

13. Ecology

Introduction

- 13.1. This Chapter, prepared by Waterman Infrastructure & Environment Limited (Waterman), presents an assessment of the likely significant impacts and resultant effects of the proposed Development on important ecological and nature conservation features, these sensitive receptors are collectively termed Important Ecological Features (IEFs).
- 13.2. This Chapter sets out the methods used to identify an accurate ecological baseline and the IEFs, together with a description of the evaluation and impact assessment methods adopted.
- 13.3. This is followed by a description of the relevant baseline conditions at the Site and surrounding area, with reference to any significant limitations or other gaps in data that would constrain the thoroughness of the impact assessment. The Chapter then describes the baseline against which the assessment of impacts with embedded mitigation (that is inherent to the scheme design) to identify if there is the potential for any significant effects arising from the demolition and construction and/or completed development phases of the proposed Development.
- 13.4. Additional mitigation measures are identified where appropriate, to avoid, reduce or offset any significant adverse effects identified and enhancement measures identified, which would result in likely beneficial effects. Taking account of the additional mitigation measures, the nature and significance of the likely residual effects are provided.
- 13.5. The Chapter is supported by the following appendices:
 - **Appendix 13.1:** Preliminary Ecological Appraisal (PEA);
 - **Appendix 13.2:** Protect Species Report (PSR);
 - **Appendix 13.3:** Water Framework Directive screening request and response; and
 - **Appendix 13.4:** Biodiversity Net Gain (BNG) Assessment.
- 13.6. It should be noted that consultation was undertaken with the Environment Agency (EA) regarding the 2018 Planning Applications, who stated that no Water Framework Directive (WFD) Assessment was deemed necessary in support of the Development. Further details are set out in **Appendix 13.3**. Given the current applications do not involve any significant changes in the approach of the River Thames flood defence walls or outfalls than described in the 2018 Planning Applications, no further consultation was deemed necessary. Furthermore, as stated in **Appendix 13.3**, the Development would not include any significant changes to the foreshore or tow path (which are outside of the Applicant's ownership), nor would it result in a substantial change to the surface water drainage regime at the Site, therefore, no deterioration of the adjacent waterbody is anticipated.

Assessment Methodology and Significance Criteria

Assessment Methodology

Consultation

13.7. As part of the formal EIA Scoping Opinion, received on the 30th June 2017 as part of the previous 2018 Planning Applications, comments were received from both the London Borough of Richmond upon Thames (LBRuT) and Natural England (NE). LBRuT detailed the following key ecological issues:

- It does not appear, from the information provided that the proposed Development would affect any nationally designated geological or ecological sites (Ramsar, SPA, SAC, SSSI, NNR).
- Although the Applicant has carried out bat surveys and discounted bats roosting on Site, the ES should consider that bats may pass along the river on the northern site boundary/Ship Lane and therefore light/noise/vibrations and disturbance may affect their movement. These effects may be permanent depending upon the duration of the effect and the resulting environment. Therefore, the scope of the surveys should be increased to cover commuting bats using the whole site.
- The ES should consider the impacts on the Chalkers Corner element of the Site (now the area subject to the S278 highways works). The section of the Thames path along the boundary of the site is in a poor state of repair and has the potential to benefit both people and wildlife. Given the size of the Site, scale of the development, there is a high probably of disturbance to riverside areas.
- The sensitive receptors will include (but not be limited to), trees, other soft landscaping (plants / grasses), birds, river, bats, reptiles, hedgehogs, invertebrates.

13.8. NE detailed that the scoping request is for a proposal that does not appear, from the information provided, to affect any nationally designated geological or ecological sites (Ramsar, SPA, SAC, SSSI, NNR) and as such it is not a priority for NE to advise on the detail of this EIA. This did, however, state that:

'Natural England undertakes an initial assessment of all development consultations, by determining whether the location to which they relate falls within geographical 'buffer' areas within which development is likely to affect designated sites. The proposal is located outside these buffer areas and therefore appears unlikely to affect an Internationally or Nationally designated site. However, it should be recognised that the specific nature of a proposal may have the potential to lead to significant impacts arising at a greater distance than is encompassed by Natural England's buffers for designated sites. The ES should therefore thoroughly assess the potential for the proposal to affect designated sites, including Special Areas of Conservation (SAC), Special Protection Areas (SPA), Ramsar sites and Sites of Special Scientific Interest (SSSI). Should the proposal result in an emission to air or discharge to the ground or surface water catchment of a designated site then the potential effects and impact of this would need to be considered in the Environmental Statement'

Survey and Assessment Methodology

Ecological Data Search

- 13.9. An ecological data search undertaken as part of the PEA (**Appendix 13.1**) was requested from eCountability / Greenspace Information for Greater London (GI GL) in September 2021, where existing records were obtained for protected species and / or other notable fauna and flora, together with records of important statutory and non-statutory designated sites located within 2km of the Site. Statutory sites of an International / European level were also searched for on the Multi-Agency Geographic Information for the Countryside maps (MAGIC map)¹ within 10km and aerial photography for the area was also reviewed.
- 13.10. The aim of an ecological data search is to collate existing ecological records for the Site and denoted Zone of Influence (ZoI) for the anticipated likely significant effects from a development.
- 13.11. In addition to the above, Habitats of Principal Importance (HoPI) and Species of Principal Importance (SoPI), listed under Section 41 of the NERC Act², as well as Habitat Action Plans (HAPs) and Species Action Plans (SAPs), listed under the London Environmental Strategy (LES)³ and the LBRuT Biodiversity Action Plan (RBAP)⁴, were reviewed to assign an ecological context to the Site.

Field Survey

- 13.12. As part of the PEA (**Appendix 13.1**), a UK Habitat Classification (UK Hab) field survey of the Site was undertaken on 31st August 2021 by Lee Mantle MCIEEM. UK Hab supersedes previous systems such as Phase 1 Habitat Survey, allowing for direct interpretation of baseline habitat survey data into Priority Habitat Types (HoPI) and Annex I Habitat types.
- 13.13. The PEA details an assessment of the recorded habitats potential to support legally protected and notable species and building on this, the requirement for undertaking the additional survey work detailed below.
- 13.14. Further details of the UK Hab field survey are provided in **Appendix 13.1**.

Preliminary Roost Assessment

- 13.15. As part of the PEA a preliminary roost assessment (PRA), comprising an external ground-based building, wall (both northern boundary wall and southern boundary wall, refer to **Figure 13.1** and **Appendix 13.1**) and tree assessments for roosting bat potential, was undertaken at the Site during the UK Habs field survey. The survey was also undertaken by Lee Mantle MCIEEM who holds a Natural England Class 2 Licence (2015-14934-CLS-CLS) for all bat species and counties of England. The survey was based on current best practice guidelines⁵.

Northern boundary wall Inspection

- 13.16. The PRA assessed the northern boundary wall to have moderate potential to support roosting bats.
- 13.17. As such an endoscope inspection of the potential roosting features (PRFs) present was undertaken. Each PRF (refer to **Figure 13.2** and **Appendix 13.1**) was systematically inspected

for evidence of bat usage (e.g. droppings, scratch marks, staining and sightings as well as bats themselves) using a digital video endoscope, inspection mirrors, binoculars and a high powered torch with a ladder as required. The inspections were led by a Natural England Class Level 2 Bat Licence holder (2015-11736-CLS-CLS). Further details can be found in **Appendix 13.1**.

Evening Emergence Surveys

- 13.18. In line with best practice guidelines⁶, evening emergence surveys were undertaken on those buildings (building B1, B9, B12^a assessed to have low potential to support roosting bats and building B3, B8 (previously recorded as a confirmed roost site in 2019) and B10 assessed to have moderate potential to support roosting bats) and trees (T43, T44, T67, T68, T71, T75, T78, T83) and tree group G115 (assessed to have moderate potential to support roosting bats) where bat potential had been identified as part of the PRA (**Appendix 13.1**). In addition, evening emergence surveys were also undertaken at the boundary wall at PRFs 10a and 10b and 13 of the northern boundary wall where a full endoscope inspection could not be undertaken. For locations of the buildings, walls and trees see **Figure 13.1**.
- 13.19. The evening emergence surveys were undertaken during optimum weather conditions, commencing approximately 15 minutes prior to sunset and continued for at least an hour and a half thereafter. Surveyors were situated so that all potential bat roosting features could be viewed (refer to **Figure 13.3**). A record of all bat activity (i.e. commuting, foraging, social calls) during the surveys was noted.
- 13.20. The surveys were undertaken using Elekon Batlogger and Echometer Touch bat detectors. During the survey at building B8, due to its conformation as a roost site in 2019 and the height of the buildings, Nightfox Infrared monocular's and infrared torches were also utilised along with the bat detectors detailed above as part of the survey technique.
- 13.21. The survey was undertaken in optimal weather conditions, that is wind levels below 4 on the Beaufort wind force scale, the absence of prolonged rain and above 10°C in temperature as per best practice guidelines.

Bat Activity Surveys

- 13.22. To determine the use of the habitats along the Site but specifically along the northern Site boundary adjacent to the River Thames, a bat activity survey was undertaken.
- 13.23. The evening activity survey commenced from sunset to two hours thereafter. A pair of surveyors followed a pre-determined transect route (refer to **Figure 13.4**). The survey was undertaken using Elekon Batlogger detectors. Full details of the survey methodology are provided in **Appendix 13.2**.

^a Note, building numbers align with those assigned for existing buildings surveyed in the PEA rather than the proposed building numbers of the Development.

