MKA
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Preliminary Ecological Appraisal and Invasive Species Survey

Hylands Road, Walthamstow

Site	Hyland's Road, Walthamstow, London
Project number	86519
Client name / Address	London Borough of Waltham Forest Waltham Forest Town Hall, Forest Rd, London, E17 4JF

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Declaration of compliance

This Preliminary Ecological Appraisal has been undertaken in accordance with British Standard 42020:2013 "Biodiversity, Code of practice for planning and development".

The information which we have provided is true, and has been prepared and provided in accordance with the Chartered Institute of Ecology and Environmental Management's (CIEEM) Code of Professional Conduct. We confirm that the opinions expressed are our true and professional bona fide opinions.

Validity of data

Unless stated otherwise the information provided within this report is valid for a maximum period of 24 months from the date of survey. If works at the site have not progressed by this time an updated site visit may be required in order to determine any changes in site composition and ecological constraints.

CONTENTS

1. EXECUTIVE SUMMARY 3

2. INTRODUCTION 4

2.1. Aims and scope of Preliminary Ecological Appraisal 4
2.2. Site description and context 4
2.3. Proposed development 4
2.4. Legislation and planning policy 4

3. METHODOLOGIES 6

3.1. Desktop study 6
3.2. Phase 1 habitat survey 6
3.3. Protected species scoping survey 7
3.4. Surveyor, author and reviewer 8
3.5. Date, time and weather conditions 8
3.6. Constraints 9

4. RESULTS 10

4.1. Desktop study 10
4.2. Phase 1 habitat survey 12
Figure 1: Phase 1 habitat map of Hylands Road 15
4.3. Protected species scoping survey 16
4.4. Invasive species scoping survey 20

5. ECOLOGICAL CONSTRAINTS, OPPORTUNITIES AND RECOMMENDATIONS 21

6. CONCLUSIONS 28

7. REFERENCES 29

8. APPENDICES 30

8.1. Appendix 1: Relevant wildlife legislation and planning policy 30
8.2. Appendix 2: Phase 1 Habitat species list 37
8.3. Appendix 3: Site photographs 39
8.4. Appendix 4: Bird box recommendations 44

1. EXECUTIVE SUMMARY

In June 2019 MKA Ecology Limited was commissioned to undertake a Preliminary Ecological Appraisal of Hylands Road, Walthamstow. The appraisal included a Phase 1 habitat survey, protected species scoping survey and desktop study of protected and notable sites and species in the area. A check for invasive species was also conducted. A site visit was undertaken on 06 June 2019.

The site comprises residential buildings, amenity grassland and scattered trees. The proposed development involves residential re-development, including the demolition of buildings and vegetated habitats followed by the creation of new buildings.

The following ecological constraints were identified at the Site with recommendations made as follows;

- Breeding birds: suitable habitat for nesting birds. Recommended that this is not cleared in the breeding season which runs from March to August.
- Bats: suitable roosting habitats in the building on Site. Recommended that, a daytime bat roost inspection of buildings should be undertaken to assess potential roosting sites and the need for nocturnal survey work.
- Reptiles: suitable habitat for reptiles in the adjacent allotments. Recommended that a method statement is produced to detail ecologically sensitive working practices for reptiles.
- Hedgehogs: suitable habitat for hibernating and resting hedgehogs. Recommended that this is not cleared in the hibernating season which runs from November to April.
- Non-native, invasive plants: two non-native, invasive plants listed in the London Invasive Species Initiative were found on site. It is recommended that these species are removed and disposed of appropriately to ensure these species do not spread outside of the Site boundary.

Opportunities exist to enhance the biodiversity on the Site post-development. These include native planting schemes, in particular wildflower planting to increase suitability for pollinators, incorporating green roofs, bird and bat boxes within the new buildings, and providing log piles and Hedgehog hibernation boxes. These will help to increase the biodiversity of the site post-development, in line with local and national planning policy. The aim should be to deliver a net gain in biodiversity.

2. INTRODUCTION

2.1. Aims and scope of Preliminary Ecological Appraisal and Invasive Species Survey

In June 2019 MKA Ecology Limited was commissioned to undertake a Preliminary Ecological Appraisal at Hyland's Road, Walthamstow by London Borough of Waltham Forest in order to support a planning application for residential re-development.

The aims of the Preliminary Ecological Appraisal were to:

- Undertake a desktop study to identify the extent of protected and notable species and habitats within close proximity of the Site;
- Prepare a Phase 1 habitat map for the Site;
- Complete an invasive species survey at the Site;
- Identify evidence of protected species/species of conservation concern at the Site;
- Assess the potential impacts of the proposed development, using existing plans;
- Detail recommendations for further survey effort where required; and
- Detail recommendations for biodiversity enhancements.

2.2. Site description and context

The survey area is shown on the map in Figure 1. Within this report this area is referred to as the Site or Hylands Road, Walthamstow.

Hylands Road is situated in Walthamstow in Greater London (centred on TQ 38896 90123) and falls under the Local Authority of London Borough of Waltham Forest. The site comprises mainly of residential buildings, amenity grassland and scattered trees. The site covers a total of 0.5 ha.

