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Ecology Consultancy

King's House School, Richmond / Preliminary Roost Assessment / Report for Land Use Consultants



King's House School, Richmond

Preliminary Roost Assessment

Report for Land Use Consultants

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Summary of Key Issues

The Ecology Consultancy was commissioned by Land Use Consultants to carry out an update Preliminary Roost Assessment to determine the status of bats and any likely constraints to re-development arising at the site known as the King's House School, London Borough of Richmond-upon-Thames. The results of the survey will be used to assess the existing habitats in order to make informed decisions about the refurbishment, and extension of the building on site. The main findings are as follows:

- The proposals for the site are for the demolition of a number of buildings on site to facilitate the construction of a new building and associated landscaping.
- This site comprised one main building (B1) and two outbuildings (B2 and B3) formally part of a school and semi natural habitats comprising introduced shrub, amenity grassland and scattered trees, which are connected to the wider area via private gardens.
- An update Preliminary Roost Assessment of the buildings was carried out on 17 December 2020.
- Building sections B1.1, B1.2, B1.4, B1.6 and B1.7 were assessed as having moderate potential to support summer roosting bats and low potential to support hibernating bats.
- Building sections B1.3 and B1.8, Building 2 (B2) and Building 3 (B3) were assessed as having negligible potential to support roosting bats as such no further surveys are required.
- In line with current survey guidelines one dusk emergence survey and one dawn re-entry survey was carried out on building sections B1.4, B1.6 and B1.7 in May and June 2019 which are all scheduled to be impacted by proposed works.
- No bats were recorded emerging or emerging from B1.4, B1.6 and B1.7 during the surveys on site. However, common pipistrelle and soprano pipistrelle bats were recorded commuting through the site during both surveys. As works are now planned to commence in 2021, update surveys will be required in accordance with best practice (Collins, 2016).
- Recommendations are provided on mitigating against disturbance on bats during and post development works. These will be detailed in a Construction Management Plan (CEMP) which will be produced post planning.
- Recommendations to enhance the site for biodiversity, including new planting to enhance the commuting and foraging habitats bats.

1 Introduction

BACKGROUND TO COMMISSION

- 1.1 The Ecology Consultancy was commissioned by Land Use Consultants to undertake an update Preliminary Roost Assessment to assess the presence or likely absence of bats within buildings at the King's House School, London Borough of Richmond-upon-Thames. This assessment follows on from a Preliminary Ecological Appraisal and Ground Level Tree Assessment carried out by The Ecology Consultancy in December 2020 which identified buildings and trees with bat roosting potential (The Ecology Consultancy, 2021a and 2021b).

SCOPE OF REPORT

- 1.2 The primary aims are, through a process of investigation and assessment, to determine if any bat roosts are present, what the type of roost may be, the species using them, their status and relative conservation importance and any likely impacts that could occur as a result of the proposals. Where impact is identified, appropriate mitigation and compensation measures are provided as supporting information to inform the planning application.
- 1.3 The assessment of a site for bats is based on the following sources of information, including that obtained from third parties and the results of surveys:
- a desk study including:
 - a data search for bat records within a 2km radius of the site;
 - an assessment of the surrounding habitats for their likely importance to bats;
 - the presence of any protected areas cited for their bat populations; and
 - the location and status of any nearby European Protected Species Mitigation licensed sites for bats.
 - a Preliminary Roost Assessment comprising a detailed building inspection;
 - a Preliminary Ground Level Roost Assessment of any trees scheduled for removal or remedial works;
 - DNA analysis of any bat droppings found; and
 - emergence and re-entry surveys.
- 1.4 The elements listed above comprise the individual parts of the process that underlie the assessment. If, at preliminary assessment, the buildings do not provide any potential for

a roost, the assessment can be stopped at this stage. If potential for a roost is identified, a suite of emergence/re-entry surveys will be required to confirm presence or likely absence, to determine the species present, and to characterise any roosts located. In cases where no roosts are identified or suspected during these surveys, the assessment can be halted. Where roosts are found to be present then an evaluation of the conservation value of the species concerned is made and the impacts of the development identified and addressed.

- 1.5 This assessment has been prepared with reference to best practice guidance published by the Bat Conservation Trust (Collins, 2016) and as detailed in BSI Standards Publication 42020:2013 *Biodiversity – Code of Practice for Biodiversity and Development* (British Standards Institution, 2013) and BSI 8956:2015 *Surveying for Bats in Trees and Woodland* (British Standards Institution, 2015).
- 1.6 This report provides supporting information in the appendices with a georeferenced map of the survey results in Appendix 1, cross referenced photographs in Appendix 2 and raw survey data in Appendix 3.

SITE CONTEXT AND STATUS

- 1.7 The proposed development is located at King's House School, Kings Road, London Borough of Richmond-upon-Thames. The site is approximately 0.4 hectares (ha) in size and is centred on Ordnance Survey National Grid reference TQ1871 7475. The site is located in a suburban environment with the local area dominated by residential properties and associated gardens. The nearest large areas of greenspace are East Sheen and Richmond Cemeteries and Pesthouse Common Site of Importance for Nature Conservation (SINC) an area of grassland habitat located 300 metres (m) east of the site.

DEVELOPMENT PROPOSALS

- 1.8 A number of the existing school buildings, including the existing music block, gym, PE store, side extension and garage will be demolished in order to create a central quad area and facilitate construction of the new teaching block. The new classroom block is due to be built to the South of the site resulting in the removal of two trees, (T20 and G2.1), as well as areas of scrub, introduced shrub and amenity garden (David Miller Architects, 2020). Proposed new landscaping includes areas of biodiverse green roofs and climbing plants.
- 1.9 As part of the proposed landscaping new shrub and tree planting will be included along the southern and western boundary as well as a biodiverse roof on sections of the new building (LUC London, 2020)

RELEVANT LEGISLATION AND PLANNING POLICY

- 1.10 The following key pieces of nature conservation legislation are relevant to this assessment, with a more detailed description of this legislation provided in Appendix 4:
- The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019;
 - The Wildlife and Countryside Act 1981 (as amended); and
 - Natural Environment and Rural Communities Act 2006.
- 1.11 The actions that could result in an offence occurring under the above legislation include: the disturbance of bats within a roost; loss or damage of a roost; blocking a roost entrance; or modification of a roost. If development proposals are likely to result in an offence then a European Protected Species Mitigation (EPSM) licence must be obtained from Natural England prior to works to provide a derogation from the legislation. Alternatively, where no more than three low conservation significance roosts are present and are used by low numbers of bats of no more than three of the (qualifying) species that EPSM licences are most commonly applied for, it may be possible to register the site under the Bat Mitigation Class Licence (BMCL) scheme. No like for like bat compensation is required for the majority of the species covered by BMCL.
- 1.12 The National Planning Policy Framework (Ministry of Housing, Communities & Local Gov, 2019) requires local authorities to avoid and minimise impacts on biodiversity and to provide net gains in biodiversity when taking planning decisions. In addition, in England, under Section 40 of the Natural Environment and Rural Communities Act 2006, all public bodies are required to have regard to biodiversity conservation when carrying out their functions. This is commonly referred to as the 'biodiversity duty'.
- 1.13 Other planning policies at the local level which are of relevance to this development include The Richmond Local Plan (London Borough of Richmond, 2018). Further information is provided in Appendix 4.

