Twickenham Riverside

# Ecological Impact Assessment (non-EIA)

LONDON BOROUGH OF RICHMOND UPON THAMES

July 2021

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| | **Name** | **Position** | **Date** |
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## Contents

# 1 Summary

1.1 BSG Ecology was commissioned on 17 June 2020 to undertake an Ecological Appraisal of a site in Twickenham, Surrey, centred at Ordnance Survey National Grid Reference TQ 1627 7315 (the 'Site'). BSG Ecology was later commissioned for further survey of a single building within the Site to identify whether it supports a bat roost.

1.2 The Site, (approximately 1.3 ha in extent), is located in Twickenham, Surrey, on the northern bank of the River Thames. The Site is predominantly hardstanding, but also contains a small area of broadleaved plantation woodland, an artificial turf area and shrubs which form Diamond Jubilee Gardens, a public garden. The red line boundary also extends within the River Thames. There are several commercial buildings within the Site, including the café for the Diamond Jubilee Gardens, and retail buildings on King Street.

1.3 There are proposals for Demolition of existing buildings and structures and redevelopment of the site comprising residential (Use Class C3), ground floor commercial/retail/cafe (Use Class E), and public house (Sui Generis), boathouse locker storage, floating pontoon and floating ecosystems with associated landscaping, restoration of Diamond Jubilee Gardens and other relevant works

1.4 This study involved undertaking an ecological desk study and an extended Phase 1 habitat survey of the Site to gain information on the habitats present, and to establish the suitability of the Site for protected or otherwise notable species. Where appropriate further survey of protected species was undertaken and the results of all survey work is included in this report. The report also includes an assessment of the ecological impacts of the Proposed Development and sets out appropriate ecological mitigation and enhancement measures.

1.5 An extended Phase 1 habitat survey of the Site was undertaken by Anna Muckle, Principal Ecologist at BSG Ecology in July 2020, and included an external assessment of buildings within the Site for their suitability to support roosting bats. One building within the Site was identified as having suitability for roosting bats and was subject to one emergence and one re-entry bat survey in September 2020 following a precautionary assessment of moderate potential due to no internal inspection.

1.6 There are three statutory designated sites within 2 km of the Site, and 10 non-statutory designated sites within 1 km of the Site. The Site was identified to provide potential habitat for a limited range of protected species, including nesting birds and invertebrates (in some existing insect 'hotels'), and hedgehog. Further survey for bats of Building 1 identified that this building does not support a bat roost.

1.7 Following national and local planning policy, there will be a requirement for this development to achieve biodiversity net gain.

1.8 The design includes the following elements to minimise impacts on biodiversity and incorporate opportunities for enhancement:

- The black poplar will be retained on the Site but moved from its current location towards the south of the Site along the Riverside Promenade. 12 London planes will also be relocated but retained on Site.
- Incorporation of damper planting areas of native and non-native species of high value to pollinators as rain gardens.
- Incorporation of climbing plants supported by wires to create green walls with species of value to pollinators such as clematis *Clematis spp.* and star jasmine *Trachelospermum jasminoides*.
- Existing insect hotels present within the Site will be retained but relocated to provide a variety of conditions within the Site.

- The inclusion of eight bird and four bat boxes integrated within buildings within the Site and three bird and three bat boxes on retained trees within the Site.
- The inclusion of green roofs on new buildings within the Site.

1.9 The following measures are necessary to mitigate the ecological impacts of the Proposed Development:

- A contribution should be made to Richmond Borough to enable planting of 87 m of new species-rich native hedgerow to ensure no loss of priority hedgerow habitat in the Borough.
- Detailed lighting proposals to be devised to minimise the impact of artificial lighting on bats and other wildlife.
- Sensors (PIRs) to be used in the residential common areas (stairs, corridors and entrance lobbies) and the office to ensure that lighting in these areas is turned off when they are not in use to minimise light spill.
- Specific and detailed method statements for activities such as the installation of the pontoon, to avoid impacts on the River Thames (also the River Thames and Tidal Tributaries Site of Metropolitan Importance).
- Removal of nesting bird habitat outside of the nesting bird season (March to August inclusive).
- Retained trees should be protected according to a Tree Protection Plan.

1.10 Measures to ensure biodiversity gain will include the following:

- A Landscape and ecology management plan (LEMP) or equivalent should be produced and implemented.
- Self seeded woodland (a habitat of moderate distinctiveness in calculator terms, though not a priority habitat) to be lost will be compensated for through either habitat enhancement of the River Thames via a floating ecosystem with a suitable planting scheme or through a contribution to fund woodland planting elsewhere in the Borough.

1.11 Enhancement measures include the following:

- Detailed designs for the extensive green roofs should be informed by an ecologist and use plants of high value to pollinators.
- Incorporation of native and non-native species of high value to pollinators in detailed proposals for the herbaceous planting, including terrace, woodland style (upper gardens) and river garden areas.
- Use of tree species of value to wildlife.
- The detailed design of the pontoon and any modifications to the slipway should seek to increase habitat heterogeneity through creating a more varied structure with opportunities for intertidal and aquatic wildlife including fish.
- Tenants or building owners will be supplied with information on Ecology and Biodiversity to inform the owner or occupant of local ecological features, and value and biodiversity on or near the Site. This could be made available online.
- Monitoring and reporting of the ecological outcomes for the Site will be undertaken at the construction stage.

# 2 Introduction

### Background to commission

2.1 BSG Ecology was commissioned on 17 June 2020 to undertake an Ecological Appraisal of a site in Twickenham, Surrey, centred at Ordnance Survey National Grid Reference TQ 1627 7315 (the 'Site') on behalf of London Borough of Richmond upon Thames (the Applicant).

2.2 BSG Ecology was then commissioned on 17 August 2020 for emergence and re-entry bat surveys of a single building within the Site.

### Site description

2.3 The Site, which is approximately 1.34 ha in extent, is located in Twickenham, Surrey, on the northern bank of the River Thames. The Site is predominantly hardstanding (roads, pavements and a children's play park), but also contains a small area of broadleaved woodland, an artificial turf area and shrubs which form Diamond Jubilee Gardens, a public garden and formerly an open air swimming pool. There are several commercial buildings within the Site, including the café for the Diamond Jubilee Gardens, and retail buildings on King Street. A small area, roughly 0.1 ha of the River Thames is also included.

2.4 The Site is located within the busy Twickenham Town Centre and is bound by commercial units at the northern edge along King Street, residential uses to the east and west, and the Eel Pie Island to the south of the Site across the footbridge.

### Description of Proposed Development

2.5 The proposals include the Demolition of existing buildings and structures and redevelopment of the Site comprising residential (Use Class C3), ground floor commercial/retail/cafe (Use Class E), and public house (Sui Generis), boathouse locker storage, floating pontoon and floating ecosystems with associated landscaping, restoration of Diamond Jubilee Gardens and other relevant works.

2.6 This report is the culmination of iterative work with the project team to ensure that biodiversity net gain is delivered within these proposals. As part of this process the Proposed Development includes the following elements to minimise impacts to biodiversity and maximise opportunities for enhancement:

- A native black poplar will be retained on the Site but moved from its current location towards the south of the Site along the Riverside Promenade. Eleven London planes will also be relocated but retained on Site.
- Existing insect hotels present within the Site will be retained but relocated to provide a variety of conditions within the Site.
- Incorporation of damper planting areas of native and non-native species of high value to pollinators as rain gardens.
- Incorporation of climbing plants supported by wires to create green walls with species of value to pollinators such as clematis *Clematis spp.* and star jasmine *Trachelospermum jasminoides*.
- The inclusion of eight swift boxes[1] and four bat boxes integrated within buildings within the Site and of three bird and three bat boxes on retained trees within the Site.
- The inclusion of green roofs on new buildings within the Site.

[1] Recent research by the RSPB has found that boxes targeted at swifts are also taken up by other small birds of conservation concern, such as house sparrow (Day, J., Mayer, E., Newel D, 2019)

- The intent to provide new marginal habitat on the River Thames through a floating ecosystem if feasible.

**Aims of study**

2.7 The aims of this study are as follows:

- To undertake an ecological desk study and an extended Phase 1 habitat survey of the Site to gain information on the habitats present.
- To establish the suitability of the Site for protected or otherwise notable species, and where appropriate, to conduct further survey of such species and gain an understanding of their use of the Site.
- To identify the ecological impacts of the Proposed Development and to set out appropriate avoidance, mitigation, compensation and enhancement measures.

2.8 Following national and local planning policy, there will be a requirement for this development to achieve a net gain in biodiversity.

2.9 The National Planning Policy Framework states that '*Planning policies and decisions should contribute to and enhance the natural and local environment by… minimising impacts on and providing net gains for biodiversity*" (paragraph 174).

2.10 Policy LP15 of the Richmond Borough Council Local Plan 2018 states that '*Major developments are required to deliver net gain for biodiversity, through incorporation of ecological enhancements, wherever possible*'.

