8. BIODIVERSITY

Introduction

8.1 This chapter of the ES assesses the likely significant effects of the Development on the environment in respect of biodiversity and ecology.

8.2 This chapter describes the legislative and policy framework; the assessment methodology; the baseline conditions at the Site and surroundings; the likely significant environmental effects; the mitigation measures required to prevent, reduce or offset any significant adverse effects; and the likely residual effects after these measures have been employed. It should be read in conjunction with the following reports and assessments:

- Preliminary Ecological Appraisal (PEA) Report (Appendix 8.1);
- Bat Survey Method Statement and Bat Survey Report (Appendix 8.2);
- Bird Survey Report (Appendix 8.3); and
- Biodiversity Impact Assessment Phase 1 (Appendix 8.4).

Policy Context

8.3 Where any development may have a direct or indirect effect upon ecology, there is a legislative and policy framework to ensure the proposals are considered with due regard for their impact to notable receptors. This section outlines the legislative framework, the national, regional and local planning policy and supplementary policy guidance/best practice that has been considered in this assessment.

National Planning Policy

National Planning Policy Framework[i]

8.4 The Government published a revised version of the National Planning Policy Framework (NPPF) in February 2019. Paragraph 170 of the NPPF states that "*Planning policies and decisions should contribute to and enhance the natural and local environment by:*

> *a) protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan);*

b) recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland."

8.5 Paragraph 170 of the revised NPPF also states that:

"*d) minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures."*

8.6 With regard to planning applications and biodiversity, Paragraph 175 of the NPPF states that:

"*When determining planning applications, local planning authorities should apply the following principles:*

a) 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;

b) 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;

c) 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

d) development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to incorporate biodiversity improvements in and around developments should be

encouraged, especially where this can secure measurable net gains for biodiversity."

8.7 In Paragraph 180, the revised NPPF advises that "*Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should: c) limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation*."

Regional Planning Policy

The London Plan: Spatial Development Strategy for Greater London[ii]

8.8 The London Plan is comprised of separate chapters relating to a number of areas, including London's Places, People, Economy and Transport. The following policies have been identified within the London Plan, which relate specifically to ecology and this Development.

Policy 2.18 Green Infrastructure

8.9 Policy 2.18 aims to *"protect, promote, expand and manage the extent and quality of, and access to, London's network of open and green spaces."*

Policy 5.10 Urban Greening

8.10 This policy encourages the *"greening of London's buildings and spaces and specifically those in central London by including a target for increasing the area of green space (including green roofs etc) within the Central Activities Zone."*

Policy 5.11 Green Roofs and Development Site Environs

8.11 Policy 5.11 specifically supports the inclusion of planting within developments and encourages boroughs to support the inclusion of green roofs.

Policy 5.13 Sustainable Drainage

8.12 Policy 5.13 promotes the inclusion of sustainable urban drainage systems in developments and sets out a drainage hierarchy that developers should follow when designing their schemes.

Policy 7.19 Biodiversity and Access to Nature

8.13 *"'The Mayor will work with all the relevant partners to ensure a proactive approach to the protection, enhancement, creation, promotion and management of biodiversity in support of the Mayors Biodiversity Strategy."*

The Draft New London Plan (Intend to Publish)

Policy G1 Green infrastructure

8.14 Policy G1 States:

A. "London's network of green and open spaces, and green features in the built environment should be protected and enhanced. Green Infrastructure should be planned, designed and managed in an integrated way to achieve multiple benefits.

B. Boroughs should prepare green infrastructure strategies that identify opportunities for cross-borough collaboration, ensure green infrastructure is optimised and consider green infrastructure in an integrated way as part of a network consistent with Part A.

C. Development Plans and area-based strategies should use evidence, including green infrastructure strategies, to:

1. identify key green infrastructure assets, their function and their potential function

2. identify opportunities for addressing environmental and social challenges through strategic green infrastructure interventions."

Policy G2 London's Green Belt

8.15 Policy G2 States:

A. "The Green Belt should be protected from inappropriate development:

1. development proposals that would harm the Green Belt should be refused

2. the enhancement of the Green Belt to provide appropriate multi-functional uses for Londoners should be supported."

Policy G5 Urban greening

8.16 Policy G5 States:

A. "Major development proposals should contribute to the greening of London by including urban greening as a fundamental element of site and building design, and by incorporating measures such as high-quality landscaping (including trees), green roofs, green walls and nature-based sustainable drainage.

B. Boroughs should develop an Urban Greening Factor (UGF) to identify the appropriate amount of urban greening required in new developments. The UGF should be based on the factors set out in Table 8.2, but tailored to local circumstances. In the interim, the Mayor recommends a target score of 0.4 for developments that are predominately residential, and a target score of 0.3 for predominately commercial development (excluding B2 and B8 uses)."

Policy G6 Biodiversity and access to nature

8.17 Policy G6 States:

A. Sites of Importance for Nature Conservation (SINCs) should be protected.

B. Boroughs, in developing Development Plans, should:

1. Use up-to-date information about the natural environment and the relevant procedures to identify SINCs and ecological corridors to identify coherent ecological networks 2) identify areas of deficiency in access to nature (i.e. areas that are more than 1km walking distance from an accessible Metropolitan or Borough SINC) and seek opportunities to address them

2. Support the protection and conservation of priority species and habitats that sit outside of the SINC network, and promote opportunities for enhancing them using Biodiversity Action Plans

3. Seek opportunities to create other habitats, or features such as artificial nest sites, that are of particular relevance and benefit in an urban context

4. Ensure designated sites of European or national nature conservation importance are clearly identified and impacts assessed in accordance with legislative requirements.

C. Where harm to a SINC is unavoidable, and where the benefits of the development proposal clearly outweigh the impacts on biodiversity, the following mitigation hierarchy should be applied to minimise development impacts:

1. *Avoid damaging the significant ecological features of the site*
2. *Minimise the overall spatial impact and mitigate it by improving the quality or management of the rest of the site*
3. *Deliver off-site compensation based on the principle of biodiversity net gain of better biodiversity value.*

D. Development proposals should manage impacts on biodiversity and aim to secure net biodiversity gain. This should be informed by the best available ecological information and addressed from the start of the development process.

E. Proposals which reduce deficiencies in access to nature should be considered positively.

Policy G7 Trees and woodlands

8.18 Policy G7 States:

A. London's urban forest and woodlands should be protected and maintained, and new trees and woodlands should be planted in appropriate locations in order to increase the extent of London's urban forest – the area of London under the canopy of trees.

B. In their Development Plans, boroughs should:

1. *protect 'veteran' trees and ancient woodland where these are not already part of a protected site*
2. *identify opportunities for tree planting in strategic locations*

C. Development proposals should ensure that, wherever possible, existing trees of value are retained. If planning permission is granted that necessitates the removal of trees there should be adequate replacement based on the existing value of the benefits of the trees removed, determined by, for example, i-tree or CAVAT or another appropriate valuation system. The planting of additional trees should generally be included in new developments – particularly large-canopied species which provide a wider range of benefits because of the larger surface area of their canopy.

Supplementary Planning Guidance (SPG): Sustainable Design and Construction 2014[iii]

8.19 As part of the London Plan 2011 implementation framework, the SPG, relating to sustainable design and construction, was adopted in April 2014 and includes the following sections detailing Mayoral priorities in relation to biodiversity of relevance to the Site.

Nature conservation and biodiversity

8.20 The Mayor's priorities include ensuring *"developers make a contribution to biodiversity on their development Site."*

Overheating

8.21 Where priorities include the inclusions of *"measures, in the design of schemes, in line with the cooling hierarchy set out in London Plan policy 5.9 to prevent overheating over the scheme's lifetime".*

Urban greening

8.22 A Priority is for developers to *"integrate green infrastructure into development schemes, including by creating links with wider green infrastructure network."*

Use less energy

8.23 *"The design of developments should prioritise passive measures' which can include 'green roofs, green walls and other green infrastructure which can keep buildings warm or cool and improve biodiversity and contribute to sustainable urban drainage".*

London Environment Strategy 2018[iv]

8.19 The Mayor's Environment Strategy was published in May 2018. This document sets out the strategic vision for the environment throughout London. Although not primarily a planning guidance document, it does set strategic objectives, policies and proposals that are of relevance to the delivery of new development in a planning context, including:

Objective 5.1 Make more than half of London green by 2050

8.20 Policy 5.1.1 Protect, enhance and increase green areas in the city, to provide green

infrastructure services and benefits that London needs now.

8.21 This policy states:

> *"New development proposals should avoid reducing the overall amount of green cover and, where possible, seek to enhance the wider green infrastructure network to increase the benefits this provides. […] New developments should aim to avoid fragmentation of existing green space, reduce storm water run-off rates by using sustainable drainage, and include new tree planting, wildlife-friendly landscaping, or features such as green roofs to mitigate any unavoidable loss."*

8.22 This supports the 'environmental net gain' approach promoted by government in the 25 Year Environment Plan.

8.23 Proposal 5.1.1.d of The London Plan includes policies to green streets and buildings, including increasing the extent of green roofs, green walls and sustainable drainage.

Objective 5.2 conserving and enhancement wildlife and natural habitats

8.24 Policy 5.2.1 Protect a core network of nature conservation sites and ensure a net gain in biodiversity.

8.25 This policy requires new development to include new wildlife habitat, nesting and roosting sites, and ecologically appropriate landscaping will provide more resources for wildlife and help to strengthen ecological corridors. It states: "*Opportunities should be sought to create or restore priority habitats (previously known as UK Biodiversity Action Plan habitats) that have been identified as conservation priorities in London [and] all land managers and landowners should take BAP priority species into account*."

Local Planning Policy

Kingston Core Strategy[v]

Policy CS 3 - The Natural and Green Environment

8.26 The Council will protect and improve Kingston's valued natural and green environment by:

A. *"seeking to ensure that residents have access to an interconnected network of safe, well managed and maintained areas of open space through the implementation of routes in the 'South West London Greenways Network Expansion - Feasibility Report', Kingston's Green Spaces Strategy, Park Management Plans and Annual Implementation Plans."*

B. *"protecting Kingston's open space network from inappropriate development through its open spaces designations; Green Belt, Metropolitan Open Land (MOL), Thames Policy Area, Sites of Importance for Nature Conservation (SINCs), Local Nature Reserves, Local Open Space, School Open Spaces, Green Corridors, Green Chains and Allotments, as shown on the Proposals Map."*

C. *"facilitating regeneration, infrastructure upgrades and environmental improvement to the Hogsmill Environs."*

D. *"incorporating appropriate elements of public open space into new developments and/or making a financial contribution to improving existing open spaces, with additional facilities and better management to Green Flag standards."*

E. *"promoting the management of biodiversity in light of the threats arising from climate change and future development growth, by working in partnership with a range of organisations on projects to protect and enhance Kingston's Open Space Network. This will not only provide increased wildlife habitats, but will also link wider parts of Kingston, allowing easier movement and reducing isolation of habitats."*

Policy DM 6 – Biodiversity

8.22 The Council will:

A. *"ensure new developments protect and promote biodiversity as part of sustainable design, through the inclusion of sustainable drainage, tree planting, soft landscaping, habitat enhancement and/or improvement, green roofs and new or improved semi-natural habitats, where appropriate."*

B. *"require an ecological assessment on major development proposals, or where a site contains or is next to significant areas*

of habitat or wildlife potential. This should be completed before design work or submission of the planning application."

