

KNELLER HALL, TWICKENHAM

PRELIMINARY ECOLOGICAL APPRAISAL & PRELIMINARY BAT ROOST
ASSESSMENT



ECO02281

A

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REPORT

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Prepared for:

DWD

EXECUTIVE SUMMARY

- RPS were commissioned by DWD to undertake a Preliminary Ecological Appraisal and Preliminary Bat Roost Assessment of Kneller Hall, Twickenham. This comprised a desk study, Phase 1 Habitat Survey, an ecological scoping survey, which assessed the potential of the site to support species of conservation concern or other species which could present a constraint to the development, and both internal and external assessments of buildings for bat roost potential.
- The proposals involve the creation of a new school.
- The site comprises largely hardstanding and old school buildings that are no longer in use. The buildings are surrounded by amenity grassland, aside from a small area of improved grassland adjacent to one of the relatively newer buildings. There are scattered trees throughout the site, mostly associated with hardstanding walkways, and beech hedgerows separating sections of the site. To the east of the site there is a large amenity grassland sports field with an area of scattered trees on improved grassland bordering the north. An area of woodland extends just east, outside the site boundary. Aside from this the surroundings are majority urban and residential, with Twickenham Stadium almost directly adjacent to the east.
- There is one statutory and 18 non-statutory designated sites for nature conservation within 2 km of the site. It is unlikely that these will be negatively impacted by the proposed development, due to their distance from the site and the urban nature of the intervening habitats.
- It is recommended that the trees to be removed are subject to a Preliminary Bat Roost Assessment to determine the need for further bat surveys, after which suitable mitigation for the loss of this habitat would be outlined.
- It has been noted in the pre-application response that acidic grassland may be present on site. Whilst not identified during the survey (most likely due to the time of year), it cannot be excluded from being present. Therefore, it is recommended that a National Vegetation Classification (NVC) botanical survey be undertaken. Such a survey can be carried out between May – July (when plants are flowering), monthly, on three separate occasions.
- Some of the buildings on site were identified as having potential roosting features for bats, therefore emergence / re-entry surveys should be carried out on all identified buildings during the survey season (March-September inclusive), if the surveys confirm presence of bat species, appropriate mitigation for the potential loss of roosting habitat will be determined.
- Notwithstanding the results of these surveys, a sensitive lighting scheme should be used both during construction and post-development, to encourage commuting / foraging bats to use the habitats retained and created on site.
- The invasive plant species rhododendron and wall cotoneaster were identified on site. These are both listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended), and a suitable eradication strategy should be implemented.
- Recommendations and mitigation proportionate to the proposed development includes the timing of removal of buildings and habitats on site, including pre-checks by fully competent ecologists if ecologically sensitive periods are not avoidable.
- It is unlikely that the site is supporting a significant population of any small mammals, neither is it within close proximity to any designated sites. Notwithstanding this, general good practice guidelines should be followed during construction, including the use of spill kits to prevent pollution and ramps to provide easy access away from ongoing construction for small mammals.
- A full Ecological Enhancement Strategy will be submitted alongside this report to support the planning application. Opportunities for Biodiversity Net Gain within the site have been discussed within this report.

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Appendices

- Appendix A** Relevant Legislation
- Appendix B** Site Photographs

1 INTRODUCTION

1.1 Purpose and scope of this report

- 1.1.1 RPS was commissioned by DWD to undertake a Preliminary Ecological Appraisal (PEA) and Preliminary Bat Roost Assessment (PBRA) of Kneller Hall, Twickenham.
- 1.1.2 To undertake an initial assessment of the potential ecological impact of the proposals, a desk study, Phase 1 Habitat Survey, and a preliminary protected species assessment, including a specific bat roost assessment were carried out. This is termed as a Preliminary Ecological Appraisal Report (PEAR) in accordance with CIEEM (2017). This assessment is considered 'preliminary' until any required protected species, habitat or invasive species surveys are completed, and the results incorporated into a final Ecological Appraisal or Ecological Impact Assessment (EIA) which supports the planning application.
- 1.1.3 The PEA aims to:
- undertake a desk-based review of designated sites and records of protected species and other species that could present a constraint;
 - map and assess the habitats present on site;
 - assess the site for potential to support protected species or other species that could present a constraint, and make appropriate recommendations for further survey work if necessary;
 - provide outline options for mitigation measures as appropriate; and
 - make recommendations for appropriate biodiversity enhancements in line with national and local planning policy.
- 1.1.4 This report pertains to these results only; recommendations included within this report are the professional opinion of an experienced ecologist and therefore the view of RPS. The surveys and desk-based assessments undertaken as part of this review and subsequent report including the Ecological Appraisal Notes are prepared in accordance with the British Standard for Biodiversity Code of Practice for Planning and Development (BS42020:2013).

1.2 Study area and Zone of Influence

- 1.2.1 The site is located at Kneller Road, Twickenham, TW2 7DN. The National Grid coordinates for the centre of the site are TQ 14692 74194.
- 1.2.2 The site comprises largely hardstanding and building's associated with the military school of music's former use of the site. The site is no longer in use. There are areas of amenity grassland surrounding most buildings, and an area of scattered trees on improved grassland along the northern site boundary. In the centre of the site there was some ornamental planting and introduced shrub beds surrounding a small pond.
- 1.2.3 The site location is shown on Figure 1.1. Aerial imaging available via Google Earth Pro was also reviewed to assess the site in relation to its context in the wider landscape. The site is located in a predominantly suburban area, comprised of rows of semi-detached and terraced 1930's housing. Murray Park and Gainsborough Gardens recreation ground offer open green space nearby, and further afield, the area is characterised by Twickenham stadium and the River Thames.
- 1.2.4 The term Zone of Influence is used to describe the geographic extent of potential impacts of a proposed development. The Zone of Influence is determined by the nature of the development and also in relation to designated sites, habitats or species which might be affected by the proposals.

- 1.2.5 For this site, the Zone of Influence is considered to be land on and immediately adjacent to the site.

Figure 1.1: Site location



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JOB TITLE:
KNELLER HALL SCHOOL

DRAWING TITLE:
Red Line Boundary

SCALE: 1 : 2000	DRAWING SHEET SIZE: A3
JOB CODE: 001506	DRAWING NUMBER: 0017
REVISION:	

1.3 Development proposals

1.3.1 The proposed development involves the creation of a new school.

1.3.2 The currently proposed site plan is provided in Figure 1.2.

1.4 Legislation and policy

1.4.1 Relevant legislation, policy guidance and both Local and National Biodiversity Action Plans (BAPs) are referred to throughout this report where appropriate. Their context and application are explained in the relevant sections of this report.

1.4.2 The relevant articles of legislation are:

- The National Planning Policy Framework (NPPF, 2021);
- ODPM Circular 06/2005 (retained as Technical Guidance on NPPF 2021);
- Local planning policies (London Borough of Richmond upon Thames);
- The Conservation of Habitats and Species Regulations 2021;
- The Wildlife and Countryside Act 1981 (as amended);
- The Protection of Badgers Act 1992;
- The Countryside and Rights of Way Act 2000;
- The Hedgerow Regulations 1997;
- The Natural Environment and Rural Communities Act 2006;
- National / Local Biodiversity Action Plan for Richmond.

1.4.3 A summary of legislation relevant to protected or other species identified as potential constraints in this report is provided in Appendix A.

Figure 1.2: Currently proposed site plan.

Developed Masterplan Concept

- o. KNELLER HALL
- 1. BAND PRACTICE HALL
- 2. GUARDS HOUSE
- 3. TEACHING BUILDING
- 4. SPORTS HALL
- 5. SWIMMING POOL
- 6. PERFORMING ARTS CENTRE (PAC)
- 7. SPORTS PAVILION
- 8. ENERGY CENTRE
- 9. FOREST SCHOOL SHELTER

- + Sports Hall is reorientated to align with 'grid' created by Kneller Hall and the subsequent accommodation blocks. This gives the masterplan a formality that responds to the listed building. Buildings arranged around cat A tree.
- + Swimming pool moved slightly north to align with northern gatepost
- + PAC also reorientated to formal grid - principal east elevation addresses larger courtyard space in which the Band Practice Hall sits as an element.
- + Energy centre shown to the north of the site within the MOL and forming the eastern side to the northern quad
- + Small extension to western side of teaching block removed to allow route through
- + Indicative location for a forest school shelter/canopy within the woodland area
- + Landscaping to be developed to create different qualities to the variety of spaces including a play area, quiet area and areas to enhance biodiversity.
- + Landscape Architect to advise on additional replacement tree planting across the site.



2 METHODS

2.1 Desk Study

- 2.1.1 Ecological records within a 2 km radius of the site were requested from the Greenspace Information for Greater London environmental records centre (GiGL). Data requests were limited to records for protected species recorded within the last ten years and sites of nature conservation interest within 2 km of the site. This included a review of existing statutory sites of nature conservation interest, such as Sites of Special Scientific Interest (SSSIs), Special Protection Areas (SPAs), Special Area of Conservation (SACs) and National Nature Reserves (NNRs), and non-statutory sites, such as Sites of Importance for Nature Conservation (SINCs) and Local Wildlife Sites (LWSs).
- 2.1.2 Locations of statutory designated sites were accessed via the government 'MAGIC' website (MagicMap, 2021).
- 2.1.3 A 1:25,000 OS map was used to identify nearby features such as ponds or green corridors that could provide habitat or connectivity to other areas.