**Personnel**

2.11 The team for this project involved the following members of staff:

- Anna Muckle MCIEEM, Principal Ecologist at BSG Ecology and licenced bat ecologist (Natural England class licence CL18: 2015-11522-CLS-CLS), conducted the Phase 1 habitat survey and external bat inspections, and led the bat emergence and re-entry surveys of a building within the Site.
- Joe Bishop MSc, a Qualifying member of CIEEM, Ecologist at BSG Ecology wrote this report.
- Jamie Peacock, a Graduate member of CIEEM, Ecologist at BSG Ecology assisted in writing this report.
- Judith Giles CEcol, Associate Director at BSG Ecology, provided technical review of this report.

2.12 Further information on the skills and experience of the project team is available on the BSG Ecology website (see https://www.bsg-ecology.com/people/).

# 3 Methods

### Consultation

3.1 The Borough of Richmond and Wandsworth was consulted on 22 October 2020 to confirm how the Borough of Richmond requires biodiversity net gain to be demonstrated in the planning application. A pre-application meeting was held with the Council on 23 June 2021 in which a draft of this report and the approach to achieving net gain were discussed.

### Desk study

3.2 Existing ecological information was requested from the local environmental records centre (Greenspace Information for Greater London (GiGL)). This included information on statutory and non-statutory designated sites, protected species and any notable species[2] from within a 2 km radius of the Site centre. The data was received on 10 August 2020. Information on non-statutory designated sites was reviewed for a 1 km radius from the Site. Given the densely urban nature of the intervening habitat and scale of the Proposed Development there is not considered to be any potential for impacts on SINCs beyond this distance.

3.3 In addition, online aerial photography and the Multi Agency Geographic Information for the Countryside[3] (MAGIC) database was used to provide further ecological context for the Site, including Ordnance Survey mapping and the location of previous protected European Protected Species licences and to check for statutory designated sites within 2 km of the Site boundary. This was accessed on 16 October 2020.

### Field survey

#### *Extended Phase 1 habitat survey*

3.4 A Phase 1 habitat survey of the Site was undertaken by Anna Muckle MCIEEM, Principal Ecologist at BSG Ecology on 31 July 2020, with reference to industry standard guidance (JNCC, 2010). The survey was 'extended' to include an assessment of the potential for the Site to support protected species.

3.5 During the survey, all habitats present on Site were mapped. For each habitat type, the vegetation was characterized by recording all plant species observed and indicating their abundance using the DAFOR scale (D: dominant; A: abundant; F: frequent; O: occasional; R: rare).

3.6 The weather conditions at the time of survey were warm (32ºC on average), sunny (1/8 Oktas cloud cover), and calm (0 on the Beaufort scale).

#### *Preliminary roost assessment*

3.7 A Preliminary Roost Assessment (PRA) of the buildings within the Site was undertaken by Anna Muckle during the Phase 1 habitat survey on 31 July 2020. Anna holds a Level 2 Licence for bat survey from Natural England (licence number 2015-11522-CLS-CLS). This comprised an external inspection of all accessible areas of the building, taking into account industry guidance (Collins, 2016). The exterior of all buildings were inspected from the ground for:

[2] 'Notable species' is used by TVERC to cover species that are not legally protected but are of material consideration for the assessment of planning applications. Includes species listed as Species of Principal Importance (SPI) for the Conservation of Biodiversity in England in accordance with Section 41 of the Natural Environment and Rural Communities Act (NERC) 2006. It also includes declining species either nationally or locally or those that are rare within the county or local area. Such species may be included under local Biodiversity Action Plans or lists such as the Birds of Conservation Concern (BoCC) (Eaton et al, 2015).
[3] http://www.magic.defra.gov.uk [accessed 18/02/2020]

a. Features which could provide bats with access into roosting spaces or provide roosting spaces (such as gaps under roofing tiles, gaps in ridge tiles, gaps in soffit boxes, gaps under lead flashing and cracks or crevices in the stonework).

b. Evidence of the presence of bats such as bat droppings on windows, windowsills, walls and the ground, or scratch marks or staining from bat's fur around possible roost access/egress points.

3.8 The inspection was aided by the use of close-focussing binoculars and a high-powered torch (Clulite 1 million candlepower) where necessary. The buildings were assigned a category for their potential to support roosting bats based on the presence of potential roosting features as summarised in Table 1.

*Table 1: Potential of buildings to support roosting bats (adapted from Collins, 2016)*

| Suitability | Roosting Habitat |
|---|---|
| Negligible | A structure with no or negligible potential roost features (PRFs), which is isolated from suitable foraging habitat. |
| Low | A structure with one or more PRFs which have a very limited potential to be used by individual opportunistic bats. Any identified features do not have the correct dimensions or conditions and/or are not connected to suitable foraging habitat that could be used by a larger number of bats. |
| Moderate | A structure with one or more PRFs which could be used by bats because of their dimension and conditions. However these features are unlikely to support a roost of high conservation status with respect to roost type only. The structure may also have PRFs which are obscured or not possible to survey from the ground level. The surrounding habitat is continuous and/or well connected to the wider landscape. |
| High | A structure with one or more PRFs which are obviously suitable for use by a larger number of bats on a more regular basis and potentially for longer periods of time, due to their dimensions and conditions. The surrounding habitat is high quality, continuous and/or well connected to the wider landscape. |
| Confirmed Roost | Presence of bats or evidence of recent use by roosting bats. |

***Emergence and re-entry bat surveys***

3.9 With reference to industry guidance (Collins, 2016), one building (B1 on Figure 1) with a precautionary assessment of moderate suitability (see limitations) to support roosting bats, was subject to one dusk emergence and one dawn re-entry survey.

3.10 Surveyors were equipped with ultrasonic bat detectors (to record calls for later analysis where necessary), and observed the previously identified roost features to identify any bats emerging from the building. The dusk survey began 15 minutes before sunset, and continued for 90 minutes after sunset, and the dawn survey began 90 minutes before sunrise, and continued for 15 minutes after sunrise.

3.11 The weather conditions at the time of the surveys were suitable for bat activity, and are shown in Table 2 below.

*Table 2: Weather conditions during dusk emergence surveys*

| Date | Weather conditions | | | | Surveyors |
|---|---|---|---|---|---|
| | Temperature | Cloud (Oktas) | Wind (Beaufort scale) | Rain | |
| 01/09/20 | 19ºC | 3/8 | 1 | None | Anna Muckle<br>Bill Haines<br>Connor Butler |
| 15/09/20 | 16ºC | 6/8 | 1 | None | Anna Muckle<br>Connor Butler |

| | | | | | |
|---|---|---|---|---|---|
| | | | | | James Gretton |

3.12 The dusk emergence and dawn re-entry surveys of the Site were undertaken in optimal conditions with surveyors located in close proximity to the river

3.13 The biodiversity calculator was then used to make an assessment of the net biodiversity value of the Site following development under Proposed Development plans (see plans submitted with application, in particular the Ecology and Net Gain Strategy which is reproduced in Appendix 1 for convenience). The following assumptions were made regarding the type and condition of the habitats in the completed scheme

- Grassland areas will be maintained as **amenity grassland** with a short sward by mowing. The condition will therefore be poor.
- Herbaceous planting will comprise a mixture of **introduced shrubs**, for which condition is good.
- **Urban rain garden** will be planted with suitable species and maintained to good condition.
- **Ground based green walls** will comprise climber species which will be maintained to a moderate condition.
- **Extensive green roofs** will be installed on both the new building to the east and west of the Site as well as on top of the bin stores to the west along Wharf Lane. These will be maintained to reach moderate condition.
- All other areas of the development, which include buildings and hardstanding will be **Urban – developed land; sealed surface**, for which condition is N/A.

3.14 There is a discrepancy of 0.1 ha between the total Site area noted within section 2 of this report and the Site area noted within the biodiversity calculator. This is explained by the 0.1 ha of the River Thames within the redline boundary which cannot be attributed to an area based baseline habitat on Tab A-1 of the spreadsheet. Rivers are noted as linear habitats similar to hedgerows on Tab C-1.

**Limitations to methods**

3.15 Following discussions with John Davis (caretaker team), no internal surveys of the buildings were conducted due to health and safety concerns over the potential presence of asbestos and safety of the buildings. Considerations which informed this decision included the age and type of building and absence of asbestos information; the building being abandoned for a number of years and uncertainty as to the condition of internal structures (i.e. floors etc.); the possibility of people sleeping rough within the building; likely presence of possible drug paraphernalia and damage associated with vandalism at the Site.

3.16 Based on the external inspection and its context (including significant levels of overnight lighting) Building B1 was assessed as having low potential to support roosting bats. This assessment drew on our experience of the internal opportunities offered by this type of building. Given the absence of an internal inspection, and as a precaution, the suitability of B1 was upgraded to moderate survey effort to ensure robust results.

3.17 Following industry standard guidance for bat survey (Collins, 2016), buildings with moderate suitability for roosting bats should be subject to one dusk emergence and one dawn re-entry survey between May and September, spaced by at least 14 days, with at least one of these surveys occurring before the end of August. In this case, surveys of Building 1 were undertaken on 1 September and 15 September. August 2020 experienced particularly poor weather conditions. This meant that the survey we planned for August was unavoidably delayed to 1st September to ensure suitable conditions. The weather conditions for the survey were equally good to the few suitable days in August. The second half of August saw Storm Ellen and Storm Francis, very poor weather

which it is likely would have delayed maternity roosts disbanding. It is our view that these survey results are robust and that it would have been disproportionate to delay into the following year in this instance. Given that the first of these surveys took place only one day after the end of August and conditions were suitable, this is not considered to be a major deviance from the survey guidelines. It is considered that the survey timing and effort was adequate to understand the likely size and type of any roosts, had any been identified.