2.3. Proposed development

The proposed development involves residential re-development, including the demolition of existing buildings, removal of vegetated habitat and creation of new buildings.

2.4. Legislation and planning policy

This Preliminary Ecological Appraisal has been undertaken with reference to relevant wildlife legislation and planning policy.

Relevant legislation considered within the scope of this document includes the following:

- The Wildlife and Countryside Act 1981 (as amended);
- The Conservation of Habitats and Species Regulations 2017 (as amended);
- Natural Environment and Rural Communities (NERC) Act 2006;
- The Countryside and Rights of Way (CRoW) Act 2000;
- Protection of Badgers Act 1992; and
- Wild Mammals (Protection) Act 1996.

Further information is provided in Appendix 1, including levels of protection granted to the species considered in Section 3.3.

In addition to obligations under wildlife legislation, the revised National Planning Policy Framework (NPPF) updated on 19 February 2019 requires planning decisions to contribute to conserving and enhancing the local environment. Further details are provided in Appendix 1.

The Waltham Forest Borough Council has produced an adopted Local Plan which covers a number of policies relating to biodiversity and habitat conservation, including protecting existing healthy trees and encouraging the planting of new trees as well as protecting biodiversity, enhancing green infrastructure, and promoting native planting. Where relevant these are discussed in further detail in Section 5.

3. METHODOLOGIES

This Preliminary Ecological Appraisal has been undertaken in accordance with the Chartered Institute for Ecology and Environmental Management (CIEEM) Guidelines for Preliminary Ecological Appraisal, 2nd edition (CIEEM, 2017).

3.1. Desktop study

A data search was conducted for the Site and the surrounding area within 2km of the site centroid. Data was retrieved from the sources listed in Table 1.

Table 1: Sources of data for desktop study

Organisation	Data collected	Date collected
Multi-agency Geographic Information for the Countryside (MAGIC) www.magic.gov.uk	Information on local, national and international statutory protected areas.	07/06/2019
Greenspace Information for Greater London (GIGL)	Information on protected and notable sites and species within 2km of the Site (TQ 38896 90123).	12/06/2019
Ordnance Survey maps and aerial photography	Information on habitats and connectivity between the Site and the surrounding landscape	10/02/2019

The Waltham Forest Council planning portal was also referred to in order to understand the scope of further development surrounding the Site.

3.2. Phase 1 habitat survey

Habitats were surveyed using the standardised Joint Nature Conservation Committee (JNCC) Phase 1 classification and mapping methodology (JNCC, 2010). Data were recorded onto field maps and then transferred onto a Geographic Information System (GIS) following the JNCC Colour Mapping Pallet for ArcGIS. Dominant plant species were observed and recorded within each habitat type. The plant species nomenclature follows that of Stace (2010).

The DAFOR scale is used to describe the relative abundance of species. The scale is shown in Table 2. It is important to note that where a species is described as rare this description refers to its relative abundance within the Site and is not a description of its abundance within the wider landscape. Therefore, a species with a rare relative abundance within the Site may be common within the wider landscape.

Table 2: DAFOR scale

DAFOR code	Relative abundance
D	Dominant
A	Abundant
F	Frequent
O	Occasional
R	Rare

3.3. Protected species scoping survey

As part of the Preliminary Ecological Appraisal, an assessment of the potential for the habitats on site to support protected or notable species was made. This assessment was based on the quality, extent and interconnectivity of suitable habitats, along with the results of the desktop study detailed in Section 3.1.

Protected species frequently encountered on development sites and considered within the protected species scoping survey for Hylands Road, Walthamstow include, but was not limited to, the following:

- Amphibians: Great crested newt *Triturus cristatus.*
- Reptiles: Adder *Vipera berus*, common lizard *Zootoca vivipara*, slow-worm *Anguis fragilis*, grass snake *Natrix helvetica helvetica*.
- Birds: All species, with special reference to species listed under Schedule 1 of The Wildlife and Countryside Act 1981 (as amended).
- Mammals: Badger *Meles meles*, bats (all species), European water vole *Arvicola amphibius*, otter *Lutra lutra* and hazel dormouse *Muscardinus avellanarius*.
- Invertebrates: White-clawed crayfish *Austropotamobius pallipes.*

In each case the likelihood of presence of these protected species at the Site was classified as being either confirmed, high, moderate, low or negligible.

Confirmed: The species is confirmed on the site during the Preliminary Ecological Appraisal, previous survey effort or recent records.

High: Habitats are available onsite which are highly suitable for this species and there are records within the desktop study. The surrounding areas also provide widespread opportunities for the species which are well connected to the Site.

Moderate: Some suitable habitat available on site for the species although not of optimum quality. Species is present with the desktop study.

Low: Some suitable habitat available on site for the species but this is low value and possibly of small scale or with poor connectivity. No, or very few, records returned in the desktop study.

Negligible: No suitable habitat available for the species, or very little poor-quality habitat.

This protected species scoping survey is designed to assess the *potential* for presence or absence of a particular species or species group, and does not constitute a full survey for these species.