2.2 Ecological Appraisal

- 2.2.1 The Ecological Appraisal consisted of two components: a Phase 1 Habitat Survey and a scoping survey for protected species and other species of conservation concern which could present a constraint to development.
- 2.2.2 The walkover survey was undertaken 7th February 2022 by Consultant Ecologist Laura White ACIEEM and Assistant Ecologist Harriet Miles.
- 2.2.3 The Phase 1 Habitat surveys followed the standard methodology (JNCC, 2010), and as described in the Guidelines for Preliminary Ecological Assessment (IEEM, 2012). In summary, this comprised walking over the survey area and recording the habitat types and boundary features present.
- 2.2.4 A protected species scoping survey was carried out in conjunction with the Phase 1 Habitat survey. The site was assessed for its suitability to support protected species, in particular great crested newts *Triturus cristatus*, reptiles, birds, badgers *Meles meles*, bats, and other species of conservation importance that could pose a planning constraint.
- 2.2.5 The surveyor looked for evidence of use including signs such as burrows, droppings, footprints, paths, hairs, refugia and particular habitat types known to be used by certain groups such as ponds. Any mammal paths were also noted down and where possible followed. Fence boundaries were walked to establish any entry points or animal signs such as latrines. Areas of bare earth were inspected for mammal prints. Areas of habitat considered suitable for protected species or those of conservation interest were recorded.

2.3 Bat Roost Assessment

- 2.3.1 A Preliminary Bat Roost Assessment (PBRA) of the buildings (internal and external where possible) was conducted on 1st February 2022.
- 2.3.2 The visits were carried out by Nicola Pyle MCIEEM, a Class 1 Bat Licensed Ecologist to assess on site buildings. Buildings with potential to support roosting bats were categorised and can be seen on Figure 3.3. The visit and assessments were conducted in accordance with Bat Surveys for Professional Ecologists: Good Practice Guidelines (BCT, 2016).

Buildings

- 2.3.3 A systematic external inspection of buildings on-site was completed from ground level using close focusing binoculars and a high-powered torch as necessary. Internal inspection of buildings was also completed in a systematic fashion where safe access was available.
- 2.3.4 Areas of interest for surveyors included (but were not limited to) structural features that may influence the suitability of a building to support roosting bats include the presence of a roof void, the presence of access points into the building (including gaps beneath bargeboards, soffits and fascia boards, gaps under lead flashing, gaps within masonry and under loose tiles, gaps between mortise and tenon joints), the complexity and size of any roof voids and daytime light levels in the roof voids.
- 2.3.5 The suitability of the buildings for roosting bats was also assessed by examining the surrounding habitat. Important habitat features surrounding the structure which may influence roost potential include whether the structure is in a semi-rural or parkland location, its proximity to significant linear habitat features such as a watercourse, mature hedgerow, wooded lane or an area of woodland.
- 2.3.6 Taking account of these architectural and habitat features, the buildings were then assigned a level of roost suitability (Table 2.1) based on the criteria given in the Bat Conservation Trust’s Bat Surveys: Good Practice Guidelines (Collins, 2016) and professional judgement. The primary objective of this exercise was to identify the need for further detailed bat surveys later in the year, or alternatively to obtain sufficient information that would dismiss the need for further assessment.

Table 2.1: Categories for Bat Roosting Potential.

Category	Criteria
Negligible Potential	No evidence of use, no suitable Potential Roost Features (PRFs)
Low Potential	No evidence of use, one or two features suitable for low numbers of bats, with very limited roosting potential. Limited connectivity to wider landscape with other bat habitats.
Moderate Potential	No evidence of use, several suitable features, but unlikely to support a roost type of high conservation status, connected to wider landscape with good foraging habitat.
High Potential	No evidence of use, but many suitable features for use by larger numbers of bats on a more regular basis and potential for longer periods. Well connected to good foraging habitat and known roosts nearby.
Confirmed Roost	PRFs with evidence of use present, observation or previous records of bats confirmed to be roosting in the feature/building/tree.

2.4 Impact Appraisal

- 2.4.1 The overall ecological appraisal is based on the standard best practice methodology provided by the Guidelines for Preliminary Ecological Appraisal (CIEEM, 2017). The assessment identifies sites, habitats, species and other ecological features that are of value based on factors such as legal protection, statutory or local site designations such as Sites of Special Scientific Interest (SSSI) or Local Wildlife Sites (LWS) or inclusion on Red Data Book Lists or Biodiversity Action Plans.
- 2.4.2 The assessment also refers to planning policy guidance (e.g. NPPF) where relevant to relate the value of the site and potential impacts of development to the planning process, identifying constraints and opportunities for ecological enhancement in line with both national and local policy.
- 2.4.3 The methodology for evaluation of the nature conservation value of ecological features affected by development (ecological receptors) is adapted from the current Chartered Institute of Ecology & Environmental Management guidelines for Ecological Impact Assessment (CIEEM, 2016). These guidelines recommend assignment of value (or potential value) to ecological receptors in accordance with the following scale:

1. International;
2. UK;
3. National (i.e. England/Northern Ireland/Scotland/Wales);
4. Regional;
5. County (or Metropolitan - e.g. in London);
6. District (or Unitary Authority, City, or Borough);
7. Local or Parish; and/or
8. within immediate zone of influence only.

2.4.4 Following on from the above, potential constraints to development are identified on that basis, with recommendations for further, more detailed surveys made as appropriate, for example to fully investigate botanical value or to confirm presence / likely absence of a protected species

2.4.5 In appraising any impacts, the review considers the client's site proposals and any subsequent recommendations made are proportionate and appropriate to the site and have considered the Mitigation Hierarchy as identified below:

- **Avoid:** Provide advice on how the development may proceed by avoiding impacts to any species or sites by either consideration of site design or identification of an alternative option.
- **Mitigate:** Where avoidance cannot be implemented mitigation proposals are put forward to minimise impacts to species or sites as a result of the proposals. Mitigation put forward is proportionate to the site.
- **Compensate:** Where avoidance cannot be achieved any mitigation strategy will consider the requirements for site compensatory measures.
- **Enhance:** The assessment refers to planning policy guidance (e.g. NPPF) to relate the ecological value of the site and identify appropriate and proportionate ecological enhancement in line with both national and local policy.

2.4.6 When describing impacts on ecosystem structure and function, reference is made to the following aspects where appropriate:

1. extent;
2. magnitude;
3. duration;
4. reversibility;
5. timing and frequency; and

2.4.7 Understanding the nature of the impact enables determination of the effect on the ecological integrity of the ecological receptor. This in turn is assessed against the importance of the receptor to determine the significance of the effect on nature conservation interests as being (i) not significant, or (ii) a significant positive or adverse impact.

2.5 Limitations

Desk Based Assessment

2.5.1 The desk study data is third party controlled data, purchased for the purposes of this report only. RPS cannot vouch for its accuracy and cannot be held liable for any error(s) in these data.

Survey

- 2.5.2 It should be noted that whilst every effort has been made to provide a comprehensive description of the site, no investigation can ensure the complete characterisation and prediction of the natural environment.
- 2.5.3 The protected/notable species assessment provides a preliminary view of the likelihood of these species occurring on the site, based on the suitability of the habitat, known distribution of the species in the local area provided in response to our enquiries and any direct evidence on the site. It should not be taken as providing a full and definitive survey of any protected/notable species group.
- 2.5.4 One of the buildings with a loft space was inaccessible due to the loft hatch being unsafe to climb through. However, an external PRA was successfully carried out on the building.
- 2.5.5 The Phase 1 Habitat Survey was carried out outside of the optimal survey season (April to October). Although the survey was carried out at a sub-optimal time of year, it is considered that sufficient information was obtained to enable an accurate assessment of the site to be carried out.

Accurate Lifespan of Ecological Data

- 2.5.6 The majority of ecological data remain valid for only short periods due to the inherently transient nature of the subject. The survey results contained in this report are considered accurate for two years, assuming no significant considerable changes to the site conditions.

3 RESULTS

3.1 Designated Sites

- 3.1.1 There is one statutory designated site for nature conservation value within 2 km of the site. This is the Hounslow Heath Local Nature Reserve (LNR).
- 3.1.2 18 non-statutory sites are located within the 2 km search radius of the site. The closest of these is the Duke of Northumberland's River north of Kneller Road Site of Importance for Nature Conservation (SINC).
- 3.1.3 A summary of these sites is provided in Table 3.1 below and the location of each site is detailed in Figure 3.1.

