI ' (located approx. 280m west of the site) which is described as follows:

"*For a length of over 5 kms, the River Crane is bordered by habitats of remarkable diversity, including woodland, pasture, heathland and areas of open water. Throughout, the width of the river corridor is exceptional by London standards. The river itself is one of the most natural in London, and is a stronghold for uncommon aquatic plants…. Various damp pastures, old water meadows and associated ox-bow ponds also support a rich flora of regionally uncommon plants…Willow-alder woodland occurs in several places; this is a rare habitat in London. The breeding avifauna includes kingfisher, grey wagtail and reed warbler. The specially-protected water vole is also present. There are three Local Nature Reserves within the site; Crane Park Island (managed by London Wildlife Trust), Cranebank Water Meadows and Pevensey Road Open Space.*"[16]

We note that an additional parcel Mereway Nature Park was added to SMI in April 2019. This is 50m to the northeast of the Site at its nearest extent.

The most southern part of the 'RiBII04 Duke of Northumberland's River south of Kneller Road SBI' is located approx. 270m to the west of the site. Kingfishers *Alcedo atthis* are commonly seen along this 800m section of the river feeding on the abundant fish population, which includes chub *Squalius cephalus* and stone loach *Barbatula barbatula* [16].

Table 3: Non-Statutory Sites within 2km of the Site

Site Ref	Site Name	Location	Habitats
Sites of Metropolitan Importance			
M031	River Thames and tidal tributaries	TQ 302 806	Intertidal, marsh/swamp, pond/lake, reed bed, running water, saltmarsh, secondary woodland, vegetated wall/tombstones, wet ditches, wet grassland, wet woodland/carr.
M076	Crane Corridor	TQ 113 743	Pond/lake, running water, scrub, wet grassland, wet woodland/carr.

[18] Natural England. 2019. Designated Sites View – Ham Lands LNR [ONLINE] Available at: https://designatedsites.naturalengland.org.uk/SiteLNRDetail.aspx?SiteCode=L1008934&SiteName=Ham%20lands&countyCode=&responsiblePerson=&SeaArea=&IFCAArea= [Accessed 8th January 2019].

M083	Ham Lands	TQ 165 722	Pond/lake, scrub, secondary woodland, semi-improved neutral grassland, wet grassland.
Sites of Borough Importance			
HoBI06	Mogden Sewage Works	TQ 154 750	Bare ground, ruderal, running water, scrub, secondary woodland, semi-improved neutral grassland, tall herbs, wet woodland/carr.
RiBI04	Duke of Northumberland's River north of Kneller Road	TQ 151 743	Running water. This 650 metre section of the Duke of Northumberland's River which runs alongside Twickenham Rugby Stadium is very attractive, with excellent aquatic and marginal vegetation.
HoBII07	River Crane at St Margarets	TQ 163 746	Running water, scrub, secondary woodland, semi-improved neutral grassland.
RiBII03	Fulwell and Twickenham Golf Courses	TQ 138 719	Acid grassland, heathland, pond/lake, scrub, secondary woodland, wet ditches.
RiBII04	Duke of Northumberland's River south of Kneller Road	TQ 150 737	Amenity grassland, running water, scattered trees, scrub.
RiBII05	Strawberry Hill Golf Course	TQ 152 720	Acid grassland, heathland, running water, scattered trees, scrub, secondary woodland.
RiBII10	The Copse, Holly Hedge Field and Ham Avenues	TQ 174 726	Scattered trees, secondary woodland, semi-improved neutral grassland, veteran trees.
RiBII12	Petersham Lodge Wood and Ham House Meadows	TQ 174 732	Improved agricultural grassland, semi-improved neutral grassland, wet grassland, wet woodland/carr.
RiBII16	Hounslow, Feltham and Whitton junctions	TQ 131 740	Scrub, semi-improved neutral grassland.
RiBII18	River Crane at St Margaret's (Richmond side)	TQ 164 746	This site includes the Crane between Chertsey Road and the tidal limit at Northcote Road (below which the river is included in the River Thames and tidal tributaries Metropolitan site, and an adjacent area of largely disused allotments. The river is divided into two channels, and is lined with trees and shrubs. Kingfishers are frequently seen. Most of the site is in Hounslow, but one side of the river is in Richmond.
Sites of Local Importance			
RiL02	Marble Hill Park and Orleans House Gardens	TQ 172 736	Amenity grassland, planted shrubbery, scattered trees, secondary woodland, semi-improved neutral grassland, veteran trees.
RiL10	Twickenham Junction Rough	TQ 156 734	Bracken, roughland, scrub, secondary woodland, semi-improved neutral grassland, tall herbs, vegetated wall/tombstones.
RiL22	Twickenham Cemetery	TQ 137 731	Acid grassland, amenity grassland, hedge, scattered trees.

RiL24	Teddington Cemetery	TQ 153 718	Amenity grassland, planted shrubbery, scattered trees, semi-improved neutral grassland, vegetated wall/tombstones.
RiL25	Moor Mead Recreation Ground	TQ 164 740	Amenity grassland, Running water, Scattered trees, Semi-improved neutral grassland, Tall herbs.

4.4 Habitats

No areas of ancient woodland were present within the 2km search area. The Greater London Authority (GLA) habitat surveys information was provided in the GiGL report. The nearest habitats to the site are:

- GiGL_HAB_10939 'River Crane at Mereway, Abandoned allotments' described as 1.52 ha of scrub, semi-improved neutral grassland and scattered trees;
- GiGL_HAB_11166 'Whitton to Twickenham Railsides' described as 3.41 ha of woodland of unknown condition; and
- GiGL_HAB_10868 'Cole Park Range' described as 1.05 ha of roughland, rivers, streams, bare artificial habitat, scattered trees and amenity grassland.

4.5 Ponds

No ponds within 250m of the site were observed on OS Online Mapping or Google Earth.

4.6 Protected Species Licences

Magic was used to search for granted European Protected Species Licence Applications relating to the following taxa: amphibians, bats, cetaceans, invertebrates, other mammals, plants and reptiles within 2km of the site. Two Bat EPS Licences were recorded within the search area:

- A record for a Bat EPS Licence (EPSM2011-2993), dated between 26th April 2011 and 31st August 2014, in relation to common pipistrelle *Pipistrellus pipistrellus* and soprano pipistrelle bat(s) *Pipistrellus pygmaeus*.
- A record for a Bat EPS Licence (2016-25082-EPS-MIT), dated between 6th of September 2016 and 1st September 2021, in relation to brown long-eared *Plecotus auritus*, soprano and common pipistrelle bat(s).

