



**Red & Yellow**  
**Specialist Extra Care**  
Melliss Avenue - Kew

Preliminary Ecological Appraisal  
October 2018

## Quality information

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The methodology adopted and the sources of information used by AECOM in providing its services are outlined in this Report. The work described in this Report was undertaken between 22<sup>nd</sup> and 29<sup>th</sup> November 2017 and is based on the conditions encountered and the information available during the said period of time. The scope of this Report and the services are accordingly factually limited by these circumstances. AECOM disclaim any undertaking or obligation to advise any person of any change in any matter affecting the Report, which may come or be brought to AECOM's attention after the date of the Report.

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## 1. Executive Summary

AECOM Infrastructure and Environment UK Ltd. ("AECOM") was instructed by Melliss Ave Devco Limited ("Client") to carry out a Preliminary Ecological Appraisal (PEA) for a Proposed Development at the former Kew Biothane Site, Melliss Avenue, Kew TW9 4BD (hereafter referred to as the Site) located in the London Borough of Richmond. The Site is approximately 0.7ha in size and is proposed for the demolition of existing buildings and structures, and redevelopment of the Site to provide a Specialist Extra Care facility (C2 Use Class) for the elderly with existing health conditions. This comprises 89 units, with extensive private and communal healthcare, therapy, leisure and social facilities set within a building of ground plus 3 to 5 storeys including set backs. Provision of car and cycle parking, associated landscaping and publicly accessible amenity spaces including a children's play area are also part of the development plan.

In order to inform the PEA, a desk study and an extended Phase 1 habitat survey was undertaken by an ecologist from AECOM on 22nd November 2017 to identify any potential constraints with regards to protected species and habitats associated with the Site. In addition, an initial inspection of all buildings and trees within the Site to assess the suitability to support roosting bats was also undertaken.

Three international statutorily designated sites for nature conservation are present within a 10km radius of the Site. This includes Richmond Park Special Area of Conservation (SAC), Wimbledon Common SAC, and West London Waterbodies Special Protection Area (SPA) and Ramsar site. In addition, a total of four nationally designated statutory sites are located within 2km of the Site, including a single Site of Special Scientific Interest (SSSI) and three Local Nature Reserves (LNR). The nearest of these, Dukes Hollow LNR is located 1.6km west of the Site. Given that all internationally designated sites are a minimum of 1.9km away from the Site, and given the scale of the Proposed Development, no adverse impacts to these designations or any other statutory sites are anticipated during the construction and operational phases of the Proposed Development.

A total of 21 non-statutory designated sites for nature conservation are located within 2km of the Site, the closest of which is The River Thames and Tidal Tributaries Site of Metropolitan Importance for Nature Conservation (SINC) which is located 0.1km east of the Site.

The Site predominantly comprises hardstanding features associated with the on-site waste treatment facilities, interspersed with a relatively large area of neutral semi-improved grassland with intermittent patches of tall ruderal and ephemeral/short perennial herbs. Additionally, continuous scrub and a variety of semi-mature and occasional mature trees line the site's east boundary with the Kew Riverside Walkway, and scattered, ornamental varieties of oak and other trees line both south and west boundaries.

The habitats present on site are suitable for nesting birds and provide potential foraging, commuting and hibernation habitat for Western European hedgehog, which have been recorded within the wider local area. In addition, several ivy covered trees within the Proposed Development site have the potential to support roosting bats.

The lighting plans for the Proposed Development must include a 'dark corridor' situated along the adjacent towpath and no external upwards facing lighting within the Site, which prevents light spill onto the River Thames and minimises the impact

that light could have on bat populations, or populations of fish or aquatic invertebrates within the Thames.

The following recommendations have been made with regard to the Proposed Development:

- Creation of an species-rich urban mini-meadow, designed for urban pollinating insects such as bumblebees (LBAP species') to mitigate the loss of species-rich semi-improved grassland;
- Creation of nectar rich, structurally diverse green roofs and planters to replace and enhance the species-rich semi-improved grassland. The living roof will be encompassed within a biosolar (or similar) living roof. The solar photovoltaic panels situated on the roof will provide a spectrum of shaded conditions and microclimates that will create a variety of habitats of benefit to invertebrates;
- Planting of native trees to replace and mitigate the proposed removal of trees as outlined in the Landscape Masterplan;
- Native shrub planting that connects with the existing habitats within the MOU land in Kew Riverside Walk;
- Provision of nesting/refuge opportunities for pollinators through the installation of habitat boxes;
- Provision of deadwood piles and/or a stag beetle loggery to provide habitat for saproxylic insects;
- Nesting provision for swifts and house sparrows, which are Priority Species listed under the London BAP;
- Integration of bat bricks and bird nest bricks into the building design; and,
- Provision wildflower-rich grassland habitat to benefit pollinating insects. This habitat will connect with adjacent linear shrub and scrub habitat to provide an unfragmented habitat to allow for movement of hedgehogs, a national and local priority species listed under Section 41 of the NERC Act and London BAP.

## 2. Introduction

AECOM Infrastructure and Environment UK Ltd. (“AECOM”) was instructed by Melliss Ave Devco Limited (“Client”) to carry out a Preliminary Ecological Appraisal (PEA) for a Proposed Development at the former Kew Biothane Site, Melliss Avenue, Kew TW9 4BD (hereafter referred to as the Site) located in the London Borough of Richmond. The Site is approximately 0.7ha in size and is proposed for the demolition of existing buildings and structures, and redevelopment of the site to provide a Specialist Extra Care facility (C2 Use Class) for the elderly with existing health conditions. This comprises 89 units, with extensive private and communal healthcare, therapy, leisure and social facilities set within a building of ground plus 3 to 5 storeys including set backs. Provision of car and cycle parking, associated landscaping and publicly accessible amenity spaces including a children’s play area are also part of the development plan.

This PEA was commissioned to identify whether there are known or potential ecological receptors (nature conservation designations, and protected and notable habitats and species) that may constrain or influence the design and implementation of the proposed development. The approach applied when undertaking this PEA accords with the *Guidelines for Preliminary Ecological Appraisal* published by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2013). The PEA addresses relevant wildlife legislation and planning policy as summarized in Section 2 of this report, and is consistent with the requirements of *British Standard 42020:2013 Biodiversity. Code of Practice for Planning and Development*.

In order to inform preparation of the PEA, a desk study, extended Phase 1 habitat survey and inspection of suitability of buildings and trees to support roosting bats were undertaken by an appropriately experienced AECOM ecologist. The purpose of these surveys was to identify ecological receptors within the Site and the wider potential zone of influence of the Proposed Development. The potential zone of influence was defined with reference to the project description provided by Melliss Ave Devco Limited. Additional details are provided in Section 3: Methods.

The purpose of the PEA was to:

- Identify and categorise all habitats present within the Site and any areas immediately outside of the Site where there may be potential for direct or indirect effects (the “zone of influence”);
- Carry out an appraisal of the potential of the habitats recorded to support protected or notable species of fauna and flora;
- Provide advice on any potential ecological constraints and opportunities in the zone of influence, including the identification (where relevant) of any requirements for follow-up habitat and species surveys and/or requirements for ecological mitigation; and
- Provide a map showing the location of the identified ecological of relevance.

The purpose of this report is to inform the design of the Proposed Development prior to submission of a planning application. The report identifies the scope of further work (where necessary) that would be required to support a planning application. High level recommendations are made on potential options for the avoidance, mitigation or compensation of the potential impacts of the proposed development (where known) on the identified ecological receptors, and of potential enhancements to the biodiversity and ecosystem services.



### 3. Wildlife legislation and planning policy

#### 3.1 Wildlife Legislation

The following wildlife legislation is potentially relevant to the proposed development:

- Wildlife and Countryside Act (WCA) 1981 (as amended);
- Countryside and Rights of Way (CROW) Act 2000;
- Natural Environment and Rural Communities (NERC) Act 2006; and
- The Conservation of Habitats & Species Regulations 2017 (the Habitats Regulations).

The above legislation has been considered when planning and undertaking this PEA using the methods described in Section 3, when identifying potential constraints to the proposed development, and when making recommendations for further survey, design options and mitigation, as discussed in Section 5. Compliance with legislation may require the attainment of relevant protected species licences prior to the implementation of the proposed development.

Further information on the requirements of the above legislation is provided as Appendix A.

#### 3.2 National Planning Policy

The revised National Planning Policy Framework (NPPF) was published in July 2018 and sets out the Government's planning policies for England how these are expected to be applied. This NPPF supersedes the previous NPPF published in March 2012.

The NPPF states the commitment of the UK Government to minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity. It specifies the obligations that the Local Authorities and the UK Government have regarding statutory designated sites and protected species under UK and international legislation and how this is to be delivered in the planning system. Protected or notable habitats and species can be a material consideration in planning decisions and may, therefore, make some sites unsuitable for particular types of development, or if development is permitted, mitigation measures may be required to avoid or minimise impacts on certain habitats and species, or where impact is unavoidable, compensation may be required.

Policies and objectives within the NPPF of relevance to ecology are outlined in Appendix A. For example, paragraph 170 of the revised NPPF states that:

*"Planning policies and decisions should contribute to and enhance the natural and local environment by... ...minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures".*

Further information on the relevant parts of the NPPF is provided as Appendix A.

### 3.3 Regional Planning Policy

#### 3.3.1 The London Plan: The Spatial Development Strategy for London – Consolidated with Alterations since 2011 (March 2016)

The London Plan highlights the importance of protecting biodiversity outside of designated sites. Paragraph 7.60 states that *“priority should be placed on connecting fragmented habitat and increasing the size of habitat areas to increase resilience to climate change”*.

Policy 2.18 of the London Plan states that development proposals should *“incorporate appropriate elements of green infrastructure that are integrated into the wider development”* and *“encourage the linkage of green infrastructure...to the wider public realm”*.

Policy 5.3 discusses sustainable design and construction, and states that development proposals should *“demonstrate that sustainable design standards are integral to the proposal, including its construction and operation”*.

Policy 5.10 discusses urban greening and states that development proposals should *“integrate green infrastructure from the beginning of the design process to contribute to urban greening”* and that this can include *“tree planting, green roofs and walls, and soft landscaping”*.

Policy 5.11 discusses green roofs and states that major development proposals *“should be designed to include roof, wall and site planting, especially green roofs and walls where feasible”*.

Policy 7.19 discusses biodiversity and access to nature and states that development proposals should *“make a positive contribution to the protection, enhancement, creation and management of biodiversity”* and *“prioritise assisting in achieving targets in biodiversity action plans”*, and *“not adversely affect the integrity of European sites”*.

Policy 7.21 discusses trees and woodland and states that *“existing trees of value should be retained and any loss as the result of development should be replaced”*, and that *“wherever appropriate, the planting of additional trees should be included in new developments, particularly large-canopied species”*.

#### 3.3.2 The Mayor's Biodiversity Strategy (2002)

The Mayor's Biodiversity Strategy outlines the Mayor's detailed policies for London's biodiversity. Chapter 4: Policies and Proposals states that the Mayor will give priority to the *“protection of biodiversity, positive measures to encourage biodiversity action, promoting the management, enhancement and creation of valuable green space, incorporating biodiversity into new development, and access to nature and environmental education”*.

Policy 1 states that *“The Mayor will work with partners to protect, manage and enhance London's biodiversity”*. This will be implemented through a no net loss of important wildlife habitat, and a net increase in habitat through enhancement and habitat creation.

Policy 2 explains that the Mayor has set up the concept of a “Blue Ribbon Network” for the Thames, London's waterways and the land alongside them. The Mayor will and boroughs should *“protect and enhance the biodiversity of the Blue Ribbon Network by resisting development that results in a net loss of biodiversity and designing new waterside developments in a way that increases habitat value”*.

Policy 5 states that *“The Mayor will seek to ensure that opportunities are taken to green the built environment within development proposals”*.

### 3.3.3 The London Biodiversity Action Plan

The London Biodiversity Action Plan details habitats and species that are of importance for biodiversity in London. Priority habitats of relevance to the Site are Parks and Urban Green Spaces, Private Gardens and Wasteland.