Table 3.1: Designated sites within 2 km of the study area

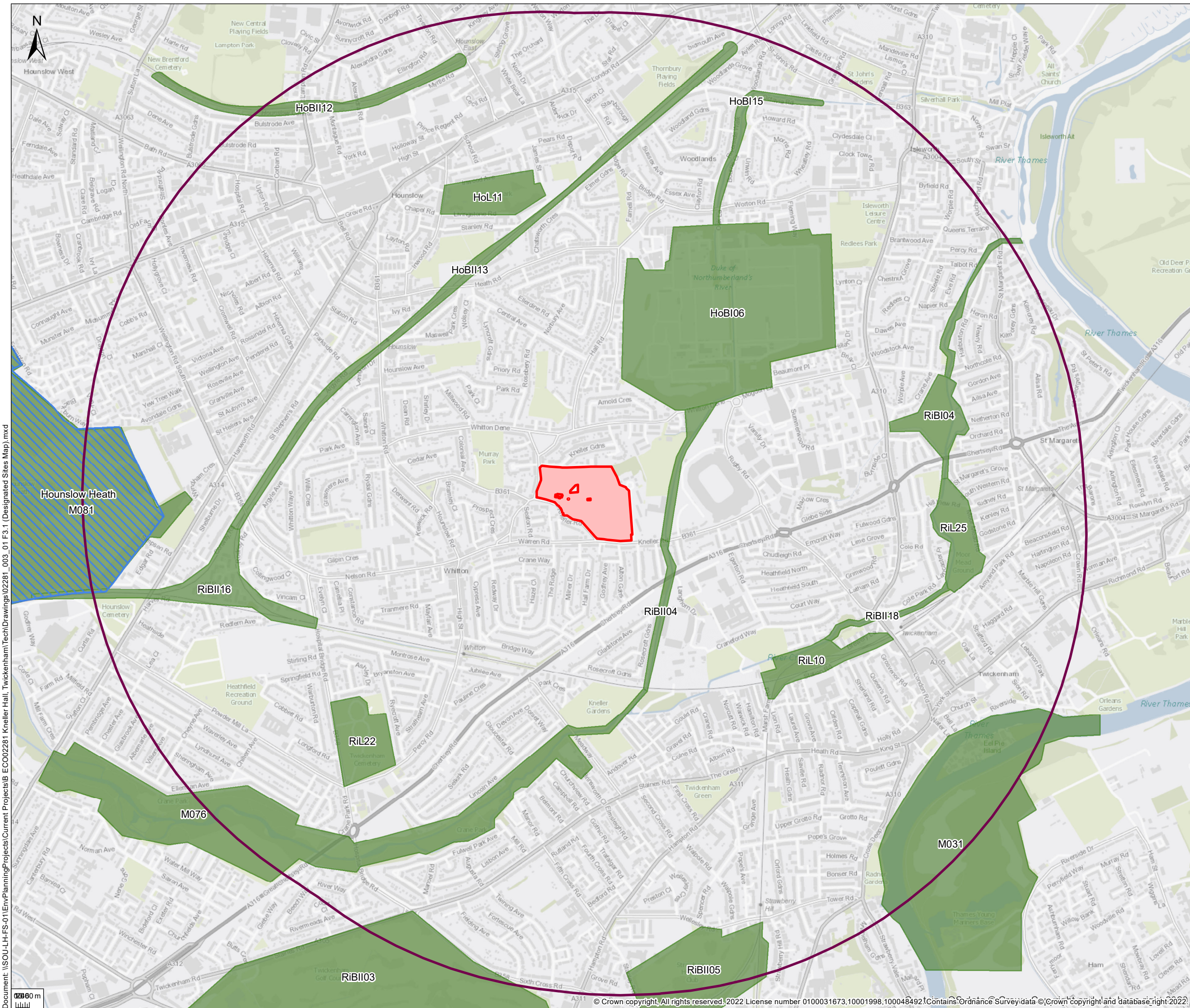
Site name	Type	Approx. area (ha)	Interest Features
Hounslow Heath	LNR	83.13	Hounslow Heath consists of areas of woodland, neutral grassland, acidic grassland communities and several small ponds. Several local rarities are present in the acidic grassland such as pretty whin, small furze and heath bedstraw. 102 bird species have been recorded, of which 28 species are breeding. Rarities such as hobby, wryneck and red-backed shrike have been reported and populations of skylark, stonechat, whitethroat, meadow pipit, reed bunting, and short-eared owl are of local importance. The site is also important for slow worms, viviparous lizard and grass snake.
River Thames and tidal tributaries	SINC	2311.29	The Thames, London's most famous natural feature, is home to many fish and birds, creating a wildlife corridor running right across the capital.
Crane Corridor	SINC	178.05	This corridor of open space around the River Crane combines an excellent variety of wetland habitats, including ponds and lakes, and includes some historic buildings.
Hounslow Heath	SINC	112.9	A large area of grassland, valuable for birds, reptiles and rare plants, and a popular open space for local people.
Mogden Sewage Works	SINC	60.11	A large sewage works, providing a good range of habitats for birds.
Duke of Northumberland's River at Woodlands	SINC	1.47	A narrow section of river with abundant aquatic vegetation.
Duke of Northumberland's River north of Kneller Road	SINC	0.73	A very attractive section of the Duke of Northumberland's River with an outstanding variety of aquatic plants.
River Crane at St Margaret's	SINC	4.61	A section of the river, lined with trees, that runs through allotments.
Piccadilly Line rail sides in Hounslow	SINC	16.53	Rail sides with a mixture of woodland, scrub and grassland, forming a green corridor.
Hounslow Loop rail sides	SINC	30.17	Rail sides with a mix of grassland, scrub and tall herbs, forming an important green corridor.
Fulwell and Twickenham Golf Courses	SINC	83.22	These golf courses contain some fine acid grassland, with a few clumps of heather, a rare plant in London.
Duke of Northumberland's River south of Kneller Road	SINC	0.63	A straight a shallow section of the river with abundant fish.

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Site name	Type	Approx. area (ha)	Interest Features
Strawberry Hill Golf Course	SINC	20.39	A small golf course with areas of woodland, scrub and acid grassland and a patch of heather.
Hounslow, Feltham and Whitton junctions	SINC	4.64	A triangle of rail sides with good range of wildlife habitats, including scrub and grassland.
River Crane at St Margaret's (Richmond side)	SINC	1.18	A short section of the River Crane, just above its tidal limit, spanning the borough boundary between Richmond and Hounslow.
Inwood Park	SINC	5.78	A park with meadows and areas of planted woodland, providing access to nature in a densely built-up part of Hounslow.
Twickenham Junction Rough	SINC	4.54	An island of wildlife habitat surrounded by railway lines.
Twickenham Cemetery	SINC	6.91	An attractive cemetery, with an abundance of wildflowers and plenty of trees.
Moor Mead Recreation Ground	SINC	4.99	Attractive village green beside the River Crane in Twickenham.

Abbreviations used in Table 3.1: LNR: Local Nature Reserve; SINC: Site of Importance for Nature Conservation; NS: Not supplied; ha: hectare.

Figure 3.1: Designated sites within 2 km



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Legend

- Application boundary
- 2 km search area
- LNR
- SINC

Rev	Description	By	CB	Date



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3.2 Species

3.2.1 Records of protected species were obtained from the GiGL. A number of species of conservation importance or otherwise notable were recorded within the 2 km search radius of the site. A summary of these records is provided in Table 3.2.

3.2.2 In order to simplify the results, only records of species from the last 10 years are shown. In addition, only data with a 6-figure grid reference resolution or higher are provided, since locations given at a lower resolution do not allow accurate calculation of distance to the site boundary.

Table 3.2: Species records from the last 10 years within 2 km of the site

Common name	Scientific name	Nearest distance from site (m)	Year of most recent record	Conservation Status
Fish				
European Eel	<i>Anguilla anguilla</i>	929	2016	NERC Act Section 41 LPS Local Spp of Cons Conc
Amphibians				
Common Toad	<i>Bufo bufo</i>	344	2020	NERC Act Section 41 LPS Local Spp of Cons Conc
Common Frog	<i>Rana temporaria</i>	154	2020	HSD5 LPS
Great Crested Newt	<i>Triturus cristatus</i>	920	2017	Hab&Spp Dir Anx 2 Hab&Spp Dir Anx 4 Cons Regs 2010 Sch2 W&CA Sch5 Sec 9.4b W&CA Sch5 Sec 9.4c NERC Act Section 41 LPS Local Spp of Cons Conc
Reptiles				
Slow-worm	<i>Anguis fragilis</i>	1102	2020	W&CA Sch5 Sec 9.1k/i NERC Act Section 41 LPS Local Spp of Cons Conc
Common Lizard	<i>Zootoca vivipara</i>	1414	2020	W&CA Sch5 Sec 9.1k/i NERC Act Section 41 LPS Local Spp of Cons Conc
Birds				
Lesser Redpoll	<i>Acanthis cabaret</i>	956	2015	NERC Act Section 41 LPS Local Spp of Cons Conc Bird-Red
Common Sandpiper	<i>Actitis hypoleucos</i>	735	2017	LPS
Eurasian Skylark	<i>Alauda arvensis</i>	735	2017	NERC Act Section 41 LPS Local Spp of Cons Conc Bird-Red
Kingfisher	<i>Alcedo atthis</i>	301	2021	Birds Dir Anx 1 W&CA Sch1 Part 1