2 Methodology

DESK STUDY

- 2.1 A desk study was conducted to obtain data relating to bats within a 2km radius of the site, as made available by London Bat Group (LBG).
- 2.2 Additional contextual information was compiled from publicly available data sources:
- MAGIC (<http://www.magic.gov.uk>) – the Government’s on-line mapping service. Information was sought concerning: the presence of ancient semi-natural woodland (ASNW); statutory designated nature conservation sites¹; and extant or historic European Protected Species Mitigation licences for bats; and
 - Ordnance Survey mapping and publicly available aerial photography to determine any features such as: running and standing water; woodland; tree lines; hedgerows; railway corridors; and the surrounding landscape uses.

BAT SURVEYS

Personnel

- 2.3 The surveys were led by John Myerscough BSc (Hons) MSc, an Ecologist with over five years’ commercial bat survey experience.

Equipment

- 2.4 The surveys listed below made use of some or all the following equipment:
- an extendable ladder;
 - a handheld LED torch;
 - a high-powered torch for illuminating features at height;
 - close focussing binoculars;
 - bat dropping (DNA) collection kit;

Aims and Objectives

- 2.5 The aim of the survey methodologies outlined below is to establish the presence/likely absence of bat roosts within the buildings within the site boundary. Once presence has been established the secondary aim is to obtain sufficient information to characterise the type of roost according to criteria set out in the current guidelines (Collins, 2016). This

¹ Statutory designations include Special Areas of Conservation (SAC), Special Protection Areas (SPA), Ramsar sites, National Nature Reserves (NNR), Sites of Special Scientific Interest (SSSI) and Local Nature Reserves (LNR).

includes determining the function/s of the site by bats for maternity or hibernation roosts, transitional roosts, foraging and commuting. The gathered information is then used to inform an assessment of the potential impacts of the development proposals and to devise an appropriate and proportionate mitigation strategy.

Field surveys

- 2.6 The survey methodologies below follow best practice guidelines (Mitchell-Jones & McLeish, 2004; Collins, 2016, The British Standards Institution, 2015). A standard recording form was completed for each building within the site boundary and for each tree that is likely to be impacted by the proposals. This included recording the main structural features and layout, any potential access points and roost features and photographs. The criteria used as a framework to assess the potential for structures or trees to support roosting bats are provided in Appendix 6. This section provides methodologies for the primary survey types used to assess the status of bats at a site, depending on the particulars of the site and the commission, not all of these survey types may be carried out.

Preliminary Roost Assessment - Buildings

- 2.7 The survey comprised an external inspection of each building, involving a detailed search of all accessible architectural features for bat droppings, urine staining, scratch marks, staining around suitable crevices and feeding remains. Window panes and other external surfaces were visually checked for droppings or other secondary evidence. A high-powered torch was used to illuminate recesses and crevices at height and these were inspected using close focusing binoculars. This included external features, such as soffit boxes, roof tiles, hanging tiles, ridge areas and window casements. Any features that could potentially provide access into internal areas such as roof voids and cavity walls were noted.
- 2.8 During the internal inspection the surveyor worked through the roof voids of the building in logical progression searching each adjoining void in turn as well as all small storage areas such as dormer rooms and water towers. Within the roof voids all surfaces including floor areas were checked for discarded feeding remains and bat droppings. The beam from a high-powered torch was shone along the length of each individual rafter, where appropriate to the roof type, looking for bats, staining and droppings. The roofing material was also inspected for areas of overlapping materials, holes and potential access points into the ridge area. Any open water tanks were inspected for the presence of bat corpses.

DNA analysis

- 2.9 If present, a sample of each different type of bat dropping, differentiated by size and morphology, may be collected by an ecologist with gloved hands and then placed into clean, dry, containers. These droppings are then sent for laboratory analysis within 48hrs of collection or stored in a dry, cool location for later dispatch.

Preliminary Ground Level Roost Assessment - Trees

- 2.10 Any trees that were within the site boundary and likely to be impacted by the proposals were inspected for any suitable features that could provide suitable roosting locations for bats, including: loose, flaking or folded bark; cracks and fissures in limbs; woodpecker holes; or any downward-facing crevices or holes in the limbs or trunks. They were also inspected for any signs indicating possible use by bats, such as tiny scratched, rub marks and staining around access points, bat dropping in around or below access points (The Ecology Consultancy, 2021b).

Roost Characterisation

- 2.11 The results from the preliminary roost assessments (including the GLTA) are used to characterise any roosts that may be confirmed within the site. This follows standard criteria for roosts, classifying roost type² as described in the Natural England bat EPSM licence application form. Also included are variable such as: species; abundance; likely use; and importance throughout the year.

EVALUATION AND IMPACT ASSESSMENT

Evaluation

- 2.12 The conservation status of those species found to be roosting within the site or for which the site provides a measurable supporting function is drawn from published sources with the conservation significance of any roost provided according to accepted criteria³.
- 2.13 If emergence and re-entry surveys were carried out, then the foraging and commuting activity recorded during those surveys is summarised along with an outline interpretation of the function the site may provide for these activities.
- 2.14 The ecological importance of the site for bats has been assessed broadly following guidance issued by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2018) which ranks nature conservation importance according to a geographic

² Day, Night, Feeding Perch, Transitional, Satellite, Maternity, Hibernation, Foraging Area, Commuting Route, Swarming Site.

³ Figure 4. *Guidelines for proportionate mitigation*, the Bat Mitigation Guidelines (Mitchell-Jones & McLeish, 2004) which assigns conservation significance to different types of bat roost on a sliding scale from Low to High

scale of reference: international and European; national; regional; metropolitan, county vice-county or other local authority-wide area; local or of value at the site scale. The following factors are considered when making this evaluation: nature conservation designations; rarity; vulnerability; distribution; and the conservation significance of any roosts.

Impact Assessment

2.15 An assessment is provided on the likely impacts of the development proposals on any bat roosts located within or immediately adjacent to the site boundary. This assessment is made with reference to Section 6⁴ of the Bat Mitigation Guidelines (Mitchell-Jones & McLeish, 2004) and Natural England's standing advice⁵ and includes a summary of the scale of impact according to roost type and development effect. This section considers types of construction impact to bats and their roosts including; disturbance, loss, modification and fragmentation in relation to duration and timing. For the site as a whole, a statement is made on the geographic scale at which impact is deemed to be significant, following CIEEM guidance (CIEEM, 2018).

Data validity and Limitations

2.16 It is important to note that even where data are held, a lack of records for a defined geographical area does not necessarily mean that there is a lack of ecological interest; the area may be simply under-recorded. Bats are highly mobile animals and can move roost sites both within and between years. Where surveys are not spread throughout the bat active season is possible that they could miss roosts that are occupied earlier or later in the year. However, where undisturbed, evidence of bats inside a building is likely to be detectable throughout the year. The detection of small numbers of crevice dwelling species may remain problematic in some cases, such as where droppings accumulate within an inaccessible void. Data from bat surveys should be considered to be valid for a period of 18 months, unless there are any gross changes to the buildings or other habitats within the site (CIEEM, 2019).

2.17 It was not possible to carry out internal inspections of Building 2 and Building 3. However, as no potential roost features (PRF's) were identified during the external assessment this has not affected the building assessment.

2.18 It is often very difficult to confirm likely absence of a hibernation roost even if surveys have been completed. This is because features that hibernating bats tend to use (such

⁴ *Predicting the Impact of Development*, the Bat Mitigation Guidelines (Mitchell-Jones & McLeish, 2004), assigns scale of impact to the favourable conservation status of bats according to type and extent of construction effect

⁵ *Bats: surveys and mitigation for development projects*, first published 28 March 2015

as cavity walls) are not always accessible or visible during an internal inspection. Static hibernation surveys are not feasible at this site due to the inaccessibility of some of the loft spaces. There is also a risk that hibernation surveys may disturb bats if present (Collins, 2016).