Priority species of relevance to the Site are the cinnabar moth (*Tyria jacobaeae*), stag beetle (*Lucanus cervus*), black redstart (*Phoenicurus ochruros*), house sparrow (*Passer domesticus*), dunnoek (*Prunella modularis*), peregrine (*Falco peregrinus*), song thrush (*Turdus philomelos*), starling (*Sturnus vulgaris*) and the common pipistrelle bat (*Pipistrellus pipistrellus*).

## 3.4 Local Planning Policy

Relevant local planning policies for London Borough of Richmond-upon-Thames are detailed in the following documents:

- London Borough of Richmond Local Development Framework Core Strategy (adopted 2009);
- London Borough of Richmond upon Thames Local Development Framework Development Management Plan (adopted 2011);
- London Borough of Richmond upon Thames Local Plan (Review, Autumn/Winter 2017/2018);
- London Borough of Richmond Biodiversity Action Plan.

Table 1 provides a summary of relevant local planning policies. For the precise wording of each specific policy please refer back to the source document. This planning policy has been considered when assessing potential ecological constraints and opportunities identified by the desk study and field surveys; and, when assessing requirements for further survey, design options and ecological mitigation, as described in Section 5.

**Table 1. Summary of Local Planning Policy**

Document	Planning Policy	Purpose
Richmond Core Strategy	CP4 Biodiversity	The Borough's SSSI's and other nature conservation sites will be safeguarded and enhanced. Biodiversity enhancements will be encouraged in areas of deficiency, in areas of new development, and along wildlife corridors and green chains such as the River Thames.
	CP11 River Thames Corridor	The natural environment of the River Thames corridor within the Borough will be protected and enhanced.
Richmond Development Management Plan	DM SD 5 Living Roofs	Living roofs should be incorporated into new developments where feasible. Onus is on the developer for proposals with roof plate areas of 100sqm or more to provide evidence and justification if a living roof cannot be incorporated. The aim is to achieve 70% cover of roof plate area.
	DM OS 5 Biodiversity and New Development	New developments are expected to preserve and where possible enhance existing habitats, including biodiversity features such as trees. All developments will be required to enhance existing and incorporate new biodiversity features into the build design, and in the landscaping scheme. Consideration should be given to the use of native species.
	DM DC 4 Trees and Landscape	Encourages planting of trees. Requires landscape proposals in submission for new development, which retain existing trees and other important landscape features where practicable. Where trees are removed, appropriate planting will normally be required.
Richmond Local Plan	LP12 Green Infrastructure	Ensure all development proposals protect, and where opportunities arise enhance, green infrastructure (GI). Green roofs, green walls, swales and new tree planting will all be considered as features that enhance GI networks.
	LP13 Green Belt, Open Land and Local Green Space	The borough's Metropolitan Open Land (MOL) will be protected and retained in predominately open use. Inappropriate development will be refused unless 'very special circumstances' can be demonstrated that clearly outweigh the harm to the MOL. Development will be supported if it is appropriate and helps secure the objectives of improving MOL land and will only be considered if by their nature are open or depend upon open uses for their enjoyment and if they conserve and enhance the open nature, character and biodiversity.
	LP15 Biodiversity	Incorporate and create new habitats or biodiversity features into development sites and into the design build themselves; major developments are required to deliver net gain for biodiversity, through incorporation of ecological enhancements, wherever possible.
	LP16 Trees, Woodlands and Landscape	Council requires the protection of existing trees and provision of new trees, shrubs and other vegetation of landscape significance that complement existing, or create new, high quality green areas which deliver amenity and biodiversity benefits.

Document	Planning Policy	Purpose
	LP17 Green Roofs and Walls	Requires green and/or brown roofs to be incorporated into new major development with roof plate areas of 100sqm or more with the onus on the applicant to justify if such provision cannot be made. The Council will expect a green wall to be incorporated, if a green/brown roof is not feasible.
Richmond Biodiversity Action Plan	3.4 Habitats	One of the main aims of the Local Biodiversity Action Plan (LBAP) is to halt further habitat loss, to enhance the quality of what is left through improved management and where possible increase the habitat resource through creation and/or restoration. Priority habitats within the Borough include acid grassland, ancient parkland and veteran trees, broad-leaved woodland, reedbeds and tidal Thames.
	3.5 Species	The protection and appropriate management of a habitat should ensure the survival of individual species associated with that particular habitat

The London Borough of Richmond Biodiversity Action Plan (BAP) targets priority species and habitats within the Borough. The priority habitat, urban wasteland, is relevant to the Site. Relevant priority species include all locally extant bat species, bumblebees (*Bombus* spp.), hedgehog (*Erinaceus europaeus*), song thrush, stag beetle and tower mustard (*Arabis glabra*).

## 4. Methods

### 4.1 Desk Study

A desk study was carried out to identify nature conservation designations, and protected and notable habitats and species potentially relevant to the proposed development.

A stratified approach was taken when defining the desk study area, based on the likely zone of influence of the proposed development on different ecological receptors and, an understanding of the maximum distances typically considered by statutory consultees. Accordingly, the desk study identified any international nature conservation designations within 10km of the Site; other statutory sites, non-statutory sites and protected and notable habitats and species within 2km of the Site.

The desk study was carried out using the data sources detailed in Table 2. Protected and notable habitats and species include those listed under Schedules 1, 5 and 8 of the Wildlife and Countryside Act 1981 (as amended); Schedules 2 and 5 of the Habitats Regulations; species and habitats of principal importance for nature conservation in England listed under section 41 (s41) of the NERC Act (2006); and other species that are Nationally Rare, Nationally Scarce or listed in national or local Red Data Lists and Biodiversity Action Plans.

**Table 2. Desk Study Data Sources**

Data Source	Accessed	Data Obtained
Multi-Agency Geographic Information for the Countryside (MAGIC) website	24 <sup>th</sup> November 2017	<p>International statutory designations within 10 km</p> <p>Other statutory designations within 2 km</p> <p>Ancient woodlands and notable habitats within 1 km</p> <p>Information on habitats and habitat connections (based on aerial photography) relevant to interpretation of planning policy and assessment of potential protected and notable species constraints</p>
Greenspace Information for Greater London	28 <sup>th</sup> November 2017	<p>Non-statutory designations within 2km</p> <p>Protected and notable species records within 2km (records for the last 10 years only)</p>
Ordnance Survey 1:2500 Pathfinder maps and aerial photography	28 <sup>th</sup> November 2017	<p>Information on habitats and habitat connections (based on aerial photography) relevant to interpretation of planning policy and assessment of potential protected and notable species constraints</p>

## 4.2 Field Survey

The field survey comprised a Phase 1 habitat survey and an appraisal was made of the potential suitability of the habitats present to support protected and notable species.

### 4.2.1 Phase 1 Habitat Survey

A Phase 1 habitat survey was undertaken in accordance with the standard survey method (Joint Nature Conservation Committee, 2010). Phase 1 Habitat survey is a standard method of environmental audit. It involves categorising different habitat types and habitat features within a survey area. The information gained from the survey can be used to determine the likely ecological value of a site, and to direct any more specific survey work which may need to be carried out prior to the submission of a planning application. The standard Phase 1 habitat survey method can be “extended” to record target notes on protected, notable and invasive species.

The survey was undertaken on 22<sup>nd</sup> November 2017 by a suitably qualified AECOM ecologist who recorded and mapped all habitat types present within the survey area, along with any associated relevant ecological receptors observed. The survey area encompassed all safely accessible parts of the site and adjacent habitats, where access permission had been granted in advance of survey, or this land was visible from within the Site or from public rights of way, or other publicly accessible areas.

Where relevant ecological receptors were present, target notes were recorded and the position of these shown on the Phase 1 habitat map (Figure 1). Typical and notable plant species were recorded for different habitat types and reflect the conditions at the time of survey. This was not intended to be a detailed inventory of the plant species present in the survey area, as this is not required for the purposes of Phase 1 habitat survey.

### 4.2.2 Appraisal of Potential Suitability of Habitats to Support Protected and Notable Species

An appraisal was made of the potential suitability of the habitats present to support protected and notable species of plants or animals (as defined in Section 2.1). Field signs, habitat features with potential to support protected species and any sightings or auditory evidence were recorded when encountered. An initial external assessment of buildings and trees to assess suitability to support roosting bats was undertaken (see Section 3.2.3), but no detailed surveys were carried out for any other species.

A note was made of visible instances of invasive non-native plant species listed under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended), including Japanese knotweed (*Fallopia japonica*), or any species of concern listed by the London Invasive Species Initiative (LISI). Locations of plants or stands of any such invasive non-native plant species found were recorded.

Section 5 of this report identifies further requirements for species survey based on the results of the habitat survey. These surveys should be completed prior to submission of a planning application as the results are likely to be material for determination of the planning application.



#### 4.2.3 Assessment of Buildings for Suitability to Support Roosting Bats

An initial external inspection of the buildings was undertaken by a suitably experienced AECOM ecologist on 22<sup>nd</sup> November 2017. This survey was conducted in line with the Bat Conservation Trust (BCT) *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (Collins, 2016).

Close focusing binoculars were used to conduct an external assessment of all buildings within the Site. All potential bat access/egress points and features with the potential to support roosting bats (e.g. cracks, crevices, roof voids) were recorded along with any evidence which may have indicated the location of roosts, such as:

- Stains around entrance holes (resulting from the deposition of oil secretions in bat fur);
- Scratch marks around entrance holes (resulting from bat claw holds);
- Bat droppings;
- Feeding remains; and
- Odours or noise characteristics of bats.

On the basis of the external survey, the overall risk of each building to support roosting bats was classified using a scale of negligible, low, moderate, high or confirmed (see Appendix B). This assessment was based on both the intrinsic suitability of the features to support roosting bats and other evidence giving an indication of the likelihood of use (e.g. presence of droppings, cobwebs, or exposure to elements).

#### 4.2.4 Assessment of Trees for Suitability to Support Roosting Bats

An initial external inspection from the ground of all trees within the Site and all trees outside of the Site boundary that may potentially be affected by the development was undertaken with each tree being classified under the conditions described in Section 4.2.3. All trees were examined from the ground using close focusing binoculars for potential roost features (PRFs) such as loose bark, cavities and ivy that could be utilised by bats. Trees were also checked for any signs of bats such as droppings, scratch marks, staining and feeding remains.

The grading system used to determine the suitability of a PRF to support roosting bats is contained within Appendix B.

### 4.3 Desk Study and Field Survey Limitations

The aim of a desk study is to help characterise the baseline context of a proposed development and provide valuable background information that would not be captured by a single site survey alone. Information obtained during the course of a desk study is dependent upon people and organisations having made and submitted records for the area of interest. As such, a lack of records for a particular habitats or species does not necessarily mean that the habitats or species do not occur in the study area. Likewise, the presence of records for particular habitats and species does not automatically mean that these still occur within the area of interest or are relevant in the context of the proposed development.



The recording of invasive non-native plant species listed on Schedule 9 of the Wildlife and Countryside Act was constrained by the time of year that the survey was undertaken. Most such species are not visible or cannot be reliably mapped outside the growing season (May to September), and some species are only apparent during certain months. Populations of annual plant species may fluctuate markedly between years dependent on the growing conditions present in any given season. Despite being outside of the optimal survey season, the survey undertaken in November 2017 recorded all habitat types within the Site to an appropriate level of botanical detail to inform this PEA and given the habitats present, the timing of the survey is not considered to be a constraint.

Where habitat boundaries coincide with physical boundaries recorded on OS maps the resolution is as determined by the scale of mapping. Elsewhere, habitat mapping is as estimated in the field and/or recorded by hand-held GPS. Where areas of habitat are given they are approximate and should be verified by measurement on site where required for design or construction. While indicative locations of trees are recorded this does not replace requirements for detailed specialist arboricultural survey to *British Standard 5837:2012 Trees in Relation to Design, Demolition and Construction*. During the survey visit, access to the Thames Water Site was not available, and as such, this area was surveyed from the site perimeter. Despite this, aerial imaging shows little additional habitat is present within this area. Therefore, the overall findings of the report are unlikely to differ and lack of access is not considered to be a constraint.