3.18 The redline boundary was extended to include part of the River Thames in July 2021. Whilst notes on the river were taken during the initial survey a detailed botanical species list and condition assessment were not made. As a result a precautionary assessment of the condition of the river has been used in the biodiversity net gain calculation. Given that no significant impacts on the river are anticipated (provided standard mitigation measures are implemented during construction of the pontoon) this limitation is not considered to constrain this assessment.

3.19 The Site is only 1.34 ha in extent and given the quality and extent of habitat present and data obtained from the emergence surveys further activity surveys were not required to enable an understanding of how bats are using the Site. Further to this, lighting levels on the Site are currently high further limiting the use of this Site by bats.

# 4 Results and Interpretation

4.1 Further information on the legislation and policy referred to in this section is given in Appendix 2.

**Consultation**

4.2 Nicki Dale, South Area Team Manager, London Borough of Richmond and Wandsworth Council, confirmed on the 23 October 2020 that as a guide the development should seek a 10 % net gain in biodiversity demonstrated using the DEFRA 2.0 calculator.

4.3 Charles Murphy from London Borough of Richmond and Wandsworth Council, confirmed on the 23 July 2021 that compensation for the lost woodland can be achieved through either enhancing the River Thames through a floating ecosystem along the bankside or via a financial contribution towards planting an area of woodland elsewhere within the Borough.

**Designated sites**

***Statutory***

4.4 There in one internationally and nationally designated site within 2 km of the Site; Richmond Park, which is a Special Area of Conservation (SAC), National Nature Reserve (NNR) and Site of Special Scientific Interest (SSSI).

4.5 Two Local Nature Reserves (LNR) are also present: Ham Lands and Ham Common LNR.

4.6 These are described in Table 4.

*Table 4: Statutory designated sites within 2 km of the Site boundary*

| Site name and designation | Description of site | Distance and direction from Site |
|---|---|---|
| Richmond Park SAC, NNR, SSSI | A royal deer park supporting dry acid and neutral grassland, wet grassland and mire, veteran trees, scrub and bracken. Also recognised for its diverse range of deadwood-specialist beetle fauna, of which over 200 species have been recorded. The primary reason for the SAC designation is its population of stag beetle *Lucanus cervus*. There are no other qualifying features. | 1.90 km E |
| Ham Lands LNR (and SINC) | An area of infilled gravel pits, old water meadows and a narrow belt of woodland. | 450 m S |
| Ham Common LNR | Predominantly birch and oak woodland. A large amount of dead wood habitat is present, which is of high value to invertebrates and fungi. There are several wet hollows within the woodland. An area of dry acid grassland still exists at the western end of the common. | 1.90 km SE |

***Non-statutory***

4.7 There are ten Sites of Importance for Nature Conservation (SINCs) within 1 km of the Site boundary. London classifies these into three tiers of sites: Sites of Metropolitan Importance, Sites of Borough Importance and Sites of Local Importance. A summary of the SINCS within 1 km of the Site is given in Table 5.

*Table 5: Non-statutory designated sites within 1 km of the Site*

| Site name and designation | Description of site | Distance and direction from Site |
|---|---|---|
| River Thames and Tidal Tributaries Site of Metropolitan Importance | The River Thames and its tributaries which, combined, form an important wildlife corridor through the capital. | 0 m S (within the Site boundary) |
| Ham Lands Site of Metropolitan Importance | Also an LNR - described in Table 1. | 140 m S |
| River Crane at St Margaret's Site of Borough Importance | A short section of the River Crane, lined with trees and shrubs. | 500 m N |
| Twickenham Junction Rough Site of Local Importance | An 'island' of undisturbed wildlife habitat comprising rough grassland, tall herbs, scrub and young woodland, surrounded by railway tracks. | 500 m NW |
| Marble Hill Park and Orleans House Gardens Site of Local Importance | Landscaped gardens, with meadows, woodland and veteran trees. | 550 m NE |
| Moor Mead Recreation Ground Site of Local Importance | A village green of informally managed short grass and some common grassland wildflowers. | 580 m NE |
| Petersham Lodge Wood and Ham House Meadows Site of Borough Importance | A small wood and two grassy fields next to the River Thames, which can become wetland habitats on high spring tides. | 600 m SE |
| Strawberry Hill Golf Course Site of Borough Importance | A small golf course with areas of woodland, acid grassland, scrub and a small amount of heather. | 1.0 km NE |
| The Copse, Holly Hedge Field and Ham Avenues Site of Borough Importance | Wildflower meadow, a stand of ancient oaks an avenue of lime trees. | 1.0 km SE |
| Teddington Cemetary Site of Local Importance | A Victorian cemetery with mature trees (mostly conifers with some ornamental cherries (*Prunus sp.*). | 1.0 km SW |

**Habitats**

4.8 Habitats within the Site are shown on Figure 1. Photographs are shown in Section 9, and Target Notes are included in Appendix 3.

***Hardstanding***

4.9 The Site is dominated by hardstanding (tarmac) of negligible ecological value (Photograph 1).

4.10 This habitat does not meet the description of any HPIs in Maddock (2011).

***Buildings***

4.11 There are four buildings within the Site, all of which are flat-roofed commercial buildings of negligible inherent ecological value. Buildings 1 (Photograph 2), 3 and 4 are of brick construction and are vacant, whilst Building 2, a café, is a wooden structure. See Bats below for consideration of the suitability of these buildings for bats.

4.12 This habitat does not meet the description of any HPIs in Maddock (2011).

***Broadleaved plantation woodland***

4.13 A small (0.063 ha) area of mature trees of even age is present in the centre of the Site (Photograph 3 and 4). This area consists of sycamore *Acer pseudoplatanus*, hornbeam *Carpinus betulus*, silver birch *Betula pendula*, horse chestnut *Aesculus hippocastanum* and goat willow *Salix caprea*, with an extensive ivy *Hedera helix* ground cover. Deadwood is not a significant component of the woodland. It has been classified as broad-leaved plantation woodland, however, its very small size and lack of connectivity to other areas of woodland mean this is a very poor example of this type of habitat.

4.14 This habitat does not meet the description of Lowland Mixed Deciduous Woodland Habitat of Principal Importance (HPI) by Maddock (2011), as it is planted woodland with a poor age structure and a lack of diversity in the ground flora.

***Scattered trees (broadleaved)***

4.15 Several scattered broadleaved trees of varying ages are present throughout the Site (see Photograph 5), including hornbeam, Indian bean tree *Catalpa bignonioides*, Himalayan birch *Betula utilis*, oak *Quercus robur* and black poplar *Populus nigr*a. The black poplar is located at TN3. A line of Pin Oaks *Quercus palustris* are also located along The Embankment to the south of the Site. Whilst the pin oaks are parallel to the river they do not provide important vegetation cover for wildlife given their spacing, age and relative isolation from other vegetation cover. The southern bank of the river at this location has much better habitat and canopy cover with mature trees and it is considered that at present this bank provides the key ecological connectivity as part of the wildlife corridor along the Thames as opposed to the limited habitat offered along the northern bank.

4.16 Whilst this habitat does not meet the description of any HPIs in Maddock (2011), black poplar is a Priority Species in the London Borough of Richmond (Richmond Biodiversity Partnership, 2019). This specimen was planted in honour of the Queen's Diamond jubilee in 2012.

***Species-poor defunct hedgerow***

4.17 Several short lengths of species-poor hedgerow are present within the Site, located around two areas of artificial turf (Target Note 2; Figure 1 and Appendix 3) and the children's play area. They comprise single-species lengths, cumulatively 87 m, none of which are more than 20 m long of either hornbeam or yew *Taxus baccata* and measure less than 1 m wide and less than 2 m tall (Photographs 6 and 7 respectively). The area at the hedge bases is managed as low maintenance amenity planting (see introduced shrub below) with ornamental grasses and bare ground.

4.18 This habitat technically meets the description of Hedgerows HPI Maddock (2011), as it is more than 20 m in length and comprises at least one UK native woody species. However it is an extremely poor example of this habitat type.

***Introduced shrub***

4.19 Several areas of introduced shrub habitat of poor ecological value are present in raised beds throughout the Site (see Photograph 8), with species including giant feather-grass *Stipa gigantea*, pheasant's tail-grass *Achnatherum alamagrostis*, Mexican feather-grass *Stipa tenuissima*, lavender *Lavandula angustifolia* and buddleja *Buddleja davidii.*

4.20 This habitat does not meet the description of any HPIs in Maddock (2011).

***Bare ground***

4.21 A small area of bare ground of negligible ecological value is present adjacent to an area of introduced shrub.

4.22 This habitat does not meet the description of any HPIs in Maddock (2011).

***Running water (River Thames)***

4.23 A small area of the River Thames, 0.1 ha, is included within the red line boundary of the Site. The River Thames, which is a site of Metropolitan importance, meets the definition of a River HPI due to the presence in this reach of Annex II Habitat Directive Species including Atlantic salmon *Salmo salar*, bullhead *Cottus gobio* and river lamprey *Lampetra fluviatilis* (Maddock, 2011) (see below).