13.24. The survey was undertaken in optimal weather conditions, i.e. wind levels below 4 on the Beaufort wind force scale, the absence of prolonged rain and above 10°C in temperature as per best practice guidelines.

Automated Detector Bat Surveys

13.25. To supplement the bat activity survey, three automated bat detectors were deployed at the Site) and set to record for a five-night period. The automated detectors were set to record all night. Two of the automated detectors were located along the northern boundary wall (under the Budweiser sign and on the wall to the western corner) to the north of the Site as adjacent to the River Thames and one automated detector to the east of the Site behind building B4 (the Maltings, referred to **Figure 13.4**). Further details can be found in **Appendix 13.2**.

Bat Data Analysis

13.26. The sound recordings for the evening emergence and bat activity surveys were analysed using BatExplorer and Kaleidoscope software respectively. Identification of bat calls was undertaken using the parameters set out by Russ (2012).

13.27. The sound recordings for the automated survey were analysed using AnaLook software and bat call parameters from Russ (2012). For the purposes of analysis, a bat pass correlates to a single 15 second recording.

Birds (Black Redstart Survey)

13.28. A series of five black redstart surveys, occurring approximately every fortnight, were carried out between 13th May and 29th June 2016 to ascertain the status of this species at the Site and adjacent habitats (a c.25 m buffer around the Site was surveyed). The methodology broadly followed the industry standard for this species as outlined in 'Bird Monitoring Methods'⁷. Each survey commenced between dawn and sunrise as this is the period when black redstarts are the most vocal and therefore most likely to locate. Given the results of the PEA (**Appendix 13.1**) which demonstrates that the habitats have not significantly altered since the black redstart survey was undertaken, and that no new records for black redstart were returned in the data search, it is considered highly unlikely that black redstarts would currently be present on Site. Further black redstarts were therefore not undertaken.

Impact Assessment Methodology

13.29. This assessment was undertaken with reference to the Chartered Institute of Ecology and Environmental Management ('CIEEM') guidelines for ecological impact assessments (the 'Guidelines')⁸. Although the Guidelines are recognised as current industry guidance, they are also recognised as not being a prescriptive tool for carrying out ecological impact assessments; they provide guidance to practitioners for refining their own methodologies.

Zone of Influence

13.30. The Zone of Influence (Zol) is the spatial extent over which IEFs would be affected by biophysical changes caused by the development. The Zol was determined through a review of baseline

conditions, consideration of the wider local environment, and consideration of the type of development proposed.

- 13.31. The conceivable ZOI of the development is assessed to be;
- 2km for statutory designated sites (extended to 10km for sites of International/European importance) of importance for nature conservation.
 - 500m for non-statutory designated sites of importance for nature conservation
 - The Site and immediate adjacent areas for habitats and legally protected and notable species.
- 13.32. Given the urban nature of the Site that would be subject to regular disturbance events and physical barriers (for example to legally protected and notable species migration) the ZOI is unlikely to extend any further.

Assessment of Ecological Features

- 13.33. The ecological features are evaluated based on criteria in the Guidelines. This is based on an understanding of how the potentially affected population or habitat contributes to the conservation status or distribution of the species or habitat at a particular geographical scale.
- 13.34. Determination of value of ecological features within the survey area is assessed according to the geographical framework given below;
- **International and European** - Very high importance and rarity, international and European scale and very limited potential for substitution
 - **National** (England)- High importance and rarity, national scale, and limited potential for substitution
 - **Regional** (London) - High or medium importance and rarity, regional scale, limited potential for substitution
 - **District** (London Borough of Richmond Upon Thames) - Medium importance and rarity, district scale, potential for substitution
 - **Local** (Site and neighbouring receptors) - Low or medium importance and rarity, local scale
 - **Site** - Very low importance and rarity, local scale
 - **Negligible**
- 13.35. Baseline data has been used to identify relevant ecological features (including designated sites, habitats and species) of value (or potential value).
- 13.36. Based on baseline data collection, ecological features (habitats, species, ecosystems and their functions / processes) that are 'important' and have the potential to be significantly affected by the Development, have been identified as Important Ecological Features (IEFs) for assessment.
- 13.37. To identify IEFs for the purposes of this assessment, professional judgement and experience was used, informed by the results of the baseline data collection for the Site, derived from desk, consultation and field survey. Consideration was given to habitats and species for nature conservation, such as designated sites, Biodiversity Action Plan lists and legally protected species. When an ecological feature is not listed / designated, consideration was given to population, diversity and key functional role and connectivity within the wider environment.

Species that are not considered ‘important’ or are unlikely to be significantly affected include (but are not limited to) species that are sufficiently widespread, unthreatened and / or resilient habitats or species of insufficient size or diversity.

- 13.38. Details of the ecological features that are not considered ‘important’ or unlikely to be significantly affected by the proposed Development have not been assessed within this Chapter. In accordance with the Guidelines these are assessed to be features valued at below a **Local** level, in accordance with the geographical scales provided above. However, any ecological features which are not considered ‘important’ but could be affected by the development impacts (identified separately) are discussed further in **Appendix 13.1**.

Methodology for Defining Effects

- 13.39. Under the Guidelines impacts on biodiversity are assessed not only by magnitude but are also characterised and described as beneficial / adverse, together with their extent, duration, timing and frequency. **Table 13.1** provides impact criteria used in line with the Guidelines.

Table 13.1: Criteria for determining the impact on ecological features under the Guidelines

| Characteristic | Criteria |
|-----------------------|---|
| Beneficial or Adverse | Beneficial impact: a change that improves the quality of the environment. Beneficial impacts may also include halting or slowing an existing decline in the quality of the environment. Adverse impact: a change that reduces the quality of the environment. |
| Extent | The spatial or geographic area over which the impact/effect may occur. |
| Magnitude | Refers to the size, amount, intensity and volume. It will be quantified if possible and expressed in absolute or relative terms. |
| Duration | Duration will be defined in relation to ecological characteristics (such as a species’ lifecycle), as well as human timeframes. The duration of an activity may differ from the duration of the resulting effect caused by the activity. Effects may be described as short, medium or long-term and permanent or temporary. Short, medium, long-term and temporary will need to be defined in months/years. |
| Frequency | The number of times an activity that will impact biodiversity will occur. |
| Timing | The timing of an activity or change caused by the project may result in an impact if this coincides with critical life-stages or seasons. |

- 13.40. Impacts can also be defined as being direct or indirect. A direct impact is defined as an impact resulting in the direct interaction of an activity with an environmental or ecological component. An indirect impact is defined as an impact on the environment which is not a direct result of a project or activity, often produced away from or as a result of a complex impact pathway.

Significance Criteria

- 13.41. This Chapter does not use the same methodology for reporting the likely significant effects as set out in **Chapter 2** of this ES, instead it follows CIEEM guidance. CIEEM defines a significant impact as ‘an impact (negative or positive) on the integrity of a defined site or ecosystem and/or

the conservation status of habitats and species within a given geographical area' (CIEEM, 2018). Therefore, an impact can be significant at the Site, Local, District, Regional, National or International level (as detailed in paragraph **13.35** above).

- 13.42. Integrity is defined as 'the coherence of the ecological structure and function, across the whole area (of a site), that enables it to sustain the habitat, complex of habitats and/or population of species for which it was classified.' (European Commission Managing Natura 2000, 2000).

Baseline Conditions

- 13.43. A summary of the existing baseline conditions is provided below with full detail provided within **Appendix 13.1** and **13.2**.

Data Search

- 13.44. The ecological data search returned records of statutory and non-statutory designated sites for nature conservation and protected species records as detailed in **Appendix 13.1**.
- 13.45. No statutory and non-statutory designated sites for nature conservation were provided for the Site, however, the following sites were recorded within the conceived Zol:
- Richmond Park Special Area of Conservation (SAC), National Nature Reserve (NNR) and Site of Special Scientific Interest (SSSI);
 - Wimbledon Common SAC;
 - River Thames and Tidal Tributaries Site of Metropolitan Importance (SMI);
 - North Sheen and Mortlake Cemeteries Site of Local Importance (SLI);
 - Old Mortlake Burial Ground SLI; and
 - Kew Meadow Path Site of Borough Importance (SBI grade 2).
- 13.46. Records of amphibian, reptile, mammals (bat, hedgehog and badger), birds and invertebrate species were returned within 2km of the centre of the Site. In total eight different defined species of bat were presented (Serotine *Eptesicus serotinus*, Daubenton's *Myotis daubentonii*, Leisler's *Nyctalus leisleri*, Noctule *Nyctalus noctule*, Nathusius's Pipistrelle *Pipistrellus nathusii*, Common Pipistrelle *Pipistrellus pipistrellus*, Soprano Pipistrelle *Pipistrellus pygmaeus* and Brown Long-eared *Plecotus auratus*) and bird species including black redstart *Phoenicurus ochruros* and peregrine falcon *Falco peregrinus*. Records returned of species directly adjacent to the Site (determined to be within 250m from the centre of the Site) includes swift *Apus apus*, starling *Sturnus vulgaris*.

Statutory Designated Sites Field Survey

[Richmond Park SAC, NNR and SSSI](#)

- 13.47. At its closest point Richmond Park SAC, NNR and SSSI are located within 1.3km south of the proposed development.
- 13.48. Richmond Park has been managed as a royal deer park since the seventeenth century, producing a range of habitats of value to wildlife. In particular, Richmond Park is of importance for its

diverse deadwood beetle fauna associated with the ancient trees found throughout the parkland. Many of these beetles are indicative of ancient forest areas where there has been a long continuous presence of over-mature timber. The site is at the heart of the south London centre of distribution for stag beetle *Lucanus cervus*. This area has been designated as an SAC as Stag Beetle, an Annex II species, are a primary reason for designation. No other reasons for designation apply.