#### 4.4 Quality Assurance

The AECOM Ecologists who conducted the surveys and authored this report are members, at the appropriate level, of the Chartered Institute of Ecology and Environmental Management (CIEEM) and follow their code of professional conduct when undertaking ecological work.

AECOM is BS EN ISO 9001:2008, BS EN ISO 14001:2004 and OHSAS 18001:2007 Health and Safety accredited.

## 5. Results

### 5.1 Nature Conservation Designations

#### 5.1.1 Statutory Designations

Table 3 details the statutory nature conservation designations of sites identified by the desk study, based on the method given in Section 2.1 of this report. A total of seven statutory sites were returned, including three internationally designated sites within 10km and four nationally designated site within 2km. Richmond Park Special Area of Conservation (SAC) is the nearest internationally designated site, located 2.4km away from the Site, whereas Duke's Hollow Local Nature Reserve (LNR) is the nearest nationally designated site, located 1.6km away from the Site.

**Table 3. Sites with Statutory Designations for Nature Conservation**

Designation	Reason(s) for Designation	Relationship to the Site
Duke's Hollow (LNR)	Wildlife refuge created from a former boathouse site. Habitats include woodland and a relatively rich intertidal zone that supports a number of scarce waterside plants.	1.6km W of the Site
Gunnersbury Triangle (LNR)	Mosaic of habitats including wet willow woodland, dry birch woodland, open water and grassy glades.	1.7km N of the Site
Syon Park (SSSI)	Only area of tallgrass washland in Greater London; contains several invertebrate species with a restricted distribution, both locally and nationally.	1.8km W of the Site
Leg of Mutton Reservoir (LNR)	Disused reservoir important for wildfowl.	2.0km E of the Site
Richmond Park (SAC)	The park has a large number of ancient trees with decaying timber, which helps support South London's population of stag beetle ( <i>Lucanus cervus</i> ).	2.4km S of the Site
Wimbledon Common (SAC)	Primarily designated for supporting Northern Atlantic wet heaths with <i>Erica tetralix</i> and European dry heaths. Secondly, the park supports a large population of stag beetle.	4.7km S of the Site
South West London Waterbodies (SPA and Ramsar)	Primarily, designated for its nationally important populations of northern shoveler ( <i>Anas clypeata</i> ) and overwintering gadwall ( <i>Anas strepera strepera</i> ).	9.7km SW of the Site

#### 5.1.2 Non-statutory Designations

Table 4 details the non-statutory nature conservations designations identified by the desk study based on the method given in Section 2.1 of this report. A total of 21 Sites of Importance for Nature Conservation (SINC) are present within 2km of the Site. The designations are listed in descending order, with those closest to the Site listed first.

Table 4. Sites with Non-Statutory Designations for Nature Conservation

Designation	Reason(s) for Designation as per citation provided by GiGL	Relationship to the Site
River Thames and Tidal Tributaries (SINC Metropolitan)	The River Thames is London's most famous natural feature and supports many species of fish and birds, creating a wildlife corridor right through the capital.	0.1km east of the Site.
Kew Meadow Path (SINC Borough Grade II)	A public footpath providing a home for the rare two-lipped door-snail ( <i>Balea biplicata</i> ).	0.4km S of the Site.
Occupation Lane, Kew Railway Bridge (SINC Borough Grade II)	This site is of importance as habitat for the rare two-lipped doorsnail ( <i>Balea biplicata</i> ), a tiny mollusc known from only a handful of sites in Britain, most of them along the Thames in west London.	0.5km NW of the Site.
North Sheen and Mortlake Cemeteries (SINC Local)	Two large cemeteries containing a variety of trees and grassland communities which is of value to invertebrates. They have considerable wildlife interest due to their large size and the diversity of plants and animals that they support.	0.6km S of the Site
Pensford Field (SINC Local)	This former playing field, completely surrounded by housing, is now a community nature, managed largely by local people through the Pensford Field Environment Trust.	0.7km SW of the Site.
Royal Botanical Gardens Kew (SINC Metropolitan)	The gardens also contain some valuable semi-natural habitats, including woodland, grassland and wetlands, supporting a good diversity of birds and other animals.	0.8km W of the Site.
Kew Pond and Kew Green (SINC Local)	Kew Green is a picturesque village green, with the old church of St Anne in its centre and an attractive pond across the road. Although the green is very short-mown, its acid grassland supports several plants which are rare in London, including knotted, rough, clustered and subterranean clovers ( <i>Trifolium striatum</i> , <i>T. scabrum</i> , <i>T. glomeratum</i> and <i>T. subterraneum</i> ).	0.9km NW of the Site.
Royal Mid-Surrey Golf Course (SINC Borough Grade I)	This large golf course has areas of acid grassland and wetland that provide excellent habitat for local wildlife.	1.5km SW of the Site.
London's Canals (SINC Metropolitan)	London's canals support a wide range of aquatic flora, amongst which are found a number of locally uncommon species. These include narrow-leaved water plantain ( <i>Alisma lanceolatum</i> ) and rigid hornwort ( <i>Ceratophyllum demersum</i> ).	1.6km N of the Site.
Gunnersby Triangle (SINC Metropolitan)	Bordered on two sides by railway lines, the site consists largely of secondary woodland dominated by birch ( <i>Betula</i> spp.) and willow ( <i>Salix</i> spp.). There is also a small area of dry grassland in the north of the site.	1.7km N of the Site.
Tide Meadow at Syon Park (SINC Metropolitan)	One of the very few remaining Thames-side wetlands, and particularly unusual in being regularly inundated by the tide. The site is also one of few unimproved grasslands in London grazed by	1.8km W of the Site.

Designation	Reason(s) for Designation as per citation provided by GiGL	Relationship to the Site
	cattle.	
Dukes Hollow (SINC Metropolitan)	A small area of natural Thames riverbank vegetation, consisting of a zoned succession of habitats from the shingle foreshore, through to alder-willow carr and drier woodland occurring higher up.	1.8km W of the Site.
Richmond Park and associated areas (SINC Metropolitan)	In addition to Richmond Park itself, this site includes Richmond Park and Sudbrook Park Golf Courses as well as Ham, Petersham, East Sheen and Palewell Commons. Together, these form an extensive area of high quality wildlife habitats. The many ancient pollarded oaks are of international importance for invertebrates, especially beetles, and also support a wide range of fungi and hole-nesting birds.	1.9km S of the Site.
Chiswick House Grounds (SINC Borough Grade I)	These large, landscaped grounds are of considerable historic interest, and contain a variety of good wildlife habitats. Large areas of secondary woodland, known as 'The Wilderness', have a wide range of trees and shrubs, both native and exotic.	1.9km NE of the Site.
Gunnersbury Park (SINC Borough Grade II)	This large, attractively landscaped park contains two areas of particular nature conservation interest. The Potomac Pond is a sizeable pond, fringed with trees and with a wooded island. Marginal vegetation includes yellow iris ( <i>Iris pseudacorus</i> ), gypsywort ( <i>Lycopus europaeus</i> ) and meadowsweet ( <i>Filipendula ulmaria</i> ).	1.9km NW of the Site.
Old Mortlake Burial Ground (SINC Local)	This small cemetery is quite intensively managed, but its grasslands contain a reasonable diversity of wild flowers, including cat's ear ( <i>Hypochaeris radicata</i> ), mouse-ear hawkweed ( <i>Pilosella officinarum</i> ) and lady's bedstraw ( <i>Galium verum</i> ).	1.9km SE of the Site.
Leg o'Mutton (SINC Borough Grade I)	Situated beside the River Thames, this attractive, reed-fringed reservoir (also known as 'Leg O'Mutton Reservoir' due to its shape) is very important for water birds, amphibians and bats.	2.0km W of the Site.
East Sheen and Richmond Cemeteries, and Penthouse Common (SINC Local)	These three open spaces, adjacent to Richmond Park, provide a range of wildlife habitats, complementing the higher quality habitats in the adjacent National Nature Reserve.	2.0km S of the Site.

## 5.2 Habitats

### 5.2.1 Phase 1 Habitat Types

The habitats recorded, their extent and distribution are shown in Table 5 and Figure 1. The areas are approximate only and only comprise habitats present within the 'Property - Sale Area', the area in which development is to occur. The associated target notes are provided in Appendix C. Relevant information from the desk study on particular habitats is noted in Table 6.

**Table 5. Habitats Present, in Descending Order Based on Spatial Area Occupied**

Habitat	Brief description	Area (ha)	% of Site area
Hardstanding and buildings	The Site comprises a large central area of hard-standing surfaces in the form of concrete and pebble substrate surrounding several waste treatment structures.	Buildings – 0.14	19.7
		Hardstanding – 0.24	33.4
Neutral semi-improved grassland	A relatively species-rich semi-improved grassland was the predominant habitat on site, surrounding the areas of hard-standing and water treatment features, located along most of the site's perimeter.	0.24	34.2
Tall ruderal	Small dense patches of tall ruderal herbs were present across several locations within the areas of semi-improved grassland. Mugwort ( <i>Artemisia vulgaris</i> ) was recorded as the most dominant species.	0.07	9.7
Continuous scrub	A thin belt of scrub lines the inside of the east site boundary, that backs onto a larger linear area of scrub and broadleaved woodland which lines the Kew Riverside Walk adjacent to the River Thames.	0.01	1.9
Ephemeral/short perennial	Ephemeral/short perennial plants line the edge of many hardstanding features. Within the centre of the Site a more densely populated area of ephemeral/short perennial species has colonised that is indicative of open mosaic habitat.	0.03	3.9
Scattered trees	A row of semi-mature trees are located along the fence that runs parallel to the Site entrance. Most of the trees comprise an upright variant of English oak ( <i>Quercus robur</i> ).	0.04	0.1
Bare earth	A small patch of bare ground is located within the north-west corner of the site.	<0.01	0.3

The habitats are described in greater detail below.

### ***Hardstanding and buildings***

In total, approximately 53% (0.38 hectares) of the Site is covered by hard-standing surfaces and buildings. These areas comprise concrete or pebble substrates surrounding several waste treatment facility structures, such as large concrete tanks and large metal infrastructure (Plate 1, Plate 2 & Plate 3).

Further information on the buildings within the Site in relation to their suitability to support roosting bats can be found in Section 4.2.2.





**Plate 1 Circular hard-standing feature (left) and the main central area of hard-standing waste water treatment infrastructure**



**Plate 2 Small green outlet building located near to the Site entrance**





**Plate 3 Hard-surfaced area with variety of waste treatment infrastructure located within the centre of the Site**

### ***Neutral semi-improved grassland***

Semi-improved grassland was the predominant habitat on site, surrounding the areas of hard-standing and water treatment features, present along most of the site's perimeter. The semi-improved grassland situated towards the east of the site was particularly diverse with occasionally dense patches of tall ruderal throughout (TN3, TN5; Plate 5). This area consisted of dominant red fescue (*Festuca rubra*), abundant false oat grass (*Arrhenatherum elatius*), Yorkshire fog (*Holcus lanatus*) and cleavers (*Galium aparine*), common yarrow (*Achillea millefolium*) and greater plantain (*Plantago major*), frequent mugwort, occasional cocksfoot (*Dactylis glomerata*), black medick (*Medicago lupulina*), bristly ox-tongue (*Helminthotheca echioides*), dandelion (*Taraxacum officinale* agg.), common mallow (*Malva sylvestris*), hedge mustard (*Sisymbrium officinale*) upright brome (*Bromopsis erecta*) and white dead nettle (*Lamium album*). In addition, stands of common field speedwell (*Veronica persica*) and spear thistle (*Cirsium vulgare*) were rarely recorded.