**Protected and notable species**

***Bats***

4.24 Records of four species of bat (common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus*, noctule *Nyctalus noctula* and Daubenton's bat *Myotis daubentonii*) were returned from the data search (no detailed location information was provided). In addition, a search of the MAGIC database revealed that three European Protected Species Licences for bats have been granted by Natural England within 2 km of the Site (for common pipistrelle, soprano pipistrelle and brown long-eared bat *Plecotus auritus*).

4.25 Bats and their roosts receive protection as European Protected Species under the Conservation of Habitats and Species Regulations 2017 (as amended), and also under the Wildlife & Countryside Act 1981 (as amended). Seven species of bat are listed as Species of Principal Importance (SPIs), including the commonly occurring soprano pipistrelle and noctule and brown long-eared bat *Plecotus auritus*.

**External building inspection**

4.26 Building 1 (Photograph 2) was initially assessed as having low potential based on the external inspection which identified the presence of several potential access points to bats on the exterior of the structure, its context (including significant levels of overnight lighting) and our experience of the limited internal opportunities typically offered by this type of building. However, as no internal survey could be undertaken, a precautionary assessment of moderate suitability to support roosting bats was made. The potential access points are shown on Figure 2 and include some weep holes in the brickwork in the south-eastern corner of the building, broken window boarding, a broken door, and an open toilet block at the northern end of the building.

4.27 All other buildings (B2-B4) were assessed as having negligible suitability for roosting bats due to the absence of suitable features where bats could access the buildings or shelter.

**Bat emergence / re-entry surveys and use of the Site by bats**

4.28 No bats were observed emerging from or re-entering Building 1 during the dusk emergence and dawn re-entry surveys. Bat activity during the surveys was low, with no more than seven bat passes recorded in either survey.

4.29 Although the Site contains small areas of habitat which bats may utilise for foraging purposes (e.g. the small area of broadleaved plantation woodland), the Site as a whole (dominated by hardstanding and introduced shrub habitats) offers negligible opportunities for foraging and commuting bats. The River Thames which runs along the south-eastern Site boundary, is likely to offer opportunities for bats to forage over the water's surface, although the river in this area lacks marginal vegetation which would support a greater diversity and abundance of invertebrate prey.

4.30 The dusk emergence and dawn re-entry surveys of the Site were undertaken in optimal conditions with surveyors located in close proximity to the river, the patch of self seeded woodland and the northern extent of the hornbeams on Site. Despite this activity levels were exceptionally low with no more than seven bat passes recorded in either survey. Species recorded were limited to common and soprano pipistrelle, and noctule. There was no evidence recorded during either survey that bats are using the patch of self-seeded woodland as a commuting corridor and only one feeding buzz was recorded during either survey suggesting it is not an important foraging resource.

***Birds***

4.31 Of the protected and notable species (e.g. protected under Schedule 1 of the Wildlife and Countryside Act (WCA 1), Section 41 species (SPI) under the NERC act (2006) and amber (A) or red (R) listed on the list of Birds of Conservation Concern (BoCC) returned from the data search, very few have the potential to use the resources on Site. The exceptions are grey wagtail *Motacilla cinerea* (R), house sparrow *Passer domesticus* (SPI; R and a Priority Species in the London Borough of Richmond (Richmond Biodiversity Partnership, 2019), dunnock (SPI; A) and starling *Sturnus vulgaris* (SPI; R). However, the amount of habitat available for these species on Site is very limited and is unlikely to be of importance in the context of the wider area.

4.32 The Site does however contain suitable nesting habitat (trees and shrubs) for a range of common and widespread bird species.

4.33 Wild birds and their nests and eggs are protected under the Wildlife and Countryside Act 1981 (as amended).

***Great crested newt***

4.34 No records of great crested newt (GCN) were returned from the data search. There are no ponds within 250 m of the Site which are visible on Ordnance Survey mapping or aerial images. Therefore, GCN is considered likely absent from the Site and is not considered further in this assessment.

***Hedgehog***

4.35 There were 409 records of hedgehog *Erinaceous europaeus* (a SPI) returned from the data search, the closest of which was 255 m from the Site. Hedgehog is also a Priority Species in the London Borough of Richmond (Richmond Biodiversity Partnership, 2019. The Site offers limited suitable habitat for the species (small areas of woodland, hedgerow and introduced shrub) albeit there is limited connectivity with other suitable habitat in the local area. It is considered possible but unlikely that hedgehog is present on Site.

***Invertebrates***

4.36 The Site generally offers limited habitat for invertebrate communities of conservation significance, due to the very limited extent of semi-natural habitats. However, the Site does contain “The Four Seasons Insect Hotel” – five invertebrate ‘hotels’ installed by the parks department and created with help from local schools under a Public Art scheme supported by Richmond upon Thames Council in 2014 (see Photograph 9 and Target Note 1 on Figure 1) which may offer breeding and overwintering opportunities for a range of common invertebrate species. The planting on Site at present offers limited feeding resources for invertebrates.

***Otter***

4.37 No records of otter *Lutra lutra* were returned from the data search. The Site offers no suitable resting or breeding places for the species. Otter is therefore considered to be absent from this stretch of the River Thames and the Site, and is not considered any further in this assessment.

***Water vole***

4.38 Four records of water vole *Arvicola amphibius* were returned from the data search, the closest of which was 1.34 km from the Site. The River Thames on the edge of the Site is considered to be unsuitable for the species due to the hard-engineered banks in this area and lack of marginal vegetation which would offer shelter, breeding and foraging opportunities. Water vole is therefore considered to be absent from this stretch of the River Thames and the Site, and is not considered any further in this assessment.

***Fish***

4.39 The desk study data returned five records of European eel *Anguilla anguilla* within 2 km of the Site. The most recent record was from 2016 which was also the nearest record, 1.6 km south of the Site. No other records were returned. The European eel is a UK BAP and priority London species.

4.40 The Zoological Society of London Guidance document (ZSL, 2016) notes spawning events between Teddington Lock and Wandsworth Bridge for the following species; common dace *Leuciscus leuciscus,* Common goby *Pomatoschistus microps* (Annex III species)*,* European smelt *Osmerus eperlanus* (SPI), Roach *Rutilus rutilus*.

4.41 The Zoological Society of London Guidance (ZSL, 2016) document also indicates that the following species listed in Annex II of the Habitat Directive are present in this reach: Atlantic salmon *Salmo salar*, bullhead *Cottus gobio* and river lamprey *Lampetra fluviatilis.*

***Other protected and notable species***

4.42 For other protected or notable species, such as badger *Meles meles*, common toad *Bufo bufo*, dormouse *Muscardinus avellanarius*, brown hare *Lepus europaeus*, harvest mouse *Micromys minutus* and reptiles, the Site offers no suitable habitat, or is sufficiently isolated and distant from any suitable habitat that they are considered to be likely absent from the Site and are not considered any further in this assessment.

**Biodiversity net gain**

4.43 The Defra Metric Biodiversity Calculator yields the following key results:

- Habitat existing score: 0.77 units
- Habitat proposed score: 0.92 units
- Habitat biodiversity gain: 0.15 units
- **Total habitat area net change (i.e. biodiversity gain or loss): 19.45% net gain**

- Hedgerow existing score: 0.19 units
- Hedgerow proposed score: 0.00 units
- Hedgerow biodiversity gain: 0.19units
- **Total hedgerow net change (i.e. biodiversity gain or loss): - 100% net loss**

- River existing score: 3.31 units
- River proposed score: 3.31 units
- River biodiversity gain: 0.00 units
- **Total river change ( i.e. biodiversity gain or loss): 0.00%**

The Defra Metric Biodiversity Impact Assessment calculator spreadsheet can be found in Appendix 4.

# 5 Potential Impacts

### Designated sites

#### *Statutory*

5.1 No direct or indirect impacts on statutory designated sites are anticipated as a result of the Proposed Development. The closest site, Ham Lands LNR and Site of Importance for Nature Conservation (SINC) which is 150 m south of the Site, is separated to the Site by the River Thames. The nearest River Thames crossing is a footbridge that is located approximately 2 km upstream of the Site. LNRs are for people and wildlife. They offer people opportunities to study or learn about nature or simply to enjoy it. As such public access is a key function of the sites and Ham Lands has specific measures in place to manage and encourage public access. Adverse impacts on Ham Lands LNR are overall considered very unlikely.

5.2 The other two statutory designated sites are considered to be sufficiently distant from the Site (both 1.9 km and on the southern side of the River Thames), that impacts on these sites through increased visitor pressure is unlikely from a development of this scale.

#### *Non-statutory*

5.3 The River Thames and Tidal Tributaries SINC, is within the Site boundary and will be directly impacted through the installation of the floating pontoon and possible floating ecosystem. Without appropriate avoidance measures, there is some potential for both direct and indirect impacts on this designated site. Potential impacts include increased sediment deposition which can smother important fish habitats such as spawning grounds, increased suspended sediment which can reduce feeding behaviour and oxygen exchange as well as impulsive sound sources and vibration which could impact fish migration or cause fatal internal injuries. Construction site run-off could impact the water quality in this section of the river (and further downstream).