C. "*ensure that new development does not result in a net loss of biodiversity and, where appropriate, should include new or improved habitats and provision for natural and semi-natural public green space, as set out in the Planning Obligations SPD or Community Infrastructure Levy charge.*"

Legislative Context

International

The Conservation of Habitats and Species, 2017[vi]

8.23 The Conservation of Habitats & Species Regulations 2017 replace The Conservation (Natural Habitats, etc.) Regulations 1994 (as amended)[vii], and transpose Council Directive 92/43/EEC on the Conservation of Natural Habitats and Wild Fauna and Flora ('EU Habitats Directive')[viii], and Council Directive 79/409/EEC on the Conservation of Wild Birds ('Birds Directive')[ix] into UK law (in conjunction with the Wildlife and Countryside Act).

8.24 Regulations 43 and 47 respectively of the Conservation of Habitats & Species Regulations makes it an offence (subject to exceptions) to deliberately capture, kill, disturb, or trade in the animals listed in Schedule 2 (European protected species of animals), or pick, collect, cut, uproot, destroy, or trade in the plants listed in Schedule 5 (European protected species of plant). Development that would contravene the protection afforded to European protected species requires a derogation (in the form of a licence) from the provisions of the Habitats Directive.

8.25 Regulation 63 (1) states: "*A competent authority, before deciding to undertake, or give any consent, permission or other authorisation for, a plan or project which —*

(a) is likely to have a significant effect on a European site or a European offshore marine site (either alone or in combination with other plans or projects); and

(b) is not directly connected with or necessary to the management of that site;

must make an appropriate assessment of the implications for that site in view of that site's conservation objectives."

National

8.26 The protection afforded to individual species/group of species e.g. bats and birds is detailed below under the specific species/group of species headings. This approach has been taken as species/groups of species can receive protection under more than one piece of legislation. Bats and birds are the only species considered below as these are the only species of relevance to the Site as informed by the survey work which has been undertaken.

Wildlife and Countryside Act 1981 (as amended)[x]

8.27 The Wildlife and Countryside Act 1981 (as amended) is the principal mechanism for the legislative protection of wildlife in Great Britain. This legislation is the means by which the Convention on the Conservation of European Wildlife and Natural Habitats (the 'Bern Convention') and the Birds Directive and EU Habitats Directive are implemented in Great Britain.

The Countryside and Rights of Way Act 2000[xi]

8.28 The Wildlife and Countryside Act has been updated by the CRoW Act. The CRoW Act amends the law relating to nature conservation and protection of wildlife. In relation to threatened species it strengthens the legal protection and broadens the offences of damaging, disturbing, or obstructing access to any structure or place a protected species uses for shelter or protection, and disturbing any protected species whilst it is occupying a structure or place it uses for shelter or protection to include any such acts committed recklessly.

The Natural Environment and Rural Communities Act 2006[xii]

8.29 The Natural Environment and Rural Communities Act 2006 states that every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity. Biodiversity Action Plans provide a framework for prioritising conservation actions for biodiversity.

8.30 Section 41 of the Natural Environment and Rural Communities Act requires the Secretary of State to publish a list of species of flora and fauna and habitats considered to be of principal importance for the purpose of conserving biodiversity. The list, a result of the most comprehensive analysis ever undertaken in the UK, currently contains 1,149 species, including for example, hedgehog (*Erinaceus europaeus*), and 65 habitats that were listed as priorities for conservation action under the now defunct UK Biodiversity Action Plan[xiii] (UK BAP). Despite the devolution of the UK BAP and succession of the UK Post-2010 Biodiversity Framework[xiv] (and Biodiversity 2020 strategy[xv] in England), as a response to the Convention on Biological Diversity's (CBD's) Strategic Plan for Biodiversity 2011-2020[xvi] and EU Biodiversity Strategy (EUBS)[xvii], this list (now referred to as the list of Species and Habitats of Principal Importance in England) will be used to guide decision-makers such as public bodies, including local and regional authorities, in implementing their duty under section 40 of the Natural Environment and Rural Communities Act 2006 *"to have regard' to the conservation of biodiversity in England, when carrying out their normal functions."*

Legislation Relating to Bats

8.31 All UK bats and their roosts are protected by law. Since the first legislation was introduced in 1981, which gave strong legal protection to all bat species and their roosts in England, Scotland and Wales, additional legislation and amendments have been implemented throughout the UK.

8.32 Six of the 18 British species of bat have Biodiversity Action Plans (BAPs)[1] assigned to them, which highlights the importance of specific habitats to species, details of the threats they face and proposes measures to aid in the reduction of population declines.

8.33 Although habitats that are important for foraging and commuting bats are not legally protected, unlike their roosts, care should be taken when dealing with the modification or development of an area if aspects of it are deemed important to bats such as flight corridors and foraging areas.

8.34 The Wildlife & Countryside Act 1981 (WCA) was the first legislation to provide protection for all bats and their roosts in England, Scotland and Wales (earlier legislation gave protection to horseshoe bats only.)

8.35 All eighteen British bat species are listed in Schedule 5 of the Wildlife and Countryside Act[xviii], 1981 and under Annexe IV of the Habitats Directive[xix], 1992 as a European protected species. They are therefore fully protected under Section 9 of the 1981[xx] Act and under Regulation 43 of The Conservation of Habitats and Species Regulations 2017[xxi], It is an offence to:

- Deliberately capture, injure or kill a bat;
- Intentionally or recklessly disturb a bat in its roost or deliberately disturb a group of bats;
- Damage or destroy a bat roosting place (even if bats are not occupying the roost at the time);
- Possess or advertise/sell/exchange a bat (dead or alive) or any part of a bat; and
- Intentionally or recklessly obstruct access to a bat roost.

8.36 This legislation applies to all bat life stages.

[1] Non-statutory Biodiversity Action Plans (BAPs) have been prepared on a local and regional scale throughout the UK over the past 15 years. Such plans provide a mechanism for implementing the government's broad strategy for conserving and enhancing the most endangered ('priority') habitats and species in the UK for the next 20 years. The UK BAP was succeeded in England by Biodiversity 2020 although the list of priority habitats and species remains valid as the list of *Species of Principal Importance for Nature Conservation* under Section 41 of the NERC Act.

Regional and local BAPs are still valid however and continue to be updated and produced.

8.37 The implications of the above in relation to the proposals are that where it is necessary during construction to remove buildings, trees or structures in which bats could roost, it must first be determined whether the building, tree or structure does support a roost and if so that the work is compulsory. If the answer to both these questions is yes then an appropriate license must be obtained from Natural England.

Legislation Relating to Nesting Birds

8.38 Nesting birds, with certain exceptions, are protected from disturbance under the Wildlife and Countryside Act 1981 (as amended) and the CRoW Act. Any clearance of suitable habitat should therefore be undertaken outside of the nesting bird season, taken to run conservatively from March to August inclusive, unless an ecologist confirms the absence of active nests prior to clearance. Under this legislation it is an offence to:

- Kill, injure or take any wild bird;
- Take, damage or destroy the nest of any wild bird while it is in use or being built; and
- Take or destroy the egg of any wild bird.

8.39 The implications of the above in relation to the Development are that where it is necessary during construction to remove trees and buildings which are suitable to support nesting birds, this should be done outside of the nesting bird season (March-August inclusive). If this is not possible an ecologist must be present to confirm absence of nesting birds prior to completion of works.

Assessment Methodology

Desktop Study

8.40 Records were requested from and provided by Greenspace Information for Greater London (GiGL)[xxii] on details of statutory and non-statutory designated sites of nature conservation importance for the Site and the surrounding 2km area. The standard 1km search area as recommended in Chartered Institute of Ecology and Environmental Management (CIEEM) Guidelines for Preliminary Ecological Appraisal[xxiii] was extended to 2km given the total size of the Site and the potential for the Development to impact on designated sites. Records of protected and other notable species for the Site and the surrounding 1km area were also requested. In addition, the Multi-Agency Geographic Information for the Countryside (MAGIC) website[xxiv] was used to derive information relating to the location of statutory designated sites and priority habitats.

Preliminary Ecological Appraisal

8.41 A Preliminary Ecological Appraisal (PEA) walkover and bat scoping survey was conducted on the 17th and 19th June 2019. An update walkover survey was conducted on 12th October 2020 to assess for any significant change in habitat occurrence and/or ecological value on the site. The area surveyed is shown on Figure 1 in the PEA report in Appendix 8.1.

8.42 The PEA (which included an Extended Ecological Phase 1 Survey) was undertaken in accordance with guidance in the Joint Nature Conservation Committee (JNCC) (2010) Handbook for Phase 1 Habitat Survey[xxv] and the Chartered Institute of Ecological and Environmental Management (CIEEM) (2017) Guidelines for Preliminary Ecological Appraisal[xxvi], in accordance with BS42020:2013: Biodiversity[xxvii]. The overall assessment consisted of:

- Site specific biological information gained from statutory and non-statutory consultation (see Desk study above); and
- A Site walkover, protected species scoping assessment and phase 1 habitat survey.

Bat Scoping Survey

8.43 During the PEA Site visit the buildings and trees on the Site were assessed to determine their potential to support roosting bats. External inspections were carried out on all buildings. The buildings surveyed are shown on Figure 1 of the PEA report in Appendix 8.1.

8.44 The Site visit was undertaken in daylight and the evaluation of bat potential comprised an assessment of natural and built features on the Site, aiming to identify characteristics suitable for roosting, foraging and commuting bats. In accordance with Bat Conservation Trust's (BCT) Good Practice Guidelines[xxviii] and methods given in English Nature's (now Natural England) Bat Mitigation Guidelines[xxix], consideration was given to:

- The availability of access to roosts for bats;
- The presence and suitability of crevices and other places as roosts; and
- Signs of bat activity or presence.

8.45 Definite signs of bat activity were taken to be:

- The bats themselves;
- Droppings;
- Grease marks;
- Scratch marks; and

- Urine spatter.

8.46 Signs of possible bat presence were taken to be:

- Stains; and
- Moth and butterfly wings.

8.47 Examples of features with potential as roost sites include mature trees with holes, crevices or splits (the most utilised trees being oak, ash, beech, willow and Scots pine) and buildings with cracks or gaps serving as possible access points to voids or crevices.

8.48 Additionally, linear natural features such as tree lines, hedgerows and river corridors are often considered valuable for commuting and semi-natural habitats such as woodland, meadows and waterbodies can provide important foraging resources. Consideration was given to the presence of these features both immediately within and adjacent to the Site.