4.7 Species

In total, 4296 protected and notable species records were returned from GiGL. Only records considered to be relevant to the habitats on site, the scale of the site and from the last five years have been included (Table 4). None of the species records are from within the application site.

The adjacent sections of the River Crane are channelised with concrete sides with no potential water vole *Arvicola amphibious* burrowing or kingfisher *Alcedo atthis* and sand martin *Riparia riparia* nesting habitat (although they do not exclude foraging habitat) and no suitable features for *Lutra lutra* otter holts. However, the River Crane, as a whole, has the potential to support these species.

The desktop records include a variety of bat species all of which were located more than 300m from the site, although it's very likely that bats forage and commute along the River Crane river corridor and the surrounding habitats on a frequent basis.

A number of UK BAP species, considered as '*characteristic of the Richmond Borough*' have been assigned Species Action Plans within the Richmond Biodiversity Action Plan[19]. Several records for these species / taxa were returned in the desktop study including: bats, water vole (most recently recorded 2017, 764m

[19] Richmond Biodiversity Group: Biodiversity *Action Plan: London Borough of Richmond Upon Thames*. [ONLINE] Available at: https://www.richmond.gov.uk/habitat_and_species_action_plans. [Accessed 9 January 2019].

from site) as well as stag beetle and song thrush (both of which were most recently recorded in 2018, 732m from site).

The most recent record for black redstarts *Phoenicurus ochruros* dates back to 1996, and the site is located over 10km from their stronghold in along the Thames east of Tower Bridge and in the Lea Valley[20]. However, the site is less than 1km from the River Thames and whilst it's considered currently unsuitable for black redstart in its current condition, this may change if materials were allowed to remain during the nesting season after demolition and before construction.

Table 4: Desktop Study Results: *Relevant* Protected Species within 2km of the Site in the last Five years.

Latin Name	Common Name	Most Recent Record		Nearest Record	
		Date	Distance (m)	Date	Distance (m)
European Protected Species					
Nyctalus leisleri	Lesser noctule	2014	371	2014	371
Nyctalus noctula	Noctule bat	2017	1371	2014	371
Pipistrellus nathusii	Nathusius's pipistrelle	2017	C	2017	C
Pipistrellus pipistrellus	Common pipistrelle	2017	1371	2005	271
Pipistrellus pygmaeus	Soprano Pipistrelle	2017	1371	2014	371
Pipistrellus spp.	Pipistrelle bats	2018	732	2005	528
Myotis daubentonii	Daubenton's bat	2016	1744	2014	371
Plecotus auritus	Brown long-eared bat	2014	371	2014	371
Eptesicus serotinus	Serotine	2017	C	2017	C
Triturus cristatus	Great crested newt	2017	1176	2017	1176
Schedule 1 Birds					
Alcedo atthis	Kingfisher	2017	764	2016	305
Turdus iliacus	Redwing	2017	764	2017	764
Turdus pilaris	Fieldfare	2013	1732	1987	1462
Milvus milvus	Red kite	2014	1462	2011	342
Loxia curvirostra	Common crossbill	2012	342	2012	342
Falco subbuteo	Hobby	2014	C	2014	C
Schedule 8 Plants					
Hyacinthoides non-scripta	Bluebell	2012	1709	2003	271
Schedule 5 Animals					
Arvicola amphibius	European water vole	2017	764	2009	371
Meles meles	Eurasian badger	2018	C	2018	C
Section 41 Species /UK BAP Species					
Cuculus canorus	Cuckoo	2016	1158	2016	1158
Dendrocopos minor	Lesser spotted woodpecker	2012	1462	1987	1462
Aythya marila	Scaup	2014	1232	2014	1232
Motacilla flava	Yellow wagtail	2013	1462	1987	1462
Tyria jacobaeae	Cinnabar	2018	732	2018	732
Acanthis flammea	Common (mealy) redpoll	2013	1664	1998	1462
Emberiza schoeniclus	Reed bunting	2013	C	2013	C
Larus argentatus	Herring gull	2016	1158	1999	1008
Linaria cannabina	Linnet	2017	764	2017	764
Passer domesticus	House sparrow	2018	732	2000	116
Prunella modularis	Dunnock	2018	732	2009	371
Riparia riparia	Sand martin	2014	1462	2014	1462
Streptopelia turtur	Turtle dove	2017	764	2017	764

[20] Blackredstarts.org.uk. 2018. Black Redstarts in London [ONLINE] Available at: https://www.blackredstarts.org.uk/pages/london.html. [Accessed 11th January 2019].

Latin Name	Common Name	Most Recent Record		Nearest Record	
		Date	Distance (m)	Date	Distance (m)
Sturnus vulgaris	Starling	2018	732	2005	271
Anguilla anguilla	European eel	2016	1608	2015	1508
Passer montanus	Tree sparrow	2017	764	2017	764
Pyrrhula pyrrhula	Bullfinch	2016	764	2016	764`
Erinaceus europaeus	West European hedgehog	2018	1598	2000	116
Turdus philomelos	Song thrush	2018	732	2000	116
Habitats Directive Annex 2 - non-priority species					
Euplagia quadripunctaria	Jersey tiger	2018	732	2015	168
Lucanus cervus	Stag beetle	2018	732	1998	96
Birds Directive Annex 1 (but not Schedule 1)					
Sterna hirundo	Common tern	2013	1462	2013	1462
Egretta garzetta	Little egret	2013	1664	2013	1664

Key:

- **-**: confidential record or information not provided;
- **EPS**: European Protected Species;
- **Schedule 8 Plants**: Plants listed on Schedule 8 of the Wildlife and Countryside Act (1981) as amended;
- **Schedule 5 Animals**: Animals listed on Schedule 5 of the Wildlife and Countryside Act (1981) as amended;
- **Schedule 1 Birds:** Birds listed on Schedule 1 of the Wildlife and Countryside Act (1981) (as amended) which are protected by special penalties at all times;
- **Section 41 Species / BAP Species**; UK Biodiversity Action Plan Priority Species, London BAP Priority species and Species "of principal importance for the purpose of conserving biodiversity" covered under section 41 (England) of The Natural Environment and Rural Communities Act (2006); and
- **Habitats & Species Directive Annex 2 Non-Priority species**: Animal and plant species of Community interest (i.e. endangered, vulnerable, rare or endemic in the European Community) whose conservation requires the designation of special areas of conservation.
- **Birds Directive Annex 1:** Birds which are the subject of special conservation measures concerning their habitat in order to ensure their survival and reproduction in their area of distribution. As appropriate, Special Protection Areas to be established to assist conservation measures.
- **C:** confidential record, limited data provided.
- Please note, species may be listed in more than one category, where this is the case, species have been categorised according to the highest level of their protection.