- 2.19 As stated in Bat survey guidelines (Colins, 2016) if a structure has been classified as having low suitability for bats, an ecologist should make a professional judgment on how to proceed based on all the evidence available. Our professional judgement is to devise a precautionary method of work during the construction phase to ensure demolition is outside of hibernation period.

3 Results

DESK STUDY

Data search

- 3.1 The data search returned 378 records of bats or bat roosts of at least 11 bat species comprising; common pipistrelle, soprano pipistrelle, Nathusius' pipistrelle, brown long eared, serotine, Leisler's, noctule, whiskered, Brandt's, Natterer's and Daubenton's bat from 1983 to 2019, Two historic or current European Protected Species Mitigation (EPSM) licenses, and no sites designated for bats within a 2km radius of the site. A summary of the most pertinent results is presented in Table 3.1 and 3.2 below.

Table 3.1: Summary of most pertinent data search results from the local environmental records centre

Species	Distance (km) & Orientation	Date	Roost type	Notes
Pipistrellus pygmaeus	0.985 west	September 2008	Roost	Terrace fields and gardens, Richmond
Vespertilionidae	1.33 north east	June 1983	Roost	Model Cottages, Mortlake
Pipistrellus	1.373 south west	30/06/1994	Roost	Cambridge Park, Twickenham
Myotis nattereri	1.579 south east	29/07/2009	Roost	Richmond Park Sidmouth Wood area
Plecotus auritus	1.765 south east	29/05/2009	Roost	Richmond Park
Pipistrellus	0.244 south west	28/06/1988	Roost	Church Road, Richmond
Pipistrellus	0.728 north west	28/06/1988	Roost	Church Road, Richmond
Myotis nattereri	1.765 south east	28/05/2009	Roost	Richmond Park
Pipistrellus pygmaeus	0.985 west	27/10/2008	Roost	Terrace fields and gardens, Richmond
Pipistrellus	1.934 north west	27/07/1987	Roost	Isleworth
Plecotus auritus	1.765 south east	27/05/2009	Roost	Richmond Park
Pipistrellus	1.934 north west	26/09/1985	Roost	Isleworth
Myotis nattereri	1.802 south east	26/05/2009	Roost	Richmond Park
Vespertilionidae	1.419 north west	25/09/1984	Roost	Kew Gardens

Table 3.1: Summary of most pertinent data search results from the local environmental records centre

Species	Distance (km) & Orientation	Date	Roost type	Notes
Vespertilionidae	0.92 north east	24/09/1992	Roost	Sheen Common Drive, Richmond
Pipistrellus pipistrellus	0.861 south west	23/06/2007	Roost	Hobart Place, Richmond
Pipistrellus	2.067 south	2007	Roost	Richmond Park
Pipistrellus	1.113 south east	2007	Roost	Richmond Park
Myotis daubentonii	1.612 south east	20/08/2006	Roost	Richmond Park
Pipistrellus	1.934 north west	20/07/1987	Roost	Isleworth
Pipistrellus	0.219 south east	1990	Roost	Queens Road, Richmond
Pipistrellus	3.204 south west	1988	Roost	London Road, Twickenham
Vespertilionidae	0.417 south west	1987	Roost	Onslow Avenue, Richmond
Pipistrellus	1.934 north west	1986	Roost	Isleworth
Pipistrellus pygmaeus	1.31 south west	18/07/2002	Roost	Park Road, Twickenham
Pipistrellus	1.743 south west	16/07/1998	Roost	Tree Close, Petersham
Pipistrellus	0.49 west	15/08/1998	Roost	Mount Ararat Road, Richmond
Pipistrellus	1.708 east	15/07/1998	Roost	Sheen Lane, SW14
Pipistrellus	0.391 west	13/07/1999	Roost	Mount Ararat Road, Richmond
Pipistrellus	1.934 north west	13/07/1987	Roost	Isleworth
Pipistrellus	1.988 west	13/06/1995	Roost	St Margarets Road, Twickenham
Nyctalus noctula	1.021 south west	11/07/1988	Roost	Richmond Park
Pipistrellus pygmaeus	1.77 north east	09/11/2013	Roost	Lawn Crescent, Kew
Pipistrellus	0.244 south west	09/08/1985	Roost	Marchmont Road, Richmond
Pipistrellus pygmaeus	2.031 north west	07/07/1999	Roost	St Margarets Road, Twickenham
Pipistrellus	1.961 south west	07/07/1990	Roost	Orleans Road, Twickenham

Table 3.1: Summary of most pertinent data search results from the local environmental records centre

Species	Distance (km) & Orientation	Date	Roost type	Notes
Vespertilionidae	2.785 south west	04/07/1986	Roost	Cole Road, Twickenham
Pipistrellus pygmaeus	1.656 south west	03/08/2012	Roost	Lawn Crescent, Kew
Pipistrellus	1.684 north west	02/07/1995	Roost	St Peters Road, Twickenham
Eptesicus serotinus	1.275 west	01/07/2016	Roost	Kew Gardens
Pipistrellus pipistrellus	1.275 north	01/07/2016	Roost	Kew Gardens
Pipistrellus pygmaeus	0.64 north	2006	Casualty, may refer to a roost	Lancaster Park, Richmond
Vespertilionidae	2.125 south west	05/07/2008	Casualty, may refer to a roost	Orleans Road, Twickenham
Vespertilionidae	1.385 south west	01/09/1987	Casualty, may refer to a roost	Ducks Walk, East Twickenham
Pipistrellus pygmaeus	0.824 south west	01/05/2012	Casualty, may refer to a roost	Richmond Hill
Nyctalus noctula	1.644 south west	11/07/1994	Release	R Thames S bank Kew to Richmond

Table 3.2: Summary of extinct/ extant EPSM licences within 2km of site

Species	Distance & Orientation	Date	Record type	Notes
Common pipistrelle, Soprano pipistrelle, Serotine	1.3km north	2017	Non-breeding	2016-27025-EPS-MIT licence allows destruction of a resting place.
Soprano pipistrelle	1.8km north	2015	Non-breeding	2015-9916-EPS-MIT allows destruction of a resting place.

Surrounding habitat

- 3.2 The habitat contained on site was limited to small areas of introduced shrub, scattered scrub and amenity grassland in the south semi mature scattered trees located throughout the site. Immediately adjacent to the site, the habitat is predominantly roads, buildings and residential gardens, which include scattered trees. The wider area includes open space suitable for bats including East Sheen and Richmond Cemeteries and Pesthouse Common Site of Importance for Nature Conservation (SINC) located 300m east of the site and Richmond Park Special Area of Conservation (SAC), National Nature Reserve (NNR) and Site of Special Scientific Interest (SSSI) located 800 metres to the south west.
- 3.3 While the site itself is relatively small it provides some connectivity between various larger areas with good roosting and foraging value for bats as well as having low lighting levels.

FIELD SURVEYS

Overview

- 3.4 The Preliminary Roost Assessment (PRA) covered a group of interconnecting buildings which made up the school building (B1) as well as two out-buildings (B2 and B3), detailed individually below with a site plan provided in Appendix 1 and supporting photographs in Appendix 2.
- 3.5 No evidence of roosting bats was recorded during the PRA undertaken for the building sections which are proposed to be impacted by works on site; B1.4, B1.6 and B1.7.