However, the grassland located along the west perimeter was notably less diverse, predominantly comprising abundant creeping cinquefoil (*Potentilla reptans*) Yorkshire fog and creeping bent (*Agrostis stolonifera*) (TN11; Plate 4).

Additionally, across all areas of grassland on site, common nettle (*Urtica dioica*) was frequent, green alkanet and field bindweed (*Convolvulus arvensis*) were occasionally recorded and broadleaved dock (*Rumex obtusifolius*), common ragwort, herb Robert (*Geranium robertium*), hogweed (*Heracleum sphondylium*), smooth sow thistle (*Sonchus oleraceus*) and spotted medick (*Medicago arabica*) were all rarely recorded. The sward height across all areas was on approximately 30-50cm.



**Plate 4 Semi-improved grassland with intermittent patches of tall ruderal herbs located within the north-west of the Site**





Plate 5 Semi-improved grassland leading up to and on the bund which extends along the eastern side of the Site

### ***Tall ruderal***

Small patches of tall ruderal herbs were recorded in several locations across the area of semi-improved grassland, collectively covering 0.07ha. Although many species indicative of tall ruderal habitat were distributed throughout the grassland, dense patches of tall ruderal were found dominating areas adjacent to hardstanding features. These patches (see Plate 6) were predominately comprised of dominant mugwort, abundant Yorkshire fog and yarrow, occasional Canadian fleabane (*Erigeron canadensis*), hedge mustard, common nettle, and rare stands of black nightshade (*Solanum nigrum*) and willowherb (*Epilobium* sp.).





Plate 6 Patch of tall ruderal adjacent to the Site entrance, largely dominated by mugwort

### **Continuous scrub**

Along the east site boundary is a thin linear belt of scrub consisting of frequent hawthorn (*Crataegus monogyna*) and elder (*Sambucus nigra*) with occasional horse-chestnut (*Aesculus hippocastanum*), ash (*Fraxinus excelsior*), holly (*Ilex aquifolium*) and bramble (Plate 7). Beyond the site boundary to the east, the row of dense scrub continues along the Kew Riverside Walk, in which a range of mature and semi-mature trees were present, including horse-chestnut, sycamore (*Acer pseudoplatanus*) and ash; this area of scrub and woodland adjacent to the east site boundary is likely to be partially cleared through the Proposed Development works. A large amount of ivy coverage was recorded on many of the trees within this area (TN7, TN14, and TN15).

Below the scrub margin, several herbaceous species were recorded, including occasional hedge woundwort (*Stachys sylvatica*) cleavers and Canadian fleabane.

Further information of the trees within the Site in relation to their suitability to support roosting bats is contained in Section 4.2.3.





**Plate 7 Continuous scrub comprising a variety of semi-mature trees, and shrubs**

### ***Ephemeral/short perennial***

Along the perimeter of the hard standing features, a variety of ephemeral/short perennial species were recorded. Furthermore, an area laid with pebble substrate surrounding the flat circle hardstanding feature had been colonised by these species (Plate 8). These areas were characterised by occasional bristly ox-tongue, buddleia, Canadian fleabane, greater plantain, hedge mustard and scentless mayweed (*Tripleurospermum inodorum*), frequent upright brome, red fescue, doves-foot cranesbill (*Geranium molle*) and mugwort, and rarely recorded willowherb (*Epilobium* sp.).

Moreover, many of these areas had been colonised by dense areas of tufted bryophytes, most notably *Grimmia* spp. (TN6).





**Plate 8 Ephemeral/short perennial plants growing within pebble substrate and adjacent to hard standing areas**

### **Scattered trees**

Rows of semi-mature trees are located outside the fencing to the south and west (Plate 9). Despite being beyond the Site fencing, these trees may be affected by the Proposed Development. Most of the trees comprise tall, upright growing ornamental variety of oak (*Quercus* sp.). Along the southern boundary occasional Leyland cypress (*Cupressus x leylandii*), elder and holm oak (*Quercus ilex*) were recorded.

The tree lines along the west predominantly comprised well-pruned semi-mature oak (*Quercus* sp.), and occasional dog rose (*Rosa canina*), pyracantha (*Pyracantha* sp.) and bramble.

Further information on the trees within the Site in relation to their suitability to support roosting bats can be found in Section 4.2.2.



Plate 9 Tree line of pruned oak (*Quercus* sp.) with *Pyracantha* and bramble beneath, the west boundary as seen from outside the Site.

### ***Bare earth***

A patch of bare earth was recorded within the (Plate 10) north-west corner of the Site, located directly where the extraction zone for the tunnel that services the shafts within the Thames Water site is present.





**Plate 10** Small patch of bare earth covered with leaf litter within the north-west corner of the Site

### 5.2.2 Notable Habitats

Table 6 provides a summary of notable habitats associated with the site based on the results of the Phase 1 habitat survey and with reference to guidance for the recognition of NERC Act S41 (Maddock, 2010), the London Borough of Richmond-upon-Thames Biodiversity Action Plan, and Site of Importance for Nature Conservation (SINC) quality habitats. This assessment is preliminary and further surveys may be required to investigate the value of habitats further, as detailed in Section 5 of this report.

**Table 6. Notable Habitats within the Site**

Habitat	NERC Act?	LBAP?	[LWS/SINC] Quality?	Supporting Comments
Urban wasteland	X	✓	X	3% of the Site is covered by ephemeral/short perennial habitat which is indicative of urban wasteland habitats.

Key to symbols: ✓ = yes, x = no, ? = possible, further survey required to determine this

## 5.3 Protected and Notable Species

Appendix D provides a summary of potentially relevant species identified through a combination of desk study and field survey. The table summarizes the conservation status of each species and provides comment on the likelihood of presence.

Species present within the Site are those for which recent direct observation or field signs confirmed presence. Species which are possibly present are those for which there is potentially suitable habitat based on the results of the Phase 1 habitat survey, or this combined with desk study records (Appendix C). Species unlikely to be present are only mentioned where there are desk study records but there is no suitable habitat in the zone of influence, or there are other reasons why presence is unlikely. Brief comments are provided to support the determinations made in Section 5.

Where species are identified in Table 7 as potentially relevant to the Site they are likely to represent legal constraints or may be material to determination of a planning application. Further surveys will or may be required to determine presence or probable absence. Requirements for further survey are identified in Section 5 of this report.

**Table 7. Protected and notable species relevant or potentially relevant to the Proposed Development**

Species	Legally Protected Species?	Species of Principal Importance?	Other Notable Species?	Present on Site?	Possibly Present on Site?	Present / Potentially Present in Wider Zone of Influence?	Supporting Comments
Bats	✓	✓	X	X	✓	X	Suitable potential roosting features were present upon several trees directly outside of the Site border; these trees are retained within the landscape masterplan. The linear scrub line and adjacent River Thames provide linear foraging and commuting habitat.
Western European hedgehog	X	✓	X	X	✓	✓	Have been recorded within 0.3km of the Site within an area of habitat connected to the Site. Grassland and scrub has potential for foraging and hibernating opportunities.
Nesting birds	✓	X	X	X	✓	✓	Trees and continuous scrub have the potential to support common nesting birds.
Bumblebees	X	X	✓	✓	✓	✓	A buff-tailed bumblebee ( <i>Bombus terrestris</i> ) was observed on site. A good range of floral and structural diversity within the grassland is present to support bumblebee foraging and nests on site.

Key to symbols: ✓ = yes, see Supporting Comments for further rationale

Legally protected species are those listed under Schedules 1, 5 and 8 of the Wildlife and Countryside Act 1981 (as amended); and, Schedules 2 and 4 of The Conservation of Habitat & Species Regulations 2010 (as amended).

Species of Principal Importance as those listed under Section 41 of the NERC Act 2006. Planning Authorities have a legal duty under Section 40 of the same Act to consider such species when determining planning applications.

Other notable species include native species of conservation concern listed in the LBAP (except





species that are also of Principal Importance), those that are Nationally Rare, Scarce or Red Data List, and non-native controlled weed species listed under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended).

### 5.3.1 Bats






#### ***Assessment of suitability of buildings to support roosting bats***

On the basis of the initial external inspection undertaken the majority of buildings and structures within the Site have negligible suitability to support roosting bats. Further details on each building are contained within Table 8.

**Table 8. Initial Assessment of Buildings for Suitability to Support Roosting Bats**

Building	Description	Photograph
Building 1 – Small green building	Small single-storey height building with a flat roof. No crevices were noted, as were no suitable features on the exterior of the building that could potentially be used as access/egress points for roosting bats. In addition, no signs of bats were noted. The building has negligible suitability to support roosting bats.	
Building 2 – Metal infrastructure	One to two-storey height metallic structure with a wooden bordered wall to the back. No crevices were noted, as were no suitable features on the exterior of the building that could potentially be used as access/egress points for roosting bats. In addition, no signs of bats were noted. The building has negligible suitability to support roosting bats.	
Building 3 – Concrete tank (centre-west)	One to two-storey height concrete tank, located centre-west within the Site, with metal features on top. No crevices were noted, as were no suitable features on the exterior of the building that could potentially be used as access/egress points for roosting bats. In addition, no signs of bats were noted. The building has negligible suitability to support roosting bats.	
Building 4 – Concrete tank (north-east)	One to two-storey height concrete tank, located north-east within the Site. No crevices were noted, as were no suitable features on the exterior of the building that could potentially be used as access/egress points for roosting bats. In addition, no signs of bats were noted. The building has negligible suitability to support roosting bats.	






Building	Description	Photograph
Building 5 – Concrete tank (north-west)	One to two-storey height concrete tank, located north-west within the Site. No crevices were noted, as were no suitable features on the exterior of the building that could potentially be used as access/egress points for roosting bats. In addition, no signs of bats were noted. The building has negligible suitability to support roosting bats.	
Building 6 – Concrete tank (south-west)	One to two-storey height concrete tank, located south-west within the Site. No crevices were noted, as were no suitable features on the exterior of the building that could potentially be used as access/egress points for roosting bats. In addition, no signs of bats were noted. The building has negligible suitability to support roosting bats.	
Building 7 – Concrete block (centre-north)	One to two-storey height concrete block with a range of associated metal infrastructure attached; located centre-north within the Site. No crevices were noted, as were no suitable features on the exterior of the building that could potentially be used as access/egress points for roosting bats. In addition, no signs of bats were noted. The building has negligible suitability to support roosting bats.	
Building 8 – Waste treatment facility features (centre-east)	Large metal waste treatment facility features located within the Site towards the bund to the east. No crevices were noted, as were no suitable features on the exterior of the building that could potentially be used as access/egress points for roosting bats. In addition, no signs of bats were noted. The building has negligible suitability to support roosting bats.	
Building 9 – Waste treatment facility feature (centre-west)	Large metal waste treatment facility feature with wooden board, located centre-east within the Site. No crevices were noted, as were no suitable features on the exterior of the building that could potentially be used as access/egress points for roosting bats. In addition, no signs of bats were noted. The building has negligible suitability to support roosting bats.	

### **Assessment of trees for suitability to support roosting bats**

On the basis of the initial external inspection undertaken all trees within the Site have negligible suitability to support roosting bats. However, several trees adjacent to the Site's east boundary, within the Riverside Walk, all have low suitability to support roosting bats. Further details on the trees with low suitability are contained within Table 8.

**Table 9. Initial Assessment of Trees for Suitability to Support Roosting Bats**

Building	Description	Photograph
Tree 1 – Horse chestnut	Mature horse chestnut ( <i>Aesculus hippocastanum</i> ) located just outside the eastern site boundary, along the scrub border (TN15). The trunk and several branches contained cavities at a low height which could potentially be used as egress/access points for bats. No signs of bats were noted. The tree has low suitability to support roosting bats. The tree will be retained as detailed within the development's landscape masterplan.	
Tree 2 – Semi-mature sycamores	Two semi-mature sycamore trees ( <i>Acer pseudoplatanus</i> ) located just outside the eastern site boundary, along the scrub border (TN16). The trunk and several branches of both trees were densely covered in ivy, which could potentially be used as roosting cover. No signs of bats were noted. The tree has low suitability to support roosting bats. The tree will be retained as detailed within the development's landscape masterplan.	
Tree 3 – Ivy covered horse chestnut and semi-mature ash trees	Mature horse chestnut and semi-mature horse ash ( <i>Fraxinus excelsior</i> ) located just outside the eastern site boundary, along the scrub border (TN7). The trunk and several branches of both trees were densely covered in ivy, which could potentially be used as roosting cover. No signs of bats were noted. The tree has low suitability to support roosting bats. The tree will be retained as detailed within the development's landscape masterplan.	