5 Results: Phase 1 Habitat Survey

5.1 Site Overview & Habitats

On-site Habitats

This section provides a description of the habitats on site. Photos of the site are provided in Chapter 8. The site currently stands as a single industrial unit which previously functioned as bakery. The former bakery is dominated by buildings and hardstanding (including car parking) (Photos 1 and 2). The buildings include a number of occupied and unoccupied offices, warehouses, open-sided sheds, production buildings and one end of a terraced house (Number 2 Gould Road). Two tall silos are prominently located by the Edwin Road entrance (Photo 3, TN 2).

The only vegetation on site comprised: 1) occasional stands of buddleia *Buddleja davidii*; 2) ivy *Hedera helix* and bramble *Rubus fruticosus* agg. over several of the buildings and walls (Photo 4 and 5, TN3); and 3) occasional ruderal vegetation in the cracks of the hard standing (Photo 6, TN 1). The small garden to the rear of Number 2 Gould Road, included semi-mature trees and introduced shrubs (Photo 7, TN7).

Fencing, walls and metal hoarding surrounded the majority of the site (Photos 8, 9 and 10, TN4).

Off-site Habitats

The adjacent sections of the River Crane, to the north of the site, are channelised with concrete sides (Photos 11 and 12, TN5). Whilst, river channelisation can have adverse impacts for wildlife (due to the loss of suitable habitat, but also by the change in hydraulic conditions which make the remaining habitats less suitable[21]), the river is still very likely to be used as a commuting route by the local bat population. Bats may also use the rail bridge which is in close proximity to the site and spans the River Crane (Photo 13, TN6). Other protected species such as: otters, kingfishers, sand martins, and eels are also likely to commute along the river to more optimal aquatic habitats (see the above desktop records for more information).

Limited vegetation dominated by buddleia and bramble was observed growing on / through the concrete wall adjacent to the site (along the south edge of the river) (Photo 14). The Waterloo to Reading railway line is situated a few metres to the north of the north side of the river, creating a strip of vegetation that is contiguous with the Mereway Nature Park (which provides varied grasses and bramble for a diverse range of species[22]) and beyond this, Kneller Gardens (Photo 15).

5.2 Protected / Notable Species

The surveys recorded features suitable for supporting the following protected species / taxa:

- Bats – the buildings on site were noted as supporting suitable potential bat roosting features (see Section 5.3);
- Nesting birds - on / within the building / limited vegetation on site;
- Limited potential for black redstart foraging once construction begins;
- Foxes *Vulpes vulpes*: Whilst no evidence of fox earths was recorded, fox scats were evident through the site;

[21] Ward D., Holmes N., Jose P. (eds) (1994) The New Rivers and Wildlife Handbook. Publication: RSPB, Sandy

[22] London Borough of Richmond upon Thames. 2019. *Mereway Nature Park*. [ONLINE] Available at: https://www.richmond.gov.uk/services/parks_and_open_spaces/find_a_park/mereway_nature_park. [Accessed 9 January 2019].

- Section 41 Species such as house sparrows *Passer domesticus*, soprano pipistrelle bats potentially on site / adjacent to the site.

Details of the legislation pertaining to these species, the habitats present, and the recommended surveys / actions are summarised in Table 7.

5.3 Preliminary Bat Roost Assessment

The potential of the buildings on site to host bat roosts is considered generally low and no bats or signs of bats were observed during the inspection (Table 5). Many of the building were open-sided or, large and draughty and were therefore poorly insulated and less likely to provide stable temperatures. However, the site's close proximity to the River Crane, a likely bat commuting / foraging corridor, increases its potential suitability. A description, photos and assessment of bat roost potential for each building surveyed is presented in Table 5.

Table 5: Building Bat Roost Potential Assessment

Building (see Fig 4)	Building External Description	Bat Roost Potential	Photos	
1	– Two storey brick building – Flat roof – Plastic and metal window frames – Signage with gaps / potential bat access points underneath – Holes / potential bat access points in brickwork by downpipe – Wooden barge board, partially rotten	**Low**		
2	– Large elongated factory building – Brick built with large metal roll-up shutters – High void / roof pitch with corrugated tiles and skylights – Some doors and windows bricked up – Holes / potential bat access points in brickwork	**Low**		
3	– Two silos clad with corrugated sheet metal – No obvious gaps / access points	**Negligible**		

Building (see Fig 4)	Building External Description	Bat Roost Potential	Photos	
4	– Large elongated storage bay / covered shed – Open sided and therefore likely to be subject to wide temperature fluctuations – Pitched roof with corrugated sheet metal tiles and skylights – Metal framed	**Negligible**		
5	– Large elongated brick built factory building – Pitch roof with corrugated sheet tiles and skylights – High roof void – Single storey sloping pitch extension to the rear – Metal window frames – Wooden door frames with gaps – Limited number of gaps under wooden barge board	**Low**		
6	– Large elongated factory building – Painted brick – Pitch roof with corrugated sheet tiles and skylights – Wooden door frames – Gaps under soffits at the gable ends	**Low**		

Building (see Fig 4)	Building External Description	Bat Roost Potential	Photos	
7a	– Factory entrance gate house – Three storeys – Painted brick – Pitched roof with clay tiles - gaps under some tiles – Wooden door frames – Wooden soffits, lifted in place creating gaps	**Low**		
7b	– Series of one / two storey flat roof extensions – Brick built – Plastic window frames – Metal door frames – Large spot light on external first floor wall	**Low**		
8	– Reception / office building – Three storeys with single storey flat roof extension / porch – Rendered brick – Multiple pitched roof in a good state of repair – PVC and metal windows with no obvious gaps – Soffits – lifted in places	**Low**		

Building (see Fig 4)	Building External Description	Bat Roost Potential	Photos	
9	– Silo storage brick built building – Flat roof with skylights – Good state of repair – No obvious gaps / access points	**Negligible**		
10	– Brick built single storey office building – PVC windows – Flat roof – No obvious gaps / access points – North face adjacent to River Crane	**Low**		
11	– Large elongated factory / production building plus multiple porches and flat roof extensions – North face adjacent to River Crane – Brick and concrete construction – Majority of building hosts a pitched roof with corrugated tiles and plastic skylights – Some doors covered by protective weather boarding – Holes in brickwork – Occasional gaps in facias and cable entry points	**Low**		

Building (see Fig 4)	Building External Description	Bat Roost Potential	Photos	
12	– Number 2 Gould Road – End of terrace rendered building – Tiled pitch roof – Sash windows – Sloping pitch roof porch – Wooden barge board	**Low**		

6 Recommendations

6.1 Introduction

Table 7 at the end of this chapter summarises each of the ecological constraints and potential ecological constraints (protected species and designated sites), the likelihood of the ecological constraint being present, their protection status and initial recommendations for further survey / mitigation. Generic site wide recommendations and prescriptions for habitat and species protection, as well as site enhancement, are provided below.