Weather Conditions

- 3.6 The PRA were carried out in optimal weather conditions.
- 3.7 *PRA:* 17 December 2020 6 °C, light breeze (Beaufort 3), 1/8 okta cloud cover and no rain. Sunset was at 15:53 and the survey commenced at 10:00 and continued until 14:00.

Preliminary Roost Assessment

B1: Description

- 3.8 The main building (B1) was complex in design, one to two storeys, and varied in age. The oldest sections were in the west of the site (B1.1 and B1.2), which had pitched roofs clad in either concrete or clay tiles. B1 also included flat roof areas clad in roofing felt (section B1.7) (see Appendix 3, Photographs 1 to 3).

- 3.9 The overall condition of the structures was good with only small areas of wear and tear recorded during the survey.
- 3.10 Building section B1.2 contained small internal voids, which contained close board sarking (Appendix 2, Photograph 9). No voids were present in building section B1.8 (Appendix 2, Photograph 8).
- 3.11 *B1 Results.* No bats or evidence of bats such as urine staining or droppings were recorded within the building. However, several features with the potential to support roosting bats were identified. These are shown on Figure 1, Appendix 1 and included a hole in soffit box, holes in timber sarking, gaps in the dormer frame, missing mortar round ridge tile and gaps between wall and soffit box (See Appendix 3, Photographs 4 and 5).
- 3.12 Based on the above, B1 (sections B1.1, B1.2, B1.4, B1.6 and B1.7) were assessed as having **moderate potential** to support roosting bats in the summer and **low potential** to support hibernating bats.
- 3.13 Sections of B1 (B1.3 and B1.8) were assessed as having **negligible potential** to support roosting bats as these building sections were in a good state of repair. No potential roosting features; such as slipped tiles, gaps in brickwork or holes in soffit boxes were identified.

B2 and B3 Description

- 3.14 B2 and B3 were both single storey storage structures constructed from timber (See Appendix 3, Photograph 3). The overall condition of the structures was good with only small areas of wear and tear recorded during the survey.
- 3.15 No internal survey was completed as loft voids were absent.

B2 and B3 Results. No evidence of roosting bats was recorded during the external survey of B2 and B3, with buildings in a good state of repair. As such, both buildings have therefore been assessed as having negligible potential to support roosting bats.

4 Evaluation and Impacts

Roosts

- 4.1 No evidence of roosting bats was recorded during the building inspection and no bats were recorded emerging from any of the buildings / building sections surveyed. Therefore, it is likely that roosting bats are absent from the re-development areas of B1.4, B1.6 and B1.7.
- 4.2 Sections 1.1 and 1.2 of Building B1 will not be subject to dusk emergence or dawn re-entry surveys as it is understood no direct works are proposed to these sections. Nevertheless, these sections remain to have moderate potential to support roosting bats and it cannot be confirmed that bats are not roosting in either building sections B1.1 and B1.2.

Foraging and commuting habitats

- 4.3 The site provides a limited commuting and foraging resource, in the form of scattered trees and introduced shrub. The 2019 surveys did record foraging and commuting activity from at least three species of bat; common pipistrelle, soprano pipistrelle and long eared bat (The Ecology Consultancy, 2020).

Site

- 4.4 During the 2019 surveys (The Ecology Consultancy, 2020), there was a low amount of activity on site during both surveys of three common bat species, with the species utilising the site unlikely to be dependent on the habitats due to the abundance of higher quality foraging / commuting habitats in the locality. The site has therefore been assessed as having value at Site level for bats.

IMPACT ASSESSMENT

Roosting Bats

- 4.5 Due to the likely absence of roosting bats during surveys undertaken in 2019, it is considered the proposed works to building sections B1.3, B1.4, B1.7 and B1.8, will have negligible impact upon roosting bats.
- 4.6 Buildings B1.1 and B1.2 are scheduled to be retained, and its features with moderate potential to support a roost are to remain, intact. However, the building sections (B1.2) shall be located immediately adjacent the construction zone. As such, in the absence of mitigation, the construction works may result in the disturbance of foraging and

commuting routes used species such as those recorded during the emergence / re-entry surveys via; lighting, noise and vibration, and fragmentation of flight lines.

- 4.7 In order to ensure the continued functionality of a roost (if present) and comply with legislation and local and national policy in relation to roosting bats measures must in put in place. Measures include an appropriate lighting plan during the construction and operational phases of the development and the protection and enhancement of the on site habitats of value of the site for bats to ensure foraging an commuting routes are maintained.

Foraging and commuting habitats

- 4.8 The development proposals will result in the permanent removal of introduced shrub, and one tree in the south of the site, which provide low value foraging habitat. This could result in a minor effect at a Low scale of impact. However, lighting (both during the construction phase, and operational lighting post-development) should be designed sensitively to avoid impacting bats using the site. Furthermore, new tree and shrub planting on the southern and eastern boundary will ensure commuting and foraging habitats are maintained post development.

5 Summary and Recommendations

SUMMARY OF FINDINGS

- 5.1 This section summarises the data gathered during the surveys and the likely impacts on bats and supporting habitats that are present on the site, as described in previous sections of this report.
- 5.2 The following key ecological issues have been identified:
- During the 2019 surveys (The Ecology Consultancy, 2020c), no bats were recorded emerging or were suspected to have emerged from building sections of B1.4, B1.6, and B1.7. B1.4 will undergo an extension and recladding, B1.6 will be retained, and B1.7 will undergo part demolition. There were low levels of commuting activity from up to three species of bat (common pipistrelle, soprano pipistrelle and long eared bat) recorded during the dawn and dusk surveys,
 - The refurbishment and alterations of buildings on site, are unlikely to impact the commuting route, provided sensitive artificial lighting is employed and new planting is provided.

RECOMMENDATIONS

- 5.3 Measures must be taken to ensure no additional lighting during construction or operational phase of works during (dusk and dawn) directly illuminate any of the potential roosting features identified on site.

Construction management plan

- 5.4 Once a mains work contractor is commissioned post planning, a construction management plan must be produced which will detail measures taken to minimise the disturbance on bats on buildings B1.1 and B1.2 during the construction and operational phase.

Timing

- 5.5 As sections of B1 on site were assessed as having low potential to support hibernating bats, works to the existing roof will need to be started after outside of hibernation season, November to March.

Further surveys

- 5.6 Update bat surveys will be required in the May to August summer of 2021 prior to works commencing on buildings B1.1, B1.2, B1.4, B1.6 and B1.7 on site.

Lighting

- 5.7 While different species of bat react differently to night-time lighting, research has found that bats overall are sensitive to artificial lighting. Excessive and/or poorly directed lighting may delay bats in emerging from their roosts; shortening the time available for foraging, as well as causing bats to move away from suitable foraging grounds, movement corridors or roosting sites, to alternative dark areas (Jones, 2000).
- 5.8 To minimise indirect impacts from lighting associated with any proposed changes to the site it is recommended that artificial lighting is only directed where necessary for health and safety reasons. Lighting on site should be kept to a minimal with particular attention to illumination of the potential roosting features on B1.1 and B1.2 as well as the trees, hedgerows and dark zones on the south and east of the site. Lighting should only be used for the period of time for which it is required (Jones, 2000). This can be achieved by following accepted best practice (Fure, 2006; Institute of Lighting Engineers 2018 Bat Conservation Trust 2011):
- The level of artificial lighting including flood lighting should be kept to an absolute minimum;
 - Where this does not conflict with health and safety and/or security requirements, the site should be kept dark during peak bat activity periods (0 to 1.5 hours after sunset and 1.5 hours before sunrise);
 - Lighting required for security or safety reasons should use a lamp of no greater than 2000 lumens (150 Watts) and should comprise sensor-activated lamps;
 - Lights utilising LED technology are the preferred option as these lights do not emit on the UV spectrum, are easily controllable in terms of direction/spill and can be turned on and off instantly;
 - Avoid the use of sodium or metal halide lamps, these gas lamps require a lengthy period in which to turn off and the diffuse nature of the light emitted makes light spillage a significant problem.
 - Lights required for night time deliveries or security patrols could be set to activate with pressure activated sensors set into the ground;
 - Lighting should be directed to where it is needed to minimise light spillage. This can be achieved by limiting the height of the lighting columns and by using as steep a downward angle as possible and/or a shield/hood/cowl/ that directs the light below the horizontal plane and restricts the lit area;

- Artificial lighting should not directly illuminate any confirmed or potential bat roosting features or habitats of value to commuting/foraging bats. Similarly, any newly planted linear features or compensatory bat roosting features should not be directly lit; and
- Lighting design computer programs can be used to predict the potential impacts of light spillage.