- 13.49. Richmond Park is London's largest NNR covering approximately 850 hectares. Significant habitats and species include dry acid and neutral grassland, species-poor wet grassland, mire, plantation woodlands, streams, ponds, veteran trees, scrub and bracken. The NNR is nationally important site due to the outstanding number of veteran oak trees and the significance of the insects they support. Over 1,000 species of beetle have been recorded in the park, many of which are linked to dead and decaying wood while others are associated with wetland habitats and deer droppings.
- 13.50. Richmond Park SSSI is of importance for its diverse deadwood beetle fauna associated with the ancient trees found throughout the parkland. In addition, the Park supports the most extensive area of dry acid grassland in Greater London.
- 13.51. It is assessed that Richmond Park SAC is of **European** value and the NNR and SSSI are of **National** value.

Wimbledon Common SAC

- 13.52. At its closest point Wimbledon Common SAC is located within 3.5km south west of the Development.
- 13.53. Wimbledon Common SAC is one of the largest areas of uncultivated land in the conurbation of London and sits in the Thames Valley Natural Character Area. It supports a mosaic of habitats including broadleaved woodland, acid grassland, dry and wet heath, scrub and mire. The underlying soils are mostly sands, gravels and silty clays which give rise to poorly-drained, nutrient poor and acid conditions. The range of habitats supports a wide diversity of plants and animals, including many which are scarce in the London area.
- 13.54. The SAC is a particular stronghold for the stag beetle *Lucanus cervus* in the south east of England and is at the heart of the local centre of distribution of the species. The site provides ideal habitat conditions for the stag beetle, such as extensive areas of undisturbed woodland and large quantities of decaying wood. The site is also important in supporting small but important areas of heathland, a very scarce habitat in the London area.
- 13.55. The SAC has been designated due to the Annex 1 habitats it supports (European dry heaths and Northern Atlantic wet heaths with *Erica tetralix*) and fauna being Stag Beetle, an Annex II species. No other reasons for designation apply.
- 13.56. It is assessed that Wimbledon Common SAC is of **European** value.

Non-statutory Designated Sites

River Thames and Tidal Tributaries SMI

13.57. The River Thames and Tidal Tributary SMI is located directly adjacent to the northern boundary of the Site, and comprises a number of valuable habitats not found elsewhere in London. The mudflats, single beach, inter-tidal vegetation, islands and river channel itself support many species of fish and birds and plants, creating a wildlife corridor running right across the capital.

13.58. It is assessed that this non-statutory site is of **Regional** value.

Kew Meadow Path SBI

13.59. The Kew Meadow Path SBI is a public footpath, totally unremarkable in appearance and is one of only a handful of British sites for the two-lipped door snail *Alinda biplicata*.

13.60. It is assessed that this non-statutory site is of **District** value.

North Sheen and Mortlake Cemeteries SLI

13.61. The North Sheen and Mortlake Cemeteries SLI is located adjacent to the west of the Site. These extensive cemeteries, which are bisected by Mortlake Road, are among the largest in the LBRuT. They are both in active use and managed relatively intensively, with most of the grasslands being mown frequently. They have considerable wildlife interest due to their large size and the diversity of plants and animals that they support.

13.62. It is assessed that this non-statutory site is of **Local** value.

Old Mortlake Burial Ground SLI

13.63. The Old Mortlake Burial Ground SLI is a small and quite intensively managed cemetery, but its grasslands contain a reasonable diversity of wildflowers.

13.64. It is assessed that this non-statutory site is of **Local** value.

Field Survey

Buildings

13.65. Eighteen buildings are present within or directly adjacent to the Site (refer to **Figure 13.1** and **Appendix 13.1**). These buildings comprise industrial warehouses and storage buildings associated with redundant brewing processes, offices, security offices and a club house. These buildings were being used for temporary filming purposes at the time of the survey. An office building and a pub located immediately adjacent to the Site boundary were also included in the survey.

13.66. It is assessed that this habitat is of **Negligible** value.

Hardstanding

- 13.67. A large area of the Site comprises hardstanding around the buildings. Small areas of ephemeral / tall ruderal vegetation have colonised cracked and disturbed areas of hardstanding. The species recorded within these areas include bristly ox-tongue *Helminthotheca echioides*, smooth sow-thistle *Sonchus oleraceus*, cleavers, wall barley, broad-leaved willow herb *Epilobium montanum*, Michaelmas daisy *Aster amellus*, spear thistle *Cirsium vulgare*, prickly lettuce *Lactuca serriola*, cocksfoot *Dactylis glomerata*, mugwort *Artemisia vulgaris*, knotgrass *Polygonum sp*, greater plantain, wood avens, red fescue, common ragwort *Jacobaea vulgaris*, broad leaved dock, common dandelion, common hogweed *Heracleum sphondylium*, common nettle, perennial ryegrass, herb Robert and Canadian fleabane *Erigeron canadensis*.
- 13.68. This habitat is assessed to be of **Negligible** value.

Bare ground

- 13.69. Bare ground, predominantly gravel, is present along the footpath (towpath) at the northern boundary of the Site adjacent to the River Thames.
- 13.70. This habitat is assessed to be of **Negligible** value.

Wall

- 13.71. Several free-standing walls are present within, and forming boundaries, of the Site including the northern boundary wall and the boundary wall (refer to **Figure 13.1** and **Appendix 13.1**). All walls are constructed from brick. Several climbing species were also recorded on Site at the wall habitat, largely associated with the northern Site boundary. Species recorded include honeysuckle *Lonicera periclymenum*, ivy *Hedera helix*, and Virginia creeper *Parthenocissus quinquefolia*. The climbing plants are beginning to spread across features such as fencing due to lack of management.
- 13.72. This habitat is assessed to be of **Site** value.

Fence

- 13.73. A metal fence is present around Watney's Sports Ground playing fields.
- 13.74. This habitat is assessed to be of **Negligible** value.

Ornamental planting

- 13.75. Several areas of ornamental planting are present across the Site within both raised and ground level planting beds. Formally managed ornamental planting is present at the base of the buildings, with less formal areas which appear unmanaged present towards the north of the Site. Ornamental planting is also present at the boundary of Mortlake Green and within the Chalker's Corner. Species recorded include *Pyracantha sp.*, spindle *Euonymus japonicas*, barberry *Berberis darwinii*, senecio sunshine *Brachyglottis sp.*, holly *Ilex aquifolium*, *Euonymus fortunei*, Mexican orange blossom *Choisya x dewitteana* 'Aztec Pearl', Cordyline *Cordyline sp.*, spotted laurel *Aucis japonica*, red robin *Photinia x fraseri*, broom *Cytisus scoparius.*, cotoneaster tree *Cotoneaster*

cornubia, lilac *Syringa sp.*, clematis *Clematis sp.*, false castor oil *Fatsia japonica*, sweet bay *Laurus nobilis*, daffodil *Narcissus sp.* and laurel *Laurus sp.*

13.76. This habitat is assessed to be of **Site** value.

Trees

13.77. Trees are present across the Site. At the former brewery part of the Site the trees are growing out of hardstanding. These trees vary in age and comprise false acacia *Robinia pseudoacacia*, sycamore *Acer pseudoplatanus* London plane *Platanus x hispanica*, hornbeam, small-leaved lime *Tilia cordata*, wild cherry *Prunus avium*, whitebeam *Sorbus aria*, Himalayan birch *Betula utilis*, ash *Fraxinus excelsior*, elder *Sambucus nigra*, holly, Swedish whitebeam *Sorbus intermedia* and tree-of-heaven *Ailanthus altissima*. Some recent management in the form of pruning works is present at the trees.

13.78. Trees are also present within the Watney's Sports Ground playing fields, Chalker's Corner and lining the River Thames. These trees vary in age. Along the River Thames the tree species include ash *Fraxinus excelsior*, sycamore *Acer pseudoplatanus*, elder *Sambucus nigra*, goat willow *Salix caprea*, cherry *Prunus sp.*, elm *Ulmus sp.* and hawthorn *Crataegus monogyna*. Within Watney's sports Ground playing fields the tree species include wingnut *Pterocarya sp.*, London Plane *Platanus x hispanica*, Indian Bean Tree *Catalpa bignonioides*, Manna Ash *Fraxinus ornus*, red horse chestnut *Aesculus x carnea*, pink hawthorn *Crataegus laevigatus* 'Rosea Flore Pleno', cockspur hawthorn *Crataegus crus-galli* and Ornamental Hawthorn *Crataegus sp.* At Chalkers Corner the tree species include red norway Maple *Acer platanoides* 'Crimson King', cherry *Prunus sp.*, cider gum *Eucalyptus gunnii*, horse chestnut *Aesculus hippocastanum* and false acacia *Robina pseudoacacia*. Some recent management in the form of pruning works is present at the trees.

13.79. This habitat is assessed to be of **Site** value.

Amenity grassland

13.80. Amenity grassland is present at the Site within Watney's Sports Ground playing fields, Mortlake Green and the footpath / roadside verges at Chalker's Corner and along the boundary with the River Thames. The short length of sward (approximately 5cm) and limited species diversity recorded indicate that the amenity grassland is subject to an intensive mowing regime. The dominant species recorded was perennial rye grass *Lolium perenne* with species including common bent *Agrostis capillaris*, common daisy *Bellis perennis*, ribwort plantain *Plantago lanceolata*, red fescue *Festuca rubra*, white clover *Trifolium repens*, common catsear *Hypochaeris radicata*, yarrow *Achillea millefolium*, dove's-foot cranesbill *Geranium molle* and *Taraxacum sp* also present.