6.2 Generic Site Wide Proposals for Habitat and Species Protection – LS to confirm

Pre-clearance Ecological Walkover: As the status of protected species may change over time a site walkover by a suitably qualified Ecologist(s), will be undertaken prior to the start of any site demolition / construction. This should be repeated should works be paused for more than approx. two weeks during the demolition / construction phases between March and November.

Protection of Off-Site Terrestrial and aquatic Habitats: There are a number of important wildlife sites and habitats (in particular, the River Crane) that are in very close proximity to the site. As a precaution, good construction practice in relation to ecology will be followed during the site clearance and construction works to prevent water course pollution (for example, avoidance of run-off). Where a Demolition Management Plan (DMP) / Construction Management Plan (CMP) and Site Waste Management Plan (SWMP) are prepared for the development, they will include a section detailing the provisions aimed at protecting biodiversity.

Toolbox Talk: Prior to the start of works, the contractor will be fully briefed on the potential to encounter bats and other protected species by means of a 'Toolbox Talk' provided by a suitably qualified ecologist (SQE).

Landscape & Ecological Management Plan (LEMP): A Pre-occupation LEMP will be produced for the site to identify the ecological features to be retained on site (Target Species and Habitats), and to specify measures for their enhancement, aftercare and long-term management during the Operational Phase of the development.

6.1 Consideration of Lighting

6.1.1 Potential Impacts of Lighting

Lighting schemes can damage bat foraging habitat (and habitat used by other nocturnal species) directly through loss of land and spatial exclusion of bats due to high illuminance, or indirectly by severing commuting routes from roosts, through light spillage polluting hedgerows, mature tree lines and other linear features often used by commuting bats. Lighting around roosts has also been shown to delay emergence, causing bats to miss the peak in insect prey abundance affecting survival and health[23].

It should be noted that some bat species (common pipistrelle and noctule) can benefit from lighting and are known to forage around and above streetlights, whereas other species such as brown long-eared bats are light averse and will avoid brightly lit areas. As such, the severity of impacts of any lighting scheme will vary depending on the species present.

[23] Stone, E.L. (2013) Bats and Lighting: Overview of current evidence and mitigation guidance

6.1.2 Designing a Site-Specific Lighting Strategy

As part of the design process, the impact of external lighting on the local biodiversity has been considered in line with current guidance and in consultation with the Project Lighting Team (Desco (Design & Consultancy) Ltd)[3]. Any lighting during construction will be addressed in the CEMP.

The '*Exterior Lighting Assessment Supplementary Report: Minimising the Impact of Lighting on Nocturnal Wildlife*'[3] provides a site-specific lighting strategy aimed at protecting bats and other nocturnal wildlife from the potential deleterious impacts of light spill on sensitive habitats.

The lighting strategy for the site has been be formulated to avoid, and where this is not possible for safety or security reasons, minimise any light trespass on the River Crane Corridor so it can continue to function as a 'dark corridor'. The lighting strategy has been based on principles of the:

- Bats and Artificial Lighting in the UK[24];
- Planning guidance (National Planning Policy Framework, 2019)[25]; and
- Design Guidance Protecting Bats in Waterside Development[26].

A detailed account of the proposed lighting scheme is provided in the 'Greggs Bakery, 2019 Twickenham Bat Survey Report'[27].

6.2 Habitat Creation

6.2.1 Sensitive Planting

In accordance with Local Policy (LP 16[28]), where possible, native and pollinator plant species will be used throughout the landscaping and should include plant species to encourage a diversity of insects, which in turn may attract different bat species and generally deliver biodiversity benefits. Planting option guidance has been taken, where appropriate, from sources including:

- Bat Conservation Trust's 'Landscape and Urban Design for Bats and Biodiversity' (Gunnell, 2012); and
- Bat Conservation Trust's 'Encouraging Bats: A Guide for Bat-Friendly Gardening and Living' (Bat Conservation Trust, 2015).

The following native species will form part of the landscaping planting palette: *Crataegus monogyna* (provides summer flowers and autumn berries and creates a dense hedge, good for nesting bird habitat), *Fagus sylvatica*, Ilex aquifolium (good evergreen species providing autumn food source for birds), *Silene dioica, Lychnis flos-cuculi, Galium verum Leontodon hispidus, Leucanthemum vulgare, Lotus corniculatus, Primula veris, Prunella vulgaris, Ranunculus acris, Rumex acetosa, , Agrostis capillaris, Cynosurus cristatus, Festuca rubra, and Acer campestre*.

6.2.2 Green Roofs

In accordance with local policy (Policy LP17[28]), green roof(s)? have been included as part of the of the proposed new development. The 843 m^2 of living roofs will achieve coverage across the potential roof plate. The green roof will create a habitat for a variety of plants, birds, animals and invertebrates. Where

[24] Bat Conservation Trust and Institution of Lighting Professionals Guidance Note 08/ 18 "Bats and Artificial Lighting in the UK" Bats and the Built Environment Series

[25] Ministry of Housing, Communities & Local Government. 2019. Policy paper: National Planning Policy Framework February 2019.

[26] The Environment & Design Team (2018) WaterSpace Design Guidance Protecting Bats in Waterside Development

[27] Richard Graves Associates (2019) Greggs Bakery, 2019 Twickenham Bat Activity Survey Report.

[28] London Borough of Richmond Upon Thames (2018) Local Plan as Adopted by Council 3rd July 2018

possible, stones and deadwood habitat will be used to form hibernacula and log piles which would add to the structural diversity and biodiversity value of the roof(s).

6.3 Terrestrial Enhancement

Opportunities for biodiversity gain as well as avoiding impact, particularly where these support the borough-wide Biodiversity Action Plans, have been considered in accordance with local policy (Policy LP 15[2822]). Such opportunities include:

- Creation of one stag beetle log pyramids, built from the wood of broadleaved trees[29];
- Installation of four bat boxes within new builds;
- Installation of two bird boxes on the new buildings – targeted at species such as house sparrows;
- Creation of a structurally diverse green roof; and
- Installation of invertebrate habitat in the form of 'bug hotels' in appropriate locations throughout the site.

Information on the numbers, models and installation of these features is provided in Appendix A.