### 5.3.2 Nesting Birds

The semi-mature broadleaved trees and scattered scrub that line the Site boundary, including the scrub and broadleaved woodland habitat that runs along the Kew Riverside Walk adjacent to the Site has the potential to support common nesting bird species.

### 5.3.3 Hedgehogs

The desk study data from GiGL included records for hedgehog within 0.3km of the site boundary. The linear strip of scrub located along the eastern boundary of the Site is considered suitable for this species; the surrounding semi-improved grassland offers suitable foraging habitat.

### 5.3.4 Invasive Non-native Plants and Animals

No invasive non-native plant species listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) were recorded during the survey. However, a flock of ring-necked parakeets (*Psittacula krameri*), a Schedule 9 listed species, were heard and seen flying past the nearby Mellis Avenue.

### 5.3.5 Other Protected or Otherwise Notable Species

The continuous scrub, diverse ephemeral/short perennial vegetation and species-rich grassland may provide suitable habitat for a range of common invertebrate species. During the extended Phase 1 habitat survey larvae of the ruby tiger moth (*Phragmatobia fuliginosa*) was observed feeding on ragwort and an individual buff-tailed bumblebee (*Bombus terrestris*) was observed flying across the grassland. The desk study search returned records of 24 invertebrate species including the cinnabar moth (*Tyria jacobaeae*) and knotgrass moth (*Acrionicta rumicis*), species of Principal Importance under Section 41 of the NERC Act (2006).

The wildflower species present within the Site are likely to be of potential value to invertebrate species.

Reptiles were considered, but due to the lack of records within the local area and the urban nature of the Site and surrounding vicinity, it is unlikely that they are present.



## 6. Identification of ecological constraints and recommendations

### 6.1 Approach to the Identification of Ecological Constraints

Relevant ecological receptors that may represent constraints to the proposed development, or that provide opportunities to deliver ecological enhancement in accordance with planning policy, are identified in Section 4 of this report. The NPPF and local planning policy (summarised in Section 2 of this report) specify requirements for the protection of features of importance for biodiversity. Planning policy is a material consideration when determining planning applications. Compliance with planning policy requires that the Proposed Development considers and engages the following mitigation hierarchy where there is potential for impacts on relevant ecological receptors:

1. Avoid features where possible;
2. Minimise impact by design, method of working or other measures (mitigation) e.g. by enhancing existing features; and
3. Compensate for significant residual impacts, e.g. by providing suitable habitats elsewhere (whether in the control of Melliss Ave Devco Limited or otherwise legally enforceable through planning condition or Section 106 agreement).

This hierarchy requires the highest level to be applied where possible. Only where this cannot reasonably be adopted should lower levels be considered. The rationale for the proposed mitigation and/or compensation should be provided with planning applications, including sufficient detail to show that these measures are feasible and would be provided.

In pursuance of the objective within the NPPF of providing net gains in biodiversity where possible, consideration should be given to the scope for enhancement as part of the proposed development. This should represent biodiversity gain over and above that achieved through mitigation and compensation. Enhancement could be achieved on and/or off the Site.

The likelihood of the relevant ecological receptors constraining the Proposed Development has been assessed with reference to the scale described in Table 10. The higher the importance of the ecological receptor for the conservation of biodiversity at national and local scales, the more likely it is to be a material consideration during determination of the planning application for the Proposed Development.

Opportunities for ecological enhancement are not scaled in Table 10, but are identified in Section 5.5 of this report. There may be scope for ecological enhancement where existing habitat features could be improved or enhanced within the proposed development as designed, or with only minor amendment to the design of the Proposed Development. Ecological enhancement may not be possible where there is little scope to accommodate enhancement within the Proposed Development, e.g. due to a lack of utilisable space, or where land is required for

essential mitigation. In such cases consideration could be given to enhancing biodiversity in the vicinity of the Site.

**Table 10. Scale of Constraint to Development**

**Likelihood    Definition**

High	An actual or potential constraint that is subject to relevant legal protection and is likely to be a material consideration in determining the planning application (e.g. statutory nature conservation designations and European/nationally protected species). Further survey likely to be required (as detailed in this report) to support a planning application.
Medium	An actual or potential constraint that is covered by national or local planning policy and, depending on the level of the potential impact as a result of the proposed development, may be a material consideration in determining the planning application. Further survey may be required (as detailed in this report) to support a planning application.
Low	Unlikely to be a constraint to development or require further survey prior to submission of a planning application. Mitigation is likely to be covered under Construction Environmental Management Plan (CEMP) or precautionary working method statement (e.g. generic requirements for the management of nesting bird risks).

## 6.2 Constraints and Requirements for Further Survey: Designations

There are seven statutory and 21 non-statutory sites designated for their nature conservation value that are potential constraints to the proposed development. The potential relevance of these designations is assessed further below.

### 6.2.1 Statutory Sites

There are three internationally designated sites within 10km of the Site, Richmond Park SAC, Wimbledon Common SAC and West London Waterbodies SPA/Ramsar. A total of four other statutorily designated sites within 2km of the Site, including Syon Park SSSI and three LNRs. Given the distance of the designation from the survey area and assuming that standard best practice construction methods are implemented as part of a Construction Environmental Management Plan (CEMP), no adverse impacts to these designated sites are anticipated during the construction and operational phases of the Proposed Development.

### 6.2.2 Non-Statutory Sites

Based on available information, the majority of the non-statutorily designated nature conservation sites identified in the desk study (Table 4) are considered not to be relevant to the Proposed Development. This conclusion is based on the rationale that the designated sites are too distant from the Proposed Development to be affected and the scale of the Proposed Development will be constrained to the habitats present within the Survey Area. However, the nearest non-statutory designation, the River Thames and Tidal Tributaries SINCR, is located less than 0.1km east of the Site.

SINCRs are designated by LPAs and any works likely to affect these non-statutory sites should be subject to discussion with the LPA and their ecologists.

The Proposed Development includes the removal of scrub and grassland habitat adjacent to the Thames and Tidal Tributaries SINCR. Although the SINCR will not be directly affected, indirect impacts are likely to occur. Early consultation with relevant

stakeholders is recommended with regards to construction adjacent to the Thames and Tidal Tributaries SINCC, and it is recommended that the proposed scheme demonstrates a significant biodiversity gain within the proposed landscape masterplan.

Given the adjacent proximity to the River Thames and its associated non-statutory designation, it is recommended that a CEMP is implemented during construction of the Proposed Development to ensure no adverse impacts of the works to designated sites. The CEMP will include best practice measures to control noise, dust and pollution as a consequence of site clearance and development works, including but not limited to:

- All vehicles and mechanical plant will be fitted with exhaust silencers;
- Acoustic covers used over generators and other plant;
- Plant and machinery will be turned off when not in use;
- Enclosure and sheeting of material stockpiles;
- Sheltered location for material storage;
- The use of wheel washes to reduce the trafficking of soil onto adjacent highways with prompt clearance as a remedial action;
- The use of a bowser on-Site during extended periods of dry weather to damp down dust;
- Sheeting of vehicles carrying spoil;
- Dust suppression measures for any on-Site crushers; and
- Bunding of fuel stores and material stockpiles to prevent pollution

### 6.3 Constraints and Requirements for Further Survey: Habitats

The mosaic of habitats within the Site fit within the broad definition of “urban wasteland” habitat, which is a Priority Habitat within the Richmond Biodiversity Action Plan (LBAP). Although no definition appears to be published for this habitat, the criteria for open mosaic habitat on previously developed land (NERC S41) is used as a reference point. Under the JNCC (2010b) definition of open mosaic habitat, the habitat must be at least 0.25ha in size. As the associated habitat on site is below this figure, no further constraint or survey is required. Additionally, no further survey work is recommended with regards to the habitats present within or directly adjacent to the Site as the Phase 1 habitat survey undertaken to inform this PEA is sufficient to assess the ecological value of these habitats.

### 6.4 Constraints and Requirements for Further Survey: Species

#### 6.4.1 Bats

All species of bat and their roosts (whether bats are present or not) are protected under the Conservation of Habitats and Species Regulations (2017) and under the Wildlife and Countryside Act 1981 (as amended). Taken together, this legislation makes it an offence to deliberately damage, destroy or obstruct access to a bat roost or to deliberately kill, damage, take or disturb bats. The procedures set out below must be undertaken for all low rated buildings and trees, respectively, prior to the

commencement of building demolition or tree removal in order to prevent an offence occurring.

It is anticipated that all buildings on Site are to be removed as part of the Proposed Development. Moreover, it is anticipated that all trees with low suitability for roosting bats are to be retained as part of the Landscape Masterplan for the Site. Therefore, no further surveys for bats are recommended. However, if one of these trees is removed, a single emergence or re-entry survey will be required.

#### 6.4.2 Nesting Birds

Trees, shrubbery and buildings on site and within the immediate vicinity have potential to support common nesting bird species. Therefore, there is potential for the Proposed Development works to lead to the destruction or disturbance of active nests. All species of wild bird in the UK are protected under Part 1 Section 1(1) of the Wildlife and Countryside Act 1981 (as amended) against intentional killing, injuring or taking, as well as taking, damaging or destroying nests in use or being built, and taking or destroying eggs.

No further survey works are required. However, depending on the timing of works, checks for the presence of nesting birds may be required prior to the commencement of vegetation clearance in order to prevent an offence occurring. Assuming any vegetation clearance works occur during the period of September to February inclusive (i.e. avoiding the key nesting period) then no impacts on nesting birds are anticipated and no further ecological inputs will be required.

If vegetation removal is required, or if demolition of buildings commences during the period March to August inclusive, an ecologist will be required to undertake a check to confirm the absence of active bird nests immediately prior to the commencement of works.

#### 6.4.3 Hedgehogs

The scrub and linear woodland habitat associated with the eastern site boundary and adjacent Kew Riverside Walk has the potential to support hedgehogs. The linear habitat connects with a larger area of habitat 0.3km north in which records of hedgehogs have been recorded in 2016. In addition, the semi-improved grassland on site offers suitable foraging habitat.

The potential presence of hedgehog should be assumed within the Site, and appropriate measures taken during construction to avoid killing and injury. Mitigation measures should include provision for hedgehog including gaps under fences to allow them access to and from the proposed development (Wildlife Trust, n.d.).

#### 6.4.4 Summary

Under the current proposal, no further surveys for protected and notable species or habitats are required. Summaries of ecological constraints and requirements for further survey are given in Table 11.

**Table 11. Summary Appraisal of Features of Ecological Constraints and Recommended Further Action**

Receptor	Scale of Constraint	Further Requirements, Including Potential Mitigation Requirements	Driver	When is Action Likely to be Required		
				To Inform Design	Before Planning Application	Pre-construction Onwards
Bats	Low	No further surveys required as it is anticipated that no trees potentially suitable for roosting bats are to be removed as part of the Proposed Development. However, if this changes a pre-demolition inspection will be required.  Clearance of trees with low potential suitability should only be undertaken at a time of year least likely to impact on bats; early spring (i.e. March to April) or late autumn (i.e. September to October)	Legislation	X	X	✓
Nesting birds	High	No further survey required. Timing of site clearance and/or pruning of trees and scrub outside of nesting bird season, or undertake a nesting bird check to confirm absence prior to clearance commencing.	Legislation	X	X	✓
Hedgehogs	Moderate	Assume presence. Mitigation and enhancement for hedgehog included within the design of the scheme including gaps under fences to allow access for hedgehogs.	Legislation (NERC Act)	✓	✓	✓

The constraints outlined here will need to be reassessed if there is a significant change to the type or scale of development proposed, or if there are any significant changes in the use or management of the land that would affect the habitats and species. If a planning application is made two years or more after a PEA it is advisable to review and update the survey data.