13.81. Where the edges of the amenity grassland have avoided the mowing regime, this has a longer sward and is more species rich with wall barley *Hordeum murinum* (dominant in areas), yarrow *Achillea millefolium*, red clover *Trifolium pratense*, meadow cranesbill *Geranium pratense*, common dandelion *Taraxacum officinale*, cleavers *Galium aparine*, false oat-grass *Arrhenatherum elatius*, Yorkshire fog *Holcus lanatus*, herb Robert *Geranium robertianum*, common mallow *Malva sylvestris*, wood avens *Geum urbanum*, broad-leaved dock *Rumex obtusifolius*, greater plantain

Plantago major and common nettle *Urtica dioica* present.

13.82. This habitat is assessed to be of **Site** value.

Hedgerows

13.83. A length (of approximately 90m) of privet *Ligustrum sp* hedge is present along the southern edge of Watney's Sports Ground playing fields. This hedge is approximately 1.5 m in height and 0.75 m wide and appears to be subject to a regular management regime.

13.84. This habitat is assessed to be of **Site** value.

River Thames

13.85. The River Thames (a notable habitat under LES, RBAP and S41 of the Natural Environment & Rural Communities (NERC) Act 2006)⁹ is located adjacent to the north of the Site. The section of river that flows adjacent to the Site is tidal and the banks adjacent to the footpath are heavily modified being reinforced by stone and concrete, with parts of the footpath and Thames Bank becoming flooded at high tide. A small boat landing stage also fronts on to the River Thames at the top of Ship Lane adjacent to the northern Site boundary.

13.86. This habitat is assessed to be of **Regional** value.

Roosting bats

13.87. As a result of the PEA (**Appendix 13.1**), in total eight different defined species of bat were presented (Serotine *Eptesicus serotinus*, Daubenton's *Myotis daubentonii*, Leisler's *Nyctalus leisleri*, Noctule *Nyctalus noctule*, Nathusius's Pipistrelle *Pipistrellus nathusii*, Common Pipistrelle *Pipistrellus pipistrellus*, Soprano Pipistrelle *Pipistrellus pygmaeus* and Brown Long-eared *Plecotus auratus*) as records in the ecological data search.

13.88. The northern boundary wall inspection was undertaken on 4th October 2021 in overcast conditions but in the absence of rain. In summary (full results **Appendix 13.2**) no roosting bats were recorded in the fifteen PRFs inspected on both the interior and exterior of the wall (Site and river side).

13.89. The evening emergence surveys at the buildings, walls (both the northern boundary wall where the PRFs could not be fully inspected as part of the northern boundary wall inspection and at the Boundary wall) and trees were undertaken as detailed in **Table 13.2** below.

Table 13.2: Summary of Evening Emergence Bat Surveys

| Survey | Date | Sunset Time | Time Start / End (GMT+1) | Wind (Beaufort) | Cloud Cover (Oktas) | Temp Start / End (°C) |
|---------------------------------------|------------|-------------|--------------------------|-----------------|---------------------|-----------------------|
| Evening emergence (B8, T75, T43, T44) | 04/10/2021 | 18:33 | 18:18/ 20:03 | 0 | 7/8 | 13/ 13 |
| Evening emergence (B9, B10, B3, B1) | 05/10/2021 | 18:31 | 18:16/ 20:01 | 3 | 8/8 | 13/ 12 |

| Survey | Date | Sunset Time | Time Start / End (GMT+1) | Wind (Beaufort) | Cloud Cover (Oktas) | Temp Start / End (°C) |
|--|------------|-------------|--------------------------|-----------------|---------------------|-----------------------|
| Evening emergence (T71, T68, T67, B14) | 07/10/2021 | 18:24 | 18:09/ 19:54 | 1 | 8/8 | 20/ 18 |
| Evening emergence (B12, T78, T83, tree group G115) | 11/10/2021 | 18:15 | 18:00/ 19:45 | 1 | 2/8 | 15/ 10 |
| Evening emergence (Boundary wall) | 14/10/2021 | 18:10 | 17:55/ 19:40 | 1 | 5/8 | 15/ 13 |
| Evening emergence (northern boundary wall at PRA 10a, 10b and 13, tree group G115) | 19/10/2021 | 18:00 | 17:45/ 19:30 | 1 | 8/8 | 19/ 18 |

13.90. In summary, (full results **Appendix 13.2**) no roosting bats were recorded emerging or re-entering the buildings, walls and trees surveyed. However, incidental records of low numbers of both foraging and commuting bats were made. The species recorded included common, soprano and nathusius pipistrelle, long-eared (assumed to be brown given the Sites location), myotis species and noctule bats.

13.91. These survey results are consistent with the full suite of bat surveys undertaken for roosting bats in 2019 as part of the 2018 Planning Applications. The surveys in 2019 recorded no roosting bats at the walls (both northern boundary wall and boundary wall) and the trees on Site. However, a soprano pipistrelle day roost was recorded at building B8 (The Maltings), where a single soprano pipistrelle bat was observed emerging from a gap within a boarded-up window on the second floor of the northern side of the building. Although no roosting bats were recorded as part of the survey in October 2021 at building B8, a precautionary approach is taken, and this building is still assessed to be a roosting site for soprano pipistrelles.

13.92. Given building B8 is still assessed to be a day roost for low number of soprano pipistrelle bats the Site is assessed to be of **Local** value to roosting bats.

Foraging and commuting bats

13.93. The bat activity survey was undertaken on the 4th October 2021 as detailed in **Table 13.3**.

Table 13.3: Summary of Bat Activity Surveys

| Survey | Date | Sunset Time | Time Start / End (GMT+1) | Wind (Beaufort) | Cloud Cover (Oktas) | Temp Start / End (°C) |
|------------------|------------|-------------|--------------------------|-----------------|---------------------|-----------------------|
| Evening Transect | 04/10/2021 | 18:32 | 18:51/ 21:19 | 0 | 5/8 | 14 / 11 |

13.94. The survey recorded a total of 61 bat passes along the transect route. Of these, 54 passes were by soprano pipistrelle bats, 1 by long-eared bat (assumed to be brown given the Sites location)

and 6 by common pipistrelle bats (refer to **Figure 13.5**). The first bat call recorded was of a soprano pipistrelle at 19:01 (29 minutes after sunset) which was heard but not seen.

13.95. The automated detector surveys were undertaken as detailed in **Table 13.4** below.

Table 13.4: Summary of Bat Automated Surveys

| Survey Month | Date | Sunset Time | Max Wind speed (mph) | Rain (inches) | Average Day Temp °C |
|--------------|------------|-------------|----------------------|---------------|---------------------|
| October 2021 | 04/10/2021 | 18:33 | 13 | 0 | 14 |
| | 05/10/2021 | 18:31 | 23 | 1.3 | 13 |
| | 06/10/2021 | 18:28 | 8 | 0 | 14 |
| | 07/10/2021 | 18:24 | 4 | 0 | 15 |
| | 08/10/2021 | 18:21 | 9 | 0 | 16 |

13.96. The automated detector survey recorded a total of five confirmed bat species. The majority of the recordings were made by common and soprano pipistrelle bats. Long eared (assumed to be brown given the Site's location), noctule, nathusius' pipistrelle and myotis bats were also recorded.

13.97. A summary of the number of passes recorded by each species during each automated bat detector survey is provided in **Table 13.5** below.

Table 13.5: Results of Supplementary Automated Surveys

| Automated Detector Location | Recording Period and Location | Common Pipistrelle | Soprano Pipistrelle | Nathusius' Pipistrelle | Noctule | Brown Long Eared | Nyctalus Species | Myotis Species | Total no. of Bat Passes |
|---|-------------------------------|--------------------|---------------------|------------------------|---------|------------------|------------------|----------------|-------------------------|
| Detector located on top of the northern boundary wall adjacent to the River Thames under the Budweiser sign at grid reference TQ 2044276093 | 04/10/2021 – 08/10/2021 | 511 | 576 | - | 3 | 1 | 1 | 2 | 1095 |

| Automated Detector Location | Recording Period and Location | Common Pipistrelle | Soprano Pipistrelle | Nathusius' Pipistrelle | Noctule | Brown Long Eared | Nyctalus Species | Myotis Species | Total no. of Bat Passes |
|--|-------------------------------|--------------------|---------------------|------------------------|----------|------------------|------------------|----------------|-------------------------|
| Detector located on top of the northern boundary wall adjacent to the River Thames to the east of the Site at grid reference TQ20633760 25 | 04/10/2021 | - | - | - | - | - | - | - | - |
| | 08/10/2021 East | 139 | 99 | 1 | 5 | - | 1 | 1 | 246 |
| Detector located to the west of the Site and on a tree at grid reference TQ20300761 12 | 04/10/2021 | - | - | - | - | - | - | - | - |
| | 08/10/2021 West | 56 | 42 | - | 1 | 1 | 1 | - | 101 |
| Total | | 706 | 717 | 1 | 9 | 2 | 3 | 3 | 1441 |

13.98. Given the results of the bat activity surveys undertaken it is assessed that the habitats at the Site and adjacent to (i.e. the River Thames) to the northern boundary of the Site are used by urban bat species typically associated to be non-light sensitive. It is noted that species including long-eared, noctule, Nyctalus species and myotis species were also recorded however these were in very low numbers (under 10 passes as a result of the automated detector results). The results of the bat activity and automated survey has demonstrated that bat activity is low at the Site and adjacent to the northern boundary of the Site. Nonetheless, bat species were recorded in good diversity with five identified to species level. Due to this diversity foraging and commuting bats at the Site (but specifically at the northern boundary of the Site adjacent to the River Thames) are therefore assessed to be of **District** value.