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Common name	Scientific name	Nearest distance from site (m)	Year of most recent record	Conservation Status
				LPS
White-fronted Goose	<i>Anser albifrons</i>	735	2017	Local Spp of Cons Conc Bird-Red
Swift	<i>Apus apus</i>	153	2020	LPS
Common House Martin	<i>Delichon urbicum</i>	1121	2020	LPS
Little Egret	<i>Egretta garzetta</i>	1365	2019	Birds Dir Anx 1
Little Gull	<i>Hydrocoloeus minutus</i>	1362	2020	Birds Dir Anx 1 W&CA Sch1 Part 1
European Herring Gull	<i>Larus argentatus</i>	735	2020	Bird-Red
Lesser Black-backed Gull	<i>Larus fuscus</i>	1176	2013	LPS
Baltic Gull	<i>Larus fuscus fuscus</i>	2043	2017	LPS
Linnet	<i>Linaria cannabina</i>	1121	2017	LPS Local Spp of Cons Conc Bird-Red
Red Crossbill	<i>Loxia curvirostra</i>	735	2012	W&CA Sch1 Part 1
Grey Wagtail	<i>Motacilla cinerea</i>	735	2019	Local Spp of Cons Conc Bird-Red
Spotted Flycatcher	<i>Muscicapa striata</i>	1382	2015	NERC Act Section 41 LPS Local Spp of Cons Conc Bird-Red
House Sparrow	<i>Passer domesticus</i>	154	2020	NERC Act Section 41 LPS Local Spp of Cons Conc Bird-Red
Tree Sparrow	<i>Passer montanus</i>	735	2017	NERC Act Section 41 Local Spp of Cons Conc Bird-Red
Dunnock	<i>Prunella modularis</i>	735	2021	LPS
Common Firecrest	<i>Regulus ignicapilla</i>	1152	2019	W&CA Sch1 Part 1
Common Tern	<i>Sterna hirundo</i>	735	2017	Birds Dir Anx 1
Turtle Dove	<i>Streptopelia turtur</i>	1121	2017	NERC Act Section 41 Local Spp of Cons Conc Bird-Red
Tawny Owl	<i>Strix aluco</i>	440	2021	LPS
Starling	<i>Sturnus vulgaris</i>	386	2021	LPS Local Spp of Cons Conc Bird-Red

REPORT

Common name	Scientific name	Nearest distance from site (m)	Year of most recent record	Conservation Status
Redwing	<i>Turdus iliacus</i>	386	2020	W&CA Sch1 Part 1 Bird-Red
Song Thrush	<i>Turdus philomelos</i>	154	2021	LPS Local Spp of Cons Conc Bird-Red
Mistle Thrush	<i>Turdus viscivorus</i>	735	2019	LPS Local Spp of Cons Conc Bird-Red
Mammals				
European Water Vole	<i>Arvicola amphibius</i>	881	2020	W&CA Sch5 Sec 9.4a W&CA Sch5 Sec 9.4b W&CA Sch5 Sec 9.4c NERC Act Section 41 LPS Local Spp of Cons Conc RedList_GB-EN
West European Hedgehog	<i>Erinaceus europaeus</i>	154	2021	NERC Act Section 41 LPS Local Spp of Cons Conc RedList_GB-VU
Bats				
Daubenton's Bat	<i>Myotis daubentonii</i>	881	2020	Hab&Spp Dir Anx 4 Cons Regs 2010 Sch2 W&CA Sch5 Sec 9.4b W&CA Sch5 Sec 9.4c LPS Local Spp of Cons Conc
Nyctalus Bat species	<i>Nyctalus</i>	824	2019	Hab&Spp Dir Anx 4 Cons Regs 2010 Sch2 W&CA Sch5 Sec 9.4b W&CA Sch5 Sec 9.4c NERC Act Section 41 Local Spp of Cons Conc RedList_GB-Lr(NT)
Lesser Noctule	<i>Nyctalus leisleri</i>	881	2015	Hab&Spp Dir Anx 4 Cons Regs 2010 Sch2 W&CA Sch5 Sec 9.4b W&CA Sch5 Sec 9.4c LPS Local Spp of Cons Conc RedList_GB-Lr(NT)
Noctule Bat	<i>Nyctalus noctula</i>	881	2019	Hab&Spp Dir Anx 4 Cons Regs 2010 Sch2 W&CA Sch5 Sec 9.4b W&CA Sch5 Sec 9.4c NERC Act Section 41 LPS Local Spp of Cons Conc
Pipistrelle	<i>Pipistrellus</i>	167	2018	Hab&Spp Dir Anx 4 Cons Regs 2010 Sch2 W&CA Sch5 Sec 9.4b W&CA Sch5 Sec 9.4c

REPORT

Common name	Scientific name	Nearest distance from site (m)	Year of most recent record	Conservation Status
				NERC Act Section 41 Local Spp of Cons Conc RedList_GB-Lr(NT)
Nathusius's Pipistrelle	<i>Pipistrellus nathusii</i>	881	2019	Hab&Spp Dir Anx 4 Cons Regs 2010 Sch2 W&CA Sch5 Sec 9.4b W&CA Sch5 Sec 9.4c LPS Local Spp of Cons Conc RedList_GB-Lr(NT)
Common Pipistrelle	<i>Pipistrellus pipistrellus</i>	360	2020	Hab&Spp Dir Anx 4 Cons Regs 2010 Sch2 W&CA Sch5 Sec 9.4b W&CA Sch5 Sec 9.4c Local Spp of Cons Conc
Soprano Pipistrelle	<i>Pipistrellus pygmaeus</i>	360	2019	Hab&Spp Dir Anx 4 Cons Regs 2010 Sch2 W&CA Sch5 Sec 9.4b W&CA Sch5 Sec 9.4c NERC Act Section 41 LPS Local Spp of Cons Conc
Brown Long-eared Bat	<i>Plecotus auritus</i>	881	2014	Hab&Spp Dir Anx 4 Cons Regs 2010 Sch2 W&CA Sch5 Sec 9.4b W&CA Sch5 Sec 9.4c NERC Act Section 41 LPS Local Spp of Cons Conc
Plants				
Bluebell	<i>Hyacinthoides non-scripta</i>	915	2012	W&CA Sch8
White Horehound	<i>Marrubium vulgare</i>	1858	2017	Local Spp of Cons Conc Nationally Scarce
Large-leaved Lime	<i>Tilia platyphyllos</i>	1451	2020	Nationally Scarce
Invertebrates				
Common Darter	<i>Sympetrum striolatum</i>	263	2017	RedList_GB-DD
Stag Beetle	<i>Lucanus cervus</i>	71	2020	Hab&Spp Dir Anx 2 NERC Act Section 41 LPS Nationally Notable B
Purple Emperor	<i>Apatura iris</i>	1677	2015	LPS Local Spp of Cons Conc RedList_GB-Lr(NT)
Small Heath	<i>Coenonympha pamphilus pamphilus</i>	1240	2020	NERC Act Section 41 LPS Local Spp of Cons Conc RedList_GB-Lr(NT)
Small Copper	<i>Lycaena phlaeas</i>	459	2014	LPS

REPORT

Common name	Scientific name	Nearest distance from site (m)	Year of most recent record	Conservation Status
Small Copper	<i>Lycaena phlaeas phlaeas</i>	541	2019	LPS
Large Skipper	<i>Ochlodes sylvanus</i>	459	2017	LPS
Essex Skipper	<i>Thymelicus lineola</i>	920	2016	LPS
Small Skipper	<i>Thymelicus sylvestris</i>	575	2020	LPS
Garden Tiger	<i>Arctia caja</i>	1314	2020	NERC Act Section 41 LPS Local Spp of Cons Conc
Jersey Tiger	<i>Euplagia quadripunctaria</i>	393	2020	Hab&Spp Dir Anx 2
White Ermine	<i>Spilosoma lubricipeda</i>	425	2020	NERC Act Section 41
Cinnabar	<i>Tyria jacobaeae</i>	994	2018	NERC Act Section 41

Abbreviations used in Table 3.2: W&CA Sch1 Part 1: Wildlife & Countryside Act Schedule 1; Part 1; W&CA Sch5: Wildlife & Countryside Act Schedule 5; W&CA Sch8: Wildlife & Countryside Act Schedule 8; NERC Act Section 41: Natural Environment & Rural Communities Act Species of Principal Importance; Hab&Spp Dir Anx 2, 4, 5: Habitats Directive Annex 2, 4, 5; Birds Dir Anx 1: Birds Directive Annex 1; RedList_GB-DD: IUCN (2001) Data Deficient; RedList_GB-VU: IUCN (2001) Vulnerable; RedList_GB-NT: IUCN (2001) Near Threatened; RedList_GB-EN: IUCN (2001) Endangered; Con Regs 2010: The Conservation (Natural Habitats, &) Regulations 2017; Birds:Red: Bird Population Status: red; Birds:Amber: Bird Population Status: amber; LPS; Locally Protected Species.

3.3 Phase 1 Habitat Survey

- 3.3.1 The survey results are presented in the form of a map with the habitat types and boundary features marked (Figure 3.2). Photographs can be found in Appendix B.
- 3.3.2 Descriptions of the habitat types and boundary features are detailed below. Habitat descriptions are defined by broad habitat types (JNCC, 2010).

Amenity grassland

- 3.3.3 The largest area of amenity grassland was the sports field at the east of the site, and there were other smaller areas of amenity grassland associated with the buildings on site. The patches around the buildings that were currently in use, looked relatively well maintained in comparison to the sports pitch. They were not mown entirely flat, left at about 10cm high.
- 3.3.4 A similar composition of species was present throughout all areas of amenity grassland, which included perennial rye grass *Lolium perenne* as the dominant species; common bent *Agrostis capillaris*, yarrow *Achillea millefolium*, dandelion species *Taraxacum sp.*, creeping cinquefoil *Potentilla reptans.*, annual meadow grass *Poa annua*, as occasional species; and rare occurrence of common groundsel *Senecio vulgaris*, doves-foot Cranes-bill *Geranium molle*, common daisy *Bellis perennis*, , ribbed plantain *Plantago lanceolata*, thistle *Asteraceae sp.* and broadleaved dock *Rumex obtusifolius*.