8.49 The results of the bat scoping survey are provided in the PEA report (Appendix 8.1).

Bat Survey

8.50 The following bat surveys were undertaken at the Site as a result of the findings of the PEA and bat scoping survey:

- Dusk emergence and dawn re-entry surveys on buildings with potential to support roosting bats;
- Walked dusked activity transect surveys; and
- Static activity surveys.

8.51 The methodology followed was detailed within a Bat Survey Method Statement (Appendix 8.2) produced by Greengage in August 2019.

8.52 As detailed in Appendix 8.2, the surveys, including survey effort and timings, were designed in line with the Bat Conservation Trust (BCT) Good Survey Guidelines (2016)[xxx].

8.53 In summary, the bat surveys comprised:

- Dusk emergence surveys started 15 mins before sunset and continued for 90 minutes after sunset;
- Dawn return surveys started 90mins before sunrise and continued until sunrise;

- Walked dusk activity transects started at sunset and continued for 2 hours after sunset; and
- Static detectors were put out for a minimum of 5 nights on 3 occasions.

8.54 The dusk emergence and dawn return surveys were completed between July and September 2019. All identified potential access and egress points were surveyed twice during this period.

8.55 The walked activity transects and the static bat detector surveys were completed on three occasions in September and October 2019, and April 2020.

Bird Survey

8.56 A bird survey of the Site was undertaken between July and August 2020. Due to the survey commencing late in the bird survey season, an adapted version of the Common Bird Census methodology developed by the British Trust for Ornithology (BTO) was followed. The survey consisted of three visits to the Site, with each visit undertaken two weeks apart. These visits commenced at, or within 30 minutes of dawn and lasted for a minimum of two hours.

8.57 A transect route was walked through the Site, with the direction of the transect alternated for each visit. Any birds observed (either visually or audibly) during the transect were recorded, with information relating to species, numbers, behaviour and location collected.

8.58 Data collected across the three survey visits were assessed to identify any spatial or temporal trends, where possible.

Assessment of Conservation Value of Receptors

8.59 Following the completion of the desktop and Site surveys the Chartered Institute of Ecology and Environmental Management (CIEEM) Guidelines for Ecological Impact Assessment[xxxi] have been used to establish the value, or sensitivity, of terrestrial habitats and species impacted by the Development.

Key Terms

8.60 An impact is defined as '*the resulting in changes to an ecological feature*' with an effect being the '*outcome to an ecological feature from an impact.*'

8.61 The ecological feature which is being affected by the impact is termed the receptor. Key

ecological receptors are features that have been assessed as being of value within the context of the Development and the EIA.

Criteria for Assessing Conservation Value of Terrestrial Ecology Receptors

8.62 The approach to ecological evaluation advocated by the CIEEM guidelines involves professional judgement, based on available guidance and information, together with advice from experts who know the locality of the project and / or the distribution and status of the species or features that are being considered. The analysis aims to assign value to an ecological feature with reference to a defined geographical scale, i.e.:

- International;
- National;
- Regional;
- Borough;
- Local.

8.63 Sites which are subject to statutory and/or non-statutory designation may be readily assigned a value on this scale, for example:

- Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) are internationally important sites;
- SSSIs are nationally important sites; and
- Sites of Nature Conservation Importance (SNCIs) (non-statutory) are of borough value.

8.64 Where an area has more than one designation, the highest of these has been used to assign significance. Features of a site that are not the reasons for its designation(s) are assessed and valued according to their intrinsic value.

8.65 In assigning value to species, reference to a species' geographical distribution, and its population status (e.g. widespread, common, rare) and trends (e.g. declining, stable) has been made. A species that is rare and declining may be assigned a higher level of importance than one that is rare but known to be stable. Species which have a significant proportion of their European population in the UK may also be highly valued.

Method for Assessing Nature and Significance of Ecological Impacts

Impact Identification

8.66 The sensitivity (and recoverability) of receptors to an impact was identified, as far as current knowledge allows, during the EIA process. Generally, this was, by necessity, a qualitative assessment based on published literature and best available scientific information.

Impact Characterisation

8.67 Impacts were characterised by reference to the following terms and definitions:

- Positive (a change that improves the quality of the environment);
- Negative (a change which reduces the quality of the environment);
- Extent (the spatial or geographical area over which the impact/effect may occur);
- Magnitude (size, amount, intensity and volume);
- Duration (should be defined in relation to ecological characteristics (such as a species' lifecycle) as well as human timeframes);
- Timing (timing of an activity or change may result in an impact if it coincides with critical life-stages or seasons e.g. bird nesting season);
- Frequency (the number of times an activity occurs will influence the resulting effect); and
- Reversibility.

8.68 Consideration was given to the potential for impacts to interact with other impacts (either arising from the Development or a different (external) source, thus producing a cumulative effect (often of greater magnitude).

Significance

8.69 For the purpose of the assessment, 'significant effect' is an effect that either supports or undermines biodiversity conservation objectives for 'important ecological features' or for biodiversity in general.

Residual Impacts

8.70 During the EIA process the available means to avoid, minimise or mitigate for negative impacts were identified. Then, subject to their acceptability, these means were incorporated in the

design of the Development, so that the final assessment was of identified impacts that would be left. The consequences for development control, policy guidance and legislative compliance were then identified from the predicted residual impacts.

Assessment of Potential Impacts

8.71 Table 8.1 provides definitions for the terms used to describe impacts in each of the sections below covering impacts on terrestrial ecology.

Table 8.1: Definition of Terms Used in Assessment of Ecological Impacts

Severity	Periodicity	Extent
Positive (a beneficial impact) Negative (a non-beneficial impact) Negligible (no significant impact or value) No impact (no impact predicted)	Temporary Short-term (typically less than one active season for a species) Medium-term (typically more than one active season for a species but less than two) Long-term (more than two active seasons for a species) Permanent - no recovery to previous state within lifespan of the Development	Within the Site Boundary Local – within Norbiton ward or offsite habitat directly connected to the Site Borough – within Kingston Regional – within Southeast England National – national population context International – international context

Limitations and Assumptions

Preliminary Ecological Appraisal and Bat Scoping Survey

8.72 The PEA (Appendix 8.1) was undertaken during an optimal time of year during suitable conditions by a suitably qualified ecologist. Residential gardens were not accessible during the survey. Habitat classification for these gardens has been assumed based on observations whilst onsite and analysis of satellite images. Additionally, an underground parking/storage area is present in the north of the Site off Eureka Road. Access could not be gained into these areas. This lack of access was taken into consideration when making recommendations for further survey. No significant constraints that stand to impact conclusions drawn in this chapter therefore presented themselves.

Bat Surveys

Dusk Emergence and Dawn Return Surveys

8.73 The bat surveys were undertaken during an optimal time of year during ideal conditions by suitably qualified ecologists. It was possible to access all required areas of the Site. On two surveys, brief periods of light rain were recorded. As these did not last longer than 15 minutes, this is not considered a significant constraint. No significant constraints that stand to impact conclusions drawn in the subsequent reports therefore presented themselves.

Bat Activity Surveys

8.74 There are inherent constraints associated with the use of static bat detectors. Range and direction of bats from microphones can result in recording failures. The microphones used are omni-directional, with a wide beam pattern and were set to a high sensitivity. However, obstacles in cluttered environments can block microphones from recording.

8.75 The measure used to compare relative importance of location for bats is bat passes per night. It is important to consider that bat passes may naturally vary night on night, season on season, relative to weather conditions and conditions such as moon irradiance levels etc. To mitigate for this, detectors were installed for a minimum of six nights.

8.76 'Bat passes' were defined as any call or series of calls separated by more than one second from another call or series of calls. The number of bat calls or bat passes does not directly relate to the number of bats in a location as individual bats cannot be differentiated.

8.77 The detector named 'CRE4', located in the area of amenity grassland and scattered trees to the north of Eureka road in the north of the Site, failed to record during the first monitoring period (27th August – 5th September), therefore it was installed again between 12th and 22nd September. These data are not concurrent with other data collected by other detectors, therefore is not directly comparable. However, as data was collected over 10 nights with a variety of weather conditions and during a period that general bat activity would not have been significantly different e.g. both periods are towards the latter end of the summer season, comparison of mean passes per night between sample locations is still considered a valuable metric in determining relative importance for bats.

8.78 CRE4 failed to record again during the second (October) monitoring period. However, due to the high level of information gathered across the whole Site during all the surveys (static, walked transect and dusk emergence and dawn return to roost surveys), the overall dataset

gathered across the Site is considered to be robust and sufficient to draw conclusions and inform recommendations.

Bird Surveys

8.79 The bird survey visits were undertaken at a sub-optimal time of year with the survey being completed over three visits in July and August 2020. Typically, a breeding bird survey would be undertaken between March and July, with visits spaced four weeks apart. This has limited the ability for the survey to identify early nesting sites (unless second clutches were being reared) or territories. However, the key reason for the bird survey was to gather data on the use of the Site by house sparrow (*Passer domesticus*) in particular. House sparrow are known to have multiple clutches in a single year and were recorded in moderate numbers during the survey. Therefore, the key reason for the bird survey was met and the conclusions made within the bird report and this impact assessment with regards to house sparrow are considered to be robust.

Baseline Conditions

Nature Conservation Designations

Statutory Designated Sites

8.80 Consultations with the local biological record centre (GiGL) and the MAGIC dataset have confirmed that there are no statutory designations of national or international importance within the boundary of the Site.

8.81 However, there are seven statutory designated sites within a 2km radius. This includes one Special Area of Conservation (SAC), two Sites of Special Scientific Interest (SSSIs), one National Nature Reserve (NNR) and three Local Nature Reserves (LNRs).

8.82 The statutory designated sites are outlined in Table 8.2 below.

8.83 The SAC is considered to be of **International** value, the SSSIs and NNR of **National** Value and the LNRs of **Local** value, in line with their designations.

Non-Statutory Designated Sites

8.84 Consultations with the local biological record centre (GiGL) has confirmed that there are no non-statutory designations of Local or Borough importance within the boundary of the Site.

8.85 However, there are ten non-statutory Sites of Importance for Nature Conservation (SINCs) within 2km of the Site, including Kingston Cemetery SINC of Local Importance, which is located approximately 20m to the south of the Site. SINCs are recognised by Local Planning Authorities (LPAs) as important wildlife sites and their protection is a material consideration in the planning process. The SINCs, in line with their designation, range from **Local** to **Borough** value.