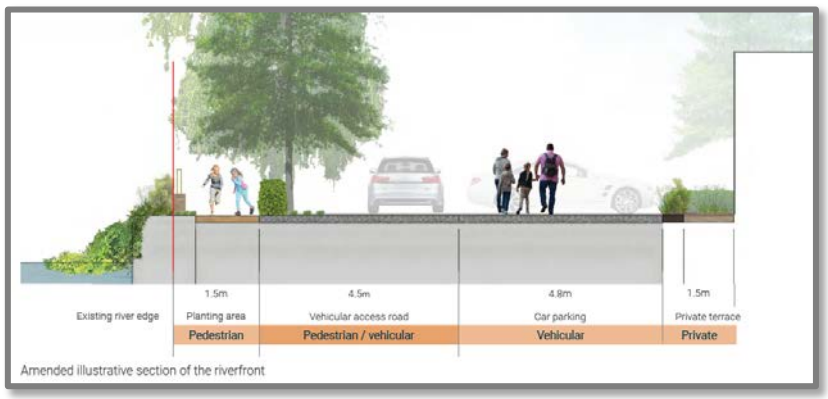
6.4 Aquatic Enhancement

The River Crane Corridor is a key ecological feature, providing ecological and societal benefits. The River Crane offers habitat for many species of wildlife and has recreational / aesthetic benefits to the local neighbourhood. In keeping with the LP 18A[28], the Greggs Bakery development seeks to contribute to the enhancement and the improvement of the River Crane corridor at suitable locations. Proposed measures include:

6.4.1 Enhancement of the River Edge

Where the site abuts the River Crane, enhanced landscaping is proposed, with additional tree planting, the addition of a low-level wall and planting designed to reduce light-spill and retain the 'dark corridor' essential for bats and other nocturnal wildlife[30] (Figure 5).

Figure 5: Illustration of Proposed Riverside Enhancement (Assael Architecture)



6.4.2 Funding Support for Local Conservation Projects

Should in-channel river enhancements not be practical at the stretch of the River Crane adjacent to the Greggs Bakery Site, consideration should be given to supporting local conservation projects involving the

[29] People's Trust for Endangered Species. (PTES) 2019. Build a log pile for stag beetles. [ONLINE] Available at: https://ptes.org/wp-content/uploads/2016/11/Build-a-log-pile-for-stag-beetles.pdf. [Accessed 10 January 2019].
[30] A full account of the sensitive lighting strategy is provided in: Richard Graves Associates (2019) Greggs Bakery, Twickenham 2019 Bat Survey Activity Report.

restoration of the River Crane. For example, funding the Crane Valley Partnership (CVP) to facilitate their Lower River Crane Restoration Project[31].

6.4.3 Installation of Kingfisher / Sand Martin Nest Boxes

Kingfishers are known to frequent the River Crane corridor, indeed they have been recorded by Richard Graves Associates, flying along the River Crane close to the site, during the June 2019 bat surveys. Therefore, two woodstone kingfisher nest boxes will be installed within the vertical bankside wall on the river edge. In addition to this, 12 sandmartin nest boxes will be installed. Information on the numbers, models and installation of these features is provided in Appendix A.

[31] Atkins (2019) Lower River Crane Restoration Feasibility and Options Appraisal Green Corridor 8th April 2019

Table 6: Confirmed and Potential Ecological Constraints on Site

Ecological Constraint	Location of Confirmed/ Potential Constraint	Likelihood of Ecological Constraint Being Present on Site	Protection Status	Initial Recommendations / Mitigation Proposals
Bats	Potential roosting features present in the buildings. Trees in the garden of Number 2 Gould Road.	**Low:** A number of the buildings possess bat roost potential.	Building demolition / works on site could cause disturbance to bats in their breeding or resting places, damage, obstruction or destruction of their roosts or/ and risk of killing and injury to bats. These actions would constitute offences under the Wildlife and Countryside Act 1981, as amended and the Conservation of Habitats and Species Regulations 2017.	**Bat Surveys[1]** - In accordance to the Bat Survey Guidelines (Collins, 2016)[32] the following bat surveys are recommended: - Activity: one survey visit per season (Spring: April / May; Summer: June-August; Autumn: Sept / Oct). Further surveys may be required if these survey visits reveal higher levels of bat activity than predicted. - Once the key locations for bat activity are determined, the following emergence surveys are recommended: - Buildings / walls with Low bat potential: One survey visit (one Dusk Emergence or Dawn Re-entry Survey). - An internal inspection of the buildings for bats / signs of bats conducted prior to demolition works, subject to safe access. - Should a bat(s) be found to be roosting in any of the on-site buildings, works may need to be carried out under a licence issued by Natural England. Additional surveys may be required, and replacement roosts may also be needed to ensure the favourable conservation status of the species is maintained.
Nesting Birds	Potential nesting features present on the buildings and in the ivy / limited vegetation on site.	**Assume presence**	Building demolition / works / vegetation removal risks damage to and destruction of the nests and eggs of wild birds which would be an offence under the Wildlife and Countryside Act 1981, as amended. Nesting bird species listed on Schedule 1 of the Wildlife and Countryside Act 1981, as amended, are also protected from disturbance.	**Nesting bird check prior to works** - Given the potential for birds, such as pigeons, to nest on / in the buildings its recommended that building demolition should ideally be undertaken outside the bird nesting season, i.e. from September to February inclusive (note that birds can nest within this period in good weather and are also protected). - Use of bird deterrents should be considered. - If buildings demolition work / vegetation clearance is not undertaken outside the bird nesting season, they must be checked by a suitably qualified Ecologist for nesting birds, prior to removal. - If an active nest(s) is found, a suitably qualified Ecologist should delineate a 'work exclusion buffer' around the structure containing the nest(s). No works are to take place within this buffer until after young have fledged.
Black Redstart	There are no recent records of black redstart within the 2km desktop search area and the site is over 10km from the population's London stronghold (situated along the Thames, east of Tower Bridge and in the Lea Valley[33]). However, this species has adapted to industrial areas and light industry with preferred foraging habitat including sparsely vegetated areas and areas undergoing or awaiting re-development. Therefore the site may increase in its level of	**Negligible** current potential for nesting black redstart on site. **Low:** potential for foraging black redstart should construction works be paused mid-works.	All wild nesting birds, their eggs, nests (whilst in use) and chicks are protected. In addition, nesting bird species listed on Schedule 1 of the Wildlife and Countryside Act 1981 (such as black redstart) are also protected from disturbance.	**Sensitive Timings of Works and Checks** - Where possible, works should be conducted outside the nesting bird season, which generally runs from March to August inclusive, but which can extend beyond this period in good weather. Any birds nesting outside this period are also protected. - If works cannot take place outside the nesting bird season, a suitably qualified Ecologist should check the site for nesting black redstart immediately prior to works commencing. - A Tool Box Talk, given to all contractors, should include information on black redstart, such as identification, signs to look out for and what to do if it is suspected / confirmed, that works may impact black redstart, as well as a summary of the potential for nesting birds, legislation protecting Schedule 1 birds and their responsibilities. - As construction works may encourage black redstart to use the site, particularly if works are paused mid-construction, a check for this species (and any other protected species) should be conducted if works are paused for more than approx. 2 weeks during construction (between March and November).