5.4 Post development no significant impacts are likely given the only impact is a small pontoon being installed. This will only cause a small area of shading on the river. A mixture of shade and more exposed areas are a key characteristic of rivers creating a range of habitats within the river and this does not constitute loss of habitat.

5.5 Impacts on Ham Lands SINC, discussed above are considered unlikely. The remainder of the non-statutory designated sites from the Site (20 out of 22 sites) are more than 500 m from the Site boundary, and in this dense urban area direct impacts of the Proposed Development during the construction stage are unlikely.

5.6 Of the non-statutory designated sites, the vast majority are sufficiently distant from the Site (especially considering that travelling to those sites south of the river would involve a detour to reach the nearest Thames bridge), that impacts through increased visitor pressure as a result of the Proposed Development are considered unlikely. Of the other non-statutory designated sites, the site which is most likely to be subject to increased visitors as a result of the Proposed Development is Marble Hill Park and Orleans House Gardens SINC, which is within 15 minutes walking distance of the Site along the Thames path. However, given the scale of the development, the size of the designated site (30 hectares), and the fact that it contains a number of clearly defined hardstanding paths (thus reducing pressure on woodland and grassland habitats), impacts as a result of the Proposed Development are not considered to be likely.

### Habitats

#### *Broadleaved plantation woodland*

5.7 The Proposed Development will result in the loss of the broadleaved plantation woodland (which comprises 29 self-seeded trees) within the Site. Although plantation woodland does offer some

biodiversity value, this particular habitat is limited in extent, and in relatively poor ecological condition (due to a high planting density, lack of age structure, and lack of a diverse ground flora). As a result its loss is unlikely to be significant beyond the site level.

***Species-poor defunct hedgerow***

5.8 The Proposed Development will result in the loss of all sections of species-poor hedgerows within the Site (total 87 m). Although this habitat qualifies as a HPI, this hedgerow is not a good example of this habitat type, due to the low species diversity and lack of buffering either side of the hedgerows. These hedgerows are not considered to provide an ecological network function due to a lack of connectivity to other habitat and gaps within the hedgerows themselves. Whilst the loss of these hedgerows is not considered to be ecologically significant, loss of HPI is a negative impact.

***Introduced shrub***

5.9 The Proposed Development will result in the loss of all introduced shrub within the Site. However, this habitat is of very low ecological value and its loss would not be significant.

***Scattered trees (broadleaved)***

5.10 The Proposed Development will result in the loss of 24 scattered trees within the Site. Including the line of non-native pin oaks parallel to the river. Two mature fastigiate hornbeam trees (of higher ecological value) which form part of the northern Site boundary, two Callery pears and the pedunculate oak in the north of the Site are to be retained. The single black poplar tree within the Site will be lifted and replanted within the Proposed Development along the riverside. A further eleven London Plane trees will be retained in new locations within the Site by translocation. Current Landscaping plans also show 35 new scattered trees to be included within the Proposed Development.

5.11 Whilst there is a loss of trees overall (-18) due to the loss of the 29 trees within the self-seeded woodland. However the proposed tree strategy increases the tree planting along the south of the Site adjacent to the River Thames (with the replacement of the pin oaks) and along the boundaries of the Site, (which in conjunction with trees adjacent to but outside of the Site) should increase the connectivity of the Site to the river for species such as bats. It is our view that the pin oaks do not provide important vegetation cover adjacent to the river given their spacing, age and relative isolation from other vegetation cover. The southern bank of the river at this location has much better habitat and canopy cover with mature trees and it is considered that at present this bank provides the key ecological connectivity as part of the wildlife corridor along the River Thames as opposed to the limited habitat offered along the northern bank.

5.12 Without appropriate avoidance measures, it is possible that impacts to retained trees could occur due to construction works occurring within the root zone of these trees.

***River Thames***

5.13 For risk of construction phase impacts on the River Thames SINC see paragraph 5.3 and 5.4.

***Other habitats***

5.14 The Proposed Development will also result in the loss of bare ground, buildings and hardstanding habitats. These habitats are of negligible ecological value and their loss would not be significant.

**Protected and notable species**

***Bats***

5.15 Since further survey of Building 1 revealed that this structure does not support a bat roost, no impacts to bat roosts are anticipated as a result of the Proposed Development.

5.16 The Site is currently of negligible importance to bats. Due to the extent and condition of habitats to be lost and lack of current use by bats, there will be no significant loss of habitats for bats in the context of the wider landscape, where high value habitats are present, particularly south of the River Thames at Ham Lands, where extensive areas of woodland are located.

5.17 The Proposed Development includes new trees and nectar rich planting which should increase the resources for bats within the Site.

5.18 The Lighting Strategy has been devised to minimise lighting of the River Thames and soft landscapes areas whilst fulfilling safety needs and other functional requirements. A lux level plot of the Lighting Strategy included within the Design and Access Statement (DAS) is included in Appendix 5.

5.19 No new lighting is proposed along any of the boundaries of the Site with the exception of the south-eastern boundary along the River Thames. This is required as it was not possible to retain the existing light columns in this location. The petanque area of the Site will lighting beneath benches within the paved area and petanque areas.

5.20 The new lighting along the south-eastern boundary will include downward directional lighting to provide an improvement from the pre-development lantern style lighting scheme. Three lights are proposed on each pole. Calculations show lux levels at approximately 1 lux over the edge of the River Thames, equivalent to a full moon on a clear night/twilight (BCT & ILP, 2018).

5.21 The north-eastern boundary lighting along Water Lane is already impacted by existing lighting. The lux plot indicates the Lighting Strategy will result in lux levels along Water Lane of around 0.25 lux near the Site boundary edge, this is likely to be insignificant in the context of existing lighting levels of Water Lane which are not accounted for in the lux plot.

5.22 The south-western boundary along Wharf Lane also has existing lighting which is being retained. New lighting suggests that lux levels of approximately 2 lux will be achieved through current plans which is similarly likely to be insignificant in the context of existing lighting levels of Wharf Lane which are not accounted for in the lux plot.

5.23 Wall mounted lighting incorporated on both new buildings will be downward facing (this is accounted for in the lux plot).

5.24 Given the existing impact of lighting upon the Site the risk of adverse impacts, given the above core design measures, is low. However there is a residual risk that the value of the Site to wildlife could be curtailed through insensitive detailed lighting design.

***Birds***

5.25 The Proposed Development will result in the loss of a small area of habitat of low value to birds (broadleaved plantation woodland and species-poor hedgerows); impacts to populations of birds of conservation concern through loss of habitat are not expected.

5.26 However, in the absence of appropriate avoidance measures, the Proposed Development would have the potential to destroy or damage bird nests whilst in use, through removal of suitable nesting habitat during the nesting bird season, which would give rise to an offence under the Wildlife and Countryside Act 1981 (as amended).

***Hedgehog***

5.27 Although a small amount of suitable habitat for hedgehog (broadleaved plantation woodland defunct hedgerow) will be lost to the Proposed Development, it is unlikely that the Site is an important resource for the species (if present at all), since it is poorly connected to suitable habitat in the wider landscape (and movement of the species between the Site and neighbouring land is inhibited by physical barriers such as walls) and hazards such as traffic. Therefore, the loss of this habitat is unlikely to be significant for hedgehog in the context of the wider landscape.

***Invertebrates***

5.28 The Proposed Development will result in the replacement of habitat of low value to invertebrates with habitats with greater value including a greater variety of structure, diversity of nectar rich planting and trees such as pedunculate oak and field maple of high value to invertebrates.

5.29 The existing insect hotels present within the Site will be retained within the Site plans and relocated such that they offer a variety of conditions to invertebrates including variation in shading and aspect and nearby planting. Current locations for invertebrate hotels are proposed within areas of planting (rain garden, herbaceous planting and woodland planting).

5.30 The Proposed Development is therefore considered to have a positive impact on invertebrates.

***Fish***

5.31 There is potential for construction phase impacts on fish in the absence of mitigation (see section 5.3).

5.32 Opportunities for providing enhanced opportunities for fish as part of the pontoon structure will be explored in detailed design.

**Biodiversity net gain**

5.33 There is a 19% net gain overall from current landscape designs which significantly exceed the 10% requested by the Council. There is however a “trading down” of moderate distinctiveness habitat, as the self-seeded woodland within the Site will not be replaced within the Proposed Development. It is not considered appropriate to replace the woodland within the Site given the pressure on the Site to deliver a multitude of public realm functions. As such the creation of woodland in good condition would not be possible without excluding people from a significant part of the Site and compromising on other uses of the Site.

5.34 There will be a net loss in linear hedgerow units with no new hedgerow being created within the development replacing the existing hedgerows being removed. Given the urban environment the Site is located, intensity of future use, and the previous location and lack of function of the existing hedgerows, it is seen as inappropriate to create new species rich hedgerows within the Site as this would compromise the approach to public realm design and flexibility of the Site for future events etc. whilst providing a hedgerow which will be unlikely to achieve anything more than poor condition, likely to become defunct with members of the public pushing through and creating gaps as well as collecting litter at the base of vegetation and being susceptible to continued damage.