3.4. Invasive species survey

An intensive survey of all publicly accessible areas was conducted to identify any invasive non-native species listed on Schedule 9 of the Wildlife and Countryside (1981) (as amended) or in the London Invasive Species Initiative (LISI). This was to assess the likelihood of presence of Schedule 9 or LISI invasive species, or confirm presence. For further details of legislation which restricts the spread of Schedule 9 invasive species see Appendix 1.

3.5. Surveyor, author and reviewer

The survey was undertaken by Gabrielle Wilbur GradCIEEM, Consultant Ecologist at MKA Ecology Limited, who has over three years' experience in undertaking Preliminary Ecological Appraisals and holds a Natural England Great Crested Newt Level 1 Class Licence. The report was written by Lauren Moore, Graduate Ecologist at MKA Ecology Limited. The report has been reviewed by Will O'Connor MCIEEM, Director and Principal Ecologist at MKA Ecology Ltd. Will has over ten years' experience as a consultant ecologist.

3.6. Date, time and weather conditions

See Table 3 below for details of the date, time and prevailing weather conditions recorded during the site visit for the Preliminary Ecological Appraisal.

Table 3: Date, time and weather conditions of survey visit

Date	Time of survey	Weather conditions*
06/06/2019	17:15	Wind: 1/8 Cloud: 0/8 Temp: 15°C Rain: None

*Wind as per Beaufort Scale / Cloud cover given in Oktas.

3.7. Constraints

A single visit cannot categorically ascertain the presence or absence of any protected species. However, an assessment is made of the likelihood for protected species to occur based on habitat characteristics and the ecology of each species. Where there is potential for protected species, additional survey work may be required to ascertain their presence or absence.

Data on species records obtained from local biological records centres are sometimes only available at low spatial resolutions and are constrained by the voluntary nature of the contributions and what has been chosen to be submitted as records. While these records provide a useful indication of species recorded in the local area, in particular protected or notable species, the data is not necessarily an accurate reflection of species assemblages or abundance in the vicinity.

A small area in the north-eastern corner of the site could not be surveyed due to a fence barrier. The inaccessible area is shown on Figure 1. This consequences of this is that the habitat and species, including invasive species, in this area could not be classified and signs of protected species were not able to be identified. The inaccessible area appeared to contain hardstanding only. It is likely to be of low ecological value and is not considered likely to affect recommendations within this report

4. RESULTS

4.1. Desktop study

An ecological desktop study was completed for the Site and the surrounding 2km. Data provided by Greenspace Information for Greater London (GIGL), identified several UK and European protected species, Species and Habitats of Principal Importance (as listed under Section 41 of the NERC Act 2006), and species of conservation concern within 2km of the Site. It should be noted that this is not a comprehensive list of the distribution or extent of the local flora and fauna of conservation importance. These species records are discussed in greater detail in the protected species scoping survey section (Section 4.3 below).

Details of statutorily designated sites identified as part of the desktop study are displayed in Table 4 below. These consist of one Special Area of Conservation (SAC) and one Site of Special Scientific Interest (SSSI).

Table 4: Statutorily designated sites within 2km of Hylands Road

Site name	Area (ha)	Distance and direction	Reasons for selection
Epping Forest (SAC and SSSI)	1604	110m south at closest point	• Supports Annex 1 habitats (Atlantic acidophilous beech forests, Atlantic wet heaths and European dry heaths) • Supports Annex 2 species (stag beetle *Lucanus cervus*) • Epping Forest is one of only a few remaining large-scale examples of ancient wood-pasture in lowland Britain • Supports habitat of high nature conservation value including ancient woodland, unimproved acid grassland and wetlands. • Supports rare moss species *Zygodon forsteri* • Supports a nationally outstanding assemblage of invertebrates, with over 360 Red Data Book and nationally notable invertebrate species recorded • Supports important populations of amphibians including great crested newt

Site name	Area (ha)	Distance and direction	Reasons for selection
			• Has botanical interest and an exceptional breeding bird community. • Supports populations of reptiles including adder, grass snake, slow-worm and common lizard

Details of non-statutorily designated sites identified as part of the desktop study are displayed in Table 5 below. These consist of seven Sites of Importance for Nature Conservation (SINC).

Table 5: Non-statutorily designated sites within 2km of Hylands Road

Site name	Area (ha)	Distance and direction	Reasons for selection
Epping Forest North (Site of Metropolitan Importance)	494	1.72km NE and SE	• Ancient semi-natural woodland, with rare beech *Fagus sylvatical* hornbeam *Carpinus betulus* type • Diverse avifauna, invertebrate and plant communities • Important reptile and amphibian populations
Woodford Green and Ponds (Borough Grade 2 importance)	15	2.45km NE	• Herb-rich acid grassland (part of Epping Forest). Several interesting wild flowers such as spiny restharrow *Ononis spinosa*. • Pond habitat with a rich aquatic flora, such as broad-leaved pondweed *Potamogeton natans* and rigid hornwort *Ceratophyllum demersum*
Wanstead War Memorial (Tarzy Wood) (Borough Grade 2 Importance)	1.38	2km SE	• Ancient woodland • Woodland dominated by pedunculate oak *Quercus robur* and hornbeam *Carpinus betulus*
Ching Brook (Borough Grade 2 importance)	5	1.48km N	• Brook lined with scattered trees and scrub • Fool's watercress *Apium nodiflorum,* pendulous sedge *Carex pendula* and soft rush *Juncus effuses* present • Good number of bird species recorded