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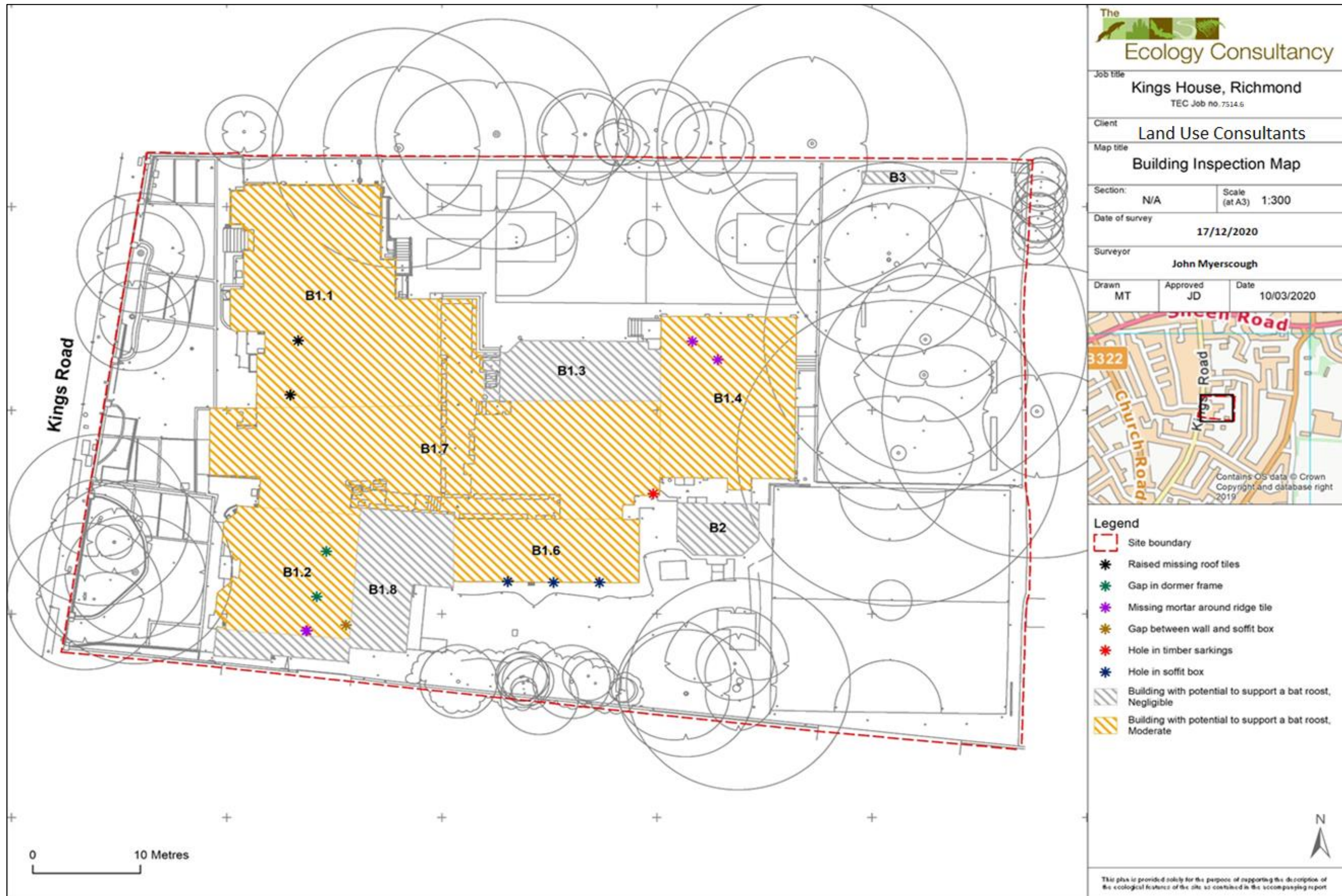
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Appendix 1: Map of Survey Results

Figure 1: Building Inspection Plan.



Appendix 2: Photographs

Photograph 1

Building 1: sections B1.1, B1.3
and B1.4 north elevation.



Photograph 2

Building 1: Section B1.6
Southern and eastern elevation.



Photograph 3

Building 2 southern elevation
And Building 1 section B1.4
southern elevation



Photograph 4
PRF: Hole in timber sarking



Photograph 5
PRF: Hole in soffit box



Photograph 6
Eastern elevation of
building section B1.8, single
storey extension adjacent to B1.2
with no PRF's.



Photograph 7
Southern elevation
of B1.2 and B1.8.



Photograph 8
Internal view of building section
B1.8, no roof voids present.



Photograph 9
Internal view of building
Section B1.2, small roof
void present.



Appendix 4: Legislation

Important Notice: This section contains details of legislation applicable in Britain only (i.e. not including the Isle of Man, Northern Ireland, the Republic of Ireland or the Channel Islands) and is provided for general guidance only. While every effort has been made to ensure accuracy, this section should not be relied upon as a definitive statement of the law.

A NATIONAL LEGISLATION AFFORDED TO BAT SPECIES

The objective of the EC Habitats Directive⁶ is to conserve the various species of plant and animal which are considered rare across Europe. The Directive is transposed into UK law by The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 (formerly The Conservation of Habitats and Species Regulations 2017, The Conservation (Natural Habitats, &c.) Regulations 2010 (as amended) and The Offshore Marine Conservation (Natural Habitats, &c.) Regulations 2007 (as amended).

The Wildlife and Countryside Act 1981 (as amended) is a key piece of national legislation which implements the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) and implements the species protection obligations of Council Directive 2009/147/EC (formerly 79/409/EEC) on the Conservation of Wild Birds (EC Birds Directive) in Great Britain.

Explanatory notes relating to all bat species protected under The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 are given below.

- In the Directive, the term ‘deliberate’ is interpreted as being somewhat wider than intentional and may be thought of as including an element of recklessness.
- The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 does not define the act of ‘migration’ and therefore, as a precaution, it is recommended that short distance movement of animals for e.g. foraging, breeding or dispersal purposes are also considered.
- In order to obtain a European Protected Species Mitigation (EPSM) licence, the application must demonstrate that it meets all of the following three ‘tests’: i) the action(s) are necessary for the purpose of preserving public health or safety, or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequence of primary importance for the environment; ii) that there is no satisfactory alternative and iii) that the action authorised will not be detrimental to the maintenance of the species concerned at a favourable conservation status in their natural range.