5.35 There is a 0% change in biodiversity units for the river.

# 6 Recommendations

**Mitigation**

6.1 The following measures are recommended to avoid impacts on the River Thames. The framework Construction Management Plan (Arcadis, 2021) states that "specific and detailed method statements relating to these operations will be developed and approved as the project proceeds. These additional key method statements will comply with the requirements of the relevant regulatory bodies and be prepared by the Principal Contractor and specialist sub-contractors involved in the project" (section 2.1). Standard mitigation measures likely to be included in the detailed method statement for the construction of the pontoon and works by the river (as suggested by the Zoological Society of London (ZSL, 2016)) include:

- Works will be carefully planned and staff will be adequately trained to reduce chance of pollution from the construction site.
- Chemicals and liquids will be stored upright and in sealed containers away from the River Thames.
- Liquids, chemicals and other waste material will be recycled where possible/sorted/disposed of offsite at designated facilities under the appropriate licences.
- Spill kits will be used when applicable.
- Low-noise techniques will be used whenever practicable.
- Works to the pontoon will be scheduled to avoid spawning periods of fish known to spawn between Teddington Lock and Wandsworth Bridge (between January and June).
- Methods to reduce noise (e.g. sleeving, muffling, pile jackets, acoustic baffles, bubble curtains) will be used where required in the construction of the pontoon.
- Use of soft start approaches to allow fish to move away from the noise source during construction of the pontoon.
- Breaks in noise production during pontoon construction if required each day to allow any fish excluded from an area to migrate further upstream or downstream in these break periods to be carried out.

6.2 Any removal of suitable nesting bird habitat (e.g. plantation woodland, hedgerow and buildings) should be undertaken outside of the nesting bird season (March to August inclusive). If this is not possible, small areas of habitat can be subject to a pre-clearance check by an ecologist, noting that any active nests would need to be left in-situ with an appropriate buffer until they are no longer in use.

6.3 Retained trees should be protected according to a Tree Protection Plan.

6.4 A contribution should be made to Richmond Borough to enable planting of 87 m of new species-rich native hedgerow to ensure no loss of priority hedgerow habitat in the Borough.

6.5 To further ensure that the genetic stock of the black poplar is retained, in case the transplanted tree fails to thrive, if practicable cuttings should be taken and grown on. This could be done as a community activity.

6.6 To minimise the impacts of artificial lighting within the Site on bat and other wildlife the detailed lighting proposals should be devised with reference to industry guidance on bats and lighting from BCT & ILP, 2018) and an ecologist consulted.

6.7 The following should be considered within the lighting specifications:

- Use of downward directional luminaires where possible. Discussion with the lighting consultant indicates that luminaires will generally be downward directed. The exception to this will be linear fittings which will be installed in the front face of fixed furniture. These are to be installed just above ground level to keep lighting visually inobtrusive at low level. The detailed design should look to minimise upwards light spill, through measures such as recessing fittings within a reveal to minimise upwards light emission, or fitting beneath an overhang lip.
- Lights to have a 0% upward light ratio as far as reasonably practicable.
- LEDs to have a peak wavelength of >550 nm where possible.
- 'Warm white' (<2700K) luminaires are to be specified where suitable fittings can be sourced, a maximum of 3000K would be acceptable where no 2700K alternative is available.

6.8 Sensors (PIRs) should be used in the residential common areas (stairs, corridors and entrance lobbies) and the office to ensure that lighting in these areas is turned off when they are not in use to minimise light spill.

**Biodiversity net gain and enhancements**

6.9 A Landscape and ecology management plan (LEMP) or equivalent should be produced and implemented to ensure that newly created habitats are managed to maximise their value to biodiversity and ensure that target conditions are achieved.

6.10 The contribution to Richmond Borough for hedge planting above will also provide net gain (87 m of species-rich hedge in moderate condition results in a 103.88% net gain in the DEFRA metric 2.0), a significant enhancement at the Borough level.

6.11 The loss of moderate distinctiveness habitat should be compensated for through provision of new moderate distinctiveness habitat. As it is not feasible to provide woodland within the Site it has been agreed with the Council that creation of marginal habitat along the edge of the Thames through creation of a "floating ecosystem" would be an appropriate enhancement for the Site. The planting proposals of the floating ecosystem should be informed by an ecologist and where possible should increase habitat for fish below the surface. As an alternative, a financial contribution to woodland planting or enhancement within the Borough (to the equivalent of 0.28 biodiversity units) would also be appropriate.

6.12 Enhancement measures include the following:

- Detailed designs for the extensive green roofs should be informed by an ecologist and use plants of high value to pollinators.
- Incorporation of native and non-native species of high value to pollinators in detailed proposals for the herbaceous planting, including terrace, woodland style (upper gardens) and river garden areas.
- The detailed design of the pontoon and any modifications to the slipway should seek to increase habitat heterogeneity through creating a more varied structure with opportunities for intertidal and aquatic wildlife including fish.
- Tenants or building owners will be supplied with information on Ecology and Biodiversity to inform the owner or occupant of local ecological features, and value and biodiversity on or near the Site. This could be made available online.
- Monitoring and reporting of the ecological outcomes for the Site will be undertaken at the construction stage.

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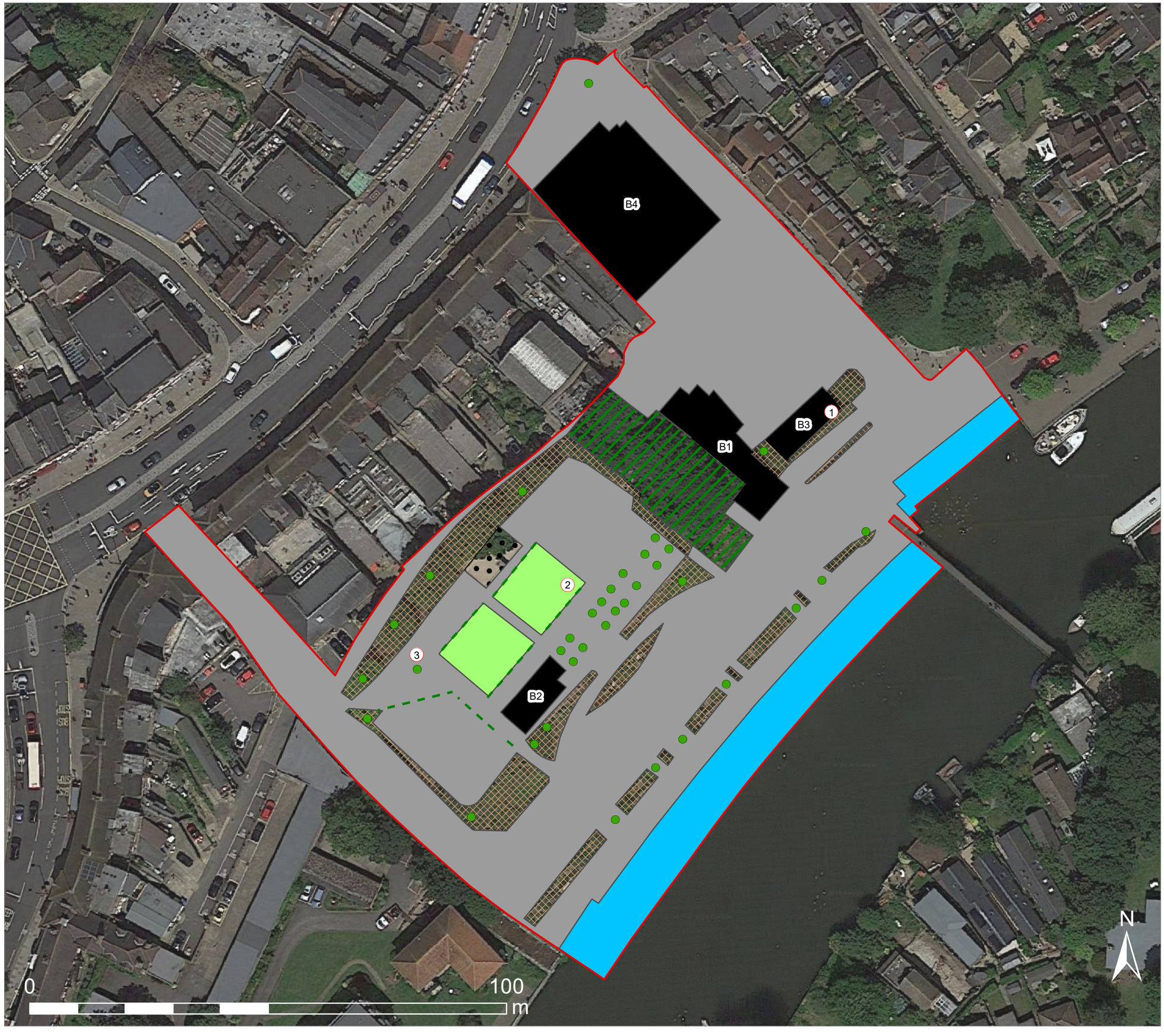
# 8 Figures