13.99. These survey results are consistent with the full suite of bat surveys undertaken for foraging and commuting bats in 2019 as part of the previous 2018 Planning Applications. These surveys observed a similar species abundance and a similar level of activity.

Birds

- 13.100. As a result of the PEA (**Appendix 13.1**) numerous bird records were returned from the ecological data search within 2km of the Site, with the most recent records of reed bunting, herring gull, common tern, swift, pochard and song thrust in 2020 and tawny owl in 2021.
- 13.101. The black redstart survey undertaken in 2016 determined that this species was absent from the Site. During the survey 33 other species of bird were recorded on, adjacent to or overflying the Site (during the five surveys undertaken). Of these, 22 species were recorded on the Site itself (excluding species seen flying over the Site only). These included three species that are classified as BTO Conservation Red Listed; herring gull, grey wagtail *Motacilla cinerea* and common starling, and three species that are BTO Conservation Amber Listed; black-headed gull *Chroicocephalus ridibundus*, lesser black-backed gull *Larus fuscus* and stock dove *Columba oenas*.
- 13.102. Two SoPI listed birds were recorded on the Site itself; herring gull and common starling with two further SoPI species, dunnock and song thrush, being recorded outside the Site boundary. Common kingfisher *Alcedo atthis* (Schedule 1 and Annex 1) and common tern *Sterna hirundo* (Annex 1) were recorded outside the Site, along the River Thames. A single RBAP species, song thrush, was recorded adjacent to the Site. Three species were recorded breeding on Site (carrion crow, feral pigeon and grey wagtail all a single breeding pair).
- 13.103. During the PEA (**Appendix 13.1**) bird prevention spikes and netting were recorded to be present at numerous locations at buildings across the Site making them unsuitable for nesting birds. However, the areas of the buildings where bird prevention measures are absent and access to the interior of buildings is available, offer opportunities for nesting birds, most likely common species such as feral pigeon *Columba livia*. The building roofs also offer nesting opportunities for species of gull.
- 13.104. A number of other exterior structures associated with the former brewing activities within the Site are present, including tanks, vessels, storage containers, forecourt structures and loading bays. These structures are also considered to offer limited nesting potential for these species. Furthermore, the trees and ornamental planting also offer potential foraging and nesting opportunities for common urban/garden species.
- 13.105. The data search returned three non-confidential records of black redstart within 2km of the Site, with the closest record located 1.8km (1999) east of the Site.
- 13.106. Black redstart is a species fully protected under Schedule 1 of the WCA and is the subject of a SAP in the LES. It is considered that the majority of the existing buildings at the Site still offer limited suitable nesting habitat for black redstarts owing to their structure. Bird prevention spikes and netting were observed at numerous locations at buildings across the Site, making them unsuitable for nesting birds. Areas of wasteland vegetation, usually typical of brownfield sites, are the optimal foraging habitat for black redstarts. The sparse patches of ephemeral vegetation / gravel present at the Site are not considered extensive enough to provide suitable foraging habitat for black redstart. However, the River Thames which lies adjacent to the northern boundary of the Site is known to be an important habitat corridor for black redstarts in London.

- 13.107. Given the results of the PEA (**Appendix 13.1**) which demonstrates that the habitats have not significantly altered since the black redstart survey was undertaken, and that no new records for black redstart were returned in the data search, it is considered highly unlikely that black redstarts would currently be present on Site.
- 13.108. The data search returned 5 confidential records of peregrine falcon *Falco peregrinus* within 2 km of the Site. Given the confidential nature of the records, the London Peregrine Partnership (LPP) was contacted on 28th September 2021 to determine if they are aware of any records of breeding peregrines (or other records) in the local area (2km). The LPP responded on the same day and detailed that there are no records of breeding pairs in the local area, either recent or historical. In addition, the LPP also stated that there are records of a pair roosting on Saint Matthias Church (2.5km to the south west of the Site) during the past few years, and sightings this year of at least one bird on Holy Trinity Church (2km to the south west of the Site). In addition, a nesting tray has now been installed at St Matthias, but it has not yet been made use of.
- 13.109. Peregrine falcon is a species fully protected under Schedule 1 of the WCA and is the subject of a SAP in the RBAP and is listed on the LES. Peregrines breed on tall buildings (typically 20m-200 m above ground level^b) which have suitable ledges for nesting.
- 13.110. Although tall buildings exist on-Site, the majority of these buildings are of simple warehouse style construction and as such lack any suitable ledges for nesting peregrines. However, building B8 (The Maltings) is approximately 18-20 m in height and a tower associated with B13 is approximately 30-35m in height that provide suitable opportunities for peregrines.
- 13.111. On 4th October 2021 a single peregrine falcon was heard calling from the direction of building B2 during the day and then during an evening emergence survey on the same day at building B8, a single peregrine falcon was observed entering the south west corner (7 storeys high). The bird was recorded entering building B8 through a gap in the wooden boarding 20 minutes post sunset, just as light was fading. The bird was not observed to have re-emerged from the building for the remainder of the bat survey by any of the four surveyors that surrounded the building. It is assessed that given this is the only evidence / sighting of peregrine falcon at the Site during a six-year period (when ecologists have been on Site undertaking various surveys in support of the previous planning applications) and given the results of the data search, as extended through consultation with London Peregrine Partnership, that the peregrine recorded entering building B8 has only recently started to roost at the Site and it is unlikely that a breeding pair have taken residence.
- 13.112. The general bird usage on Site with only three species recorded to be breeding is assessed to be of **Site** value. However, due to the presence of the recorded roosting peregrine on Site (single bird), the Site is assessed to be of **Local** value to birds.

^b Dixon, D & Shawyer, C. Peregrine Falcons: Provision of artificial nest sites on built structures. Advice note for conservation organisations, local authorities and developers.

Terrestrial Invertebrates

- 13.113. During the PEA (**Appendix 13.1**) numerous invertebrate species records were returned from the ecological data search from within 2km of the Site.
- 13.114. The ornamental planting and trees recorded on Site are likely to offer opportunities for common species of invertebrates. However, owing to the extent of these habitats and species diversity recorded, it is considered unlikely that they would support any large populations or notable species assemblages.
- 13.115. Terrestrial invertebrates are assessed to be of **Site** value.

Baseline conditions summary

- 13.116. In summary, the ecological features either scoped in to (and therefore qualifying as IEFs) or out of this assessment are detailed in **Table 13.6**.

Table 13.6: Ecological Features Scoped in / out of the Assessment

| Ecological Feature | Geographical Scale | Scoped In or Out? |
|---|--------------------|--|
| Statutory Designated Sites (Richmond Park SAC and Wimbledon Common SAC) | European | In |
| Statutory Designated Sites (Richmond Park NNR and SSSI) | National | In |
| Non-Statutory Designated Sites (River Thames and Tidal Tributaries SMI) | Regional | In |
| Non-Statutory Designated Sites (Kew Meadow Path SBI) | District | In |
| Non-Statutory Designated Sites (North Sheen and Mortlake Cemeteries SLI and Old Mortlake Burial Ground SLI) | Local | In |
| Buildings | Negligible | Out |
| Hardstanding | Negligible | Out |
| Bare ground | Negligible | Out |
| Wall | Site | Out |
| Fence | Negligible | Out |
| Ornamental Planting | Site | Out |
| Trees | Site | Out |
| Amenity Grassland | Site | Out |
| Hedgerows | Site | Out |
| River Thames | Regional | In (assessed under Non-Statutory Designated Sites) |

| Ecological Feature | Geographical Scale | Scoped In or Out? |
|-------------------------------|--------------------|-------------------|
| Roosting Bats | Local | In |
| Foraging and Commuting Bats | District | In |
| Birds (Peregrine Falcon Only) | Local | In |
| Terrestrial Invertebrates | Site | Out |

Limitations

- 13.117. At the time of the UK Hab field survey undertaken to inform the PEA, no internal PRAs were possible at the buildings on Site due to the presence of Asbestos Containing Materials (ACMs). However, this is not assessed to be a significant constraint given the historical knowledge of the Site on bats from the extensive survey work undertaken in 2016/2017 and 2019 as part of previous planning applications.
- 13.118. Due to the programme of the proposed planning application (following the receipt of refusal decisions in August 2021) only a reduced level of further ecological surveys for bats (based on the results of the PEA) could be undertaken at the Site in the remaining survey period in 2021 as part of the Protected Species Report (**Appendix 13.2**). However, and given the historical ecological survey work undertaken at the Site over a 6 year period dating back to 2016, as detailed in Table 1 of **Appendix 13.1** and **13.2**, it is assessed that a robust ecological baseline has been established and this is, therefore, not a significant constraint to this planning submission. In addition, it is proposed that if a period of greater than 18 months from the time of the bat surveys in 2021 were undertaken (as detailed in this Chapter and **Appendix 13.2**) and the commencement of Site preparation and construction/refurbishment works, further update surveys will be undertaken as agreed with LBRuT, as conditions at the Site and therefore its utilisation by bats may have changed. The results of any further update bat surveys may also be required to determine if any amendments are necessary to the mitigation measures currently proposed. In addition, further update bat surveys at confirmed roost sites (building B8) will be required to inform Natural England licencing requirements (approved licencing required to legally destroy bat roosts as a result of the proposed Development) prior to the commencement of the Works.
- 13.119. The northern boundary wall inspections undertaken as part of the Protected Species Report (**Appendix 13.2**) were undertaken as an alternative method to evening emergence/pre-dawn re-entry surveys. This was due to the associated number of surveyors that would be required to ensure full survey coverage due to the number of PRFs recorded. However, where a full endoscope inspection of a PRF could not be undertaken, an evening emergence/pre-dawn re-entry survey was undertaken to ensure a robust survey approach was undertaken.
- 13.120. As part of the Protected Species Report (**Appendix 13.2**), no bat activity surveys were undertaken with regard to the area at Chalkers Corner. This is due to the high level of associated street lighting present within this area and, therefore, any associated bat activity is likely to be on an infrequent and opportunistic basis from common species of bats adapted to urban environments. As such, it is considered that any adverse effects upon foraging and commuting bats as result to Section 278 (S278) highways works to Chalkers Corner would be not significant.