#### 6.4.5 Other Recommendations

The lighting plans for the Proposed Development must include a 'dark corridor' situated along the adjacent towpath and no external upwards facing lighting within the Site. A 'dark corridor' is defined as an area of land in which no artificial illumination is present. These actions are required in order to prevent light spill onto the River Thames and to minimise the impact that light could have on bat populations, or populations of fish or aquatic invertebrates within the Thames. The dark corridor must be maintained during both construction and operational phases.



## 6.5 Opportunities for Ecological Enhancement

In accordance with the NPPF, and the London Plan, through this development the provision of ecological enhancements is required to achieve a no net loss of biodiversity. Richmond Council's Development Framework and upcoming Local Plan encourage the implementation of biodiversity enhancements in areas of new development, and require the installation of green roofs (see Section 2.4). In addition, bat and bird bricks must be incorporated into the build design.

The accompanying Biodiversity Strategy report outlines all ecological enhancement features, species lists and specifications agreed with the client and landscape architects. The Biodiversity Strategy also outlines a maintenance programme for all habitats and enhancements. The creation of new habitats and implementation of ecological enhancements are expected to cover 4,294 sqm. The habitats assessed to be of importance, recorded during the Phase 1 habitat survey, in total comprised 3,586 sqm. The Proposed Development will therefore contribute to a net increase of 708 sqm. In accordance with local planning policies and to achieve overall biodiversity enhancement through the Proposed Development, the measures outlined below have been considered within the Landscape Masterplan.

- Provision of wildflower-rich grassland habitat to benefit pollinating insects. This habitat will connect with adjacent linear shrub and scrub habitat to provide an unfragmented habitat to allow for movement of hedgehogs, a national and local priority species listed under Section 41 of the NERC Act and London BAP. This habitat will act as an urban mini-meadow, designed for urban pollinating insects such as bumblebees (LBAP species') to mitigate the loss of species-rich semi-improved grassland;
- Creation of nectar rich, structurally diverse green roofs and planters to replace and enhance the species-rich semi-improved grassland. The living roof will be encompassed within a biosolar (or similar) living roof. The solar photovoltaic panels situated on the roof will provide a spectrum of shaded conditions and microclimates that will create a variety of habitats of benefit to invertebrates;
- Planting of native trees to replace and mitigate the proposed removal of trees as outlined in the Landscape Masterplan;
- Native shrub planting that connects with the existing habitats within the MOU land in Kew Riverside Walk;
- Provision of nesting/refuge opportunities for pollinators through the installation of habitat boxes;
- Provision of deadwood piles and/or a stag beetle loggery to provide habitat for saproxylic insects;
- Nesting provision for swifts and house sparrows, which are Priority Species listed under the London BAP; and,
- Integration of bat bricks and bird nest bricks into the building design.

### ***Pollinator planting***

Urban greenspaces which support a range of wildflower species can have significant value for pollinator species. Habitats for pollinators can be provided through a variety of ways. However the Proposed Development will include the creation of a biosolar (or similar) living roof, wildflower meadow, and plant beds containing a range of

native and non-native plants selected for their ornamental aesthetics and richness in providing nectar and pollen e.g. lavenders (*Lavandula* spp.), wild marjoram (*Origanum vulgare*) and honeysuckle (*Lonicera periclymenum*).

Upon establishment, management should be limited to cutting once in spring and once in late September after plants have set seed, and removing all arisings. A range of vegetation heights will maximise the flower diversity and will provide habitat for a range of invertebrate species.

### **Biodiverse green roof creation**

The Proposed Development will result in the loss of several habitats including species-rich neutral semi-improved grassland. It is recommended that habitat of biodiversity value is created through the provision of a substrate based biodiverse green roof system<sup>1</sup> to create areas of replacement habitat in line with the London Plan Policy 5.11.

The design criteria required for a biodiverse green roof includes the use of a low nutrient growing substrate to reduce dominance by competitive plant species and create a range of microhabitats.

It is, recommended, that there is variation in substrate depth across the roof. The deeper areas will provide overwintering and refuge habitat for invertebrate species and will create a structurally diverse rooftop environment. In order to achieve the variation in microhabitats, substrate depth should range from a minimum of 5cm to 10cm. The use of locally sourced deadwood laid on the substrate surface may create perching points for birds as well as providing food/shelter for invertebrate species, and depressions within the substrate's topography will provide wetter features. Artificial nests made of bamboo canes or reed stems can provide nest sites for solitary bees.

A locally sourced native wildflower seeded roof is recommended and will allow for more rapid establishment of vegetation which will be of value to invertebrate species. The wildflower seed mix should be suited to the substrate composition and appropriate for the local environment. Alternatively, plug planting is a potential method of planting to give control of the vegetation species present on the roof. The green roof(s) may be of significant benefit to foraging birds, such as black redstart (*Phoenicurus ochruros*), as well as populations of pollinating insects.

Policy LP17 of Richmond Borough Council's Local Plan requires new builds to aim to achieve 70% area cover of green roof on the roof plates. If appropriate to the architectural design, as an addition, green walls can be installed to external walls of the proposed development. This functions and has a similar purpose to a green roof system<sup>2</sup>.

### **Pollinator habitat boxes**

In conjunction with the creation of the green roofs and garden amenity adjacent to the proposed residential building, it is recommended that shelter and nesting sites<sup>3</sup> are created to encourage pollinators within the Site. This can be achieved through

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<sup>1</sup> For example <http://www.bauder.co.uk/green-roofs/non-accessed-green-roofs/biodiverse-or-bdap-defined/individually-planted-roof>

<sup>2</sup> Scotscape 'living' walls <https://www.scotscape.net/living-walls/>

<sup>3</sup> Suitable boxes include <https://www.wildcareshop.com/urban-bee-nester-10327.html> and <https://www.wildcareshop.com/concrete-planter-bee-hotel-beepot-33780.html>

the installation of a habitat boxes within the green roof design and associated ground level habitat creation.

### ***Bird nesting provision***

It is recommended that bird nest boxes should be installed on Site, integrated<sup>4</sup> into the building design using brick style boxes where possible. If not feasible, externally fitted boxes can be used. Nest boxes should be selected based on the requirements for garden birds such as blue tits (*Cyanistes caeruleus*), robins<sup>5</sup> (*Erithacus rubecula*) and wrens (*Troglodytes troglodytes*), and for London BAP Priority Species, house sparrows<sup>6</sup> and swifts.

### ***Bat roost provision***

Where possible, bat bricks<sup>7</sup> should be integrated into the building design. Bricks should be placed with no obstructions to the flight path and at a minimum height of 4m<sup>8</sup>.

### ***Retention of deadwood***

Deadwood piles should be created from naturally falling deadwood from trees on site. Deadwood should be retained in piles to provide a vital habitat and food source for saproxylic insects such as stag beetles, a nationally and locally recognised priority species. Specifically, a stag beetle loggery should be created to encourage the nationally and locally recognised priority species, the stag beetle<sup>9</sup>.

### ***Hedgehog***

A linear strip of habitat (e.g. woodland, scrub and/or grassland) should be created on site, keeping the connection of the existing areas of habitat, to allow movement of hedgehogs. Integration of a diverse range of herbaceous, shrubby and woody plant species will provide good habitat for invertebrates in which hedgehogs feed upon and will also provide potential nesting areas<sup>10</sup>. In addition, log piles and compost heaps can have a similar benefit. If a pond or ground level water feature is to be integrated within the Site, a low gradient exit or escape route should be included within the design. All fences or gates should include gaps (minimum size of 13 x 13cm) or channels to allow hedgehogs to move throughout the neighbourhood freely.<sup>11</sup>

<sup>4</sup> Swift brick <https://www.nhbs.com/swift-box-smooth-brick>

<sup>5</sup> Robin nest box <https://www.nhbs.com/2h-schwegler-robin-box>

<sup>6</sup> House sparrow (communal nest box) <https://www.nhbs.com/1sp-schwegler-sparrow-terrace>

<sup>7</sup> Bat brick <https://www.nhbs.com/bat-brick>

<sup>8</sup> Bat brick placement [http://www.bats.org.uk/pages/bat\\_boxes.html](http://www.bats.org.uk/pages/bat_boxes.html)

<sup>9</sup> Stag beetle loggery <https://ptes.org/wp-content/uploads/2016/11/Build-a-log-pile-for-stag-beetles.pdf>

<sup>10</sup> Hedgehog garden creation <https://www.britishhedgehogs.org.uk/leaflets/L10-Creating-a-Wildlife-Garden.pdf>

<sup>11</sup> Hedgehog habitat enhancements <http://www.wildlifetrusts.org/sites/default/files/files/16597%20WAG%20-%20Hedgehog%2016pp%20Booklet16-7.pdf>

## 7. Conclusions

Approximately 54% (0.38ha) of the Site comprises buildings and associated hardstanding which has little to negligible ecological value. However, the semi-improved grassland on site is relatively species-rich and is likely to be of potential value to common invertebrates, small mammals and birds within an urban environment. It is anticipated through the Proposed Development that all grassland, tall ruderal habitat and scrub is to be removed. In addition, much of the scrub within the understorey of the linear woodland habitat within the adjacent Kew Riverside Walk and the trees that border the Site along Melliss Avenue are also to be removed. Due to the proposed loss of habitats, recommendations have been made within the PEA regarding the design of a biosolar (or similar) living roof, wildflower-rich grassland, native shrub layers, and pollinators for planters, as well as several other ecological enhancements enhancement measures.

If the recommendations within this PEA are implemented, the overall impact on biodiversity associated with the Proposed Development will be appropriately mitigated. The habitats and ecological enhancements detailed within the Landscape Masterplan aim to replicate some of the characteristics of the Site's baseline habitats whilst reflecting the habitats found within the local landscape. The habitats proposed for the Site have been designed to predominantly benefit pollinating invertebrates and provide additional connectivity to the habitats present within the adjacent Kew Riverside Walk. The variety of habitats and their associated floristic and vegetative communities proposed will benefit wildlife such as invertebrates, birds, bats and small mammals which will consequently also positively contribute to the health and wellbeing of the elderly residents with existing health conditions (see Gaston, 2010).

In-depth information relating to the ecological enhancements is detailed within the associated Biodiversity Strategy Report for the Site.

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## Appendix A Legislation and Planning Policy

**The Conservation of Habitats & Species Regulations 2017** The Habitats Regulations consolidate all the various amendments made to the Conservation (Natural Habitats, &c.) Regulations 1994 in respect of England and Wales. The 1994 Regulations transposed Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (EC Habitats Directive) into national law. The Regulations came into force on 30th October 1994. In Scotland the Habitats Directive is transposed through a combination of the Habitats Regulations 2010 (in relation to reserved matters) and the 1994 Regulations. The Conservation (Natural Habitats, &c) Regulations (Northern Ireland) 1995 (as amended) transpose the Habitats Directive in relation to Northern Ireland.

The Regulations provide for the designation and protection of 'European sites', the protection of 'European protected species', and the adaptation of planning and other controls for the protection of European Sites.

Under the Regulations, competent authorities i.e. any Minister, Government department, public body, or person holding public office, have a general duty, in the exercise of any of their functions, to have regard to the EC Habitats Directive.

The Regulations place a duty on the Secretary of State to propose a list of sites which are important for either habitats or species (listed in Annexes I and II of the Habitats Directive respectively) to the European Commission. Once the Commission and EU Member States have agreed that the sites submitted are worthy of designation, they are identified as Sites of Community Importance (SCIs). The EU Member States must then designate these sites as Special Areas of Conservation (SACs) within six years. The Regulations also require the compilation and maintenance of a register of European sites, to include SACs and Special Protection Areas (SPAs) classified under Council Directive 79/409/EEC on the Conservation of Wild Birds (the Birds Directive). These sites form a network termed Natura 2000.