**Figure 1: Phase 1 habitat plan**

**Figure 2: Building suitability for roosting bats**




LEGEND

- Site boundary
- Artificial turf
- Broadleaved plantation woodland
- Bare ground
- Building
- Hardstanding
- Introduced shrub
- Running water
- Species-poor defunct hedge
- Broadleaved tree
- 1 Target note

BSG | ecology

OFFICE: Oxford
T: 01865 883833

JOB REF: P20-560

PROJECT TITLE

TWICKENHAM, RIVERSIDE

DRAWING TITLE

Figure 1: Phase 1 habitat map

DATE: 28/07/2021 CHECKED: JoeB SCALE: 1:764

DRAWN: LA APPROVED: JMG VERSION: 1.6



Sources: BSG Ecology survey data


LEGEND

Site boundary

**Building suitability for roosting bats**

Moderate

Negligible

**Potential Access Points**

1 Broken window boarding

2 Weep holes in brick work

3 Broken door

4 Open toilet block

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OFFICE: Oxford
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JOB REF: P20-560

PROJECT TITLE

TWICKENHAM, RIVERSIDE

DRAWING TITLE

Figure 2: Buildings with bat suitability

DATE: 27/07/2021 CHECKED: JoeB SCALE: 1:800

DRAWN: LA APPROVED: JMG VERSION: 1.5



Sources: BSG Ecology survey data

C:\Users\lucy\Documents\workingfiles\roost bsg-ecology.com\P20-560 Spatial Data\Figure 2 Building with bat suitability.mxd

# 9 Photographs

| Photograph 1: Hardstanding pavement adjacent to the River Thames | Photograph 2: Building 1 |
|---|---|
|  |  |
| **Photograph 3: Broadleaved plantation woodland** | **Photograph 4: Broadleaved plantation woodland** |
|  |  |
| **Photograph 5: Broadleaved tree** | **Photograph 6: Species-poor defunct hedgerow** |
|  |  |

| Photograph 7: Species-poor defunct hedgerow | Photograph 8: Introduced shrub |
|---|---|
|  |  |
| **Photograph 9: Insect hotels (see also Target Note 1)** | |
|  | |

# Appendix 1: Site proposals

## Strategies
Ecology  & Net Gain Strategy


The diagram opposite outlines the ecology strategy. The biodiverse planting palette seeks to provide a wide variety of habitat opportunities. Berry producing trees are proposed where appropriate to encourage bats and support birds. Bat and bird boxes and insect hotels are provided where suitable and appropriate.  The existing insect hotels wihin the gardens to be re-located within the site.

There is also an opportunity to enhance the ecology along the river with floating ecosystems that are attached to the river wall. This proposal is being discussed with the Port of London Authority and the Environment Agency.

*Example of Bio-diverse Floating Ecosystems*

*Illustrative Diagram of Floatiing Ecosystems*

Key

- Rain Gardens
- Herbaceous Planting
- Green Roof
- Woodland Planting
- Climbing Plants
- Lawn
- Floating Ecosystems
- Existing Trees
- Bat Boxes
- Existing Trees (relocated)
- Generic Bird Boxes
- Proposed Trees
- Insect Hotels

# Appendix 2: Summaries of Relevant Policy, Legislation and Other Instruments

This section briefly summarises the legislation, policy and related issues that are relevant to the main text of the report. The following text does not constitute legal or planning advice.

### National Planning Policy Framework (England)

The Government issued the National Planning Policy Framework (NPPF) in July 2021. Text excerpts from the NPPF are shown where they may be relevant to planning applications and biodiversity including protected sites, habitats and species.

The Government sets out the three objectives for sustainable development (economy, social and environmental) at paragraphs 8-10 to be delivered through the plan preparation and implementation level and 'are not criteria against which every decision can or should be judged' (paragraph 9). The planning system's environmental objective is 'to protect and enhance our natural, built and historic environment; including making effective use of land, improving biodiversity…'(paragraph 8c).

In conserving and enhancing the natural environment, the NPPF (Paragraph 174) states that 'planning policies and decisions should contribute to and enhance the natural and local environment' by:

- Protecting and enhancing...sites of biodiversity value... '(in a manner commensurate with their statutory status or identified quality in the development plan)'.
- Recognising the wider benefits from natural capital and ecosystem services including trees and woodland.
- Minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures.
- Preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability.

In respect of protected sites, at paragraph 175, the NPPF requires local planning authorities to distinguish, at the plan level, '…between the hierarchy of international, national and locally designated sites; allocate land with the least environmental or amenity value...take a strategic approach to maintaining and enhancing networks of habitats and green infrastructure; and plan for the enhancement of natural capital at a catchment or landscape scale across local authority boundaries.' A footnote to paragraph 175 refers to the preferred use of agricultural land of poorer quality if significant development of agricultural land is to take place.

Paragraph 179 refers to how plans should aim to protect and enhance biodiversity. Plans should: 'identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity [a footnote refers to ODPM Circular 06/2005 for further guidance in respect of statutory obligations for biodiversity in the planning system], wildlife corridors and stepping stones that connect them and areas identified by national and local partnerships for habitat management, enhancement, restoration or creation;' and to 'promote the conservation, restoration and re-creation of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity.'

Paragraph 180 advises that, when determining planning applications, '…local planning authorities should apply the following principles:

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

- development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments) should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest;
- development resulting in the loss or deterioration of irreplaceable habitats, (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists; and
- development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to improve biodiversity in and around developments should be integrated as part of their design, especially where this can secure measurable net gains for biodiversity or enhance public access to nature where this is appropriate.'

In paragraph 181, the following should be given the same protection as habitats sites:

- potential Special Protection Areas and possible Special Areas of Conservation;
- listed or proposed Ramsar sites; and
- sites identified, or required, as compensatory measures for adverse effects on habitats sites, potential Special Protection Areas, possible Special Areas of Conservation, and listed or proposed Ramsar sites.'

In paragraph 182 the NPPF refers back to sustainable development in relation to appropriate assessment and states: 'the presumption in favour of sustainable development does not apply where the plan or project is likely to have a significant effect on a habitats site (either alone or in combination with other plans or projects), unless an appropriate assessment has concluded that the plan or project will not adversely affect the integrity of the habitats site'.

In paragraph 183, the NPPF refers to planning policies and decisions taking account of ground conditions and risks arising from land instability and contamination at sites. In relation to risks associated with land remediation account is to be taken of 'potential impacts on the natural environment' that arise from land remediation.

In paragraph 185 the NPPF states that planning policies and decisions should ensure that development is appropriate to the location and take into account likely effects (including cumulative) on the natural environment and, in doing so, they 'should limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation' (paragraph 185c).

**Government Circular ODPM 06/2005 Biodiversity and Geological Conservation (England only)**

Paragraph 98 of Government Circular 06/2005 advises that "the presence of a protected species is a material consideration when a planning authority is considering a development proposal that, if carried out, would be likely to result in harm to the species or its habitat. Local authorities should consult Natural England before granting planning permission. They should consider attaching appropriate planning conditions or entering into planning obligations under which the developer would take steps to secure the long-term protection of the species. They should also advise developers that they must comply with any statutory species' protection provisions affecting the site concerned..."

Paragraph 99 of Government Circular 06/2005[4] advises that "it is essential that the presence or otherwise of protected species, and the extent that they may be affected by the proposed development, is established before the planning permission is granted, otherwise all relevant material considerations may not have been addressed in making the decision. The need to ensure ecological surveys are carried out should therefore

[4] *ODPM Circular 06/2005. Government Circular: Biodiversity and Geological Conservation – Statutory Obligations and their Impacts within the Planning System* (2005). HMSO Norwich.

only be left to coverage under planning conditions in exceptional circumstances, with the result that the surveys are carried out after planning permission has been granted".

### Standing Advice (GOV.UK - England only)

The GOV.UK website provides information regarding protected species and sites in relation to development proposals: 'Local planning authorities should take advice from Natural England or the Environment Agency about planning applications for developments that may affect protected species.' GOV.UK advises that 'some species have standing advice which you can use to help with planning decisions. For others you should contact Natural England or the Environment Agency for an individual response.'

The standing advice (originally from Natural England and now held and updated on GOV.UK5) provides advice to planners on deciding if there is a 'reasonable likelihood' of protected species being present. It also provides advice on survey and mitigation requirements.

When determining an application for development that is covered by standing advice, in accordance with guidance in Government Circular 06/2005, Local planning authorities are required to take the standing advice into account. In paragraph 82 of the aforementioned Circular, it is stated that: 'The standing advice will be a material consideration in the determination of the planning application in the same way as any advice received from a statutory consultee…it is up to the planning authority to decide the weight to be attached to the standing advice, in the same way as it would decide the weight to be attached to a response from a statutory consultee.'

### Natural Environment and Rural Communities (NERC) Act 2006 – Habitats and species of principal importance (England)

The Natural Environment and Rural Communities (NERC) Act came into force on 1st October 2006. Section 41 (S41) of the Act require the Secretary of State to publish a list of habitats and species which are of principal importance for the conservation of biodiversity in England. The list has been drawn up in consultation with Natural England as required by the Act. In accordance with the Act the Secretary of State keeps this list under review and will publish a revised list if necessary, in consultation with Natural England.