Table 8.2: Designations within 2km of the Site

Site Name	Approximate Location	Description
Statutory Designations		
Richmond Park SAC	2km north	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*).
Richmond Park SSSI	2km north	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. In addition the Park supports the most extensive area of dry acid grassland in Greater London.
Bushy Park and Home Park SSSI	2km west	Bushy Park and Home Park SSSI is of special interest for its nationally important saproxylic (dead and decaying wood associated) invertebrate assemblage, population of veteran trees and acid grassland communities. These features occur within and are supported by the wider habitat mosaic. The saproxylic invertebrates include those associated with heartwood decay, bark and sapwood decay and with fungal fruiting-bodies found within the veteran trees which are located throughout the site, notably in the large areas currently managed as wood pasture. Lowland dry acid grassland communities present include National Vegetation Classification (NVC) types U1 sheep's fescue (*Festuca ovina*), common bent (*Agrostis capillaris*)-sheep's sorrel (*Rumex acetosella*) grassland and U4 sheep's fescue-common bent -heath bedstraw (*Galium saxatile*) grassland community which are found within the grassland mosaic of the site.
Richmond Park NNR	2km north	Richmond Park is London's largest NNR. It is notable for its rare beetles which feed on dead and decaying wood. Main habitats: woodland, lowland grassland.

		Management: the reserve is owned and managed by The Royal Parks.
Raeburn Open Space LNR	1km southeast	Raeburn Open Space is one of the few remaining relics of the Berrylands estates past agrarian use. Part of the site was previously temporary allotments. The site consists of rough grassland, tall herbs, overgrown hedgerows and young trees, along with a narrow belt of trees along the riverside and an area of amenity grassland. Eleven species of butterfly have been recorded as have a variety of bird species. The site is valuable as a strategic link between the Hogsmill River Park and the green corridor leading to The Wood and Richard Jeffries Bird Sanctuary.
Rose Walk LNR	1km southeast	No information on designation. Forms part of The Hogsmill River Park.
Elmbridge Open Space LNR	1.2km southeast	No information on designation. Forms part of The Hogsmill River Park.
Non-Statutory Designations		
Kingston Cemetery SINC (Local importance)	20m south	Kingston Cemetery was opened in 1855 on what were previously the fields of Bonner Hill. Prior to this, all burials had taken place in Kingston Churchyard and the overflow site in Union Street. The latter has now become the Memorial Gardens. Kingston Cemetery lies between Kingston town centre and Norbiton, in an area of high-density housing. The Hogsmill River runs along its southern side, where there is a narrow strip of woodland. This area adjacent to the riverbank is rather scruffy, with litter and rubbish lying around, and the overgrown vegetation makes it difficult to reach the riverbank. It provides a variety of scrubby, tall herb and ruderal habitats, which is no doubt home to a range of wildlife. Just across the river is the Hogsmill Valley Sewage Works. The remainder of Kingston Cemetery consists largely of well-tended graves, but with a variety of localised habitat features. There are many pedunculate oaks (*Quercus robur*), mainly growing in lines, and some of which may predate the cemetery. These are likely to be of importance to the bats and birds that have been recorded from the area, as well as for invertebrates. The grassland is mostly closely cut, but retains some diversity, particularly to the east of the site, where red fescue (*Festuca rubra*) and red clover (*Trifolium pratense*) are found.
Hogsmill River in Central Kingston SINC (Local importance)	300m southwest (at nearest point)	Upstream, the river in the town centre runs between vertical concrete banks, as it passes beneath various road bridges and between the buildings of the Guildhall complex. Downstream of the Clattern Bridge, on the north bank of the river, a fig tree (*Ficus carica*) has established a precarious hold through the concrete. Although the artificial nature of the banks through the town centre otherwise mostly precludes vegetation getting a roothold, there are places where gravely margins remain, such as upstream where the river passes over a weir. Beyond the weir, fennel pondweed (*Potamogeton pectinatus*) occurs.

		The banktop vegetation includes crack willow (*Salix fragilis*), ash (*Fraxinus excelsior*), and honeysuckle (*Lonicera periclymenum*) as well as naturalised species such as rosemary (*Rosemarinus officinalis*).
Hogsmill Valley Sewage Works and Hogsmill River SINC (Borough grade I importance)	300m south	This site includes part of an active sewage works and the adjacent length of the River Hogsmill, comprising several open lagoons and various connecting habitats consisting of mown grassland, scrub and tall herb stands. The River Hogsmill is mostly in an artificial channel but its wider corridor here is predominantly wooded, providing important seclusion for breeding and wintering birds. The former has included lapwing (*Vanellus vanellus*), redshank *(Tringa tetanus*), sand martin (*Riparia riparia*), grey wagtail (*Motacilla cinerea*), kingfisher (*Alcedo atthis*), water rail (*Rallus aquaticus*), reed bunting (*Emberiza schoeniclus*) and the nationally rare little ringed plover (*Charadrius dubius)*. Large numbers of swifts (*Apus apus*), swallows (*Hirundo rustica*) and martins (*Delichon urbicum*) feed over the site in summer. Important wintering and passage species include teal (*Ana crecca*) and other wildfowl, common and jack snipes (*Gallinago gallinago, Lymnocryptes minimus*), and green and common sandpipers (*Tringa ochropus, Actitis hypoleucos*). There is also an important gull (*Larus* spp.) and cormorant (*Phalacrocorax carbo*) roost. The site is important for foraging bats and is one of the few known sites in the area supporting slow-worms (*Anguis fragilis*). The non-operational parts of the site are managed by Thames Water as a nature reserve.
Coombe Wood Golf Course SINC (Borough grade II importance)	900m northeast	This golf course has an important area of acid grassland, as well as scrub, woodland and some neutral grassland. Bents (*Agrostis* spp.) and fescues (*Festuca* spp.) characterise the relict acidic swards, together with sheep's sorrel (*Rumex acetosella*) and some bare and lichen-dominated gaps. More neutral grassland supports lady's bedstraw (*Galium verum*) and common bird's-foot-trefoil (*Lotus corniculatus*). Scrub contains both common gorse (*Ulex europaeus*) and broom (*Cystisus scoparius*), a reminder of the area's past as a common supporting heathland.

Habitats

8.86 The following habitats were recorded on the Site and are described below. The baseline has been determined from a Site survey undertaken in June 2019. An update walkover survey of the site in October 2020 confirmed that the baseline recorded in in June 2019 was still accurate and that no significant change to the habitats on site had occurred between June 2019 and October 2020. Further detail on each of these habitats is presented in Appendix 8.1. The code in brackets relates to the JNCC habitat classifications:

- Buildings/hardstanding (J3.6);
- Scattered trees (A1);
- Dense scrub (A2.1);

- Amenity grassland (J1.2); and
- Introduced shrub (J1.4).

Buildings and Hardstanding

8.87 The Site supports a range of building types. The buildings in the southern section of the Site are primarily two-storey terraced house units. These are of brick construction with pitched tile roofs and hanging clay tile facade. Each of these types of units also has a flat roof garage. These are relatively uniform across the southern area of the Site with numerous broken, missing or raised hanging tiles. The northern section of the Site is dominated by multi-storey blocks up to 17-storeys in height with flat roofs and low-rise blocks of 4/5 storeys in height with pitched tiled roofs.

8.88 There is an abundance of hardstanding across the Site in the form of asphalt roads, paving slabs, hard-surfaced play areas and carparks. Several areas of the hardstanding in the central and northern sections of the Site have under-croft parking beneath it, which was not accessible during the PEA survey.

8.89 Mortar and cracks in hardstanding has allowed some early colonising/ruderal plants to establish including willowherb (*Epilobium* sp.), Canadian fleabane (*Erigeron canadensis*), ornamental *Euphorbia* spp., knotgrass (*Polygonum aviculare*), chickweed (*Stellaria media*), dandelions (*Taraxacum* spp.), smooth sow-thistle (*Sonchus oleraceus*), black medick (*Medicago lupulina*), greater plantain (*Plantago major*), wall rocket (*Diplotaxis tenuifolia*), green alkanet (*Pentaglottis sempervirens*) and fat hen (*Chenopodium album*). These occur sporadically and inconsistently across the Site.

8.90 Based on the lack of ecological value of these structures and areas of hardstanding, this habitat is accordingly considered to be of **Negligible** value. The value these buildings have for bats and birds is discussed in the sections below, and as such buildings in and of themselves are not considered any further in this assessment.

Scattered Trees

8.91 A total of 213 trees/groups of trees were recorded on the Site. Species include London plane (*Platanus x hispanica*), sycamore (*Acer pseudoplatanus*), lime (*Tilia x europaea*), birch (*Betula pendula*), Lawson cypress (*Chamaecyparis lawsoniana*), cherry (*Prunus avium*), beech (*Fagus sylvatica*), false acacia (*Robina pseudoacacia*), elder (*Sambucus nigra*), Corsican pine (*Pinus nigra*), whitebeam (*Sorbus aria*), hawthorn (*Crataegus monogyna*), goat willow (*Salix caprea*),

weeping willow (*Salix x chrysocoma*), horse chestnut (*Aeseculus hippocastanum*), hybrid black poplar (*Populus serotine*) rowan (*Sorbus aucuparia*), tree-of-heaven (*Ailanthus altissima*), oak (*Quercus robur*), common alder (*Alnus glutinosa*) and Norway maple (*Acer platanoides*). There is significant variation between the quality and value of the trees across the Site.

8.92 The scattered trees are relatively widespread across the Site and form, albeit broken, green corridors connecting the Site and the wider area. They provide foraging and nesting habitat for common bird species and foraging and commuting habitat for bat species. They are also likely to support common invertebrate species. In general, the tree provision on Site is less concentrated than the tree provision in the wider area, although it will almost certainly play a role in connecting greenspaces across the wider area. As such, the scattered trees on the Site are considered to have **Local** value.

Dense Scrub

8.93 A small patch of dense scrub habitat exists in the east of the Site. It is composed of bramble, sycamore (*Acer pseudoplatanus*) saplings, old man's beard (*Clematis vitalba*), firethorn (*Pyracantha* sp.) and creeping thistle (*Cirsium arvense*). There is a potential fox den present within this patch of scrub.

8.94 The dense scrub habitat is dominated by common and widespread species, is small in size and is a habitat that is relatively abundant in the surrounding areas. The occurrence of a small patch in the east of the Site, surrounded by areas of building, hardstanding and amenity grassland also means that this habitat is isolated. For these reasons the dense scrub habitat on Site is considered to have **Negligible** value and is not considered any further in this assessment.

Amenity Grassland

8.95 Areas of amenity grassland were recorded in multiple areas across the Site including in a large park area to the north of the Site, roadside verges, play areas and gardens. All amenity grassland on Site was mown to a uniform low level. Areas of heavy pedestrian use show erosion and bare ground. Species present include wall barley (Hordeum murinum), ryegrass (*Lolium perenne*), smooth sow-thistle, bristly oxtongue (*Helminthotheca echioides*), common daisy (*Bellis perennis*), dandelions, shepherd's purse (*Capsella bursa-pastoris*), chickweed, yarrow (*Achillea millefolium*), Geranium spp., creeping buttercup (*Ranunculus repens*), ribwort plantain (*Plantago lanceolata*) and bird's-foot trefoil (*Lotus corniculatus*).