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

[33] Blackredstarts.org.uk. 2018. Black Redstarts in London [ONLINE] Available at: https://www.blackredstarts.org.uk/pages/london.html. [Accessed 11th January 2019].

Ecological Constraint	Location of Confirmed/ Potential Constraint	Likelihood of Ecological Constraint Being Present on Site	Protection Status	Initial Recommendations / Mitigation Proposals
	suitability for this species during construction.			- If a black redstart is found to be nesting that may be impacted by the works (including disturbance risk), all works should stop and the advice of an Ecologist sought immediately. - No works which may impact upon or disturb the nest (either directly or which causes the bird to abandon the nest) may take place until the chicks have fledged. The Ecologist would advise on a suitable buffer area around the nest and any ongoing works (if possible). This buffer area will depend on the location of the nest and the proposed works.
Section 41 / BAP Species e.g. bats and house sparrow	Various potential BAP /S.41 species in on site (e.g. bats) the area surrounding the site.	**Moderate**	Under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006, local authorities should have regard to biodiversity when determining planning permission. The Section 41 / BAP lists are drawn up to assist local authorities and other bodies in their duties.	**Retention of Habitats & Enhancements** - Protection of key habitats where possible (see Sensitive Working Practices section below). - Incorporation of features and enhancements to benefit and support local biodiversity (see Section 6.5).
Foxes	Evidence of fox commuting throughout the site's walk ways and alleyways.	**Confirmed**	All wild mammals, including foxes, are protected from cruelty under the Wild Mammals (Protection) Act 1996 which makes it an offence to mutilate, kick, beat, nail or otherwise impale, stab, burn, stone, crush, drown, drag or asphyxiate any wild mammal with intent to inflict unnecessary suffering.	**Pre-Clearance Checks** - Pre-clearance checks for this species should be made. - Humane deterrent methods should used to discourage foxes from the site, should any earths be present and the development direct impact their earths. This should be conducted under ecological supervision.
European Statutory Sites	**Absent on site**, but three European designated sites were recorded within the 10km search area: Wimbledon Common SAC, Richmond Park SAC and South West London Waterbodies Ramsar Site & SPA.		SACs are sites that are chosen to conserve the natural habitat types and species of wild flora and fauna listed in Annex I and II of the Habitats Directive. They are the best areas to represent the range and variety of habitats and species within the European Union. SPAs are highly protected sites classified in accordance with Article 4 of the EC Birds Directive (The Birds Directive). They are classified for rare and vulnerable birds (as listed on Annex I of the Directive), and for regularly occurring migratory species. Ramsar Sites are wetlands of international importance. All terrestrial Ramsar Sites are effectively protected, through the planning system, under the Wildlife and Countryside Act 1981 (as amended), and the Countryside and Rights of Way Act 2000 (CROW) through their notification as SSSIs (Sites of Special Scientific Interest) and through other regulatory systems addressing water, soil and air quality. The majority of Ramsar Sites fall within, or overlap with, SPAs and are therefore also subject to the level of protection offered to SPAs.	**Potential Habitats Regulations Assessment Required** - Given the proximity of the EU designated sites to the site, (particularly Richmond Park SAC and South West London Waterbodies Ramsar Site & SPA which are within 5km) it is possible that the competent authority (likely to be the Local Planning Authority) may require a Habitats Regulations Assessment (HRA)to be undertaken.
UK Statutory Sites	**Absent on site,** but one LNR is located within the 2km search radius. The nearest LNR is Ham Lands LNR which is located approx. 0.9km from the site. Ham Lands LNR consists of an area of infilled gravel pits, water meadows and woodland. The LNR is separated from the site by the River Thames.		Local Nature Reserves are owned, leased or managed by Local Authorities and designated under the National Parks and Access to the Countryside Act 1949, as amended. LNRs are declared and managed for nature conservation, and provide opportunities for research and education, or simply enjoying and having contact with nature.	**Sensitive Working Practices** - Liaise with the local Natural England Team about proposed works, any potential impacts and planned pre-cautionary measures / mitigation. - Adhere to good construction practice through the construction process (see recommendations for SINCs below).
Sites of Importance for Nature	**Absent on site**, but 18 SINCs are present within the 2km search area. The nearest three non-statutory sites to the Greggs Bakery Site		Local authorities are empowered to designate areas within their jurisdiction as being of local nature conservation	**Sensitive Working Practices**

Ecological Constraint	Location of Confirmed/ Potential Constraint	Likelihood of Ecological Constraint Being Present on Site	Protection Status	Initial Recommendations / Mitigation Proposals
Conservation (SINC)	are: 1) M076 Crane Corridor SMI, including Mereway Nature Park; 2) RiL10 Twickenham Junction Rough SLI; and 3) the RiBII04 Duke of Northumberland's River south of Kneller Road SBI, all of which are located approx.. 200 - 300m from the site.		interest. The criteria for inclusion, and the level of protection provided (if any) may vary between areas. These sites are defined in local and structure plans under the Town and Country Planning system and are a material consideration when planning applications are being determined.	- There are at least three SINCs located approx. 50-300m from the site. The Crane Corridor SMI and the Duke of Northumberland's River south of Kneller Road SBI are linked to the sections of the River Crane that run adjacent to the northern boundary of the Greggs Bakery Site. - Liaise with the Local Planning Authority, Friends of the River Crane Environment, (FORCE) and the London Wildlife Trust about proposed works, regarding any potential impacts and planned pre-cautionary measures / mitigation. - Good construction practice should be followed to reduce the risk of impacts to nearby SINCs. These should include provisions for the protection of biodiversity within the site DMP / CMP and SWMP as well as the following: - *Surface Run-off* – construction activities, wheel washers and pollution incidents must all be properly managed in line with current best practice to minimise pollution of nearby watercourses by surface run off. Safe storage of chemicals/oil must be enforced, and spill kits and other measures to be in place on site. - *Minimising lighting* - Many nocturnal animals require dark areas of habitat for commuting and foraging. Using powerful lighting on wildlife corridors can, for some species, effectively sever connectivity. Consequently, lighting should be minimised wherever possible. On site, directional lighting, facing away from surrounding habitats (particularly the River Crane). Lighting should be turned off when not in use except to meet the minimum requirements for health and safety; - *Limiting construction dust* - large quantities of construction dust can travel great distances and negatively impact vegetation and habitats that it settles on. All best practice guidelines regarding limiting construction dust should be followed, especially in relation to surrounding habitats and proximal SINC sites; - *Reducing construction noise* - Noise from construction activities can cause disturbance to wildlife. Good practice guidelines should be followed and the timing of activities likely to result in high noise levels should be agreed with the relevant authorities. - *Disposal of waste* – All waste products generated by the re-development should be properly stored and disposed of in line with best practice. -

7 Conclusions

In 2019, Richard Graves Associates undertook an Extended Phase 1 Habitat Survey of the 'Greggs Bakery Site' in London, which was updated in 2022.