The Regulations enable the country agencies to enter into management agreements on land within or adjacent to a European site, in order to secure its conservation. If the agency is unable to conclude such an agreement, or if an agreement is breached, it may acquire the interest in the land compulsorily. The agency may also use its powers to make byelaws to protect European sites. The Regulations also provide for the control of potentially damaging operations, whereby consent from the country agency may only be granted once it has been shown through Appropriate Assessment that the proposed operation will not adversely affect the integrity of the site. When considering potentially damaging operations, the country agencies apply the precautionary principle' i.e. consent cannot be given unless it is ascertained that there will be no adverse effect on the integrity of the site.

In instances where damage could occur, the appropriate Minister may, if necessary, make special nature conservation orders, prohibiting any person from carrying out the operation. However, an operation may proceed where it is or forms part of a plan or project with no alternative solutions, which must be carried out for reasons of overriding public interest. In such instances the Secretary of State must secure compensation to ensure the overall integrity of the Natura 2000 system. The country agencies are required to review consents previously granted under the Wildlife and Countryside Act 1981 for land within a European site, and may modify or withdraw those that are incompatible with the conservation objectives of the site.



The Regulations make it an offence (subject to exceptions) to deliberately capture, kill, disturb, or trade in the animals listed in Schedule 2, or pick, collect, cut, uproot, destroy, or trade in the plants listed in Schedule 4. However, these actions can be made lawful through the granting of licenses by the appropriate authorities. Licenses may be granted for a number of purposes (such as science and education, conservation, preserving public health and safety), but only after the appropriate authority is satisfied that there are no satisfactory alternatives and that such actions will have no detrimental effect on wild population of the species concerned.

The Regulations make special provisions for the protection of European marine sites, requiring the country agencies to advise other authorities of the conservation objectives for a site, and also of the operations which may affect its integrity. The Regulations also enable the establishment of management schemes and byelaws by the relevant authorities and country agencies respectively, for the management and protection of European marine sites.

### **Wildlife and Countryside Act 1981 (as amended)**

The Wildlife and Countryside Act 1981 is the major domestic legal instrument for wildlife protection in the UK, and is the primary means by which the following are implemented:

- The Convention on the Conservation of European Wildlife and Natural Habitats ('the Bern Convention'); and
- The Council Directive 79/409/EEC on the Conservation of Wild birds (the 'Bird Directive')

The main relevant provisions of the Act are: allowance for the protection of the most important habitats and species by designating SSSI's, a level of protection to all nesting wild birds and specific bird species under Schedule 1.

### **Wild Birds**

The Act makes it an offence (with exception to species listed in Schedule 2) to intentionally:

- kill, injure, or take any wild bird,
- take, damage or destroy the nest of any wild bird while that nest is in use or being built (also [take, damage or destroy the nest of a wild bird included in Schedule ZA1] under the Natural Environment and Rural Communities Act 2006), or
- take or destroy an egg of any wild bird.

Special penalties are available for offences related to birds listed on Schedule 1, for which there are additional offences of disturbing these birds at their nests, or their dependent young. The Secretary of State may also designate Areas of Special Protection (subject to exceptions) to provide further protection to birds. The Act also prohibits certain methods of killing, injuring, or taking birds, restricts the sale and possession of captive bred birds, and sets standards for keeping birds in captivity.

### **Other Animals**

The Act makes it an offence (subject to exceptions) to intentionally kill, injure or take any wild animal listed on Schedule 5, and prohibits interference with places used for

shelter or protection, or intentionally disturbing animals occupying such places. The Act also prohibits certain methods of killing, injuring, or taking wild animals.

### **Flora, Fungi and Lichens**

The Act makes it an offence (subject to exceptions) to intentionally pick, uproot or destroy:

- any wild plant listed in Schedule 8, or
- unless an authorised person, to intentionally uproot any wild plant not included in Schedule 8,
- to sell, offer or expose for sale, or possess (for the purposes of trade), any live or dead wild plant included in Schedule 8, or any part of, or anything derived from, such a plant.

### **Non-native Species**

The Act contains measures for preventing the establishment of non-native species which may be detrimental to native wildlife, prohibiting the release of animals and planting of plants listed in Schedule 9 in England and Wales. It also provides a mechanism making any of the above offences legal through the granting of licences by the appropriate authorities.

### **Countryside and Rights of Way (CROW) Act 2000**

The Countryside and Rights of Way Act 2000 applies to England and Wales only. Part III of the Act deals specifically with wildlife protection and nature conservation.

The Act places a duty on Government Departments and the National Assembly for Wales to have regard for the conservation of biodiversity and maintain lists of species and habitats for which conservation steps should be taken or promoted, in accordance with the Convention on Biological Diversity.

Schedule 9 of the Act amends the SSSI provisions of the Wildlife and Countryside Act 1981, including increased powers for their protection and management of SSSIs. The provisions extend powers for entering into management agreements; place a duty on public bodies to further the conservation and enhancement of SSSIs; increase penalties on conviction where the provisions are breached; and include an offence whereby third parties can be convicted for damaging SSSIs.

Schedule 12 of the Act amends the species provisions of the Wildlife and Countryside Act 1981, strengthening the legal protection for threatened species. The provisions make certain offences 'arrestable', include an offence of reckless disturbance, confer greater powers to police and wildlife inspectors for entering premises and obtaining wildlife tissue samples for DNA analysis, and enable heavier penalties on conviction of wildlife offences.

### **Natural Environment and Rural Communities (NERC) Act 2006**

The Natural Environment and Rural Communities (NERC) Act came into force on 1st October 2006. Section 41 (S41) of the Act required the Secretary of State to publish a list of habitats and species which are of principal importance for the conservation of biodiversity in England. The list was drawn up in consultation with Natural England, as required by the Act.

The S41 list is 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.

Fifty-six habitats of principal importance are included on the S41 list. These are all the habitats in England that were identified as requiring action in the (now withdrawn) UK Biodiversity Action Plan (UK BAP) and continue to be regarded as conservation priorities in the subsequent UK Post-2010 Biodiversity Framework. They include terrestrial habitats such as upland hay meadows to lowland mixed deciduous woodland, and freshwater and marine habitats such as ponds and subtidal sands and gravels.

There are 943 species of principal importance included on the S41 list. These are the species found in England which were identified as requiring action under the (now withdrawn) UK BAP and which continue to be regarded as conservation priorities under the UK Post-2010 Biodiversity Framework. In addition, the hen harrier has also been included on the list because without continued conservation action it is unlikely that the hen harrier population will increase from its current very low levels in England.

### **National Planning Policy Framework**

The revised NPPF came into being in July 2018. The sections relevant to ecology are as follows:

- Paragraph 170 of the revised NPPF states that “Planning policies and decisions should contribute to and enhance the natural and local environment by...  
...minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures”.
- In addition, paragraph 170 states “Plans should: distinguish between the hierarchy of international, national and locally designated sites; allocate land with the least environmental or amenity value, where consistent with other policies in this Framework; take a strategic approach to maintaining and enhancing networks of habitats and green infrastructure; and plan for the enhancement of natural capital at a catchment or landscape scale across local authority boundaries”.
- The importance of ecological networks is stressed in paragraph 174, which states that “To protect and enhance biodiversity and geodiversity, plans should:
  - a) Identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity; wildlife corridors and stepping stones that connect them; and areas identified by national and local partnerships for habitat management, enhancement, restoration or creation; and
  - b) promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity.”

- In relation to the determination of planning applications, paragraph 175 states that 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.”
- Paragraph 177 states that “The presumption in favour of sustainable development does not apply where development requiring appropriate assessment because of its potential impact on a habitats site is being planned or determined”.



## Appendix B Grading of features with suitability to support roosting bats

### Grading of features with suitability to support roosting bats

Suitability to Support Roosting Bats	Description
Confirmed	A feature within which bats are seen to be present (either live bats, or bat carcasses) or heard 'chattering' inside will be classified as a confirmed roost. In addition, any feature/structure found to contain droppings during inspections will in the first instance be considered as a confirmed roost. N.B. In some cases it may be appropriate to revise this assessment following further survey (e.g. for buildings containing low numbers or old droppings and showing no evidence of use during emergence surveys).
High	<p>A feature which, due to its size, depth, shape, orientation or other physical properties (such as ability to maintain a constant temperature, accessibility for bats) is considered to be ideal for use by bats. Potential feeding remains, urine staining or scratch marks (in the absence of droppings) within or around the feature are likely to indicate presence of a bat occupation and therefore suggest high potential that a roost is present. In the absence of such signs, assigning a feature high potential will also be informed by the surveyor's knowledge of bat ecology and preferred roost types (relative to the feature being assessed). The quality of the surrounding habitat for bats will also be considered. For example, a building within an area of woodland is more likely to be occupied by bats than one adjacent to large areas of hard standing (as the bats would use the woodland for feeding, and potentially roosting).</p> <p>Potential examples of high potential features are:</p> <p>A south facing opening on a trunk that appears to form a significant wound within the tree, with uncluttered drop zone and good connectivity to other areas of suitable habitat; or</p> <p>Gap below a ridge tile that provides potential point of access to a pitched roof, with marked cleaner tile below indicating potential use by bats.</p>
Moderate	A feature which would be considered ideal for use by bats were it not for one or more key factors which limit its potential. For example, an ideal feature in sub-optimal surrounding habitat (e.g. within an area of predominately hard standing) may be considered to have moderate potential.
Low	A tree / structure containing features where use by bats cannot be ruled out but is considered unlikely based on size, depth, construction aspect, habitat location etc. For example, often metal warehouse structures with suitable access/egress points will be classed as having low potential to support roosting bats.
Negligible	A tree / structure with no features suitable to support roosting bat species.

## Appendix C Target Notes

### TN1

Semi-improved grassland with dense patches of tall ruderal upon the southern edge of a narrow bund which traversed the eastern site perimeter. An approximate sward height of 30cm was noted for grass dominated areas, whereas, ruderal dominant patches was approximately 130cm in height. The area consisted of locally dominant mugwort (*Artemisia vulgaris*), common stands of yarrow (*Achillea millefolium*) and greater plantain (*Plantago major*), abundant stands of Yorkshire fog (*Holcus lanatus*), occasional cocksfoot (*Dactylis glomerata*), and rare stands spotted medick (*Medicago arabica*) and spear thistle (*Cirsium vulgare*).

### TN2

A row of trees that run along the outside of site's southern perimeter. The tree line predominantly consists of semi-mature ornamental variety of oak (*Quercus* sp.) with occasional stands of semi-mature Leyland cypress (*Cupressus x leylandii*), elder (*Sambucus nigra*) and sycamore (*Acer pseudoplatanus*). A single immature stand of holm oak (*Quercus ilex*) was also recorded. The understorey could be characterised by occasional bramble (*Rubus fruticosus*), and ivy (*Hedera helix*), which frequently covered the floor and tree branches. The vegetation directly behind the tree line comprised of a narrow patch of dense scrub that backed onto a residential housing and gardens.

### TN3

Semi-improved grassland adjacent to TN1 characterised by dominant red fescue (*Festuca rubra*), abundant false oat grass (*Arrhenatherum elatius*) and mugwort, occasional ribwort plantain (*Plantago lanceolata*), upright brome (*Bromopsis erecta*), black medick (*Medicago lupulina*), dove's-foot cranesbill (*Geranium molle*) and rare common sorrel (*Rumex acetosa*).

### TN4

Linear line of scrub that lines the eastern site boundary fence with a variety of trees either within the Site boundary or branching across from the Kew Riverside Walk. In terms of semi-mature and immature trees present, elder is abundant throughout, whereas, hawthorn (*Crataegus monogyna*) and holly (*Ilex aquifolium*) occasional. Bramble was also abundant, as was ivy which was densely covering the trees, scrub and floor.