8.96 This habitat is abundant in the wider area, which is dominated by common and widespread

species, is easily created and is evidently heavily managed through a regime of mowing to keep the sward as short as possible. For these reasons, in particular the heavy management regime, amenity grassland habitat is considered to have **Negligible** value and is not considered further in this assessment.

Introduced Shrub

8.97 The habitat type introduced shrub has been used to classify both the areas of public landscaping and the gardens across the Site which are not turfed over. There is much variation across the Site in the species composition of this habitat, particularly owing to the different uses of the spaces and non-native ornamental species present.

8.98 Species recorded include bramble (*Rubus fructicosus agg.*), mugwort (*Artemesia vulgaris*), variegated hollies (*Ilex aquifolium*), Dracaena trees, Clematis spp., Geranium spp., common mallow (*Malva neglecta*), poppies (*Papaver* spp.), ornamental bamboos (*Bambusoidaea* spp.), roses (*Rosa* spp.), New Zealand flax (*Phormium tenax*), broad-leaved sweet pea (*Lathyrus latifolius*), cherry laurel (*Prunus laurocerasus*), cabbage (*Brassica oleracea*), beetroot (*Beta vulgaris*), Lady's mantle (Alchemilla vulgaris), lilac (Syringa sp.), Japanese maple (*Acer palmatum*), star jasmine (*Trachelospermum jasminoides*), lavender (*Lavandula angustifolia*), rosemary (*Rosmarinus officinalis*) and white stonecrop (*Sedum album*).

8.99 The introduced shrub habitat on the Site is abundant in the wider area and is dominated by common and widespread species. It is also easy to recreate. In many cases the species that form areas of this habitat are non-native and as such have reduced, albeit in most cases not negligible, value for native wildlife. These areas of habitat are however likely to provide refuge and forage opportunities for a range of faunal species including for foraging bats, foraging and to a lesser extent nesting birds, Section 41 species such as hedgehog and common invertebrates; these species being an important food source for mammals and birds. The value of the introduced shrub on Site is considered to be **Within the Site Boundary Only**.

Species and Species Groups

8.100 During the Site walkover survey element of the PEA (Appendix 8.1) it was concluded that the Site had the potential to support the following protected species/species groups:

- Bats (foraging, commuting and roosting);
- Birds;
- Invertebrate; and

- BAP/Section 41 Species – Hedgehog.

8.101 The potential presence of a fox earth was also recorded during the walkover survey and foxes were observed multiple times during the bat surveys conducted on the Site. Foxes are widespread and common and do not receive protection in the same way as the species/groups of species listed above. As such, foxes are not considered further in this assessment. Recommendations are made within the PEA (Appendix 8.1) on how the potential presence of a fox earth on the Site should be managed during the Development, from an animal welfare perspective.

Bats

8.102 There were multiple bat records within a 2km search area of the Site. These included serotine (*Eptesicus serotinus*), Daubenton's (*Myotis daubentonii*), Natterer's (*Myotis nattereri*), Leisler's (*Nyctalus leisleri*), noctule (*Nyctalus noctula*), Nathusius' pipistrelle (*Pipistrellus nathusii*), soprano pipistrelle (*P. pygmaeus*), common pipistrelle (*P. pipistrellus*) and brown long-eared bat (*Plecotus auritus*).

Foraging and Commuting

8.103 The suite of bat surveys (Appendix 8.2) completed on site recorded the presence of four species of bat:

- Common pipistrelle;
- Soprano pipistrelle;
- Nathusius' pipistrelle; and
- Noctule.

8.104 Of all the species recorded during the static bat detector surveys, 68.4% of the calls were by common pipistrelle and a further 27.5% of calls were social calls by bats in the pipistrelle genus. The percentage of calls belonging to soprano pipistrelle, Nathusius' pipstrelle and noctule were 3.4%, 0.7% and 0.1% respectively.

8.105 The bat species recorded are expected, given the location of the Site. Pipistrelles and noctules are relatively light-tolerant compared with most bat species, and they are relatively common in Greater London. The common pipistrelle being the most commonly occurring bat species at a local, regional and national level.

8.106 The average number of passes recorded per night at all locations is 20.84. Supplementary data from the walked transects suggest that low numbers of bats are responsible for much of this activity. Activity is largely confined to commuting across the Site with very little sustained foraging recorded.

8.107 Bat activity is spatially uneven across the Site, largely confined to specific areas. These share certain characteristics, such as being well vegetated, having good tree canopy cover and being associated with linear landscape features. Notably, the highest levels of activity and the only sustained foraging recorded during the walked transect surveys was in a playground in the west of the Site, which is also subject to significantly lower levels of external street lighting.

8.108 Much of the activity recorded on Bonner Hill Road was determined to be bats heard foraging over Kingston Cemetery rather than over the Site itself. However, it seems bats entering the Site from the cemetery do so by commuting up Willingham Way.

8.109 Much of the Site, particularly around the tower blocks within the north, is subject to very high levels of external lighting. This is considered highly likely to act as a deterrent to bats in the area (see Figure 5.1 in the bat survey report (Appendix 8.2)).

8.110 In summary, bats were recorded commuting and to a far lesser extent foraging in areas on Site. These areas are relatively scattered and the areas with the highest activity were generally confined to the edges of the Site, or in the case of Bonner Hill Road, offsite. Although tree lines and potential commuting routes exist on the Site, these are often isolated from each other by extensive areas of hardstanding and/or subject to significant light spill. There is an abundance of better foraging and commuting habitat in the wider area, in particular to the south of the Site in the form of Kingston Crematorium. The crematorium is then connected further south to the Hogsmill River and Hogsmill Sewage Treatment works, both areas of which are likely to offer high value foraging and commuting habitat for bats. Therefore, the value of the Site for foraging and commuting bats is considered to be at most **Local**.

Roosting

8.111 Features with the potential to support roosting bats were recorded across the Site (see Figure 1 in the Bat Survey Report provided in Appendix 8.2). The most common and notable features were hanging clay tiles on the two-storey terraced houses. Across the Site there were multiple properties with broken, missing or raised hanging tiles, which could provide crevices and access to small cavities behind tiles, potentially of value to Pipistrelle spp. Other potential

roosting features recorded included:

- A hole in a soffit box of a two-storey building on Cambridge Grove Road in the south east of the Site;
- Missing/broken bricks on the four-storey blocks off Burritt Road in the east of the Site;
- Lifted pitched roof/ridge tiles on three-storey units of Cambridge Grove Road in the south east of the Site;
- Gaps leading into an underground storage/parking area of Eureka Road in the north of the Site and just north of Willingham Road in the centre of the Site;
- Lifted ridge tile on the more recently constructed units on Willingham Way towards the south of the Site; and
- Lifted wooden cladding on Piper Hall in the south/south west of the Site.

8.112 The underground parking/storage areas were not inspected internally and the presence of potential roosting features within these could not be assessed. Therefore, they were considered to have low potential to support roosting bats as a precaution.

8.113 Whilst the roosting features were of low suitability and generally confined to small numbers per building, one in many cases, owing to the total number of potential roosting features and the close proximity of many of the structures, the potential of the Site as a whole was raised to moderate.

8.114 Based on the above, approximately 30 locations across the Site were subject to a dusk emergence survey and a separate dawn return to roost survey (see Appendix 8.2 for the full Method Statement for Bat Surveys). The surveys were undertaken between July and September 2019 and no emergence or returns were recorded. Given the conditions for the surveys were suitable and the surveys were undertaken within the active bat season, it was concluded that roosting bats were likely to be absent from the Site.

8.115 Although roosting bats are likely absent from the Site, multiple buildings and structures on the Site have the potential to support roosting bats and that potential remains. However, it is likely that due to a lack of suitable foraging and commuting habitat, coupled with the high levels of lighting on the Site, particularly in the north of the Site, that the actual value of these potential access and egress points is significantly reduced. Therefore, the value of the Site for roosting bats is considered to be **Within the Site Boundary only**, albeit this value is potential value only.

Birds

8.116 There were multiple bird records within a 1km search area of the Site. These included swift, house martin (*Delichon urbicum*), kestrel (*Falco tinnunculus*), swallow, herring gull (*Larus argentatus*), lesser black-backed gull (*Larus fuscus*), grey wagtail, spotted flycatcher (*Muscicapa striata*), house sparrow (*Passer domesticus*), dunnock (*Prunella modularis*), bullfinch (*Pyrrhula pyrrhula*), starling (*Sturnus vulgaris*) and song thrush (*Turdus philomelos*). In addition to the records search, *pers comm*. during consultation events specifically highlighted that the Site supported a population of house sparrow.

8.117 Foraging habitat onsite is limited to the introduced shrub habitat within residential gardens and berry trees across the Site and the large areas of amenity grassland. However, these habitats are common, widespread and not likely to be of value beyond site level.

8.118 Nesting opportunities onsite are found within trees across the Site, atop the flat roofs of the tower blocks and within the small patch of scrub habitat. Additionally, it was noted that some of the missing hanging clay tiles were being used by nesting house sparrow during the PEA walkover in June 2019 and again during the bird survey in 2020.

8.119 A stand-alone bird survey has also been undertaken (see Appendix 8.3). This survey was undertaken towards the end of the nesting bird season (see limitations section earlier in this Chapter) and comprised three visits through July and August 2020. Over the course of the three visits a total of 17 species of bird were recorded. Eight of these species were also recorded during the June 2019 PEA walkover survey with an additional species, blackbird (*Turdus merula*) recorded during the PEA survey but not recorded during the 2020 bird survey.

8.120 The majority of the species recorded are common and widespread with ring-necked parakeets (*Psittacula krameri*), jackdaws (*Corvus monedula*), feral pigeons (*Columba livia domesticus*) and carrion crows (*Corvus corone*) being the most abundant and generally ubiquitous across the Site on all survey visits.

8.121 Five of the species recorded are either amber or red list species of conservation concern. These comprised black-headed gull (*Chroicocephalus ridibundus*), swift and common gull (*Larus canus*) on the amber list and house sparrow and starling on the red list. Of these five species, four were recorded as flying over the Site with only house sparrow recorded as being onsite foraging and likely nesting.

8.122 The most notable species recorded was house sparrow. The peak count of house sparrow individuals in one area of the Site at any one time was 25. Although recorded in multiple

areas across the Site, house sparrows were predominantly recorded in the south of the Site in areas dominated by the two-storey housing with hanging tiles. House sparrow were observed entering gaps behind missing or slipped hanging tiles and it is likely that in at least some of these areas nests were present.

8.123 In summary, the Site contains habitats that supports foraging and nesting bird species. Much of this habitat is distributed across the Site interspersed with large areas of unsuitable habitat in the form of hardstanding and heavily managed habitat. Habitats present are widespread and common in the wider area and beyond. This is evidenced by the relatively small number of bird species recorded during the bird survey (albeit the seasonal limitations are acknowledged) and the fact that the majority of the bird species that were recorded are common and widespread. With respect to the majority of bird species, the Site is considered to be of value **Within the Site Boundary only**.