The northern boundary of the site is adjacent to the River Crane which is known to support a variety of important protected and notable species and provides a key potential 'dark corridor' along which wildlife are able to shelter, commute and forage.

In line with local policy, the Greggs Bakery development will seek to protect and enhance this key wildlife corridor, by avoiding light trespass, enhancing the riverside edge landscape, providing nesting opportunities for kingfishers and sand martins and offering roosting opportunities for the local bat population.

The development site itself comprises mostly buildings and hardstanding with very limited vegetation cover (restricted to buddleia, bramble, ruderal vegetation and one small rear garden) and is not itself of intrinsic ecological value. However, some of the building have the potential to host roosting bats and nesting birds, therefore recommendations for further surveys are noted and include: bat activity, exit / re-entry surveys[1], and internal inspections and nesting bird checks (including black redstart).

Three European designated sites are located within 10km of the site: Wimbledon Common SAC, Richmond Park SAC, and South West London Waterbodies Ramsar Site & SPA. South West London Waterbodies Ramsar Site & SPA and Richmond Park SAC are located under 5km from the site boundary and, given the proximity of these two European designated sites to the Greggs Bakery Site, it is possible that the competent authority (likely to be the Local Planning Authority) may require a Habitats Regulations Assessment (HRA) to be undertaken.

There are no records of sites with a National statutory designation (SSSI) or (NNR) within 2km of the site. Natural England's Magic Map indicates that the site does fall within two SSSI 'Impact Risk Zone' (IRZ)[34]. Residential development within the IRZs, however, is excluded from the list of proposals that prompt consultation with Natural England.

There is one LNR and 18 Sites of Importance for Nature Conservation (SINC) within the 2km desktop search radius. Recommendations for good construction practice and consultation with the local Natural England Team, Local Planning Authority, Friends of the River Crane Environment, (FORCE) and the London Wildlife Trust are provided.

A comprehensive suite of site-wide measures to avoid harm to wildlife and habitats and provide enhancements for local biodiversity form a key part of the proposed development and are presented in this report.

In summary, if the recommendations of this report, and any subsequent species-specific survey reports are undertaken at the appropriate stage, there are no undue constraints, with respect to ecology, to potential development.

[34] Due to the scale of the mapped information, and the number of IRZs, it is not possible to state, with confidence, which IRZs relates to which SSSIs.

8 Photos

Photo 1: Overview of the southern section of the Site	Photo 2: Overview of the north section of the Site
	
Photo 3: Silos	**Photo 4: Examples of limited vegetation on site – buddleia stands**
	

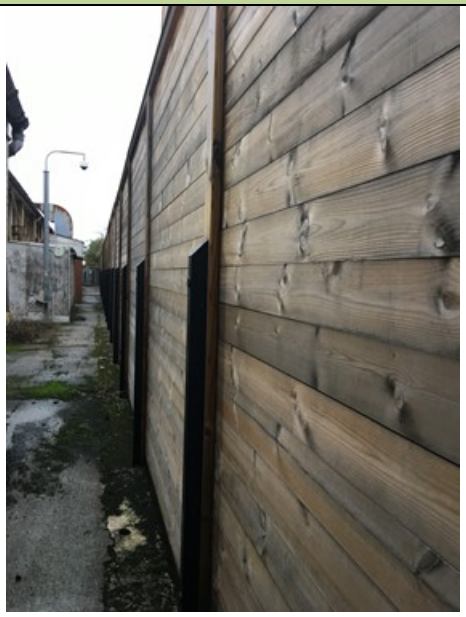
Photo 5: Examples of limited vegetation on site – climbing over walls	Photo 6: Examples of limited vegetation on site - in cracks of hardstanding
	
Photo 7: 2 Gould Road Rear Garden	**Photo 8: Examples of fencing**
	
Photo 9: Examples of walls	**Photo 10: Examples of metal hoarding**
	

Photo 11: River Crane to the north of the site reinforced with concrete sides	Photo 12: River Crane to the north of the site reinforced with concrete sides
	
Photo 13: Rail bridge spanning the River Crane	**Photo 14: Vegetation on the / near the River Crane wall adjacent to the northern boundary of the site**
	

Photo 15: Vegetated strip between the Waterloo to Reading railway and the River Crane	Photo 16: Alleyways with evidence of fox activity
	
Photo 17: Substation	**Photo 18:**
	

9 Figures

- **Figure 1**: Site Location Plan (within the text)
- **Figure 2.** Aerial Mapping indicating the Greggs Bakery Site (within the text)
- **Figure 3**: l Phase 1 Habitat Survey Map. Target Notes:
    - TN1: Ruderal vegetation in hard standing (Photo 6)
    - TN2: Silos (Photo 3)
    - TN3: Buddleia stands (Photo 4)
    - TN4: Metal hording (Photo 10)
    - TN5: River Crane (Photos 11-14)
    - TN6: Rail bridge (Photo 13)
    - TN7: Rear garden of Number 3 Goulding Road (Photo 7)
    - TN8: Ivy on wall (Photo 5)
    - TN9: Sub-station (Photo 17)
    - TN10: Vegetation climbing on walls
    - TN11: Buddleia stands
    - TN12: Narrow alleyway with evidence of fox activity (Photo 16)

- **Figure 4:** Building Reference Map
- **Figure 5:** Illustration of Proposed Riverside Enhancement (Assael Architecture) (within the text)

Legend

- Indicative site boundary
- A3.1 Broadleaved parkland/scattered trees
- J2.4 Fence
- J2.5 Brick wall
- J3.6 Buildings
- J5 Hardstanding
- 1 Target note

Note: All areas and locations are approximate and indicative

Rev	Revision Date	Purpose of revision	Drawn	Check'd	App'd
0	08/01/2019	FIRST ISSUE	JMG	SC	RG

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Project

Greggs Bakery, Twickenham

Drawing title

Figure 3: Phase 1 Habitats 2018

Scale	1:1000 @ A3	Drawn	08 January 2019

Drawing number

19RG-01-01

Rev 0

A3

Figure 4: Building References

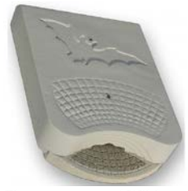
Greggs Bakery, Twickenham

Appendix A

– Ecological Enhancement Features

Greggs Bakery – Examples of Ecological Mitigation Features

Notes:
1) Additional off-site aquatic mitigation / enhancements (such as in-channel river enhancements) are also likely to be required and are not included in this document;
2) The cost of these features and their installation must be approved and supplied by the client;
3) Bats and their roosts and nesting birds and their nests, eggs and young are legally protected and therefore, once occupied, bat boxes and bird boxes cannot be moved or disturbed; and
4) A suitably qualified Ecologist should be consulted prior to disturbing or moving any of the features in this document.