⁶ Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora

All species of bat are fully protected under The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 through their inclusion on Schedule 2. Regulation 41 prohibits:

- Deliberate killing, injuring or capturing of Schedule 2 species (all bats)
- Deliberate disturbance of bat species as:
 - a) to impair their ability:
 - (i) to survive, breed, or reproduce, or to rear or nurture young;
 - (ii) to hibernate or migrate³
 - b) to affect significantly the local distribution or abundance of the species
- Damage or destruction of a breeding site or resting place
- Keeping, transporting, selling, exchanging or offering for sale whether live or dead or of any part thereof.

Bats are also currently protected under the Wildlife and Countryside Act 1981 (as amended) through their inclusion on Schedule 5. Under this Act, they are additionally protected from:

- Intentional or reckless disturbance (at any level)
- Intentional or reckless obstruction of access to any place of shelter or protection
- Selling, offering or exposing for sale, possession or transporting for purpose of sale.

How is the legislation pertaining to bats liable to affect development works?

An EPSM licence issued by the relevant countryside agency (e.g. Natural England) will be required for works liable to affect a bat roost or for operations likely to result in a level of disturbance which might impair their ability to undertake those activities mentioned above (survive, breed, rear young and hibernate). The licence is to allow derogation from the relevant legislation but also to ensure appropriate mitigation measures be put in place and their efficacy to be monitored.

Though there is no case law to date, the legislation may also be interpreted such that, in certain circumstances, important foraging areas and/or commuting routes can be regarded as being afforded *de facto* protection, for example, where it can be proven that the continued usage of such areas is crucial to maintaining the integrity and long-term viability of a bat roost⁷.

⁷ Garland & Markham (2008) Is important bat foraging and commuting habitat legally protected? Mammal News, No. 150. The Mammal Society, Southampton.

B NATIONAL AND EUROPEAN LEGISLATION AFFORDED TO HABITATS

Statutory Designations: National

Nationally important areas of special scientific interest, by reason of their flora, fauna, or geological or physiographical features, are notified by the countryside agencies as statutory **Sites of Special Scientific Interest** (SSSIs) under the National Sites and Access to the Countryside Act 1949 and latterly the Wildlife & Countryside Act 1981 (as amended). As well as underpinning other national designations (such as **National Nature Reserves** which are declared by the countryside agencies under the same legislation), the system also provides statutory protection for terrestrial and coastal sites which are important within a European context (Natura 2000 network) and globally (such as Wetlands of International Importance). See subsequent sections for details of these designations. Improved provisions for the protection and management of SSSIs have been introduced by the Countryside and Rights of Way Act 2000 (in England and Wales).

The Wildlife & Countryside Act 1981 (as amended) also provides for the making of **Limestone Pavement Orders**, which prohibit the disturbance and removal of limestone from such designated areas, and the designation of **Marine Nature Reserves**, for which byelaws must be made to protect them.

Statutory Designations: International

Special Protection Areas (SPAs), together with **Special Areas of Conservation** (SACs) form the **Natura 2000** network. The Government is obliged to identify and classify SPAs under the EC Birds Directive (Council Directive 2009/147/EC (formerly 79/409/EEC)) on the Conservation of Wild Birds). SPAs are areas of the most important habitat for rare (listed on Annex I of the Directive) and migratory birds within the European Union. Protection afforded SPAs in terrestrial areas and territorial marine waters out to 12 nautical miles (nm) is given by The Conservation of Habitats & Species Regulations 2010 (as amended). The Offshore Marine Conservation (Natural Habitats, &c.) Regulations 2007 (as amended) provide a mechanism for the designation and protection of SPAs in UK offshore waters (from 12-200 nm).

The Government is obliged to identify and designate SACs under the EC Habitats Directive (Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora). These are areas which have been identified as best representing the range and variety of habitats and (non-bird) species listed on Annexes I and II to the Directive within the European Union. SACs in terrestrial areas and territorial marine waters out to 12 nautical miles are protected under The Conservation of Habitats & Species Regulations 2010 (as amended). The Offshore Marine Conservation (Natural Habitats, &c.) Regulations 2007 (as amended)

provide a mechanism for the designation and protection of SACs in UK offshore waters (from 12-200 nm).

Ramsar sites are designated under the Convention on Wetlands of International Importance, agreed in Ramsar, Iran, in 1971. The Convention covers all aspects of wetland conservation and wise use, in particular recognizing wetlands as ecosystems that are globally important for biodiversity conservation. Wetlands can include areas of marsh, fen, peatland or water and may be natural or artificial, permanent or temporary. Wetlands may also incorporate riparian and coastal zones adjacent to the wetlands. Ramsar sites are underpinned through prior notification as Sites of Special Scientific Interest (SSSIs) and as such receive statutory protection under the Wildlife & Countryside Act 1981 (as amended) with further protection provided by the Countryside and Rights of Way (CRoW) Act 2000. Policy statements have been issued by the Government in England and Wales highlighting the special status of Ramsar sites. This effectively extends the level of protection to that afforded to sites which have been designated under the EC Birds and Habitats Directives as part of the Natura 2000 network (e.g. SACs & SPAs).

Statutory Designations: Local

Under the National Sites and Access to the Countryside Act 1949 **Local Nature Reserves** (LNRs) may be declared by local authorities after consultation with the relevant countryside agency. LNRs are declared for sites holding special wildlife or geological interest at a local level and are managed for nature conservation, and provide opportunities for research and education and enjoyment of nature.

Non-Statutory Designations

Areas considered to be of local conservation interest may be designated by local authorities as a **Wildlife Site**, under a variety of names such as **County Wildlife Sites** (CWS), **Listed Wildlife Sites** (LWS), **Local Nature Conservation Sites** (LNCS), **Sites of Biological Importance** (SBIs), **Sites of Importance for Nature Conservation** (SINCs), or **Sites of Nature Conservation Importance** (SNCIs). The criteria for designation may vary between counties.

Together with the statutory designations, these are defined in local and structure plans under the Town and Country Planning system and are a material consideration when planning applications are being determined. The level of protection afforded to these sites through local planning policies and development frameworks may vary between counties.

Regionally Important Geological and Geomorphological Sites (RIGS) are the most important places for geology and geomorphology outside land holding statutory designations such as SSSIs. Locally-developed criteria are used to select these sites, according to their value for education, scientific study, historical significance or aesthetic qualities. As with local Wildlife Sites, RIGS are a material consideration when planning applications are being determined.

C NATIONAL PLANNING POLICY

The National Planning Policy Framework (NPPF)

The National Planning Policy Framework (NPPF) replaced Planning Policy Statement (PPS9) and was updated in February 2019, as the key national planning policy concerning nature conservation. The NPPF emphasises the need for suitable development. The Framework specifies the need for protection of designated sites and priority habitats and priority species. An emphasis is also made for the need for ecological networks via preservation, restoration and re-creation. The protection and recovery of priority species – that is those listed as UK Biodiversity Action Plan priority species – is also listed as a requirement of planning policy. In determining a planning application, planning authorities should aim to conserve and enhance biodiversity by ensuring that: designated sites are protected from adverse harm; there is appropriate mitigation or compensation where significant harm cannot be avoided; opportunities to incorporate biodiversity in and around developments are encouraged; planning permission is refused for development resulting in the loss or deterioration of irreplaceable habitats including aged or veteran trees and also ancient woodland.

The Natural Environment and Rural Communities Act 2006 and The Biodiversity Duty

The Natural Environment and Rural Communities (NERC) Act came into force on 1st October 2006. Section 40 of the Act requires all public bodies to have regard to biodiversity conservation when carrying out their functions. This is commonly referred to as the ‘biodiversity duty’.