- 13.121. As part of the Protected Species Report (**Appendix 13.2**) limitations and assumptions of the bat call analysis have been detailed including the classification of a bat pass and the analysis of bat call to family and or species level.
- 13.122. No update bird surveys have been undertaken at the Site. However, this is not assessed to be necessary to the current planning applications. This is due to the finding of the bird (black redstart) survey in 2016, that the habitats on Site have not significantly altered as recorded in the PEA (**Appendix 13.1**) and as no new significant bird records were returned in the data search (within the Zol of the proposed Development). In addition, and specific to peregrine falcon although a single bird was recorded to be roosting at building B8 (The Maltings) no additional surveys are assessed to be required to determine the usage of the Site for this species. The assessment that only a single roosting bird is present is robust due to the results of the data search as extended through consultation with the LPP and that no other evidence/sightings of peregrine falcon have been recorded at the Site during a six year period.

Impact Assessment

Demolition and Construction

- 13.123. During the demolition and construction phase, the assessment considers potential direct and indirect effects brought about by the Development as a result of:
- Habitat loss;
 - Disturbance; and
 - Pollution events.

Completed Development

- 13.124. During the completed phase, the assessment considers potential direct and indirect effects brought about from the Development as a result of:
- Habitat provision;
 - Disturbance;
 - Pollution events; and
 - Overshadowing.

Assessment of Likely Significant Effects

The Works

Statutory Designated Sites

Richmond Park SAC, NNR, SSSI and Wimbledon Common SAC

Direct and Indirect Effects

- 13.125. During the demolition and construction phase of the proposed Development no significant effects (direct or indirect) are anticipated to both SACs the NNR and SSSI.
- 13.126. This is consistent with the formal EIA scoping response received on the 30th June 2017 as part of the 2018 Planning Applications. As part of this response both LBRuT and NE stated that the proposed Development is unlikely to affect statutory designated sites as based on the proposed Development information provided or the proposed Development Site being outside of the geographical 'buffer' area within which developments are likely to affect designated sites.
- 13.127. It is noted that NE go on to state that due to the specific nature of a development proposal impacts can arise at a greater distance than is encompassed by NE's buffers, however given that the proposed Development as part of this planning application is still for a residential mixed use development and that the scale is similar the need for any additional assessment of effects is not required.
- 13.128. As such, the likely effect would be **not significant**.

Non-Statutory Designated Sites

River Thames and Tidal Tributaries SMI, Kew Meadow Path SBI, North Sheen and Mortlake Cemeteries SLI and Old Mortlake Burial Ground SLI

Direct Effects

- 13.129. During the demolition and construction phase of the proposed Development three drainage connections are to be made, through existing or new outfalls, to the River Thames (and so the River Thames and Tidal Tributaries SMI). The habitat in the location of the proposed outfalls at the riverbank is heavily modified, being reinforced by stone and concrete and as such no significant effects to the SMI are anticipated.
- 13.130. The three surface water outfalls are proposed to facilitate drainage of surface waters from the northern areas of the Site, which currently drain into the River Thames (refer to **Chapter 12: Surface Water Drainage and Flood Risk** for further information). These may use existing outfalls or be newly constructed, or a combination of these approaches, the new connections are to be provided to enable attenuation of flows and pollution control measures to be incorporated. Further details will be provided as the detailed drainage design is developed, and it is anticipated that a condition requiring details of outfalls shall be attached to any planning consent to ensure the outfalls result in insignificant impacts to the River Thames.

13.131. The boundary of the S278 works (to improve the Chalkers Corner Junction) encroaches into the adjacent North Sheen and Mortlake Cemeteries SLI, however, the Works will be confined to the existing B306 Lower Richmond Road and as such no significant effects to the SLI are anticipated.

13.132. As such, the likely effect would be **not significant**.

Indirect Effects

13.133. During the demolition and construction phase of the proposed Development, indirect effects are anticipated at the River Thames and Tidal Tributaries SMI located directly adjacent to the Sites northern boundary and North Sheen and Mortlake Cemeteries SLI. The remaining non-statutory Sites are assessed to be too far removed for the Site in an urban environment to be subject to any indirect effects as a result of the proposed Development.

13.134. There would potentially be an increase in dust, noise pollution, and vibration from demolition and construction activities (refer to **Chapter 9: Noise and Vibration** and **Chapter 10: Air Quality**) which has a low risk of disturbing faunal species and coating plant leaves within the adjacent River Thames and Tidal Tributaries SMI and the adjacent North Sheen and Mortlake Cemeteries SLI. In addition, there could be an increase in light spill from temporary artificial lighting installed to facilitate the Works.

13.135. As detailed in **Chapter 11: Ground Conditions and Contamination** and **Chapter 5: The Proposed Development**, the new flood wall would be formed within the north of the Site. This would comprise a sheet pile wall extending to -1m Above Ordnance Datum (AOD). Such intrusive works may mobilise contamination in the made ground and create a pollutant pathway for contaminants to migrate to and impact the SMI. The risk to the River Thames and Tidal Tributaries SMI is therefore increased due to piling works for the flood wall works, in comparison to activities undertaken within the wider Site. In addition, the construction of the three outfalls may also cause pollution events.

13.136. In the absence of mitigation, indirect effects such as dust, noise, vibration, surface water run-off and lighting may occur during the Works. The likely significant effect to the River Thames and Tidal Tributaries SMI and North Sheen and Mortlake Cemeteries SLI would be **Adverse** and at a **Significant** level.

Roosting Bats

Direct Effects

13.137. The Works have the potential to directly impact upon the bat roost present within the building B8 (the Maltings) which could result in the destruction of the roost. The likely significant effect to roosting bats would be **Adverse** and at a **Significant** level.

Indirect Effects

13.138. Prior to the potential destruction of the roost, the roost present within building B8 (The Maltings) also has the potential to be indirectly affected by the Works, through effects such as noise, dust arisings, vibration and lighting. The likely significant effect to roosting bats would be **Adverse** and at a **Significant** level.

Foraging and Commuting Bats

Direct Effects

- 13.139. Bats using the Site and the northern boundary of the Site and directly adjacent to the River Thames for foraging and commuting are considered unlikely to be directly affected during the Works. The works to facilitate the connection of outfalls will be minimal in area and whilst some pruning of understorey vegetation (tree line along the towpath) will be undertaken to open key views, the works are minimal and would not have a significant effect on bats. The loss of habitats within the remainder of the Site would not adversely impact bats given their limited value to the species. As such, the likely effect would be **not significant**.

Indirect Effects

- 13.140. In the absence of mitigation, indirect effects to foraging and commuting bats along the River Thames including disturbance via increased noise and vibration, and lighting is likely to occur given the works to the northern boundary wall and the new outfalls. Whilst it is proposed that the works would be undertaken during daylight hours and therefore unlikely to affect bats, should night-time working be required, the effects of this would be **Adverse** and at a **Significant** level.

Birds (Peregrine Falcon Only)

Direct Effects

- 13.141. The Works have the potential to directly impact upon peregrine falcon roost (used by a single bird) present within building B8 (the Maltings) which could result in the destruction of the roost. The likely significant effect to peregrine falcon would be **Adverse** and at a **Significant** level.

Indirect Effects

- 13.142. The peregrine falcon present within building B8 (the Maltings) also has the potential to be indirectly affected by the Works, through effects such as noise, dust arisings, vibration and lighting. The likely significant effect to peregrine falcon would be **Adverse** and at a **Significant** level.

Completed Development

Statutory Designated Sites

Richmond Park SAC, NNR, SSSI and Wimbledon Common SAC

Direct and Indirect Effects

- 13.143. During the completed phase of the proposed Development no effects (direct or indirect) are anticipated on both the SACs, NNR and SSSI.
- 13.144. As detailed above, the assessment of no (direct or indirect) effects is consistent with the formal EIA scoping response received on the 30th June 2017 as part of the 2018 Planning Applications. As part of this response both LBRuT and NE stated that the proposed Development is unlikely to affect statutory designated sites based on the proposed Development information provided and /

or the proposed Development Site is located outside of the geographical 'buffer' area within which developments are likely to affect designated sites.

- 13.145. It is noted that NE go on to state that due to the specific nature of a development proposal's impacts can arise at a greater distance than is encompassed by NE's buffers, however, given that the proposed Development remains as a residential mixed use development and that the scale is similar, the need for any additional assessment of effects is not required.
- 13.146. As such, the likely effect would be **not significant**.