### TN5

Semi-improved grassland within the same continuous patch as TN3 but further north. The patch was characterised by abundant red fescue, Yorkshire fog, yarrow and creeping cinquefoil (*Potentilla reptans*), frequent cleavers (*Galium aparine*), and occasional cocksfoot, upright brome, common nettle (*Urtica dioica*), mugwort and green alkanet (*Pentaglottis sempervirens*).

### TN6

Hardstanding areas surrounded by pebble substrate within the centre of the Site in which a variety of ephemeral/short-perennial plants have colonised. The floral community is indicative of waste grounds and comprised occasional buddleia

(*Buddleja davidii*), bristly ox-tongue (*Helminthotheca echioides*), Canadian fleabane (*Erigeron canadensis*), mugwort, scentless mayweed (*Tripleurospermum inodorum*), greater plantain (*Plantago major*) and hedge mustard (*Sisymbrium officinale*), and a stand of cats-ear (*Hypochaeris radicata*). In addition, the circular hardstanding feature had been colonised by a large density of bryophyte tufts, most notably *Grimmia* spp. such as the grey cushioned *Grimmia* (*Grimmia pulvinata*).

#### **TN7**

A mature horse chestnut (*Aesculus hippocastanum*) with dense ivy cover throughout located just outside the Site boundary, although branches into the Site. Adjacent to the horse chestnut is a mature ash tree (*Fraxinus excelsior*), semi-mature sycamore and an immature elder, all densely covered in ivy. The ivy covered horse chestnut and ash trees are potentially suitable for roosting bats.

#### **TN8**

An area tall ruderal that extends from the northern point of the bund within the Site behind the waste treatment features across to the north-west corner. The patch towards the east transitions from semi-improved grassland and is comprised of dominant common nettle and mugwort, abundant false oat grass, upright brome and common mallow (*Malva sylvestris*), and occasional Canadian fleabane and yarrow.

#### **TN9**

A single-storey brick built building with a hipped slate roof with a gap beneath the ridge tile on the south-east corner; this feature is considered suitable to support roosting bats, albeit low suitability due to a lack of other suitable features being present on site.

#### **TN10**

Area of tall ruderal adjoined west of TN8. The community within this section was growing on a bank and was partially shaded by the waste treatment structures. Due to the habitats close proximity hard standing features several ephemeral/short perennial plants were recorded. The floral community comprised dominant common nettle, abundant creeping bent (*Agrostis stolonifera*), creeping cinquefoil, mugwort and Yorkshire fog, occasional upright brome, frequent Canadian fleabane and common mallow, and rare black nightshade (*Solanum nigrum*).

#### **TN11**

Area of semi-improved grassland west of the hardstanding waste treatment features. This area of grassland is notably less diverse than other patches of grassland on site. The floral community is comprised of dominant Yorkshire fog and creeping cinquefoil, abundant common bent, frequent false oat grass and common nettle, occasional field bindweed and dandelion (*Taraxacum officinale* agg.), and rare stands of broadleaf dock (*Rumex obtusifolius*), hogweed (*Heracleum sphondylium*) and sycamore saplings.

#### **TN12**

A row of trees that lines the western site perimeter comprising a series of semi-mature ornamental species of oak (*Quercus* sp.) with occasional dog rose (*Rosa canina*) and pyracantha (*Pyracantha* sp.) throughout. The oak trees had noticeable

upright growth indicative of the English oak variety *Quercus robur* var. 'Fastigiata'. Beneath the tree line, occasional stands of bramble were recorded.

**TN13**

Small mound predominantly consisting bare earth with little vegetation colonisation. Adjacent, within the north-east corner a small patch of short common nettle was recorded growing beneath the tree line.

**TN14**

Two semi-mature sycamore trees densely covered in ivy located just outside the eastern site perimeter. Both trees are potentially suitable for roosting bats.

**TN15**

Mature horse chestnut tree that lies just outside of the eastern fence boundary with several branch cavities potentially suitable for roosting bats.

**TN16**

A red fox (*Vulpes vulpes*) in healthy condition was observed sleeping upon the metal structure within the south-west corner of the Site.



## Appendix D Desk Study Data

Species	Legally Protected Species?	Species of Principal Importance?	Other Notable Species?	Present on Site?	Possibly Present on Site?	Present / Potentially Present in Wider Zone of Influence?	Most recent record (Distance, Bearing and Date)
<b>Mammals – Terrestrial (Bats)</b>							
Serotine bat ( <i>Eptesicus serotinus</i> )	✓	✓	✓	X	✓	✓	Recorded 2.0km N in 2014.
Common pipistrelle ( <i>Pipistrellus pipistrellus</i> )	✓	X	✓	X	✓	✓	Recorded 1.8km N in 2014.
Soprano pipistrelle ( <i>Pipistrellus pygmaeus</i> )	✓	X	✓	X	✓	✓	Recorded 1.8km N in 2014.
Brown long-eared bat ( <i>Plectous auritus</i> )	✓	X	✓	X	✓	✓	Recorded 1.5km W in 2008.
Noctule ( <i>Nyctalus noctula</i> )	✓	✓	✓	X	✓	✓	Recorded 1.8km N in 2013.
Myotis species ( <i>Myotis</i> spp.)	✓	X	✓	X	✓	✓	Recorded 0.8km N in 2011.
Leisler's bat ( <i>Nyctalus leisleri</i> )	✓	X	✓	X	✓	✓	Recorded 0.8km NW in 2008.
Daubenton's bat ( <i>Myotis daubentonii</i> )	✓	X	✓	X	✓	✓	Recorded 1.4km N in 2008.
<b>Mammals – Terrestrial (non-bats)</b>							
Western European hedgehog ( <i>Erinaceus europaeus</i> )	X	✓	✓	X	✓	✓	Recorded 0.3km N in 2016.
Harvest mouse ( <i>Micromys minutus</i> )	X	✓	✓	X	✓	✓	Recorded 1.8 km N in 2010.
<b>Birds</b>							
House sparrow ( <i>Passer domesticus</i> )	X	✓	✓	X	✓	✓	Recorded 1.0km NW in 2016.
Swift ( <i>Apus apus</i> )	X	X	✓	X	✓	✓	Recorded 0.6km N in 2014.
Goldcrest ( <i>Regulus regulus</i> )	X	X	✓	X	✓	✓	Recorded 1.5km W in 2014.
Dunnock ( <i>Prunella modularis</i> )	X	X	✓	X	✓	✓	Recorded 1.8km N in 2013.
Song thrush ( <i>Turdus</i> )	X	X	✓	X	✓	✓	Recorded 1.8km N in

Species	Legally Protected Species?	Species of Principal Importance?	Other Notable Species?	Present on Site?	Possibly Present on Site?	Present / Potentially Present in Wider Zone of Influence?	Most recent record (Distance, Bearing and Date)
<i>philomelus</i> )							2013.
Starling ( <i>Sturnus vulgaris</i> )	X	X	✓	X	✓	✓	Recorded 0.3km N in 2012.
Firecrest ( <i>Regulus ignicapilla</i> )	✓	X	✓	X	✓	✓	Within 2.0km NW in 2011.
Black redstart ( <i>Phoenicurus ochruros</i> )	✓	X	✓	X	✓	✓	Recorded 1.5km W in 2008.
Redwing ( <i>Turdus iliacus</i> )	✓	X	✓	X	✓	✓	Recorded 1.5km W in 2008.
<b>Amphibians</b>							
Common toad ( <i>Bufo bufo</i> )	X	✓	X	X	✓	✓	Recorded 1.7km N in 2014.
<b>Reptiles</b>							
Slow worm ( <i>Anguis fragilis</i> )	✓	✓	✓	X	✓	✓	Recorded 1.7km N in 2014.
<b>Invertebrates (beetles)</b>							
Stag beetle ( <i>Lucanus cervus</i> )	X	✓	✓	X	✓	✓	Recorded 1.9km N in 2014.
<b>Invertebrates (butterflies and moths)</b>							
Jersey tiger ( <i>Euplagia quadripunctaria</i> )	✓	X	X	X	✓	✓	Recorded 1.3km N in 2013.
Knotgrass moth ( <i>Acronicta rumicis</i> )	X	✓	✓	X	✓	✓	Recorded 1.4km N in 2011.
Cinnabar moth ( <i>Tyria jacobaeae</i> )	X	✓	✓	X	✓	✓	Recorded 1.9km N in 2011.
White-letter hairstreak ( <i>Satyrion w-album</i> )	X	✓	✓	X	✓	✓	Recorded 1.6km NW in 2011.
Grizzled skipper ( <i>Pyrgus malvae</i> )	X	X	✓	X	✓	✓	Recorded 0.7km SW in 2010.
<b>Plants</b>							
Bluebell ( <i>Hyacinthoides non-scripta</i> )	✓	X	✓	X	✓	✓	Recorded 1.7km N in 2012

Species	Legally Protected Species?	Species of Principal Importance?	Other Notable Species?	Present on Site?	Possibly Present on Site?	Present / Potentially Present in Wider Zone of Influence?	Most recent record (Distance, Bearing and Date)
Round headed leak ( <i>Allium sphaerocephalon</i> )	✓	X	✓	X	✓	✓	Recorded 0.8km N in 2011
Cornflower ( <i>Centaurea cyanus</i> )	X	✓	X	X	✓	✓	Recorded 1.7km N in 2010
Ground pine ( <i>Ajuga chamaepitys</i> )	✓	✓	✓	X	✓	✓	Recorded 1.2km W in 2009
Chamomile ( <i>Chamaemelum nobile</i> )	X	✓	✓	X	✓	✓	Recorded 1.2km W in 2009
Broad-leaved cudweed ( <i>Filago pyramidata</i> )	✓	✓	✓	X	✓	✓	Recorded 1.2km W in 2009
Jersey cudweed ( <i>Gnaphalium luteoalbum</i> )	✓	X	X	X	✓	✓	Recorded 1.2km W in 2009
Bedstraw broomrape ( <i>Orbanche caryophyllacea</i> )	✓	X	✓	X	✓	✓	Recorded 1.2km W in 2009
<b>Non-native invasive species</b>							
Ring-necked parakeet ( <i>Psittacula krameri</i> )	X	X	✓	X	✓	✓	Recorded 1.8km E in 2014.
Japanese knotweed ( <i>Fallopia japonica</i> )	X	X	✓	X	✓	✓	Recorded 1.3km NW in 2012.
Himalayan balsam ( <i>Impatiens glandulifera</i> )	X	X	✓	X	✓	✓	Recorded 1.9km NW in 2012.
<p>Key to symbols: ✓ = yes, see Supporting Comments for further rationale</p> <p><u>Legally protected species</u> are those listed under Schedules 1, 5 and 8 of the Wildlife and Countryside Act 1981 (as amended); and, Schedules 2 and 4 of The Conservation of Habitat &amp; Species Regulations 2010 (as amended).</p> <p><u>Species of Principal Importance</u> as those listed under Section 41 of the NERC Act 2006. Planning Authorities have a legal duty under Section 40 of the same Act to consider such species when determining planning applications.</p> <p><u>Other notable species</u> include native species of conservation concern listed in the BAP Priority London (except species that are also of Principal Importance), those that are Nationally Rare, Scarce or Red Data List, and non-native controlled weed species listed under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended).</p>							

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**LEGEND**

- Property - Sale Area
- Thames Water Retained Land
- Broadleaved Parkland/Scattered Tree
- Ephemeral/Short Perennial
- Target Note
- Fence
- Bare Ground
- Broadleaved Woodland - Semi-Natural
- Building
- Hardstanding
- Neutral Grassland - Semi-Improved
- Other Tall Herb and Fern - Ruderal
- Scrub - Dense/Continuous

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Purpose of Issue: **ISSUED**

Client: **MELLISS AVE DEVO LIMITED**

Project Title: **KEW BIOTHANE**

Drawing Title: **FIGURE 1 RED & YELLOW SPECIALIST EXTRA CARE PHASE 1 HABITAT MAP**

Drawn	Checked	Approved	Date
TD	CN	AW	01/10/2018

PROJECT NUMBER: Project No. 605589375, Scale: 1:500

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