Section 41 of the Act (Section 42 in Wales) requires the Secretary of State to publish a list of habitats and species which are of ‘principal importance for the conservation of biodiversity.’ This list is intended to assist decision makers such as public bodies in implementing their duty under Section 40 of the Act. Under the Act these habitats and species are regarded as a material consideration in determining planning applications. A developer must show that their protection has been adequately addressed within a development proposal.

56 Priority Habitats and 943 Priority Species (formally known as UK BAP Habitats and Species) have been listed that are of principal importance for the conservation of biodiversity in the UK. Priority Habitats include 'Lowland Mixed Deciduous Woodland' and 'Hedgerows'.

D REGIONAL PLANNING POLICY

The London Plan (Publication version 2020)

The London Plan is the statutory Spatial Development Strategy for Greater London prepared by the Mayor of London in accordance with the Greater London Authority Act 1999 (as amended). Chapter 8 includes nine policies relating to the protection, enhancement, creation, promotion and management of biodiversity and green infrastructure in support of the London Environment Strategy (GLA, 2018). Four of these Green Infrastructure and Natural Environment policies (G1, G5, G6 & G7) are considered relevant to this assessment, as detailed below.

Policy G1 Green infrastructure

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

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

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

- 1) identify key green infrastructure assets, their function and their potential function
- 2) identify opportunities for addressing environmental and social challenges through strategic green infrastructure interventions.

D Development proposals should incorporate appropriate elements of green infrastructure that are integrated into London's wider green infrastructure network.

Policy G5 Urban greening

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

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

C Existing green cover retained on site should count towards developments meeting the interim target scores set out in (B) based on the factors set out in Table 8.2.

Policy G6 Biodiversity and access to nature

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

B Boroughs, in developing Development Plans, should:

- 1) use up-to-date information about the natural environment and the relevant procedures to identify SINCs and ecological corridors to identify coherent ecological networks
- 2) identify areas of deficiency in access to nature (i.e. areas that are more than 1km walking distance from an accessible Metropolitan or Borough SINC) and seek opportunities to address them
- 3) support the protection and conservation of priority species and habitats that sit outside the SINC network, and promote opportunities for enhancing them using Biodiversity Action Plans
- 4) seek opportunities to create other habitats, or features such as artificial nest sites, that are of particular relevance and benefit in an urban context
- 5) ensure designated sites of European or national nature conservation importance are clearly identified and impacts assessed in accordance with legislative requirements.

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

- 1) avoid damaging the significant ecological features of the site
- 2) minimise the overall spatial impact and mitigate it by improving the quality or management of the rest of the site
- 3) deliver off-site compensation of better biodiversity value.

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

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

Policy G7 Trees and woodlands

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

B In their Development Plans, boroughs should:

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

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

London's Environment Strategy (2018)

The London Environment Strategy set out an ambitious vision for improving London's environment for the benefit of all Londoners. This is the first strategy to bring together approaches to every aspect of London's environment, integrating the following areas:

- Air quality
- Green infrastructure
- Climate change mitigation and energy
- Waste
- Adapting to climate change
- Ambient noise
- Low carbon circular economy

The overall aim of the strategy is for London to be the world's greenest global city by making it greener, clearer and ready for the future. The London Environment Strategy combines multiple previous strategies including the Biodiversity Strategy (GLA, 2002).

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

Proposal 5.2.1.a The London Plan includes policies on the protection of Sites of Importance for Nature Conservation (SINCs) and Regionally Important Geological Sites (RIGS)

Proposal 5.2.1.b The Mayor will develop a biodiversity net gain approach for London, and promote wildlife-friendly landscaping in new developments and regeneration projects

E LOCAL PLANNING POLICY

RICHMOND LOCAL PLAN

The following policies, saved from the 2018 Local Plan are of potential relevance to this site:

POLICY LP 9

Floodlighting

Floodlighting, including alterations and extensions, of sports pitches, courts and historic and other architectural features will be permitted unless there is demonstrable harm to character, biodiversity or amenity and living conditions.

The following criteria will be taken into account when assessing floodlighting:

“3. the impacts on biodiversity and wildlife;”

Favourable consideration will be given to the replacement or improvement of existing lighting where it provides improvements to existing adverse impacts.

POLICY LP 15

Biodiversity

A. The Council will protect and enhance the borough's biodiversity, in particular, but not exclusively, the sites designated for their biodiversity and nature conservation value, including the connectivity between habitats. Weighted priority in terms of their importance will be afforded to protected species and priority species and habitats including National Nature Reserves, Sites of Special Scientific Interest (SSSI) and Other Sites of Nature Importance as set out in the Biodiversity Strategy for England, and the London and Richmond upon Thames Biodiversity Action Plans. This will be achieved by:

1. *protecting biodiversity in, and adjacent to, the borough's designated sites for biodiversity and nature conservation importance (including buffer zones), as well as other existing habitats and features of biodiversity value;*
2. *supporting enhancements to biodiversity;*
3. *incorporating and creating new habitats or biodiversity features, including trees, into development sites and into the design of buildings themselves where appropriate; major developments are required to deliver net gain for biodiversity, through incorporation of ecological enhancements, wherever possible;*
4. *ensuring new biodiversity features or habitats connect to the wider ecological and green infrastructure networks and complement surrounding habitats;*
5. *enhancing wildlife corridors for the movement of species, including river corridors, where opportunities arise; and*
6. *maximising the provision of soft landscaping, including trees, shrubs and other vegetation that support the borough-wide Biodiversity Action Plan.*

B. Where development would impact on species or a habitat, especially where identified in the relevant Biodiversity Action Plan at London or local level, or the Biodiversity Strategy for England, the potential harm should:

1. *firstly be avoided (the applicant has to demonstrate that there is no alternative site with less harmful impacts),*
2. *secondly be adequately mitigated; or*
3. *as a last resort, appropriately compensated for.*

POLICY LP 16

Trees, Woodlands and Landscape

A. The Council will require the protection of existing trees and the 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.

B. To ensure development protects, respects, contributes to and enhances trees and landscapes, the Council, when assessing development proposals, will:

Trees and Woodlands

1. *resist the loss of trees, including aged or veteran trees, unless the tree is dead, dying or dangerous; or the tree is causing significant damage to adjacent structures; or the tree has little or no amenity value; or felling is for reasons of good arboricultural*

practice; resist development that would result in the loss or deterioration of irreplaceable habitat such as ancient woodland;

2. resist development which results in the damage or loss of trees that are considered to be of townscape or amenity value; the Council will require that site design or layout ensures a harmonious relationship between trees and their surroundings and will resist development which will be likely to result in pressure to significantly prune or remove trees;

3. require, where practicable, an appropriate replacement for any tree that is felled; a financial contribution to the provision for an off-site tree in line with the monetary value of the existing tree to be felled will be required in line with the 'Capital Asset Value for Amenity Trees' (CAVAT);

4. require new trees to be of a suitable species for the location in terms of height and root spread, taking account of space required for trees to mature; the use of native species is encouraged where appropriate;

5. require that trees are adequately protected throughout the course of development, in accordance with British Standard 5837 (Trees in relation to design, demolition and construction – Recommendations).

The Council may serve Tree Preservation Orders or attach planning conditions to protect trees considered to be of value to the townscape and amenity and which are threatened by development.

Landscape

1. require the retention of important existing landscape features where practicable;

2. require landscape design and materials to be of high quality and compatible with the surrounding landscape and character; and

3. encourage planting, including new trees, shrubs and other significant vegetation where appropriate.