Mitigation Feature	Model & Example Supplier	Number of Features Recommend	Photo of Feature		Installation Notes
Bat Boxes on Buildings	SCHWEGLER 1FQ BAT BOX https://www.wildcare.co.uk/bat-box-75.html	3	 Photo courtesy of Wildcare		**General Dos and Don'ts for Bat Boxes / Tubes /Bat Tiles** **Do** ✓ – Do position them in a southerly or westerly aspect; – Do position on communal buildings / flats; – Do locate them more than 4m from the ground to minimise the risk of cats reaching them; and – Do situate them close to rivers, treelines or hedges. **Don't**✓ – Don't obscure the entrance to the boxes. Leave a space of two meters below them clear of branches, vegetation or ledges to allow bats to safely exit the boxes; – Don't let flood lights / security must shine directly on the bat boxes / tubes / tiles; – Don't place them below or close to windows; and – Don't place them near air conditioning vents etc. For further information refer to The Bat Conservation Trusts 'Bat Box Information Pack': https://cdn.bats.org.uk/pdf/Bat-Box-Information-Pack.pdf?mtime=20181101151309
	SCHWEGLER 1WQ SUMMER AND WINTER BAT ROOST https://www.wildcare.co.uk/summer-and-winter-bat-roost.html	1	 Photo courtesy of Wildcare		
Bat Boxes on Trees	SCHWEGLER 2F-DFP UNIVERSAL BAT BOX WITH DOUBLE FRONT PANEL https://www.wildcare.co.uk/bat-box-45-with-double-front-panel.html	4 - TBC Dependent on the number of trees to be planted	 Photo courtesy of Wildcare		**General Dos and Don'ts for Bat Boxes on Trees** – Do position them in a southerly or westerly aspect; – Do locate them more than 4m from the ground to minimise the risk of cats reaching them; – Do situate them close to rivers, treelines or hedges; – Do consider future tree growth and future access to the box, should it be necessary; – Do use aluminium, headless or domed nails; – Do group a number of bat boxes on different aspects of a tree to offer a variety of climate conditions to the bats – three boxes can be arranged around the trunk of a larger tree; – Do avoid mounting them in areas exposed to bright street lights / security lights; and – Do avoid installation directly along roads where bats are more vulnerable to road traffic.

Mitigation Feature	Model & Example Supplier	Number of Features Recommend	Photo of Feature		Installation Notes
Bird Boxes on Buildings	SCHWEGLER 1SP SPARROW TERRACE – STONE https://www.wildcare.co.uk/sparrow-terrace.html	2	 Photo courtesy of Wildcare	 Photo courtesy of Wildcare	**General Dos and Don'ts for Bird Boxes on Buildings** – Do place in sheltered locations – out of prevailing wind, rain and strong sunlight; – Do locate at least 3 metres from the ground; – Do place house sparrow boxes high up under the eves; – Do position on communal buildings / flats; – Do make sure that cats cannot access the box; – Do use galvanized or stainless steel screws or nails that will not rust; and – Do face on north and east aspects.
Stag Beetle Loggery	See https://ptes.org/wp-content/uploads/2016/11/Build-a-log-pile-for-stag-beetles.pdf	1	See https://ptes.org/wp-content/uploads/2016/11/Build-a-log-pile-for-stag-beetles.pdf	See https://ptes.org/wp-content/uploads/2016/11/Build-a-log-pile-for-stag-beetles.pdf	**General Dos and Don'ts for Stag Beetle Loggeries** The stag beetle loggery should be based on the design outlined by the People's Trust for Endangered Species : https://ptes.org/wp-content/uploads/2016/11/Build-a-log-pile-for-stag-beetles.pdf – Do use wood from any broadleaved tree; – Do use logs which are at least the thickness of an adult's arm; – Do bury the stag beetle loggery logs approx. 50cm deep; – Do site the logs in partial shade if possible to prevent them drying out; – Do partially bury the logs in the soil so that they don't dry out; and – Do allow plants to grow over the log pyramid to retain moisture and provide shade.
Bug Hotels	ELBA INSECT TOWER or URBAN BEE NESTER	4	 Photo courtesy of Wildcare	 Photo courtesy of Wildcare	**General Dos and Don'ts for Locating Bug Hotels** – Ideally bug hotels should be located in sunlight or light shade, preferably 1.5m off the ground. – The Urban Bee Nester should ideally be hung in warm sunny position, between 0.75m and 1.5m above ground. Facing South / South East is perfect to catch a little morning sun.

kingfisher / Sand martin Nest Boxes on River Bank Wall	SCHWEGLER KINGFISHER/SAND MARTIN NEST TUNNEL https://www.wildcare.co.uk/schwegler-kingfishersand-10112.html	– 2 for Kingfishers – 12 for sand martins	 Photo courtesy of Wildcare	**General Dos and Don'ts for Bird Nest Boxes** **These nest boxes should be:** – **I**nstalled on banks faces that drop into fairly deep water. This helps prevent – predation, disturbance and colonisation by tall emergent vegetation that can obstruct flight. – Install on steep or vertical stable bank close to water. – Spacing between pipes is recommended at 800mm horizontally and 400mm vertically. – Pipes should slope downwards towards the entrance for drainage. – Consultation with a structural engineer will be required to determine the feasibility / options for installation unto the existing wall or into the new section of wall. – Approx. External Dimensions of tunnel: length = 58 cm, width = 12.5 cm, height = 15 cm. – See https://www.schwegler-natur.de/portfolio_1408366639/eisvogelbrutroehre/ for more information *For Kingfishers* – Kingfishers tend to use two different tunnels for their first and second brood, therefore two Nest Tunnels should be placed into the wall. – The Nest Tunnels should be placed at least 700mm apart. Install at a minimum height of 1.5m above the water level. *For Sand Martins* – Colonies of never less than 12 breeding pairs of sand martins congregate in suitable areas, therefore at least 12 Nest Tunnels should be installed for this species. – Install at a minimum height of 2m above the water level. – Install on steep or vertical stable bank close to water. – The Nest Tunnel is supplied with detailed installation and maintenance instructions.