Site name	Area (ha)	Distance and direction	Reasons for selection
Lloyd Park (site of local importance)	2	1.70km W	• Ornamental moat good for wildfowl • A number of mature, native and non-native trees and shrubs
St Mary's Churchyard (site of local importance)	1	1.43km SW	• Small churchyard supporting neutral grassland • Good tree and shrub diversity
Greenway Avenue Wood (site of local importance)	0.4	0.63km S	• Woodland dominated by ash *Fraxinus excelsior*

These designated sites encompass a mixture of ancient woodlands, grasslands and water features, comprising a good diversity of plants and shrubs.

An allotment is present to the south of the site whilst park and semi-natural grassland are present to the east. Alongside the northern and western boundaries of the site are further residential buildings and roads.

The wider landscape is a mosaic of urban development, with residential buildings, gardens and roads, and large expanses of mixed woodland. The landscape is characterised by acid grassland, wood pasture, a large amount of open spaces and amenity land with public access, as well as a prevalence of ancient woodland. Notably, there is a large amount of standing water, e.g. lakes, reservoirs and ponds, such as Walthamstow Wetlands.

There is a limited amount of habitat corridors in the wider landscape, largely due to urban development and roads such as the A503, resulting in the area being relatively fragmented. However, Epping Forest provides good north/south connecting habitat and a habitat corridor close to Hyland Road, Walthamstow.

4.2. Phase 1 habitat survey

The Site was found to comprise residential buildings, a garage block, hardstanding and amenity grassland with scattered trees and scrub throughout. More detailed species lists, along with their relative abundance, can be found in Appendix 2. The Phase 1 habitat survey map is provided in

Figure 1, at the end of this section. Descriptions of the habitat types present along with dominant species compositions are provided below.

Amenity grassland

The majority of the site comprised amenity grassland (see Photograph 1, Appendix 3). This habitat was dominated by Annual meadow-grass *Poa annua* and Brome species *Bromus sp*, with occasionally recorded species being cut-leaved cranes-bill *Geranium dissectum* and yarrow *Achillea millefolium*. The amenity grassland was left unmanaged with a sward that ranged in height.

Scattered trees

Ash *Fraxinus excelsior* trees have been planted within the amenity grassland in the centre of the site, alongside common lime *Tilia cordata x platyphyllos* (*T. x vulgaris*) trees on the south boundary. Additionally, sycamore *Acer pseudoplatanus* was present in the line of trees on the south-east boundary of the site. The specimens were mostly mature individuals.

Scrub

Dense patches of scrub were present along the south and south-east boundaries of the site, situated between the amenity grassland and tree line (Target note 7). The scrub was dominated by green alkanet *Pentaglottis sempervirens* and bramble *Rubus sp*., with greater celandine *Chelidonium majus* occasionally present (Photograph 3, Appendix 3).

Introduced shrubs

Several small areas of introduced shrubs were located towards the centre of the site in close proximity to the buildings. These were dominated by buddleia *Buddleja davidii* and rose bushes *Rosa sp* (Photograph 4, Appendix 3). The shrubs were left unmanaged.

Buildings

Four building structures were present on site. The two rows of buildings to the centre of the site and the building to the south west of the site were residential buildings comprised on brick, plastered exterior walls, hanging tiles and slate roofs (Photographs 5 and 6, Appendix 3). These buildings remained largely inhabited by residents. A one-storey building was located to the east of the site comprised of brick and a felt roof, which was no longer in use. In addition, a derelict, brick-built garage block was located to the east of the site with a flat roof metal corrugated tiles and overgrown vegetation on top (Photograph 7, Appendix 3).