8.124 However, the exception to this is the presence of the house sparrow population onsite, a population that will almost certainly be greater than the peak count of 25 individuals recorded. House sparrow have undergone a severe decline in recent decades in both urban and rural settings. As such, the Site is considered to be of **Local** value for house sparrow.

Invertebrate

8.125 The Site is located within 2km of a significant stag beetle population, and there are biological records of stag beetle within 100m of the Site. However, despite moderate levels of tree cover across the Site, there is no woodland habitat and very little deadwood to provide a resource for stag beetle larvae.

8.126 Records for notable lepidoptera and other pollinators are scarce, and those recorded within 2km of the Site are unlikely to be found on habitats present within the Site itself. However, this does not confirm their absence and the gardens across Site are likely to provide a nectar/pollen source for pollinators despite being common and widespread habitats in the immediate locale.

8.127 Therefore, the Site is considered have value **Within the Site Boundary only** for invertebrates.

BAP/Section 41 Species - Hedgehog

8.128 There are numerous records of hedgehog within 1km of the Site and habitat onsite, primarily the private gardens, are likely to offer suitable foraging and sheltering habitat for hedgehog.

However, the gardens are generally in small clusters and relatively isolated from other clusters. A significant proportion of the Site is also covered by buildings, hardstanding and amenity grassland, all unsuitable or sub-optimal habitats for hedgehog. Therefore, the Site is considered have value **Within the Site Boundary only** for hedgehog.

Future Baseline

8.129 Should the Development not come forward and the Site was to remain as is, assuming management and maintenance regimes do not change and that lighting levels remain similar, the Sites value for each of the above ecological receptors is expected to remain similar with no significant change. This is due to the inherent habitat fragmentation and isolation, vegetation management regimes and lighting levels being key factors as to why the Site currently has relatively low ecological value.

Likely Significant Effects

Construction Phase

Statutory Designated Sites

8.130 All the statutory designated sites are at least 1km from the Site. Furthermore, all the sites that are of national value or greater are 2km from the Site. The Site lies within an urban area which already has high levels of traffic and noise. The Development will be constructed in separate phases over a period of 12 years (refer to ES chapter 5). Therefore, the impact of the construction phase of the Development on statutory designated sites, both in terms of individual phases and as a whole, will almost certainly be **Negligible**.

Non-Statutory Designated Sites

8.131 With the exception of the Kingston Cemetery SINC, which lies approximately 20m south of the Site, all the other non-statutory designated sites lie 300m or more from the Site. As discussed for statutory designated sites, the Site already exists within a highly urban area which already has high levels of noise and traffic. For these reasons, the impact of the construction phase of the Development on non-statutory designated sites 300m or more away is considered to be **Negligible**.

8.132 Although the Kingston Cemetery SINC lies only 20m from the Site, except for phase 5 of the Development, all phases lie approximately 85m or greater from the SINC. However, it is possible that in the absence of mitigation, the construction phase of the Development, in

particular the phases closest to Kingston Cemetery SINC, could have an impact on the SINC, particularly in the form of dust deposition from demolition. This is likely to be a **short-term temporary negative impact at the Local level**.

Habitats – Scattered Trees

8.133 The Arboricultural Survey undertaken on the Site, and submitted as part of the planning submission, recorded the presence of 213 trees/groups of trees. Through considerate design, it is proposed that 141 of these trees (66%) will be retained as part of the Development. This includes all 16 Category A trees, 73% of the Cat B trees and 55% of the Cat C or lower trees. These retained trees will be protected in line with BS5837 guidelines.

8.134 Given the above, the Development will result in the loss of 34% of the existing tree stock. The trees to be lost occur sporadically across the Site and will only be lost as specific phases of the Development come forward. Therefore, only a proportion of this 34% will be lost to each phase of the Development. Furthermore, the most mature trees on the Site are being retained in addition to the retention of areas where tree lines were recorded as providing ecological value, such as for bats in the west of the Site.

8.135 Extensive landscaping has been embedded in to both the detailed and outline elements of the Development. This landscaping includes the planting of more than 250 new trees across the Site. This will provide a total tree number of more than 390 trees on the Site post Development. Tree planting has also been designed to ensure green corridors are created across the Site to enhance its value for commuting species such as bats and birds.

8.136 Through the careful design work which has allowed for 66% of the trees to be retained post Development, coupled with the embedded mitigation which includes the planting of over 250 trees as part of the Development, the impact of the construction phase is highly likely to be **Negligible** in the short term leading to a **Permanent positive impact at the Local level** once the construction phase of the Development is complete and as the trees reach maturity.

Habitats - Introduced Shrub

8.137 There is an estimated total area of 0.6ha of introduced shrub across the Site. Site clearance activities in each construction phase of the Development are likely to seek the removal of all introduced shrub habitat on the Site. This Site clearance includes the loss of the introduced shrub in the form of planted areas in public spaces as well as individual private gardens. However, the Development will be delivered in five phases over an indicative time period of 12 years (refer to ES Chapter 5 Construction Methodology & Phasing). This means that the

introduced shrub habitat onsite will be lost gradually.

8.138 To compensate this loss, extensive landscaping across the whole Site has been embedded into the design of the Development. This landscaping includes:

- 9,956sqm of retained existing trees;
- 3,030sqm of semi-natural vegetation including native species buffer planting;
- 5,948sqm of intensive green roof;
- 1,255sqm of rain gardens/SUDS channels;
- 14,542sqm of planting including tall perennials, grassland and/or wildflower meadow, community growing space and buffer planting;
- 7,713sqm of trees in tree pits;
- 4,728sqm of amenity grassland; and
- 9,378sqm of biodiverse roofs.

8.139 Landscaping associated with each phase of the Development will be implemented prior to the start or soon after the start of the following phase, thereby ensuring that any previous loss of introduced shrub will have either already been compensated for before any additional introduced shrub is lost during future phases or will be compensated for soon thereafter.

8.140 This embedded mitigation will more than adequately mitigate the gradual loss of introduced shrub habitat on the Site and ultimately the loss of all introduced shrub onsite once the construction phase of the Development is completed in its entirety. Furthermore, the proposed landscaping, both for the detailed and outline elements of the Development, has been developed with ecology in mind. This will ensure that the delivered landscapes will be of greater ecological value, being more diverse and importantly better connected across the Site.

8.141 Therefore, the initial loss of introduced shrub in each construction phase of the Development is likely to have a **temporary negative impact Within the Site Boundary only**, primarily associated with the area covered by that specific phase of the Development. However, in the medium to long term the embedded landscaping that will be delivered as part of the Development will almost certainly have a **permanent positive impact Within the Site Boundary** for each phase and potentially a **permanent positive impact at the Local level** once the construction of all phases is complete.

Bats

Foraging and Commuting

8.142 The level of bat activity across the Site recorded during the bat surveys was relatively low. Where activity was recorded, this was generally in areas that were well vegetated, had good tree cover and linear landscape features. With the exception of the mature trees, of which 66% are to be retained as part of the Development, the construction phase of the Development will result in the loss of the majority of the habitat used by foraging and commuting bats, albeit low numbers of bats. If all this habitat were to be lost at once the impact of the clearance on the low number of bats that forage and to a greater extent commute over the Site would be significant. However, the Development will:

- Retain the key areas of habitat that activity was highest, albeit activity was still relatively low in these areas;
- Be delivered in phases over a period of 12 years meaning that only small proportions of the suitable bat foraging and commuting habitat will be lost at any one time;
- Have significant landscaping proposals embedded in to both the detailed and outline elements of the Development (see paragraph 8.148 in this chapter for more detail), which will provide a greater area of habitat suitable for foraging and commuting bats and create new and enhanced green corridors across and through the wider Development; and
- Lighting during the construction period will be designed in line with BCT and the Institute of Lighting Professionals best practice guidance on Lighting and Bats[xxxii].

8.143 For the reason provided above the Development is therefore likely to have a **Negligible** impact in the short term and a **permanent positive impact at the Local level** for foraging and commuting bats once the construction of the Development is complete.

Roosting

8.144 Roosting bats are considered likely to be absent from the Site following extensive dusk emergence and dawn return to roost surveys conducted in 2019. Therefore, any demolition and construction work undertaken within 18 months of the surveys being completed will almost certainly have a **Negligible** impact on roosting bats.

8.145 Construction of the Development will be undertaken in five phases over 12 years (refer to ES Chapter 5 Construction Methodology & Phasing). Although roosting bats are considered to be

likely absent from the Site, given the various potential access and egress points identified across the Site, it is possible that one or more of these points could begin to be used by roosting bats over time. The current risk of this occurring, should the Site remain the same, is low due to the Site offering relatively poor foraging and commuting habitat. However, as new phases of the Development come forward and the enhancements and landscaping within these phases is delivered, which will increase the value of the Site for foraging and commuting bats, the risk of bats starting to roost on Site in areas that will be lost to later phases of the Development could increase. If this was to occur, then roosting bats could be killed or injured and roosts damaged or destroyed. In the absence of mitigation this would almost certainly result in a **permanent negative impact Within the Site Boundary** and potentially up to the **Local** scale. There would also be legal implications given the protection afforded to bats and their roosts.

Birds

8.146 The Site supports a range of nesting and foraging bird species, although the majority of these species are widespread and common at the local, regional and national level. The exception to this is the population of house sparrows on the Site.

Killing and Injury

8.147 At the commencement of each phase of the Development, site clearance will be undertaken. This will involve the removal of habitat, within the specific phase, that has potential to support nesting birds. Site clearance, if undertaken at certain times of the year, could result in the killing and injury of birds and/or the destruction of eggs and active nests. This would be an offence under the Wildlife and Countryside Act 1981 (as amended). The legislation protects all bird species. In the absence of mitigation, site clearance is likely to result in a **permanent negative impact at the Local** scale.

8.148 Adult bird species are unlikely to be impacted as they will generally fly away, however, this is not the same for eggs, nests and juvenile/young birds that are still dependant on the adult.

Loss of nesting and foraging habitat

8.149 Construction of the Development will be undertaken in five phases over 12 years (refer to ES Chapter 5 Construction Methodology & Phasing). This means that areas of suitable nesting and foraging habitat will always be available onsite, be it newly created habitat as part of earlier phases or existing habitat in future phases of the Development which are still to be constructed. Where areas are lost to specific phases, this loss will be compensated for through

the provision of extensive landscaping (see paragraph 8.148) either prior to the start of works on the next phase or shortly afterwards. This landscaping will provide extensive areas for birds to breed, forage, socialise and dust bathe. In addition to this, one of the key nesting and foraging habitat for birds on the existing Site are the mature trees. 66% of these trees are to be retained as part of the Development. Therefore, the impact of the construction phase of the Development in terms of the availability for nesting and foraging habitats, with the exception of house sparrow (nesting habitat only), is likely to be **Negligible** in the short term and a **permanent positive impact at the Local scale** once the construction of the Development is complete.