The S41 list is used to guide decision-makers such as public bodies, including local authorities and utilities companies, in implementing their duty under Section 40 of the NERC Act 2006, to have regard to the conservation of biodiversity in England, when carrying out their normal functions, including development control and planning. This is commonly referred to as the 'Biodiversity Duty.'

Guidance for public authorities on implementing the Biodiversity Duty[6] has been published by Defra. One of the key messages in this document is that 'conserving biodiversity includes restoring and enhancing species populations and habitats, as well as protecting them.' In England the administration of the planning system and licensing schemes are highlighted as having a 'profound influence on biodiversity conservation.' Local authorities are required to take measures to "promote the preservation, restoration and re-creation of priority habitats, ecological networks and the protection and recovery of priority species. The guidance states that 'the duty aims to raise the profile and visibility of biodiversity, clarify existing commitments with regard to biodiversity, and to make it a natural and integral part of policy and decision making.'

In 2007, the UK Biodiversity Action Plan (BAP) Partnership published an updated list of priority UK species and habitats covering terrestrial, freshwater and marine biodiversity to focus conservation action for rarer species and habitats in the UK. The UK Post-2010 Biodiversity Framework[7], which covers the period from 2011 to 2020, now succeeds the UK BAP. The UK priority list contained 1150 species and 65 habitats requiring special protection and has been used as a reference to draw up the lists of species and habitats of principal importance in England.

In England, there are 56 habitats of principal importance and 943 species of principal importance on the S41 list. These are all the habitats and species found in England that were identified as requiring action in the UK

[5] https://www.gov.uk/guidance/protected-species-how-to-review-planning-applications#standing-advice-for-protected-species
[6] Defra, 2007. *Guidance for Public Authorities on Implementing The Biodiversity Duty*. (http://www.defra.gov.uk/publications/files/pb12585-pa-guid-english-070516.pdf)
[7] JNCC and Defra (on behalf of the Four Countries' Biodiversity Group). 2012. *UK Post-2010 Biodiversity Framework*. July 2012. (http://jncc.defra.gov.uk/page-6189)

BAP and which continue to be regarded as conservation priorities in the subsequent UK Post-2010 Biodiversity Framework.

### European protected species (Animals)

The Conservation of Habitats and Species Regulations 2017 (as amended) consolidates various amendments that have been made to the original (1994) Regulations which transposed the EC Habitats Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (Council Directive 92/43/EEC) into national law.

"European protected species" (EPS) of animal are those which are shown on Schedule 2 of the Conservation of Habitats and Species Regulations 2017 (as amended). They are subject to the provisions of Regulation 43 of those Regulations. All EPS are also protected under the Wildlife and Countryside Act 1981 (as amended). Taken together, these pieces of legislation make it an offence to:

a. Intentionally or deliberately capture, injure or kill any wild animal included amongst these species
b. Possess or control any live or dead specimens or any part of, or anything derived from a these species
c. deliberately disturb wild animals of any such species
d. deliberately take or destroy the eggs of such an animal, or
e. intentionally, deliberately or recklessly damage or destroy a breeding site or resting place of such an animal, or obstruct access to such a place

For the purposes of paragraph (c), disturbance of animals includes in particular any disturbance which is likely—

a. to impair their ability—
    i. to survive, to breed or reproduce, or to rear or nurture their young, or
    ii. in the case of animals of a hibernating or migratory species, to hibernate or migrate; or
b. to affect significantly the local distribution or abundance of the species to which they belong.

Although the law provides strict protection to these species, it also allows this protection to be set aside (derogated) through the issuing of licences. The licences in England are currently determined by Natural England (NE) for development works. In accordance with the requirements of the Regulations (2017, as amended), a licence can only be issued where the following requirements are satisfied:

a. The proposal is necessary 'to preserve public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment'
b. 'There is no satisfactory alternative'
c. The proposals 'will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range.

### Definition of breeding sites and resting places

Guidance for all European Protected Species of animal, including bats and great crested newt, regarding the definition of breeding and of breeding and resting places is provided by The European Council (EC) which has prepared specific guidance in respect of the interpretation of various Articles of the EC Habitats Directive.[8] Section II.3.4.b) provides definitions and examples of both breeding and resting places at paragraphs 57 and 59 respectively. This guidance states that 'The provision in Article 12(1)(d) [of the EC

[8] Guidance document on the strict protection of animal species of Community interest under the Habitats Directive 92/43/EEC. (February 2007), EC.

Habitats Directive] should therefore be understood as aiming to safeguard the ecological functionality of breeding sites and resting places.' Further the guidance states: 'It thus follows from Article 12(1)(d) that such breeding sites and resting places also need to be protected when they are not being used, but where there is a reasonably high probability that the species concerned will return to these sites and places. If for example a certain cave is used every year by a number of bats for hibernation (because the species has the habit of returning to the same winter roost every year), the functionality of this cave as a hibernating site should be protected in summer as well so that the bats can re-use it in winter. On the other hand, if a certain cave is used only occasionally for breeding or resting purposes, it is very likely that the site does not qualify as a breeding site or resting place.'

### Competent authorities

Under Regulation 7 of the Conservation of Habitats and Species Regulations 2017 (as amended) a "competent authority" includes "any Minister of the Crown…, government department, statutory undertaker, public body of any description or person holding a public office.

In accordance with Regulation 9, "a competent authority must exercise their functions which are relevant to nature conservation, including marine conservation, so as to secure compliance with the requirements of the [Habitats and Birds] Directives. This means for instance that when considering development proposals a competent authority should consider whether EPS or European Protected Sites are to be affected by those works and, if so, must show that they have given consideration as to whether derogation requirements can be met.

### Birds

All nesting birds are protected under Section 1 of the Wildlife and Countryside Act 1981 (as amended) which makes it an offence to intentionally kill, injure or take any wild bird or take, damage or destroy its nest whilst in use or being built, or take or destroy its eggs. In addition to this, for some rarer species (listed on Schedule 1 of the Act), it is an offence to disturb them whilst they are nest building or at or near a nest with eggs or young, or to disturb the dependent young of such a bird.

The Conservation of Habitats and Species Regulations 2017 (as amended) places duties on competent authorities (including Local Authorities and National Park Authorities) in relation to wild bird habitat. These provisions relate back to Articles 1, 2 and 3 of the EC Directive on the conservation of wild birds (2009/147/EC, 'Birds Directive'[9]) (Regulation 10 (3)) requires that the objective is the 'preservation, maintenance and re-establishment of a sufficient diversity and area of habitat for wild birds in the United Kingdom, including by means of the upkeep, management and creation of such habitat, as appropriate, having regard to the requirements of Article 2 of the new Wild Birds Directive…' Regulation 10 (7) states: 'In considering which measures may be appropriate for the purpose of security or contributing to the objective in [Regulation 10 (3)] Paragraph 3, appropriate account must be taken of economic and recreational requirements'.

In relation to the duties placed on competent authorities under the 2017 Regulations, Regulation 10 (8) states: 'So far as lies within their powers, a competent authority in exercising any function [including in relation to town and country planning] in or in relation to the United Kingdom must use all reasonable endeavours to avoid any pollution or deterioration of habitats of wild birds (except habitats beyond the outer limits of the area to which the new Wild Birds Directive applies).'

### Hedgerows

Article 10 of the Habitats Directive[10] requires that 'Member States shall endeavour…to encourage the management of features of the landscape which are of major importance for wild fauna and flora. Such features are those which, by virtue of their linear and continuous structure…or their function as stepping stones…are essential for the migration, dispersal and genetic exchange of wild species'. Examples given in the Directive include traditional field boundary systems (such as hedgerows).

[9] 2009/147/EC Birds Directive (30 November 2009. European Parliament and the Council of the European Union.
[10] Council Directive 92/43/EEC of 2i May 1992 on the conservation of natural habitats and of wild fauna and flora.

The aim of the Hedgerow Regulations 1997[11], according to guidance produced by the Department of the Environment[12], is "to protect important hedgerows in the countryside by controlling their removal through a system of notification. In summary, the guidance states that the system is concerned with the removal of hedgerows, either in whole or in part, and covers any act which results in the destruction of a hedgerow. The procedure in the Regulations is triggered only when land managers or utility operators want to remove a hedgerow. The system is in favour of protecting and retaining 'important' hedgerows.

The Hedgerow Regulations set out criteria that must be used by the local planning authority in determining which hedgerows are 'important'. The criteria relate to the value of hedgerows from an archaeological, historical, wildlife and landscape perspective.

[11] Statutory Instrument 1997 No. 1160 – The Hedgerow Regulations 1997. HMSO: London
[12] The Hedgerow Regulations 1997: a guide to the law and good practice, HMSO: London

# Appendix 3: Target Notes

**Target Note 1**

9.1 Five insect hotels located in front of Building 3 (see also Photograph 8).

**Target Note 2**

9.2 An area of artificial turf (no botanical species).

**Target Note 3**

9.3 A single native black poplar. The Jubilee Gardens information board states that this tree was planted in honour of the Queen's Diamond Jubilee (which was in 2012).