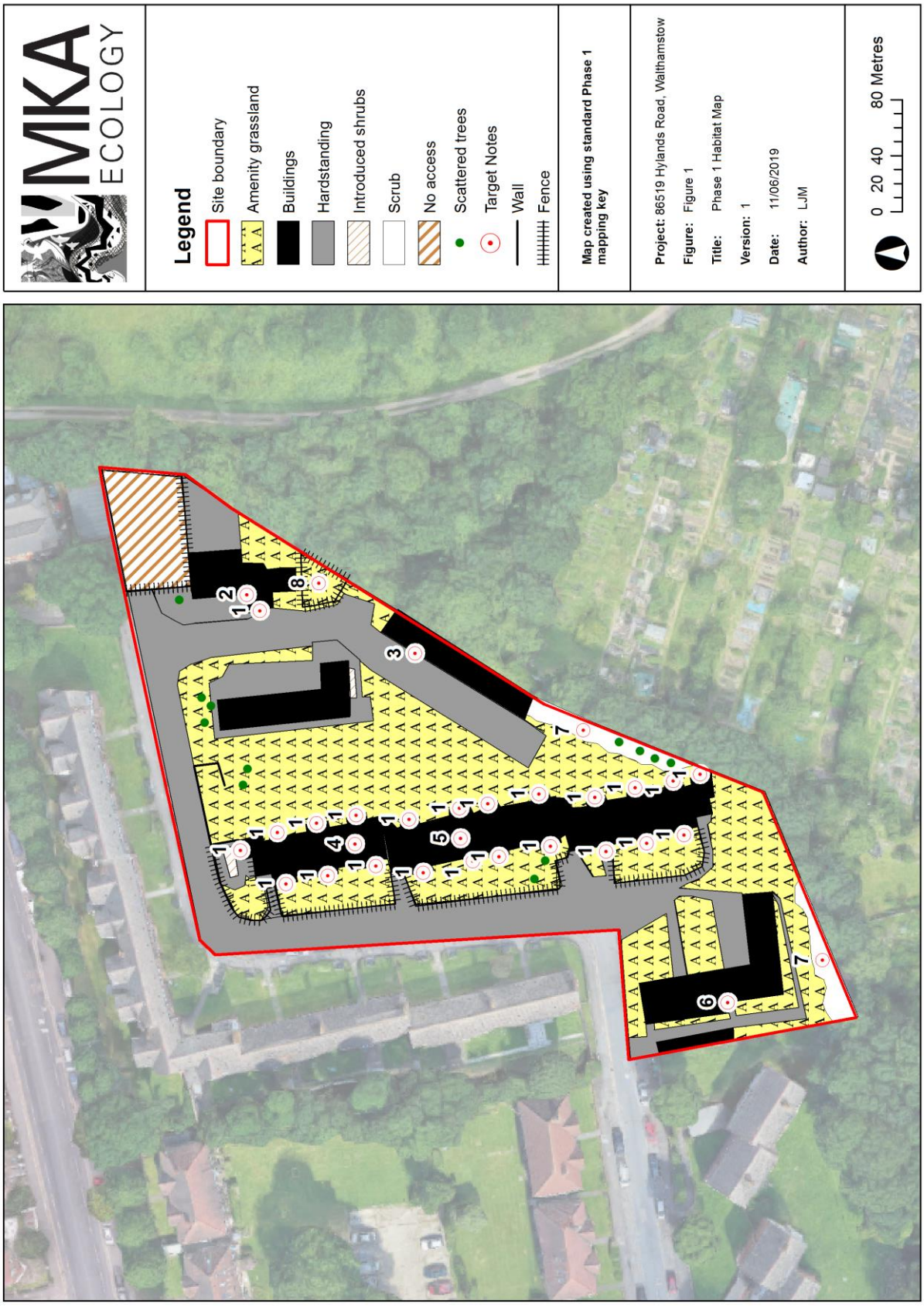
Hardstanding

A large area of hardstanding was present and located on the west, north and east perimeter of the site.

Other vegetated areas

A small and abandoned fenced allotment plot was present on the east boundary of the site which comprised of wooden decking, a wooden shed with a felt roof, a rubble pile and wooden planters with plastic lining (Target Note 8). The area was dominated by herb robert *Geranium robertianum*, bramble and young ash (Photograph 8, Appendix 3). The area was unmanaged and had a tall sward.

Figure 1: Phase 1 habitat map of Hylands Road



Target notes:

1. Gap under hanging tiles
2. Gap in brickwork
3. Potential access point into garage
4. Gap under capping tile near vent
5. Gap in capping tile
6. Gap in gable ends under tile where mortar has fallen out
7. Scrub with green alkanet, greater celandine and bramble
8. Allotment area with suitable reptile habitat

4.3. Protected species scoping survey

Plants

The data search returned several records of protected or notable plant species within the search area. These included species listed on Schedule 8 of the Wildlife and Countryside Act (1981) (bluebell *Hyacinthoides non-scripta*), London Biodiversity Action Plans (mistletoe *Viscum album*), those listed as Nationally Rare (box *Buxus sempervirens*), those listed as Vulnerable under IUCN criteria (stinking chamomile *Anthemis cotula*) and those listed as Local Species of Conservation Concern (*Spiny restharrow,* common cow-wheat *Melampyrum pratense*).

Several species listed on the London Invasive Species Initiative list were also returned from the data search. This includes Buddleia *Buddleia davidii* and Green Alkanet *Pentaglottis sempervirens.* No invasive species listed on Schedule 9 of the Wildlife and Countryside Act (1981) were recorded.

No protected or notable plant species were identified on site. The amenity grassland and other vegetated habitats contained relatively low species richness and are therefore unlikely to be significantly high in quality. The site contains plant species which are also common in the wider landscape. The low botanical diversity of species recorded during this survey suggest that the likelihood of the Site supporting protected or notable plant species is **negligible.**

Invertebrates

The data search returned several protected or notable invertebrate species, including stag beetle *Lucanus cervus*, a species listed under Annex 2 of the Habitat and Species Directive, the Wildlife and Countryside Act (1981), Section 41 of the NERC Act, UK and London Biodiversity Action Plan, and which is a local species of conservation concern.