POLICY LP 17

Green roofs and walls

Green roofs and/or brown roofs should be incorporated into new major developments with roof plate areas of 100sqm or more where technically feasible and subject to considerations of visual impact. The aim should be to use at least 70% of any potential roof plate area as a green / brown roof.

The onus is on an applicant to provide evidence and justification if a green roof cannot be incorporated. The Council will expect a green wall to be incorporated, where appropriate, if it has been demonstrated that a green / brown roof is not feasible.

The use of green / brown roofs and green walls is encouraged and supported in smaller developments, renovations, conversions and extensions.

Appendix 5: Assessment Criteria for Preliminary Roost Assessments

ASSESSMENT CRITERIA – PRELIMINARY ROOST ASSESSMENT – STRUCTURES

The potential for structures to support roosting bats, ranging from negligible to the presence of a confirmed roost, is assessed using the findings of the survey and the desk study. The following criteria were used to determine the level of potential of the buildings for roosting bats:

- **Negligible potential** – While presence cannot be absolutely discounted there were no significant visible features that could be used by bats for roosting.
- **Low** – Small number of potential roosting features such as could be utilised by individual opportunistic roosting bats. Site situated within isolated habitat that could be used by foraging bats but which is not connected by prominent linear features such as woodland edge, hedgerows and tree lines.
- **Moderate** – Several potential roosting features in the buildings or other structures. There is surrounding habitat such as woodland, scattered trees, hedgerows suitable to support foraging and roosting bats. The site is connected with the wider landscape by linear features such as woodland edge, hedgerows and tree lines that could be used by commuting bats.
- **High** – Buildings or other structures, such as mines, caves, tunnels, ice houses and cellars, with numerous features of potential significance for roosting bats. Surrounding landscape has high value habitat for roosting, foraging and commuting that is contiguous with on-site habitats. The site is connected with the wider landscape by strong linear features and may be close to known roosts or other potentially valuable habitat resources.
- **Confirmed roost** – Evidence indicates a building or other structure is used by bats, for example:
 - bats seen roosting or observed flying from a roost or freely in the habitat;
 - droppings, carcasses, feeding remains;
 - bats heard 'chattering' inside on a warm day or at dusk.

Appendix 6: Standard Guidance for Mitigation, Compensation and Enhancement

Bat tubes, bat bricks and bat boxes

To compensate for the loss of roosts used by crevice dwelling species or to provide enhancement measures thought should be given to utilising proprietary products from recognised manufacturers such as: Bird Brick Houses, The Nest Box Company, Schwegler, Habibat, Causa and Vincent. Bat tubes and integrated bat bricks are artificial roost features that can be incorporated into building structures. Bat boxes are generally fitted externally to mature trees or structures. The site's value to bats could be enhanced by installing any of these features. Any bat tubes and bat bricks used for enhancement would need to be in addition to any required to compensate for the loss of the roosts.

Bat tubes, bat bricks or bat boxes should be located at least 5m above ground level facing southeast – southwest and to allow for clear flight paths and should not be directly lit by artificial lighting. Bat boxes should be woodcrete designs as they are long lasting compared to wooden boxes and insulate occupants from extremes of temperature and condensation.

Breathable roof membrane

Breathable roof membranes (BRMs) have been shown to entangle roosting bats, leading to mortality, sometimes of entire colonies. Therefore it is recommended that only bitumen roofing felt that does not contain polypropylene filaments (e.g. bitumen felt type 1F) should be used to reduce the risk of bat mortality.

Bats and lighting

5.1 While different species of bat react differently to night time lighting, research has found that bats overall are sensitive to artificial lighting. Excessive and/or poorly directed lighting may delay bats in emerging from their roosts; shortening the time available for foraging, as well as causing bats to move away from suitable foraging grounds, movement corridors or roosting sites, to alternative dark areas (Jones, 2000).

5.2 To minimise indirect impacts from lighting associated with the proposed development it is recommended that artificial lighting is only directed where necessary for health and safety reasons. Lighting should not illuminate any trees and hedgerows on-site, or suspected or confirmed bat roosting sites. Lighting should only be used for the period of time for which it is required (Jones, 2000). This can be achieved by following accepted best practice (Fure, 2006; Institute of Lighting Engineers 2009; Bat Conservation Trust 2011):

- The level of artificial lighting including flood lighting should be kept to an absolute minimum;

- Where this does not conflict with health and safety and/or security requirements, the site should be kept dark during peak bat activity periods (0 to 1.5 hours after sunset and 1.5 hours before sunrise);
- Lighting required for security or safety reasons should use a lamp of no greater than 2000 lumens (150 Watts) and should comprise sensor-activated lamps;
- Lights utilising LED technology are the preferred option as these lights do not emit on the UV spectrum, are easily controllable in terms of direction/spill and can be turned on and off instantly;
- Avoid the use of sodium or metal halide lamps, these gas lamps require a lengthy period in which to turn off and the diffuse nature of the light emitted makes light spillage a significant problem.
- Lights required for night time deliveries or security patrols could be set to activate with pressure activated sensors set into the ground;
- Lighting should be directed to where it is needed to minimise light spillage. This can be achieved by limiting the height of the lighting columns and by using as steep a downward angle as possible and/or a shield/hood/cowl/ that directs the light below the horizontal plane and restricts the lit area;
- Artificial lighting should not directly illuminate any confirmed or potential bat roosting features or habitats of value to commuting/foraging bats. Similarly, any newly planted linear features or compensatory bat roosting features should not be directly lit; and
- Lighting design computer programs can be used to predict the potential impacts of light spillage.

Institute of Lighting Engineers 2009; Bat Conservation Trust 2018; Stone 2013; Bat Conservation Trust 2014):

- Where appropriate, professional lighting designers should be consulted, and the need for quantitative lighting measurements should be considered;
- Lighting mitigation should be based on robust baseline surveys of bat behaviour and existing light levels on site wherever possible;
- The level of artificial lighting including flood lighting should be kept to an absolute minimum;
- Where this does not conflict with health and safety and/or security requirements, the site should be kept dark during peak bat activity periods (0 to 1.5 hours after sunset and 1.5 hours before sunrise);
- Variable lighting regimes (VLR) can be utilised to lower lighting levels during periods of low human activity (e.g 00:30-05:30);
- Lighting required for security or safety reasons should use a lamp of no greater than 2000 lumens (150 Watts) and should comprise sensor-activated lamps;
- Use narrow-spectrum light sources that peak higher than 550 nanometres, avoiding lights with UV, white and blue wavelengths;
- Lights utilising LED technology are the preferred option as these lights do not emit on the UV spectrum, are easily controllable in terms of direction/spill and can be turned on and off instantly;
- Avoid the use of sodium or metal halide lamps, these gas lamps require a lengthy period in which to turn off and the diffuse nature of the light emitted makes light spillage a significant problem.
- Lights required for night time deliveries or security patrols could be set to activate with pressure activated sensors set into the ground;
- Lighting should be directed to where it is needed to minimise light spillage. This can be achieved by limiting the height of the lighting columns and by using as steep a downward angle as possible and/or a shield/hood/cowl/ that directs the light below the horizontal plane and restricts the lit area;
- Usually using lower lighting columns and increasing the spacing between them reduces light intensity and spill;
- Plant vegetation to form light barriers and dark corridors. Use close-boarded fencing to screen light until vegetation matures. Dark corridors should be well connected to commuting routes;

- Artificial lighting should not directly illuminate any confirmed or potential bat roosting features or habitats of value to commuting/foraging bats. Similarly, any newly planted linear features or compensatory bat roosting features should not be lit; and
- The use of reflective surfaces under lights should be avoided.



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