Hardstanding

- 3.3.5 Much of the site around the old school buildings was dominated by hardstanding walkways and small tarmac car parks. In some places ivy-leaved toadflax *Cymbalaria muralis* was present around cracked paving.

Buildings

- 3.3.6 The site contained a variety of buildings, including the brick-built Kneller Hall and its Guardroom which were at least 100 years old. Other buildings on site included newer purpose-built school blocks and accommodation, and some single classroom style outbuildings. There was an amphitheatre on site which was slightly raised, sitting on a metal and concrete frame with no visible cracks or entry points to the space beneath the seats. Some other temporary container type rooms were also found on site.
- 3.3.7 Detailed descriptions of individual buildings and their potential bat roost features are outlined in Section 3.5.

Scattered trees

- 3.3.8 There were scattered trees along the eastern boundary and southern boundary of the sports field. These species were all introduced and non-native.
- 3.3.9 There were also several rows of scattered trees throughout the site adjacent to hardstanding walkways. Species present included lime *Tilia sp.* and London plane *Platanus x acerifolia*.
- 3.3.10 An area of denser scattered trees was present in the northeast corner of the site, that extended east out the site boundary into a woodland area. The area was mostly broadleaved, deciduous but there was a single conifer tree present at the corner of the area almost on the sports field. The trees present were mature, and the understorey was improved grassland that had begun to form clumps. Tree species present included *Acer sp.* and oak *Quercus sp.* In this area of scattered trees there were a few patches of scrub, comprising bramble *Rubus fruticosus* thicket and saplings.

Ornamental planting

- 3.3.11 In the centre of the site there was an area of ornamental planting in beds associated with the front lawn of the main building (B0). These beds were relatively well maintained and contained a variety of introduced non-native shrubs. Native species present also included holly *Ilex sp.*, bramble and ivy *Hedera sp.*

Improved grassland

- 3.3.12 Improved grassland was present in the understorey of the previously mentioned area of scattered trees. Another relatively smaller area of poor-semi-improved grassland was located in front of building B9 'The Hub'. The grassland comprised of perennial rye grass, but other species were more abundant including false-oat grass *Arrhenatherum elatius*, cocks' foot *Dactylis glomerata*, common daisy, creeping bent, and creeping speedwell.
- 3.3.13 Species found occasionally in this area included spear thistle *Cirsium vulgare*, creeping buttercup *Ranunculus repens*, herb robert *Geranium robertianum*, fleabane *Pulicaria dysenterica* common groundsel *Senecio vulgaris*, doves-foot cranesbill *Geranium molle*, ribbed plantain, broad leaved dock, common bird's-foot-trefoil *Lotus corniculatus* and primrose *Primula sp.*

Species-poor hedgerow

- 3.3.14 Separating areas of the site and the walkways between buildings were newly planted beech *Fagus sylvatica* hedges.

Boundary features

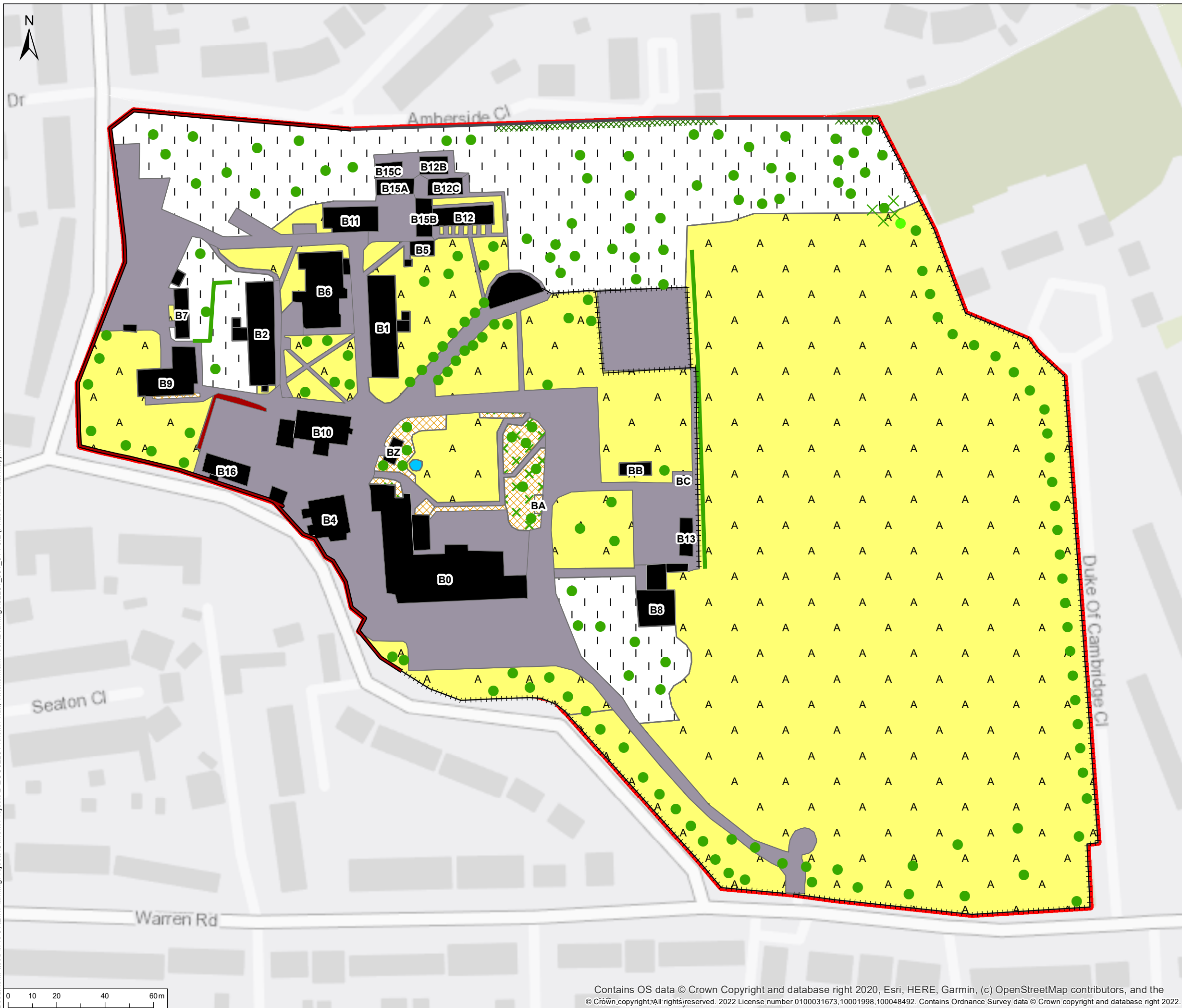
- 3.3.15 At the northern boundary of the site there was a wall with dense scrub overhanging. Some of the species present included common ivy *Hedera helix*, bramble, and some other escaped ornamental species.
- 3.3.16 The rest of the site had a brick wall between the school buildings and Kneller Road. At the eastern boundary there was a wire fence separating the playing fields from the residential area directly adjacent.

Invasive species

- 3.3.17 One small rhododendron bush was present on site in the amenity grassland at the southern boundary of the site.
- 3.3.18 Wall cotoneaster *Cotoneaster horizontalis* had been planted in a bed along the eastern wall of building B9 'The Hub'.

Figure 3.2: Phase 1 Habitat Survey Map

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Legend

- Red line boundary
- A Amenity grassland
- I Improved grassland
- Introduced shrub/ Ornamental planting
- Introduced shrub with native scattered scrub
- Pond
- Brick wall
- Buildings and structures
- Hard standing
- Intact species-poor hedge
- Dense scrub overhanging boundary
- Secured metal fencing
- Brick wall topped with iron bars
- Concrete wall topped with metal
- Scattered tree - broadleaved
- Scattered tree - coniferous
- X Scattered scrub

Rev	Description	By	CB	Date



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 Project **Kneller Hall, Twickenham**
 Title **Phase 1 Habitat Map**

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Issue	LW	HM/HK
Project Number	Scale @ A3	Date Created
ECO02281	1:1,500	21/02/22
Figure Number		Rev
3.2		01

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3.4 Ecological Scoping Survey

Flora

- 3.4.1 Rhododendron was recorded on site during the survey in the amenity grassland at the southern boundary of the site. This is listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) as an invasive species.
- 3.4.2 Cotoneaster was recorded on site during the survey in an area of scrub adjacent the building B9 at the west of the site. This is listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) as an invasive species.

Amphibians

- 3.4.3 There was one small pond on site in an area of ornamental planting in the centre of the site, however it was lined by concrete, and there were no natural slopes in and out. Therefore, it was considered to have negligible potential to support great crested newts (GCN).
- 3.4.4 The closest record of GCN to the site is nearly 1 km away which is outside the suitable buffer of 500 m for GCN habitat.

Reptiles

- 3.4.5 There was limited habitat on site to support reptiles, scrub only occurred in very small patches and was limited to a few separated areas of the site. Given the urban nature of the wider surroundings it's unlikely that the site is supporting any population of reptile species.
- 3.4.6 The data search returned records for slow-worm and common lizard, the closest of these each being over 1 km from the site.