Other species returned were listed on Section 41 of the NERC Act 2006, UK and local BAP, and listed as local species of conservation concern (centre-barred sallow *Atethmia centrago*, white ermine *Spilosoma lubricipeda*) and others listed on the Wildlife and Countryside Act (1981) Schedule 5 (swallowtail *Papilio machaon*).

The Site had relatively low botanical and structural diversity and the likelihood of protected invertebrates, or important assemblages of invertebrates, is considered to be **negligible**. This species group is not considered further within this report.

Amphibians

The data search returned several records of common frog *Rana temporaria*, common toad *Bufo bufo* and palmate newt *Lissotriton helveticus* within 2km of the site. Great crested newts are known to be present in the nearby Epping Forest SSSI.

An Ordnance Survey map and aerial photographs were consulted for the presence of other waterbodies within 500m of the Site boundary; four ponds and two drains were present within 500m. Whilst a main road acts as a barrier to ponds north of the site, the allotment to the south is not a barrier to dispersal for amphibians. No waterbodies were present on site. However, the site provides suitable terrestrial habitat for migrating, resting and hibernating great crested newt, such as rubble piles. Therefore, the likelihood of amphibians such as great crested newt being present on site is considered to be **low.**

Reptiles

The data search returned records of slow-worm 1.9km to the north-east of the site and the nearby Epping Forest SSSI is known to support adder and common lizard.

Suitable habitat for reptiles, particularly the grass snake and slow-worm, was present within the scrub, particularly within the bramble patches. Additionally, there are a number of features onsite that may provide suitable hibernation habitat for reptiles, particularly slow-worm. These included rubble piles and a log pile within the abandoned allotment area (Target Note 8). However, given the small extent of these habitat areas and the fact that there is more suitable habitat in the surrounding area, the risk of reptiles utilising the Site is considered to be **low**.

Birds

14 species were recorded during the site visit. These species are shown in Table 6 together with their conservation status. It is important to note that this is not a full inventory of species for the site.

Table 6: Bird species recorded during site visit at Hylands Road

Common name	Systematic name	S1 W&CA[1]	BoCC[2] Status	S41 SPI[3]	Local PrSp[4]
Sparrowhawk*	*Accipiter nisus*	-	Green	-	-
Feral pigeon	*Columba livia*	-	Green	-	-
Collared dove	*Streptopelia decaocto*	-	Green	-	-
Swift	*Apus apus*	-	Amber	-	-
Ring-necked Parakeet*	*Psittacula krameri*	-	Green	-	-
Magpie	*Pica pica*	-	Green	-	-
Carrion crow	*Corvus corone*	-	Green	-	-
Blue tit	*Cyanistes caeruleus*	-	Green	-	-
Great tit	*Parus major*	-	Green	-	-
Wren	*Troglodytes troglodytes*	-	Green	-	-
Starling	*Sturnus vulgaris*	-	Red	Yes	Yes
Blackbird	*Turdus merula*	-	Green	-	-
Robin	*Erithacus rubecula*	-	Green	-	-
Goldfinch	*Carduelis carduelis*	-	Green	-	-

[1] Schedule 1 of The Wildlife and Countryside Act 1981 (see Appendix 1)
[2] Birds of Conservation Concern (see Appendix 1)
[3] Section 41 (NERC Act 2006) 'Species of Principal Importance' (see Appendix 1)
[4] Local Priority Species
• Species flew over site

The data search returned a number of bird species within the search area. These included species listed on Annex 1 of the Birds Directive, Schedule 1 of the Wildlife and Countryside Act 1981, Section 41 of the NERC Act (2006), and birds listed as Amber or Red on BoCC. Several of these listed species, including dunnock *Prunella modularis*, house sparrow *Passer domesticus* and song thrush *Turdus philomelos*, alongside those recorded during the site visit, have the potential to utilise the Site for breeding, although the size of the Site is unlikely to support significant populations of these. The suitable breeding bird habitat includes buildings, introduced shrubs and scattered trees at the centre and east boundary of the site.

The likelihood of birds to utilise the Site for breeding is considered to be **high**. However, the likelihood of the Site to support important local assemblages of bird species, or protected bird species, is

considered to be **negligible** due to its small scale and wide availability of similar habitats types in the area.

Bats

The desktop study returned records for nine bat species; serotine *Eptesicus serotinus,* Daubenton's bat *Myotis daubentonii,* Leisler's bat *Nyctalus leisleri,* noctule *Nyctalus noctule,* Nathusius's pipistrelle *Pipistrellus nathusii,* common pipistrelle *Pipistrellus pipistrellus,* soprano pipistrelle *Pipistrellus pygmaeus* and unidentified bat species *Vespertilionidae* sp.

A search of Defra's MAGIC website returned one European Protected Species Licence granted for common pipistrelle Pipistrellus pipistrellus and soprano pipistrelle Pipistrellus pygmaeus within 2km of the Site (licence period February 2010 – June 2011). The licence has been granted 0.3km south of the Site.