Non-Statutory Designated Sites

River Thames and Tidal Tributaries SMI, Kew Meadow Path SBI, North Sheen and Mortlake Cemeteries SLI and Old Mortlake Burial Ground SLI

Direct Effects

- 13.147. The completed phase of the proposed Development is not anticipated to affect the non-statutory sites. As such, the likely effect would be **not significant**.

Indirect Effects

- 13.148. During the completed phase of the Development, the River Thames and Tidal Tributaries SMI could potentially be adversely impacted by increased public disturbance as a result in a change in surrounding land use. However, the River Thames is already well used for recreational purposes, including heavy usage of boat adjacent to the northern boundary of the Site, and as such the effect is considered to be insignificant. Furthermore, the provision of green space within the Development design would provide amenity space for the future residents.
- 13.149. As detailed in the indicative lighting strategy prepared by Michael Grub Studio (submitted as a standalone document in support of the planning applications), the proposed river terrace would be subject to low level lighting. High level lighting has been avoided in this part of the Site so that light spill upon the River Thames and Tidal Tributaries SMI is avoided. A small amount of lighting would be installed to illuminate the steps that lead down to the towpath for safety reasons. The internal lighting for the buildings fronting the river has not been designed at this stage. The uses on ground floor are flexible with residential uses on upper floors. The final lighting design will be mindful of light spill to the river with lighting designed in compliance with the guidance published by the Institute of Lighting Professionals (ILP). Furthermore, the floodlighting for the proposed sports pitch would be suitably controlled and be located sufficiently far from any designated sites to have a significant effect.
- 13.150. As detailed in **Chapter 18: Daylight, Sunlight, Overshadowing and Light Pollution**, the results of the sunlight amenity assessment has shown that all amenity areas surrounding the Site would experience direct sunlight across more than 50% of their area for 2 hours or more on the 21st of March or see a reduction of less than 20% from the existing level. The Development does cause some shadow to the towpath, however, it should be noted that the existing buildings on Site already cause a level of overshadowing in the afternoon. The buildings within the proposed Development (East of Ship Lane) have been designed to have gaps facing onto the towpath in

order to allow a good level of direct sunlight to penetrate. As such, levels of overshadowing would be less than in the baseline condition at specific times during the day.

13.151. As detailed in **Chapter 11: Ground Conditions and Contamination**, the proposed Development does not propose any land uses that would be classified as hazardous. In addition, the drainage system would be designed to incorporate drainage solutions such as interceptors, filters or silt traps to avoid the discharge or any fuels or oils associated with the three proposed surface water drainage outfalls to the River Thames (refer to **Chapter 12: Water Resources and Flood Risk**). Such inherent design features of the Development would likely reduce the silt and oil deposition into the River Thames when compared to the existing situation.

13.152. As such, the likely effect would be **not significant**.

Roosting Bats

Direct Effects

13.153. The completed Development is not anticipated to have a direct impact on roosting bats as the bat roost present within building B8 (the Maltings) would have been removed.

13.154. As detailed in **Chapter 5: The Proposed Development**, artificial bat roosting habitats would be provided in the proposed Development, as embedded mitigation inherent to the scheme design. The Site would include a minimum of ten bat boxes.

13.155. In view of the above, the completed Development would have a **beneficial** effect on roosting bats.

Indirect Effects

13.156. The ten bat boxes will be located in close proximity to the River Thames (commuting and foraging resource) where lighting levels will be controlled by the indicative lighting strategy as detailed above.

13.157. As such, the likely effect would be **not significant**.

Foraging and Commuting Bats

Direct Effects

13.158. The completed Development is not anticipated to have a direct impact on existing foraging and commuting bats using the northern boundary of the Site given the retention of trees along the tow path at this part of the Site.

13.159. As detailed in **Chapter 5: The Proposed Development**, soft landscaping would be provided in the Development, as embedded mitigation inherent to the scheme design, which would provide enhanced opportunities at the Site for foraging and commuting bats. The Site would include:

- up to 405 new trees and up to 99 individual and 3 tree groups retained;
- hedge planting (1.5 m high) enclosing all ground level residential courtyards east of Ship Lane;
- provision of new trees including the use of native species, or species of benefit to wildlife. This includes planting in areas close to the river edge responding to existing riverside vegetation and grove trees located in the community park south of the proposed school;
- provision of biodiversity roofs, including a mix of green and brown roofs; and

- a green link connecting the River Thames and Mortlake Green.

13.160. In view of the above, the completed Development would have a **beneficial** effect on foraging and commuting bats.

Indirect Effects

13.161. As detailed above, light spill upon the River Thames would be avoided given the scheme design (retention of the trees along the towpath and the landscape design as detailed above), a sensitive lighting strategy, and distance of the proposed floodlighting for the sports pitch. Both the existing sports field and proposed sports pitch hold little habitat value for bats, particularly given the proposed sports pitch would be made of artificial grass. The proposed floodlighting at this location would, therefore, not result in a significant effect on bats. Given the nature of commuting and foraging bats, it is highly likely that commuting and foraging bats are already commuting between various highly lit areas and are, therefore, well adapted to artificially lit environments. The results of the bat surveys undertaken assessed that the habitats at the Site and along the River Thames, adjacent to the northern boundary of the Site, are used by low numbers of urban bat species typically associated to be non-light sensitive (excluding long-eared and myotis species).

13.162. The likely significant effect to foraging and commuting bats is **not significant**.

Birds (Peregrine Falcon Only)

Direct and Indirect Effects

13.163. The peregrine falcon roost (used by a single bird) present within building B8 (the Maltings) would have been removed. As such, the likely effect would be **not significant**

Mitigation Measures and Likely Residual Effects

The Works

Statutory Designated Sites

Richmond Park SAC, NNR, SSSI and Wimbledon Common SAC

Direct Effects

13.164. As no direct effects are anticipated at the demolition and construction phase, mitigation is not required, and the residual effect remains **not significant**.

Indirect Effects

13.165. As no indirect effects are anticipated at the demolition and construction phase, mitigation is not required, and the residual effect remains **not significant**.

Non-Statutory Designated Sites

River Thames and Tidal Tributaries SMI, Kew Meadow Path SBI, North Sheen and Mortlake Cemeteries SLI and Old Mortlake Burial Ground SLI

Direct Effects

- 13.166. As no direct effects are anticipated at the demolition and construction phase, mitigation is not required, and the residual effect remains **not significant**.

Indirect Effects

- 13.167. A Construction Environmental Management Plan (CEMP) would be produced to ensure appropriate environmental controls to protect the River Thames and Tidal Tributaries SMI and North Sheen and Mortlake Cemeteries SLI from dust, noise, vibration, surface water run-off and lighting. As detailed within **Chapter 6: Development Programme, Demolition, Alteration, Refurbishment and Construction**, such protective measures would include:
- the Contractor would minimise disturbance to the River Thames and Tidal Tributaries SMI by minimising noise and dust arisings through the use of environmental screens, water jet suppression, dust monitoring devices and other best working practices;
 - no waste materials, including silt laden drainage and spillages, hazardous / contaminated materials, chemicals or fuels shall be allowed to enter the River Thames and Tidal Tributaries SMI through measures such as the use of appropriately tanked and bunded storage areas;
 - all construction lighting would be aimed towards the centre of the Site to minimise light spill towards the adjacent River Thames and Tidal Tributaries SMI.; and
 - The appropriate and legal removal of the Himalayan balsam Thames (refer to **Figure 13.1** and **Appendix 13.1**) and other invasive plant species, as listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended), that have been recorded, or are otherwise encountered on Site during the Works.
- 13.168. With the implementation and adherence to the measures to be detailed in the CEMP, the likely residual effects on non-statutory designated sites during the Works would be **not significant**.

Roosting Bats

Direct Effects

- 13.169. In order to ensure the requirements of legislation are met, and as a requirement of the CEMP, a Natural England European Protected Species (EPS) Licence would be submitted to and approved by Natural England prior to any works which could impact on the roost. Updated surveys (between May and August) will be undertaken at building B8 (the Maltings) to inform the licence application as only a single survey could be undertaken in October 2021 in support of this licence application. As part of the licence a Method Statement would set out the sensitive working methodologies required that will be overseen by an Ecological Clerk of Works (licence holder or accredited agent) to allow for roost destruction.

13.170. The residual effect would remain **Adverse** and at a **Significant** level as replacement roost mitigation will not be provided until the completed development.

Indirect Effects

13.171. Measures to avoid light spill and minimise noise along the northern boundary of the Site adjacent to the River Thames would be set out within the CEMP (as detailed above and in **Chapter 6: Development Programme, Demolition, Alteration, Refurbishment and Construction**) to ensure appropriate environmental controls are set in place to protect the roost from any indirect effects associated with the Works.

13.172. The residual effect to bats would therefore be **not significant**.

Foraging and Commuting Bats

Direct Effects

13.173. As no direct effects are anticipated at the demolition and construction phase, mitigation is not required, and the residual effect remains **not significant**.

Indirect Effects

13.174. Specifications for external lighting controls would be set out in the CEMP (as detailed above and in **Chapter 6: Development Programme, Demolition, Alteration, Refurbishment and Construction**). Lighting during the demolition and construction works would be designed with consideration to the commuting and foraging habitats along the northern boundary of the Site and adjacent to the River Thames, in order that light levels in these areas would be appropriately controlled. The CEMP would also include measures to minimise noise along the northern boundary of the Site and adjacent to the River Thames.