Birds

- 3.4.7 The hedgerows and scrub offer relatively low-quality habitat for supporting nesting and breeding birds, whilst the scattered trees are of a higher quality. However, these habitats are all isolated from each other and from those similar outside the site boundary.
- 3.4.8 The habitats are common within the wider landscape and are likely only important at a local level and are only expected to be supporting a common assemblage of birds, such as those returned in the data search.

Badgers

- 3.4.9 The area of scattered trees and improved grassland in the northeast corner of the site had an understorey suitable for supporting badgers, however there were no mammal tracks leading to anywhere significant and given the urban surroundings it is unlikely that the site is supporting any badgers.
- 3.4.10 Further, no records of badgers were returned within 2 km in the last 10 years, and during the walkover survey there were no signs of badger recorded which would include latrines, prints, hairs or setts.

Dormice

- 3.4.11 The species poor hedgerow on site offered suitable habitat for supporting dormice however there was minimal connectivity to any suitable habitats within the wider landscape, and the data search

returned no records of dormice in the search area. Therefore the site has negligible potential for supporting dormice.

Hedgehogs

- 3.4.12 Records were returned for hedgehogs within 200 m of the site, as recently as 2021.
- 3.4.13 The scattered trees and improved grassland on site could offer a habitat that creates good cover for hedgehogs, or they may use the site for foraging and commuting.

3.5 Bats – Preliminary Roost Assessment

Habitat Suitability

- 3.5.1 Generally, the habitats within the site boundary provide limited suitability for commuting bats, the site mainly consists of buildings, hardstanding and short grassland. The habitat of most importance are the scattered trees to the north of the site and the boundary wall with overhanging scrub, which provides moderate suitability for foraging and commuting bats.
- 3.5.2 The further habitats in the wider landscape comprise largely urban residential areas, and a sports stadium which when in use would have bright lighting, highly unsuitable for foraging bats.

Buildings

- 3.5.3 The majority of the structures on site were old school buildings with brick walls, and pitched slate tiled roofs, with varying levels of usage. There were a few other slightly newer buildings on site which had flat felt roofs, purposed as garages or extra school rooms but were no longer in use. Individual descriptions of each building are listed below in Table 3.3, and the buildings that had accessible lofts are described in Table 3.4.
- 3.5.4 A map of the buildings and there assigned bat potential category is shown in Figure 3.3. For consistency buildings are referenced in the same system as used by site staff. Photographs of each structure are listed in Appendix C.

Table 3.3: Summary of buildings onsite.

Building	Description of Building	Potential Roosting Features	Category
B0	<ul style="list-style-type: none"> • Building age: c.1850 • Old military school building, but not in use anymore • Brick built • ~Four storeys • A mixture of approx. eight pitched/gabled, slate tiled roofs, corresponding to multiple separate wings • North-east aspect has a dormer section with wooden cladding on walls 	<ul style="list-style-type: none"> • Occasional gaps under lifted tiles on central roofs • Externally some gaps under lifted tiles next to dormer section with rot hole in cladding on south side • Basement/cellar with one area that had potential for a hibernation roost 	Low potential
B1	<ul style="list-style-type: none"> • Brick built, relatively new school building no longer in use • Three storeys • Flat metal edged roof with metal boarding under the ledge • Concrete windowsills 	<ul style="list-style-type: none"> • Missing brick to facilitate pipework on the eastern aspect adjacent to the extension which could go into a cavity 	Low potential

REPORT

Building	Description of Building	Potential Roosting Features	Category
	<ul style="list-style-type: none"> Ground floor extension on the eastern aspect 		
B2	<ul style="list-style-type: none"> Brick built, relatively new school building no longer in use Three storeys Flat metal edged roof with metal boarding under the ledge Concrete windowsills Ground floor extension on the western aspect 	<ul style="list-style-type: none"> No potential roost features 	Negligible
B4	<ul style="list-style-type: none"> Currently in use as a guardroom/security area Brick built with two pitched slate tiled roofs Two storeys 	<ul style="list-style-type: none"> Gaps underneath lifted tiles on all aspects of roof Loose hip tile at northwest corner Gap between soffit box and wall 	High
B5	<ul style="list-style-type: none"> Single storey Brick skin Flat roof with tight wood fascia 	<ul style="list-style-type: none"> No potential roost features 	Negligible
B6	<ul style="list-style-type: none"> Single storey, double height classroom style building Southern wall entirely covered by windows Rest of building brick built with flat felt roof and lead flashing Middle roof features not visible from ground, but looks well maintained 	<ul style="list-style-type: none"> Cracks between wooden soffit board and concrete roof on the northeast 'tower' 	Low
B7	<ul style="list-style-type: none"> Brick built outbuilding Not in use Flat roof with concrete tiles Storage extension at north with corrugated roof 	<ul style="list-style-type: none"> No potential roost features 	Negligible
B8	<ul style="list-style-type: none"> Square, flat sided Single storey Classroom style building Wooden cladding and downward laying clay tiles Flat roof with metal corners Small extension on northern aspect High windows on all aspects 	<ul style="list-style-type: none"> Hanging tiles on all side with lots of gaps Hole into cavity wall at northwest corner 	High
B9	<ul style="list-style-type: none"> Referred to as 'The Hub' Two storeys Brick built Flat roof 	<ul style="list-style-type: none"> No potential roost features 	Negligible
B10	<ul style="list-style-type: none"> Old brick-built school hall One storey Pitched clay tiled roof, with tight lead flashing along westside, and gable along top Brick arched windows look recently replaced 	<ul style="list-style-type: none"> Wooden overhang off the main roof is warped in the southeast corner creating a gap in the brick wall Brick missing in chimney Cavity wall with access points identified on internal inspection of the building, although not 	Low

REPORT

Building	Description of Building	Potential Roosting Features	Category
	<ul style="list-style-type: none"> Small toilet block extension to the south side with a flat roof 	<ul style="list-style-type: none"> obviously connected with outside features Gap under lead flashing where it meets the brick at northwest corner 	
B11	<ul style="list-style-type: none"> Military outbuilding no longer in use Brick built Single storey Metal corrugated boarding at the edge of the slanted roof 	<ul style="list-style-type: none"> All windows on the northern aspect have a gap in the felt/asbestos above the windows 	Low
B12A	<ul style="list-style-type: none"> Single storey Flat felt roof Brick build Not in use Brick build with wood/PVC window, with no gaps 	<ul style="list-style-type: none"> No potential roost features 	Negligible
B12B	<ul style="list-style-type: none"> Single storey classroom style outbuilding Flat, metal roof Wooden boxes above doorways with light fixtures but are empty inside 	<ul style="list-style-type: none"> No potential roost features 	Negligible
B12C	<ul style="list-style-type: none"> Single storey Flat felt roof with wooden fascia board Brick built 	<ul style="list-style-type: none"> Ivy obscuring the roof overhang at the eastern aspect. 	Negligible
B13	<ul style="list-style-type: none"> Single storey Wooden out building Flat, felt roof 	<ul style="list-style-type: none"> Hanging tiles on south wall Gap along top of hanging tiles giving possible access into flat roof 	High
B15A	<ul style="list-style-type: none"> Row of unused single storey brick garages Slanted corrugated asbestos type roof with tight lead flashing Motion sensor lights 	<ul style="list-style-type: none"> Some small gaps which could lead into a gap between the brick and wood Cracks in garages between units Split brickwork creating internal crevice Back wall is cracked Limited to potential as a summer roost 	Low
B15B	<ul style="list-style-type: none"> Same as B15 	<ul style="list-style-type: none"> Same as B15 	Low
B15C	<ul style="list-style-type: none"> Single storey unused garage with concrete/stone walls Flat, corrugated roof with lead flashing Unlike B15A/B there were no separating walls inside so just one large room 	<ul style="list-style-type: none"> If garage has remained unused for over the year, then possible for the room to be used as a summer roost 	Low
B16	<ul style="list-style-type: none"> Small, two-storey office building Brick built with windows on north side, and a flat roof Single storey extensions of the same build were on the west and south side 	<ul style="list-style-type: none"> On the southern aspect of the building there was a brick missing to accommodate cables entering the building Slightly higher up the wall there were two holes presumably 	Low

REPORT

Building	Description of Building	Potential Roosting Features	Category
	<ul style="list-style-type: none"> A larger extension on the west side had corrugated tin roofing 	used for pipes at some point that could lead into a cavity	
BZ	<ul style="list-style-type: none"> Single storey Concrete base walls with corrugated metal sides and flat roof 	<ul style="list-style-type: none"> No potential roost features 	Negligible
BA & BB	<ul style="list-style-type: none"> Similar buildings across the car park from one another Small, single storey, wooden outbuildings Slanted felt roofs, which were well maintained 	<ul style="list-style-type: none"> No potential roost features 	Negligible
BC	<ul style="list-style-type: none"> Single storey Brick outbuilding Concrete, flat roof 	<ul style="list-style-type: none"> No potential roost features 	Negligible

Table 3.4: Internal loft inspection results.