The residential buildings provide a number of potential roosting features, with numerous access points. This includes gaps under hanging tiles (Target note 1), capping tiles (Target note 4), in the gable ends (Target note 6) and in the brickwork (Target note 2). The garage block also has potential to support roosting bats with a potential access to the front of the building (Target Note 3; Photograph 8, Appendix 3).

The trees on site were not considered suitable to support roosting bats due to their age. It should also be noted that these bat roost suitability classifications are preliminary, and based on a brief assessment only. Overall, the roosting value of the site is considered to be **moderate.**

The scattered trees and scrub may provide good potential foraging habitat and the line of trees to the south could act as corridors for commuting bats, although these cover a relatively small area of the site. There is also very good connectivity to woodland and grassland habitats of Epping Forest to the south, which is likely to provide excellent foraging habitat for bats. However, due to the small size of the site and set in the context of the surrounding countryside, the site itself is unlikely to be of significance for foraging or commuting bats. Overall, the foraging value of the site is considered to be **negligible** and the commuting value is considered to be **low**.

Badgers

The data search returned no records of badgers within the search area. No evidence of badger activity (setts or signs) was found during the site visit and there was limited habitat for badger onsite. In addition, the Site is considered too small to support significant activity of this species. Overall, the likelihood of badgers using the Site is considered to be **negligible.** This species will not be considered further in this report.

Other mammals

The data search returned 82 records for European hedgehog *Erinaceus europaeus* between 0.1km and 1.6km from the site. Hedgehogs usually construct nesting places in hollow tree stumps, piles of wood, dense vegetation and piles of leaves. The vegetated habitats onsite, in particular the abandoned allotment plot and associated log piles, provide some potential for hedgehogs. In addition, the surrounding hedgerows and woodlands provide optimal habitat for hedgehog foraging and nesting. Overall the likelihood of hedgehogs using the Site is considered to be **moderate.**

4.4. Invasive species scoping survey

The data search returned records of numerous invasive species within the search area; buddleia, New Zealand pygmyweed *Crassula helmsii*, Spanish bluebell *Hyacinthoides hispanica*, giant hogweed *Heracleum mantegazzianum* and Chinese muntjac *Muntiacus reevesi.*

Of these records, many are aquatic species which would not be present in the terrestrial habitats on and around the Site. However, buddleia was found in the introduced shrub areas on site. This species is listed as Category 3 on the London Invasive Species Initiative, meaning that is a species of high concern which is widespread in London and requires concerted, coordinated and extensive action to control and eradicate. In addition to this, green alkanet was identified within the scrub on site. This species is listed in Category 6 on the London Invasive Species Initiative, meaning that it does not currently considered to pose a threat or have the potential to cause problems in London.

The data search returned 121 records of ring-necked parakeets within the survey area and the site visit identified an individual flying over the site. This species is listed in Category 4 of the London Invasive Species Initiative, meaning the species is widespread to the extent that eradication is not feasible but where avoiding spread to other sites may be required. Appropriate biosecurity is required for sites where these species are found.

One area in the north-east corner of the site could not be assessed for invasive species and there is the risk that invasive species were not detected during the survey effort.

5. ECOLOGICAL CONSTRAINTS, OPPORTUNITIES AND RECOMMENDATIONS

This section outlines key ecological issues for consideration, recommendations for further work and ecological enhancements where appropriate.

Off-site habitats

One statutorily designated site (Epping Forest SAC/SSSI) is located within 2km of the site. Consequently, the site falls within the Natural England Impact Risk Zones (Natural England, 2016) for the SSSI. However, due to the type and size of the development, impacts upon the SSSI are not anticipated.

Due to the size and type of development, as well as the distance involved between the site and Epping Forest, the only adverse effect that may arise is an increased recreational use of the forest by residents of the new scheme. If there is a greater residential capacity in the new development, then the risk of increased use of the forest is heightened. In these circumstances consultation with Natural England and the local authority will be required to establish the requirement for a Habitat Regulation Assessment.

Recommendation 1
When data on residential density for the scheme becomes available, review the potential risk of increased visitor pressure in the Epping Forest SAC if required.

Several non-statutory designated sites were located within 2km, the nearest of which is Greenway Avenue Wood (site of local importance) at 0.63km South. The development is not anticipated to have an effect on the surrounding designated sites due to its size and the distances involved.

On-site habitats

The majority of on-site habitats are common throughout the wider landscape and does not contain any Habitats of Principal Importance as outlined in Section 41 of the NERC Act (2006). Therefore, the Site overall is considered to have lower ecological value.

Plants

Buddleia and green alkanet were both recorded on site. These are listed under London Invasive Species Initiative as Species of Concern and so require concerted, coordinated and extensive action to

control/eradicate. As such, it is recommended that these species are removed and disposed of appropriately to ensure these species are not unnecessarily spread further through the landscape.

Recommendation 2

Ensure Species of Concern on the London Invasive Species Initiative are removed and disposed of appropriately.

Amphibians and reptiles

There is suitable habitat for migrating, resting and hibernating amphibians, such as great crested newt, including rubble piles in the allotment plot. There is also connectivity to waterbodies in the wider landscape. However, the risk of presence is considered to be low. Impacts on amphibians are possible through clearance of vegetation and construction activities, as well as longer term habitat loss and fragmentation.