8.150 The impact on available nesting habitat for house sparrow has the potential to be greater than the impact on other bird species. This is because one of the main nesting habitats for house sparrow currently on the Site are the 2-storey buildings with hanging tiles in the south of the Site. Most of these buildings will be lost over the final two phases of the Development (Phases 4 and 5). This loss is proposed to occur in the final two construction phases of the Development, by which point, earlier phases will have been completed and will have included new habitat provision for house sparrow in the form of house sparrow terraces within the new buildings. However, in the absence of mitigation, the loss of most of the current habitat onsite over two phases, which may overlap, could result in a **temporary negative impact at the Local scale** on house sparrow.

Invertebrates

8.151 The key habitat on the Site that had value for invertebrates was the introduced shrub areas within private back gardens. This is likely to offer a pollen and nectar source for a range of pollinator species. As discussed within paragraphs 8.148, the loss of this habitat will be compensated for through the extensive landscaping that will be delivered as part of the Development. Furthermore, the Site currently has little to no resource for stag beetle in the form of buried deadwood.

8.152 Given that the landscaping will be embedded into the design and for the reasons provided above, the construction of the Development is likely to have a **Negligible** impact on invertebrates.

BAP/Section 41 Species - Hedgehog

Killing and Injury

8.153 At the commencement of each construction phase of the Development, site clearance will be

undertaken. This will involve the removal of habitat, within the specific phase, that has potential to support sheltering hedgehog. Site clearance could result in the killing and injury of hedgehog. Although not a legally protected species, other than under general animal welfare legislation, hedgehogs are a section 41 species under the NERC Act. In the absence of mitigation, Site clearance is likely to result in a **permanent negative impact Within the Site Boundary**.

Loss of Sheltering and Foraging Habitat

8.154 The key habitat on the Site that has value for sheltering and foraging hedgehog is the introduced shrub areas within private back gardens. As discussed within paragraphs 8.148 the loss of this habitat will be compensated for through the extensive landscaping that will be delivered as part of the Development.

8.155 Construction of the Development is likely to have a **Negligible** impact on hedgehog in the short term leading to a **permanent positive impact Within the Site Boundary** once the Development is complete.

Operational Phase

Statutory Designated sites

8.156 The key potential impact of the operational phase of the Development on statutory designated sites in the surrounding 2km area is from increased recreational pressure. However, the existing Site is residential in nature and the Development includes the provision of multiple areas of public realm. The Site is more then 2km from sites with international and national value and at least 1km from the statutory designated sites with local value. Furthermore, many of these sites are already subject to high levels of recreational pressure and managed with this in mind, which given their vast size in many cases, is not expected to significantly increase as a result of the Development. Therefore, the impact of the Development on statutory designated sites is considered to be **Negligible**.

Non- Statutory Designated sites

8.157 As with the statutory designated sites detailed above, the key potential impact of the operational phase of the Development on statutory designated sites in the surrounding 2km area is from increased recreational pressure. Likewise, for similar reasons as provided above for statutory designated sites, in particular the provision of significant public realm areas as part of the Development, the impact is considered to be **Negligible**.

8.158 A possible exception to this is the impact on the Kingston Cemetery SINC (Local importance), which lies approximately 20m from the southern edge of the Site. However, this SINC is an active cemetery and although the general public have access and use the site, it is not considered to be at risk from the usual recreational pressures associated with areas of parkland. The site has clear paths and roads networking across it and the areas of the SINC closest to the Site are generally dominated by '*well tendered graves*' and although it contains '*many pedunculate oaks*' which are '*likely to be of importance for bats and birds…*', these habitats are unlikely to be impacted by any increased recreational pressure. Furthermore, the Hogsmill River, another key habitat, is located approximately 300m from the south of the Site and the SINC citation notes that '*the overgrown vegetation makes it difficult to reach the riverbank*'. Therefore, the impact of the operational phase of the Development on this SINC is considered **Negligible**.

Habitats – Scattered Trees

8.159 As stated in paragraph 8.143 the Development will retain 66% of the existing trees on the Site. These trees will be protected during the construction phase and incorporated into the extensive landscaping which will be delivered as part of the Development. Given these trees are already present within a highly urban and densely built environment, and they will continue to be located within a highly urban and densely built environment, the impact of the operational stage of the Development will almost certainly be **Negligible**.

Habitats - Introduced Shrub

8.160 All areas of introduced shrub will be lost to the Development at the construction stage and as such there will be **no impact** from the operational phase of the Development.

8.161 It is however acknowledged that as the Development will be delivered in phases over 12 years, there is potential for introduced shrub habitat in later phases to be impacted by the operation of earlier phases, primarily through recreational pressure. However, a large proportion of the introduced shrub habitat is in the form of private gardens where recreational pressure will not increase. Where this habitat occurs in public areas currently, the individual areas are relatively small and isolated and dominated by more 'scrub' based species which have limited value for recreational use. Therefore, there is considered to be **no impact** in terms of introduced shrub habitat during the operational stage of the Development.

Bats

Foraging and Commuting

8.162 As mentioned in paragraph 8.113 to 8.120, the level of bat activity across the Site was relatively low and where activity was recorded this was generally confined to specific areas of the Site. Many of these areas where activity was recorded are being retained, with the existing trees in such areas also being retained. Although the Site (particularly the northern portion), is already subject to high lighting levels, the Development is likely to lead to an increase in lighting levels across the Site. In the absence of mitigation, the operational stage of the Development is likely to have a **permanent negative impact at the Local** scale on foraging and commuting bats as increased lighting could create sub-optimal to unsuitable conditions for foraging and commuting bats. This could impact both bats that forage within the Site and those that commute over/across the Site to areas in the wider surroundings.

Roosting

8.163 Based on the results of the extensive bats surveys undertaken on the Site (Appendix 8.2), roosting bats were considered to be absent. Therefore, the operational stage of the Development will have **no impact** on roosting bats.

Birds

8.164 There would be **no impact** upon birds through loss of habitat during the operation of the Development as the required vegetation clearance would be undertaken during the construction works. Furthermore, **no impact** on birds in terms of increased killing and injury from predation e.g. cats is expected because of the Development. This is because:

- There is likely to be an existing population of cats onsite and although the number of residential units will increase as a result of the Development, a large proportion of these are flats where cats would not be able to freely enter and exit in the same way as they would with a house; and
- There is no clear scientific evidence that the impact of cat predation is causing bird populations to decline. Evidence suggests that cats tend to take weak or sickly birds[xxxiii].

Invertebrates

8.165 There would be no further impacts upon invertebrates through loss of habitat during the

operational phase of the Development as the required site clearance would be undertaken during the construction works.

BAP/Section 41 Species - Hedgehog

8.166 There would be no further impacts upon hedgehogs through loss of habitat during the operational phase of the Development as the required site clearance would be undertaken during the construction works.

Mitigation Measures

Construction Phase

Non-Statutory Designated sites

8.167 To minimise any potential impact from the construction works, an outline Construction Method Statement and Construction Management Plan has been undertaken (refer to Appendix 5.1). Each phase of the Development will also have a phase specific detailed Construction Environmental Management Plan (CEMP) approved prior to works commencing on that phase, secured by planning condition. The detailed CEMP will include control methods that will be in place to minimise emissions such as noise, dust and particulates. Control methods specific to ecology will include measures to minimise impacts of:

- Lighting during the construction phase of the Development on foraging and commuting bats;
- Site clearance on nesting birds with regards to the clearance of suitable nesting bird habitat; and
- Site clearance on hedgehog with regards to killing and injury.

Habitats – Introduced shrub

8.168 As detailed within paragraph 8.148, extensive landscaping will be embedded into the design of the Development which will more than adequately mitigate the gradual loss of introduced shrub habitat on the Site. The proposed landscaping has been designed with ecology in mind. The landscaping will be native species dominant, create new green corridors through and across the Site as well as providing multiple habitat types, structures and foraging resources for a range of species. To ensure maximum benefits are delivered, an Ecological Management

Plan (EMP) will be prepared for each phase of the Development. The EMP will be secured through condition.

Bats

8.169 The potential impact of future phases of the Development on roosting bats will be minimised through updated ecology surveys which will be undertaken before the commencement of each phase of the Development. These surveys will be required as part of future detailed planning applications to be submitted for the outline element of the Development (Phases 2 to 5).

8.170 Update Surveys would include, as a minimum, an updated PEA and a Bat Scoping Survey of structures and trees that could be impacted by that specific phase. Through these update surveys, the baseline situation with regards to roosting bats will be updated and the impact of that specific phase of the Development on roosting bats will be reassessed. Should bats be found roosting on Site in later phases of the Development, prior to demolition and construction works in that phase commencing, appropriate mitigation will be designed and built in to the design to minimise any such impact and where possible enhance the Site for bats. Works to any bat roosts will also only be undertaken once a licence from Natural England has been received.

8.171 To enhance the Site and compensate for the loss of potential access and egress points, new bat roosting opportunities will be provided within each phase of the Development. These features will be in the form of bat boxes which will be delivered across all phases of the Development.

Birds – Killing and Injury

8.172 To minimise the risk of killing and injuring birds, their young, eggs or destroying active nests, the clearance/demolition of the vegetation and buildings with nesting bird potential/confirmed nesting activity will be undertaken outside of bird nesting season (taken to run from March to August inclusive) or after a suitably qualified ecologist has confirmed absence. Any nests recorded by the ecologist would be protected until they are no longer active.

8.173 The above will be detailed within each phase specific CEMP and will also be included within each phase specific EMP.

Birds – Nesting sites for House sparrow

8.174 To minimise the impact of the construction works on the availability of nesting sites for house

sparrow, house sparrow terraces will be integrated into new buildings in the Development. Additionally, prior to the demolition of the existing 2-storey buildings with hanging tiles, proposed in Phase 4 and 5 of the Development, additional house sparrow terraces will be installed within or close to these areas on suitable trees and structures which are being retained.

8.175 In addition to house sparrow nest boxes, a range of boxes for other bird species will be integrated into new buildings in the Development as well as in retained mature trees. These bird boxes will provide additional nesting sites for a wide range of birds across the Site. Boxes would provide nesting sites for species including starling and swift, given their status as species of conservation concern, as well as more common widespread species recorded on the Site including great tit, robin, blue tit and wren.

8.176 The exact number and approximate location of house sparrow terraces and other bird boxes to be installed within each phase of the Development would be detailed within a phase specific EMP, which would be secured through condition.

Invertebrate

8.177 To further enhance the Site for invertebrates and in particular stag beetle, log piles and specific stag beetle loggeries would be designed into the extensive landscaping proposals for the Site. The focus on stag beetles is important given that the Richmond Park SAC, which is designated for stag beetles, lies approximately 2km from the Site and there are records for stag beetle within 100m of the Site. Dead and rotting wood is an important habitat for stag beetle larvae, with the larvae spending up to six years feeding and living in dead and rotting wood before pupating and turning in to adults.