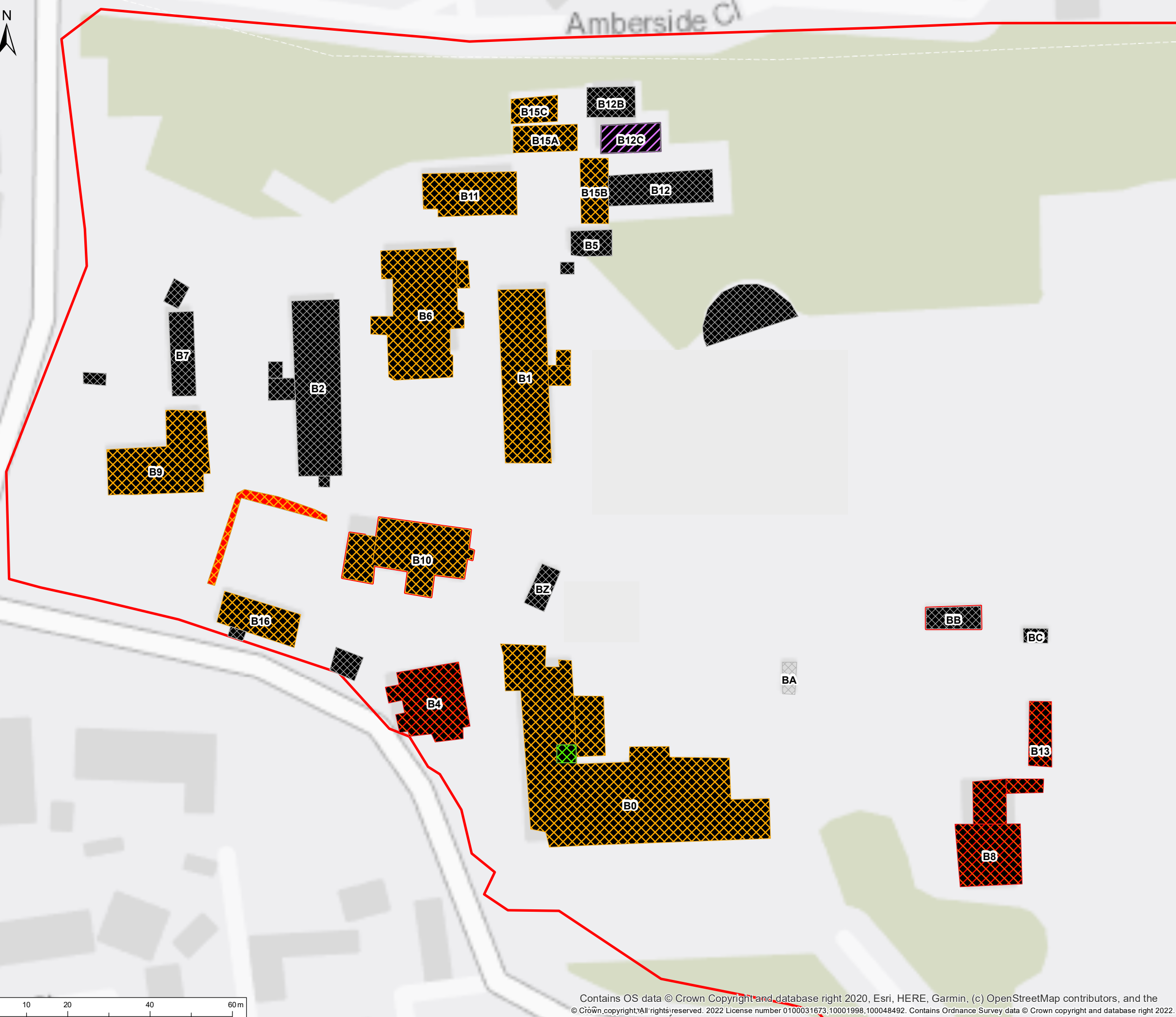
Building	Loft No.	Description of Loft	Evidence of Bats
B0	1	<ul style="list-style-type: none"> 2.5m to ridge Bitumen felt and wooden sarking boards under tiles Daylight from several vents in eaves Bird droppings present Loft not fully accessed due to movement in floor joists 	No bat evidence.
	2	<ul style="list-style-type: none"> 3m to ridge Felt and sarking boards Lots of bird droppings Loft not fully accessed 	No bat evidence.
	3	<ul style="list-style-type: none"> Same as B0 loft 1 	
	4	<ul style="list-style-type: none"> Same as B0 loft 1 	
	5	<ul style="list-style-type: none"> Same as B0 loft 2 	
	6	<ul style="list-style-type: none"> Same as B0 loft 1 	
	7	<ul style="list-style-type: none"> 2.5m to ridge Bitumen felt and wooden sarking boards Bird nest with eggs present Loft space above hallway not fully accessed as central domed ceiling didn't look very strong to walk on 	No bat evidence.
	8	<ul style="list-style-type: none"> Loft space just a boxed off room Side door hatch into Loft 9 	No bat evidence.
	9	<ul style="list-style-type: none"> No access due to pipes across hatch, and possible asbestos 	1 bat dropping on door frame of hatch.
	10	<ul style="list-style-type: none"> Only viewed from the loft hatch as possible asbestos present 	No bat evidence.
	11	<ul style="list-style-type: none"> No access due to possible asbestos in adjacent lofts 	No bat evidence.
B4	1	<ul style="list-style-type: none"> Large heavy loft hatch in centre of ceiling Not considered safe to access as not next to a wall to lean ladder on 	N/A

Figure 3.3: Bat roost potential of buildings on site.

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- Legend**
- Red line boundary
 - Brick wall
 - Buildings and structures
 - Building Potential for Bat Roosts**
 - Confirmed bat roost
 - High potential
 - Low potential
 - Negligible potential
 - Needs further search

Rev	Description	By	CB	Date



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Figure Number 3.3		Rev 01

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4 EVALUATION AND POTENTIAL IMPACTS

4.1 Designated sites

- 4.1.1 The closest site is a non-statutory designated site, the Duke of Northumberland's River north of Kneller Road SINC.
- 4.1.2 These sites are unlikely to be affected by the development given their distance from the site and the urban nature of the intervening areas.

4.2 Habitats

- 4.2.1 Table 4.1 below summarises the habitat types within the site and outlines the potential impacts of the development proposals to each of these habitats.
- 4.2.2 It has been noted in the pre-application response that acidic grassland may be present on site. Whilst not identified during the survey (most likely due to the time of year), it cannot be excluded from being present. Therefore, it is recommended that a botanical survey be undertaken. Such a survey can be carried out between May – July (when plants are flowering), on three separate occasions.

Table 4.1: Summary of potential habitat impacts

JNCC Code	Habitat Type	Ecological Importance	Potential impact
J1.2	Amenity grassland	Low	Potential impact to invertebrates
J4	Hardstanding	Negligible	N/A
J3.6	Buildings	High	Potential impact to bats
A3.3	Scattered trees	High	Potential impact to bats, birds and badgers
J1.4	Ornamental planting	Moderate	Potential impact to bats and birds
J2.3.2	Species poor hedgerow	Low	Potential impact to bats and birds
A2.1	Scrub	Low	Potential impact to bats, birds and reptiles
B4	Improved grassland	Low	Potential impact to invertebrates

4.3 Species

Flora

- 4.3.1 Rhododendron and wall cotoneaster were recorded on site, which are both listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) as invasive species, requiring eradication. Therefore, a suitable removal strategy should be prepared and implemented to prevent their spread (Section 5).
- 4.3.2 No other notable flora species were recorded on site.

Amphibians

- 4.3.3 Great crested newts *Triturus cristatus* are listed on Schedule 5 of the Wildlife and Countryside Act 1981 (and as amended), which affords the species protection under Section 9. The species is also listed on Schedule 2 of the Conservation of Habitats and Species Regulations 2019.

- 4.3.4 Although there is a pond present on site it had negligible potential for supporting a population of great crested newts as it had steep concrete walls, and the surrounding area had no suitable terrestrial habitat. Therefore, no further surveys for great crested newts are required.

Reptiles

- 4.3.5 Reptiles are protected from killing/injury under the Wildlife Countryside Act 1981 (as amended).
- 4.3.6 Despite some limited areas of habitat suitable for reptiles, the site overall had a negligible potential for supporting any population of reptile species due to the urban nature of the wider surroundings, therefore no further surveys are required.

Birds

- 4.3.7 Breeding birds are protected by the Wildlife and Countryside Act 1981 (as amended). Under this legislation it is an offence to intentionally kill, injure or take the birds or their eggs, or to intentionally destroy or disturb a nest, when it is in use or being built.
- 4.3.8 As the site only had low potential to support any breeding or nesting birds, no further surveys are required however, the removal of any trees, hedgerows or scrub will avoid the bird nesting season (March to August inclusive). If this is not possible removal will occur under the supervision of a suitably qualified ecologist who will check for any active nests. If found to be present, a buffer zone, where no development activities will occur, will be cordoned off by the supervising ecologist until the young have fledged.

Bats

- 4.3.9 All species of bat present in the UK receive full protection under The Conservation of Habitats and Species (EU Exit) Regulations 2019, and the Wildlife and Countryside Act 1981 (as amended). Several bat species are also listed in Section 41 of the NERC Act 2006. These include the widespread species soprano pipistrelle *Pipistrellus pygmaeus* and brown long-eared bat *Plecotus auritus*, and the rarer woodland species such as Bechstein's *Myotis bechsteinii* and barbastelle *Barbastella barbastellus*.

Foraging and commuting

- 4.3.10 The habitat on site was overall considered to have low potential to support commuting and foraging bats and therefore no further bat activity surveys are required.
- 4.3.11 Mitigation is outlined in section 5 to make the site more suitable for commuting and foraging bats post-development.