13.175. With the implementation of the mitigation listed above, the likely residual effects during the Works on foraging and commuting bats would be **not significant**.

Birds (Peregrine Falcon Only)

Direct Effects

13.176. As a requirement of the CEMP and in order to ensure compliance with all relevant legislation, building B8 (the Maltings) will be monitored (by an Ecological Clerk of Works who holds a Schedule 1 licence that includes peregrine falcons). A series of monitoring visits (including surveys at both ground level and at height subject to H&S issues) will be undertaken until it can be confirmed that the roosting peregrine is absent from the building. Works will then be undertaken at the building to block access point previously utilised. Monitoring will continue prior to the Works commencing at building B8 (the Maltings) to ensure the bird does not return to the roost site.

13.177. The residual indirect to peregrine falcon would remain **Adverse** and at a **Significant** level as replacement roost mitigation will not be provided until the Development is completed. A new

permanent roost site would be provided, the design, construction and location of this should be subject to condition, in order that appropriate stakeholder input can be incorporated.

Indirect Effects

- 13.178. As a precautionary approach and to avoid any potential disturbance events (given only a single peregrine falcon was recorded on site) the Works at the Site would be timed to commence outside of the main peregrine falcon breeding season (assessed to be between February / March when courtship intensifies to June when the young normally fledge).
- 13.179. The residual effect to peregrine falcon would therefore be **not significant**.

Completed Development

Statutory Designated Sites

Richmond Park SAC, NNR, SSSI and Wimbledon Common SAC

Direct Effects

- 13.180. The completed Development is considered to have no direct effects on the statutory designated sites, no mitigation is required. As such, the likely residual effect would remain **not significant**.

Indirect Effects

- 13.181. The completed Development is considered to have no indirect effects on the statutory designated sites, no mitigation is required. As such, the likely residual effect would remain **not significant**

Non-Statutory Designated Sites

River Thames and Tidal Tributaries SMI, Kew Meadow Path SBI, North Sheen and Mortlake Cemeteries SLI and Old Mortlake Burial Ground SLI

Direct Effects

- 13.182. As no direct effects are anticipated at the demolition and construction phase, mitigation is not required, and the residual effect remains **not significant**.

Indirect Effects

- 13.183. The embedded mitigation and inherent design of the proposed Development would avoid light spill on the River Thames and Tidal Tributaries SMI as well as reduce silt and oil deposition. The massing of the completed Development would also not result in any significant overshadowing effects on the River Thames and Tidal Tributaries SMI and towpath. Furthermore, the provision of green space within the proposed Development would provide amenity space for the future residents, alleviating pressure on the adjacent non-statutory sites. The likely residual effect on the River Thames and Tidal Tributaries SMI would therefore remain **not significant**.

Roosting Bats

Direct Effects

- 13.184. As embedded mitigation as part of the inherent design of the proposed Development would provide suitable roosting opportunities for bats in the form of 10 bat boxes, the residual effects remain **beneficial**.

Indirect Effects

- 13.185. The bat boxes will be located in close proximity to the River Thames (commuting and foraging resource) where lighting levels will be controlled by a lighting strategy to be approved. In addition, mitigation in the form of a Landscape and Environment Management Plan (LEMP), will be provided to ensure the boxes provided have the best possible chance of uptake. The LEMP will also ensure that measures are put in place for monitoring. The likely residual effects would remain as **not significant**.

Foraging and Commuting Bats

Direct Effects

- 13.186. As embedded mitigation as part of the inherent design of the proposed Development would provide soft landscape of value to foraging and commuting bats and avoid light spill on the River Thames the residual effects remain **beneficial**.

Indirect Effects

- 13.187. To ensure the permanence of the foraging and commuting habitats provided within the proposed Development in the long-term a Landscape and Environment Management Plan (LEMP) would be implemented.
- 13.188. Given the implementation of mitigation in the form of a LEMP, the residual effect (both direct and indirect) would remain as **not Significant**.

Birds (Peregrine Falcon Only)

Direct Effects

- 13.189. A peregrine falcon nest box will be incorporated into the proposed Development on the roof of the building B8 (the Maltings) after the refurbishment works have been completed. This would be subject to a suitably worded planning condition.
- 13.190. The likely residual effects would be **not significant**.

Indirect Effects

- 13.191. Mitigation in the form of a Landscape and Environment Management Plan (LEMP), will be provided to ensure the peregrine nesting box has the best possible chance of uptake. The LEMP will ensure no direct lighting of the box and that measure are put in place for monitoring.
- 13.192. The likely residual effects would remain as **not significant**.

Summary

13.193. **Table 13.6** summarises the likely significant effects, mitigation measures, and likely residual effects identified within this Chapter.

Table 13.6: Summary of Likely Significant Effects, Mitigation Measures and Likely Residual Effects

| Issue | Likely Significant Effect | Mitigation Measures | Likely Residual Effect |
|--|---------------------------|--|------------------------|
| The Works | | | |
| Statutory Designated Sites (Richmond Park SAC, Richmond Park NNR and SSSI and Wimbledon Common SAC) – Direct Effects. | Not Significant | No mitigation required. | Not Significant |
| Statutory Designated Sites (Richmond Park SAC, Richmond Park NNR and SSSI and Wimbledon Common SAC) – Indirect Effects. | Not Significant | No mitigation required. | Not Significant |
| Non-Statutory Designated Sites (River Thames and Tidal Tributaries SMI, Kew Meadow Path SBI, North Sheen and Mortlake Cemeteries SLI and Old Mortlake Burial Ground SLI) – Direct Effects. | Not Significant | No mitigation required. | Not Significant |
| Non-Statutory Designated Sites (River Thames and Tidal Tributaries SMI, Kew Meadow Path SBI, North Sheen and Mortlake Cemeteries SLI and Old Mortlake Burial Ground SLI) – Indirect Effects. | Adverse | Implementation of CEMP | Not Significant |
| Roosting Bats – Direct Effects. | Adverse | Implementation of CEMP (Approved Natural England EPS Licence). | Adverse |
| Roosting Bats – Indirect Effects. | Adverse | Implementation of CEMP | Not Significant |
| Foraging and Commuting Bats – Direct Effects. | Not Significant | No mitigation required. | Not Significant |
| Foraging and Commuting Bats – Indirect Effects. | Adverse | CEMP | Not Significant |
| Birds – Direct Effects. | Adverse | CEMP | Adverse |
| Birds – Indirect Effects. | Adverse | CEMP | Not Significant |
| Completed Development | | | |

| Issue | Likely Significant Effect | Mitigation Measures | Likely Residual Effect |
|--|---------------------------|--|------------------------|
| Statutory Designated Sites (Richmond Park SAC, Richmond Park NNR and SSSI and Wimbledon Common SAC) – Direct Effects. | Not Significant | No mitigation required. | Not Significant |
| Statutory Designated Sites (Richmond Park SAC, Richmond Park NNR and SSSI and Wimbledon Common SAC) – Indirect Effects. | Not Significant | No mitigation required. | Not Significant |
| Non-Statutory Designated Sites (River Thames and Tidal Tributaries SMI, Kew Meadow Path SBI, North Sheen and Mortlake Cemeteries SLI and Old Mortlake Burial Ground SLI) – Direct Effects. | Not Significant | No mitigation required. | Not Significant |
| Non-Statutory Designated Sites (River Thames and Tidal Tributaries SMI, Kew Meadow Path SBI, North Sheen and Mortlake Cemeteries SLI and Old Mortlake Burial Ground SLI) – Indirect Effects. | Not Significant | No mitigation required. | Not Significant |
| Roosting Bats – Direct Effects. | Beneficial | Embedded mitigation inherent to the scheme design. | Beneficial |
| Roosting Bats – Indirect Effects. | Not Significant | Embedded mitigation inherent to the scheme design and LEMP. | Not Significant |
| Foraging and Commuting Bats – Direct Effects. | Beneficial | Embedded mitigation inherent to the scheme design. | Beneficial |
| Foraging and Commuting Bats – Indirect Effects. | Not Significant | Embedded mitigation inherent to the scheme design and LEMP. | Not Significant |
| Birds – Direct Effects. | Not Significant | Provision of peregrine nesting box, to be secured by planning condition. | Not Significant |
| Birds – Indirect Effects. | Not Significant | LEMP | Not Significant |

Monitoring

13.194. The LHMP would provide specifics for monitoring of the habitats and artificial features provided on Site during the complete and operation phase of the Development. An annual report would be provided specifying any remediation actions required.

References

- 1 Magic.defra.gov.uk. (2017); Magic. [online] Available at: <http://magic.defra.gov.uk/>
- 2 ODPM (2006); 'Natural Environment and Rural Communities Act (2006)'.
- 3 The London Biodiversity Partnership (2004); 'London Biodiversity Action Plan'.
- 4 London Borough of Richmond upon Thames (2019); 'Biodiversity Action Plan'.
- 5 Collins, J. (ed) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn). The Bat Conservation Trust, London. ISBN-13 978-1-872745-96-1
- 6 Collins, J. (ed) (2016); 'Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edition)'. The Bat Conservation Trust, London. ISBN-13 978-1-872745-96-1
- 7 Gilbert, G. (2011); 'Bird Monitoring Methods – A manual of techniques for key species'. RSPB.
- 8 CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.1. Chartered Institute of Ecology and Environmental Management, Winchester.
- 9 Natural England (2006): 'Natural Environment & Rural Communities (NERC) Act 2006'.