8.178 The extensive landscaping will also provide an abundance of habitat for pollinator species of invertebrate.

Hedgehog – Killing and Injury

8.179 To minimise the risk of killing and injuring hedgehogs, they should be watched for during any vegetation clearance and if a hedgehog is present, clearance work should stop and the hedgehog moved to safe area of suitable habitat that is not proposed for removal.

Operational Phase

Bats – Foraging and Commuting

8.180 The operational Development will include artificial lighting. There is significant lighting on the existing Site, particularly in areas within the north of the Site and there is an opportunity as part of the Development to design new lighting to be more 'wildlife friendly'. To minimise this impact, measures to limit additional light disturbance of the Development would be implemented. The final detailed Lighting Strategy for each phase of the Development, which will be secured by planning condition, will follow guidance provided by The Institute of Lighting Professionals and BCT. Specifically:

- Hours of operation should be minimised. External lighting at night should be avoided and subject to controls to prevent illumination when not required;
- Light-spill should be minimised. Use of directional luminaires, hoods and cowls is recommended to prevent light-spill, particularly onto semi-natural features/habitats. No lights with an upward light ratio should be installed;
- Lighting should point away from green features such as trees or areas of landscaping, where possible;
- Luminaire choice should take into account impacts to bats. Warm-white spectrum lights below 2700Kelvin should be used to reduce the blue component of light. Additionally, luminaires should feature peak wavelengths higher than 550nm to avoid the component of light which is most harmful; and
- External lighting columns should be as low to the ground as possible.

Residual Effects

Construction Phase

Statutory Designated Sites

8.181 Taking into consideration all the above, the construction phase of the Development would have a **Negligible** impact on statutory designated sites.

Non-Statutory Designated Sites

8.182 Taking into consideration all the above, including the preparation of phase specific CEMPs, the construction phase of the Development would have a **Negligible** impact on non-statutory designated sites.

Habitats – Scattered Trees

8.183 Taking into consideration all the above, the Development is would have a **Negligible** impact in the short term leading to a **Permanent positive** impact at the **Local level** once the construction phase of the Development is complete and as the trees reach maturity.

Habitats – Introduced Shrub

8.184 Taking into consideration all the above, the Development would have a **temporary negative impact Within the Site Boundary only** during each individual phase of the Development, with regards to introduced shrub and would have a **permanent positive impact Within the Site Boundary** for each phase and potentially a **permanent positive impact at the Local level** once the construction of all phases is complete respectively.

Bats

Foraging and Commuting

8.185 Taking into consideration all of the above, the construction phase of the Development would to have a **Negligible** impact on foraging and commuting bats in the short term and a **permanent positive impact at the Local** level once the construction phase of the Development is complete.

Roosting bats

8.186 Taking into consideration all of the above, the construction phase of the Development would have a **Negligible** impact on roosting bats in the short term and a **permanent positive impact at the Local** level once the construction phase of the Development is complete.

Birds

Killing and Injury

8.187 Through the implementation of the recommended mitigation, the Development will have a **Negligible** impact with regards to the killing and injuring birds and/or the destruction of active nests.

Loss of nesting and foraging habitat

8.188 Through the implementation of the recommended mitigation, the Development will have a **Negligible** impact in the short term and a **permanent positive impact at the Local scale** once the construction of the Development is complete for all bird species including house sparrow.

Invertebrates

8.189 Through the implementation of the extensive landscaping and the recommended mitigation, the Development will have **a permanent positive impact at the Local level** on invertebrates.

Hedgehog

Killing and Injury

8.190 Through the implementation of the recommended mitigation, the Development will have a **Negligible** impact with regards to the killing and injuring of hedgehog.

Loss of Sheltering and Foraging Habitat

8.191 Taking into consideration all of the above, the Development is likely to have a **Negligible** impact on hedgehog in the short term leading to a **permanent positive impact Within the Site Boundary** in terms of the provision of sheltering and foraging habitat.

Operational Phase

Statutory Designated Sites

8.192 Taking into consideration all the above, the operational phase of the Development will have a **Negligible** impact on statutory designated sites.

Non-Statutory Designated Sites

8.193 Taking into consideration all the above, the operational phase of the Development will have a **Negligible** impact on non-statutory designated sites.

Habitats – Scattered Trees

8.194 Taking into consideration all the above, the operational phase of the Development will have a **Negligible** impact on scattered trees.

Habitats – Introduced Shrub

8.195 Taking into consideration all the above, the operational phase of the Development will have **no impact** on introduced shrub.

Bats

Foraging and Commuting

8.196 Through the implementation of the recommended mitigation measures, the operational phase of the Development will have a **Negligible** impact with regards to foraging and commuting bats and would have a **permanent positive impact at the Local level**.

Roosting bats

8.197 Taking into consideration all the above, **no impact** from the operational phase of the Development is predicted.

Birds

8.198 Taking into consideration all the above, the operational phase of the Development will have **no impact** on birds.

Invertebrates

8.199 Taking into consideration all the above, the operational phase of the Development will have **no impact** on invertebrate.

Hedgehog

8.200 Taking into consideration all the above, the operational phase of the Development will have **no impact** on hedgehog.

Cumulative Effects

Construction Phase

8.201 Through a combination of careful design, embedded mitigation and the implementation of the additional mitigation and enhancement measures, the impact of the construction phase of the Development on all the ecological receptors is **Negligible** to **permanent positive at a Local level**. The surrounding committed schemes considered under the cumulative assessment will also have to provide suitable mitigation for any impact on protected species, including loss of suitable habitat for such protected species, as part of their submission in order to comply with relevant legislation and planning policy with regards to biodiversity and nature conservation. As such, no cumulative effects are predicted.

Operational Phase

8.202 Through a combination of careful design, embedded mitigation and the implementation of the additional mitigation and enhancement measures, the impact of the operational phase of the Development on all the ecological receptors is **Negligible to permanent positive at the Local level**. The surrounding schemes considered under the cumulative assessment will also have to provide suitable mitigation for any impact on protected species, including increased lighting, as part of their submission in order to comply with relevant legislation and planning policy with regards to biodiversity and nature conservation. As such, no cumulative effects are predicted.

Summary

8.203 The assessment of the likely significant effects of the Development on the environment in respect of biodiversity and ecology has been completed using best practice guidance and up to date ecological data for the Site. A suite of ecology surveys assessing the habitats present on the Site and key species groups, in this case bats and birds, have been completed within the last 12 to 18 months and all survey data is within the recommended validity timeframe, as recommended by CIEEM.

8.204 There are no designated sites within the boundary of the Site. All statutory designated sites are located over 1km from the Site with the most important (international and national value) sites being approximately 2km from the Site. Most non statutory designated sites are 300m or over from the Site, with the exception being Kingston Cemetery SINC (Local), which is located 20m south of the Site.

8.205 The Site is dominated by buildings and hardstanding with vegetated habitats being dominated by amenity grassland and areas of introduced shrub, which are scattered across the Site and in many cases isolated from each other. The Site also supports multiple scattered trees of varying age, species and quality.

8.206 Roosting bats were recorded as likely absent from the Site and general bat activity was relatively low across the Site with pockets of most activity being confined to small areas of vegetation and in particular where light levels were at the lowest. Large areas of the Site, particularly within the north of the Site, are subject to high levels of light, which is likely to be a key factor in the relatively low activity of bats in these areas. With regards to birds, the key findings are that there is a reasonable population of house sparrows on the Site, with most activity being focused within the southern portion of the Site where two storey residential properties occur which have hanging tiled facades. The Site also has potential to support invertebrate, in particular pollinator species, and hedgehog.

8.207 The majority of the negative impacts that could occur during the construction phase of the Development would be eliminated through the landscaping proposals that are embedded within the design of the Development. Where impacts have been predicted in the absence of mitigation, for example the impact of Site clearance on nesting birds, mitigation measures have been recommended to minimise or eliminate the predicted impacts for example, timing Site clearance to occur outside of the nesting bird season. Through the embedded landscaping proposals and the implementation of the recommended additional mitigation measures, it has been concluded that the Development is likely to have permanent positive impacts on most ecological receptors through the provision of better-quality roosting, nesting, foraging and commuting habitat following completion of the Development.

8.208 Table 8.3 contains a summary of the likely significant effects of the Development.

Table 9.3: Table of Significance – Biodiversity

Potential Effect	**Nature of Effect** (Permanent/Temporary)	**Significance** (Major/Moderate/Minor) (Beneficial/Adverse/Negligible)	**Mitigation / Enhancement Measures**	**Geographical Importance***							**Residual Effects** (Major/Moderate/Minor) (Beneficial/Adverse/Negligible)
				I	UK	E	R	C	B	L	
Construction											
Statutory designated sites	Negligible	Negligible	Implementation of CEMP	X	X					X	Negligible
Non-statutory designated sites	Negligible to temporary	Negligible - Local							X	X	Negligible
Scattered Trees	Permanent	Positive Local	Implementation of EMP							X	Positive
Introduced shrub	Permanent	Positive Local								X	Positive
Bats - Foraging and Commuting bats	Permanent	Positive Local								X	Positive
Bats - Roosting bats (Phase 1)	Negligible	Negligible	N/A							X	Positive
Bats – Roosting (Phase 2 - 5	Permanent	Negative Local	Update OEA and Bat Scoping Surveys for outlines element (phases 2-5), as part of RM planning submissions							X	Negligible
Birds - Killing and Injuring	Permanent	Negative Local	Timing of works or ecologist supervision							X	Negligible
Birds - Loss of Nesting and Foraging Habitat	Permanent	Positive Local	Provision of bird boxes including house sparrow terraces							X	Positive
Invertebrates	Negligible	Negligible	Provision of log piles and stag beetle loggeries							X	Positive
Hedgehog – Killing and Injury	Permanent	Negative Within Site Boundary	Supervision of clearance work							X	Negligible
Hedgehog- loss of sheltering and foraging habitat	Permanent	Positive Within Site Boundary	N/A							X	Positive
Completed Development											
Statutory designated sites	Negligible	Negligible	N/A							X	Negligible

Non-statutory designated sites	Negligible	Negligible								X	Negligible
Scattered Trees	Negligible	Negligible								X	Negligible
Introduce Shrub	No Impact	No impact									No impact
Bats – Foraging and Commuting	Permanent	Negative Local	Bat sensitive lighting design							X	Positive
Bats - Roosting	No Impact	No impact	N/A								No impact
Birds	No Impact	No impact									No impact
Invertebrates	No Impact	No impact									No impact
Hedgehog	No Impact	No impact									No impact
Cumulative Effects											
Construction											
All Ecological Receptors	Negligible	Negligible	N/A							X	Negligible
Operation											
All Ecological Receptors	Negligible	Negligible	N/A							X	Negligible

*** Geographical Level of Importance**

I = International; UK = United Kingdom; E = England; R = Regional; C = County; B = Borough; L = Local

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