Roosting

- 4.3.12 During the walkover survey several of the scattered trees on site were identified as having some potential features for supporting roosting bats, such as woodpecker holes, peeling bark and other cavities. At the time of writing tree removal plans have been received and further survey work on the trees to be removed will be undertaken (described in more detail in Section 5).
- 4.3.13 External and internal inspections were carried out on all buildings accessible. Several of the buildings had high potential to support roosting bats, whilst the others were at low potential. For the buildings with higher than low bat roost potential, surveys are required. Tables 4.2 and 4.3 outlines further action.

Table 4.2: Further bat survey requirements

Building Reference (to be demolished)	Classification	Surveyors needed
B0 (partially, where the new building is to tie into the existing)	High	Two
B6 (to be partially demolished)	Low	Two
B8 (to be demolished)	High	Three
B9	Low	Three
B10 (partially demolished)	Low	One
B11	Low	Two
B12c	Low	Endoscope prior to demolition
B13	High	Two
B15a	Low	Two
B15b	Low	Two
B15c	Low	Two
B16	Low	Two

Table 4.3: Survey effort dependent on potential level assigned.

Bat Roost Potential	Surveys Required
Negligible	Inspection prior to soft demolition
Low	At least one emergence/re-entry survey
Moderate	At least two emergence/re-entry surveys
High/Confirmed	Three emergence/re-entry surveys

Badgers

- 4.3.14 Badgers are protected under the Protection of Badgers Act 1992. This act is based on the need to protect badgers from baiting and deliberate harm or injury.
- 4.3.15 Although there was habitat that was suitable for supporting badgers, when considering the wider landscape, it is unlikely that the site is supporting any badgers. There were also no signs of badgers using the site during the walkover survey. Therefore, no further surveys are required.

Dormice

- 4.3.16 Hazel Dormouse *Muscardinus avellanarius* is fully protected under Schedule 2 of the Conservation of Habitats and Species Regulations 2019. The habitat on site that was suitable for hazel dormice had no connectivity to the wider landscape and therefore the site had negligible potential for supporting dormice.

Hedgehogs

- 4.3.17 The currently proposed site plan includes the demolition and construction of several buildings in different areas of the site. Construction vehicles and activities have the potential to kill or harm hedgehogs using these areas to forage.

5 MITIGATION AND ENHANCEMENT

5.1 Designated sites

- 5.1.1 No designated sites are within a distance such that they are likely to be negatively impacted by the development.

5.2 Habitats

- 5.2.1 As rhododendron and wall cotoneaster are invasive species, measures should be put in place to limit their spread through the site and outside the site boundary. This would involve a suitable eradication strategy prior to any work commencing.
- 5.2.2 Botanical surveys are recommended at a more appropriate time of year than the above Phase 1 Habitat Survey to accurately identify the grass types on site before any vegetation clearance takes place.

5.3 Species

Birds

- 5.3.1 The demolition of buildings should ideally take place outside of bird nesting season; however, this may not correlate with the mitigation required for bat species. Should buildings need to be demolished during nesting bird season, a pre-check by a competent ecologist as described in Section 4 will confirm the presence/absence of nesting birds and should be conducted immediately prior to any demolition (which will then take place with 24 hours of the ecologist confirming the absence of nesting birds).

Bats

- 5.3.2 A selection of category U and C trees to be removed to facilitate the development; these will be subject to a PBRA to accurately identify the quality of the features present, and to assign a level of potential to each tree to determine if further surveys are necessary.
- 5.3.3 If any bat roosts are confirmed during the recommended Phase 2 Surveys of the buildings identified as being demolished, then appropriate mitigation will be considered and outlined, prior to any works commencing.
- 5.3.4 Notwithstanding the results of any further surveys, the proposed development should aim to enhance the site for habitat for foraging / commuting bats post development. A suitable lighting strategy will be outlined in the Ecological Enhancements Report, which would include recommendations to avoid bright light on the sensitive habitats on site.

Hedgehogs

- 5.3.5 During the construction phase small mammals using the site for foraging should be considered and measures put in place to protect them. This could include the use of ramps around the site allowing them to escape any areas undergoing construction.

5.4 Enhancement opportunities

- 5.4.1 An assessment of Biodiversity Net Gain (BNG), of the proposed development is recommended in line with local planning policy.

- 5.4.2 Four bat and four bird boxes are recommended within the final redevelopment design to enhance the site for breeding and mitigate for loss of suitable habitat for these species. The boxes can be affixed to the retained mature trees on site.
- 5.4.3 Such boxes could include the 1SP Schwegler Sparrow Terrace, Vivara Pro Seville woodstone nest box or swift bricks such as the Cambridge Swift Nest Box System and 2FN Schwegler bat box or 2FR Schwegler bat tube. An ecologist should be consulted to inform the exact locations of new bat and bird boxes.
- 5.4.4 In addition to the mitigation measures outlined above, opportunities for enhancements include:
- provision of native species in landscaping schemes including flower-, berry- and fruit-bearing species to enhance the habitat for birds, bats and invertebrates;
 - provision of bee bricks to enhance the habitat for solitary bee species;
 - provision of hibernacula's for herpetofauna and/or hedgehogs can be created by reusing materials on site; and
 - night scented flowering plants, to encourage foraging bats to use the site, post-development.

6 CONCLUSIONS

- 6.1.1 There is one statutory and 18 non-statutory designated sites for nature conservation value within 2 km of the site. No negative impact of the proposed development on these sites is anticipated due to the distance and the urban nature of the intervening habitats.
- 6.1.2 The habitats on site are largely of low ecological value and are common within the wider landscape. The site was comprised of hardstanding and old school buildings with a large amenity grassland sports field, and an area of ornamental planting in the centre of the site. Notwithstanding this, it is recommended that a botanical survey be carried out, at the correct time of year, when species are flowering.
- 6.1.3 There was an area of scattered broadleaved trees in the northeast corner of the site, which should be subject to a PBRA once the AIA has identified those which will be impacted by the development.
- 6.1.4 Several of the buildings on site were identified as having at least low potential for supporting roosting bats. Depending on the level assigned and the features present a number of emergence / re-entry surveys have been recommended for each building, which should be carried out between March and October.
- 6.1.5 Nesting bird checks by an experienced ecologist are recommended prior to vegetation clearance or demolition between April and October (inclusive) and if any active nests are found, an appropriate buffer installed until eggs have hatched and chicks fully fledged to avoid disturbance.
- 6.1.6 During the construction phase good practice guidelines should be adhered to, to ensure that no small mammals are harmed, and that lighting does not disturb the surrounding habitats potential to support foraging bats.
- 6.1.7 Detailed recommendations for the site will be outlined in the Ecological Enhancement Strategy following recommended Phase 2 Surveys, and it is recommended that an assessment of Biodiversity Net Gain for the site is undertaken to maximise the ecological value of the site post development.

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APPENDICES

Relevant Legislation

A.1 BIRDS

All birds, their nests and eggs are afforded protection under the Wildlife and Countryside Act 1981, as updated by the Countryside and Rights of Way Act 2000. It is an offence to:

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

Schedule 1 birds cannot be intentionally or recklessly disturbed when nesting and there are increased penalties for doing so. Licences can be issued to visit the nests of such birds for conservation, scientific or photographic purposes but not to allow disturbance during a development even in circumstances where that development is fully authorised by consents such as a valid planning permission.

A.2 BATS

All British bat species are fully protected under Schedule 5 of the Wildlife and Countryside Act 1981, as updated by the Countryside and Rights of Way Act 2000. All British bats are also included on Schedule 2 of The Conservation of Habitats and Species Regulations 2017 as European Protected Species. It is an offence to:

- intentionally or recklessly kill, injure or capture bats;
- deliberately or recklessly disturb bats (whether in a roost or not); and
- damage, destroy or obstruct access to bat roosts

A roost is defined as 'any structure or place which [a bat] uses for shelter or protection'. As bats tend to reuse the same roosts, legal opinion is that a roost is protected whether or not bats are present at the time of survey.

A licence will therefore be required by those who carry out any operation that would otherwise result in offences being committed.

The following bat species are listed as being of principal importance for the conservation of biodiversity in England, (commonly referred to as UKBAP Priority species): Barbastelle, Bechstein's, Noctule, Soprano Pipistrelle, Brown Long-eared, Greater Horseshoe, and Lesser Horseshoe.

Site Photographs



Plate 1: Front (south aspect) of building B0: Kneller Hall main building.



Plate 2: Building B4: The Gaurdroom.



Plate 3: Building B8.



Plate 4: Building B13.

REPORT



Plate 5: Building B10



Plate 6: Building B16.



Plate 7: Wood pile in the woodland area (TN1).



Plate 8: Building B9.

REPORT



Plate 9: Building B7.



Plate 10: Building B2.



Plate 11: Building B1.



Plate 12: Building B6.

REPORT



Plate 13: Building B11.



Plate 14: Buildings B15A & B.



Plate 15: Building B5.



Plate 16: Building B12A.

REPORT



Plate 17: Building B12C.



Plate 18: Ornamental planting and pond in centre of site.



Plate 19: Scattered trees and improved grassland at north east corner of site.



Plate 20: Potential bat roosting feature on building B1.



Plate 21:

Potential bat roosting feature of Building B15A: cracks in internal walls of the garages.