Whilst the presence of suitable terrestrial habitat on site and the connectivity to ponds does not warrant further assessment or special mitigation measures, it is recommended that a method statement is produced. This would minimise any potential impacts on amphibians during demolition works, detailing that the rubble piles are dismantled by hand and if any amphibians are found, that they should be moved outside of the site. It will also be important to ensure that all on-site contractors are made aware of the potential presence of reptiles during works.

Great crested newts are protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and Schedule 2 of the Conservation of Habitats and Species Regulations 2010 (as amended) (see Appendix 1). In the very unlikely event of a great crested newt being found then work should stop immediately and an ecologist should be consulted for further advice.

Some suitable habitat for reptiles (common lizard, grass snake and slow-worm) is present, such as scrub, log piles and rubble piles. Impacts on reptiles are possible through clearance of vegetation and construction activities, as well as longer term habitat loss. However, given the relative size of the Site and the availability of more suitable habitat in the wider area, there is only limited potential for reptiles using the Site.

Reptiles are protected under Schedule 5 of the Wildlife and Countryside Act (1981) (See appendix 1). They are also listed as Species of Principal Importance on Section 41 of the NERC Act (2006).

It is recommended that the method statement also details measures to minimise any potential impacts on reptiles during demolition works, specifying that the log and rubble piles are dismantled by hand and if any reptiles are found, that they should be moved outside of the site. It will also be important to ensure that all on-site contractors are made aware of the potential presence of reptiles during works.

Recommendation 3

Produce a method statement to minimise impacts on reptiles and amphibians during works. All on-site contractors should be made aware of their potential presence onsite. If a great crested newt is found then work should stop immediately and an ecologist should be consulted.

Birds

There is suitable habitat available on site for breeding birds, including scattered trees, shrubs and buildings. Impacts on breeding birds are possible through the clearance of buildings and vegetation, construction activities and habitat loss, in particular to starlings and swifts which readily nest in cavities in houses (these species are listed as Red and Amber on the BoCC Red List respectively).

All wild birds, their active nests and eggs are protected under The Wildlife and Countryside Act 1981 (as amended), which makes it an offence deliberately, or recklessly, to kill or injure any wild bird or damage or destroy any active birds' nest or eggs.

Scheduling vegetation and/or building removal works between the months of September and February inclusive (i.e. outside of the bird season) would avoid impacts on breeding birds.

Where vegetation and/or building clearance works are required during the breeding bird season (between the months of March and August inclusive), such works can only proceed following the completion of a nesting bird check undertaken by an experienced ornithologist. Any active birds' nest identified during this check must be protected from harm until the nesting attempt is complete. This will require a buffer to be left around the nest, the size of which will depend upon the species involved (as a general rule, this will be 10m in all directions around the nest). Any buffers established as a result of the initial nesting bird check must be subjected to a second check after the original nesting attempt is completed, before such areas can be removed during the breeding bird season.

Recommendation 4

Schedule vegetation and building clearance works between the months of September and February inclusive to avoid impacts on breeding birds. Where this timing is not feasible works should be preceded by a nesting bird check.

It is strongly recommended that any potential nesting bird habitat is cleared outside the breeding bird season in order to avoid potentially lengthy delays if nests are found during nesting bird checks.

The loss of bird nesting habitat at the site will be mitigated for by the provision of bird boxes as part of the biodiversity enhancements proposed for the site. The provision of bird boxes is discussed in greater detail in the relevant section below.

Bats

The residential buildings and garage block showed potential to support roosting bats, with numerous access points including gaps in under tiles, in the brickwork and at the gable ends. Although there is limited foraging habitat onsite, there is good connectivity to surrounding habitats which are likely to provide excellent foraging opportunities. This increases the risk of roosting bats in the buildings onsite. Impacts on potential bat roosts are possible through the demolition or modification of buildings. This could be through the loss or damage of roosts, or the potential killing or injuring of bats.

All bat species are protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and Schedule 2 of the Conservation of Habitats and Species Regulations 2017 (as amended) (see Appendix 1). Bats are also Species of Principal Importance listed on Section 41 of the NERC Act (2006). It is an offence to deliberately disturb a bat, damage or destroy a bat roost, intentionally or recklessly disturb a bat at a roost, or obstruct access to a roost.

As such it is recommended that a daytime bat inspection is completed to fully assess the potential of the main building and outbuildings for roosting bats. This will involve an internal and external inspection of buildings with roost features and will classify each building for their roosting potential. Please note that if any building is deemed to have a low, moderate or high roosting potential then further nocturnal surveys will be required. Nocturnal surveys can only be undertaken between May and September. This information will be detailed in the inspection report.

Recommendation 5

Conduct a daytime bat inspection survey on the buildings to identify the presence, or likely absence, of roosting bats.

Bat roosting behaviour, commuting and foraging activity can additionally be dramatically affected by artificial lighting (BCT, 2018). It is strongly recommended that any proposed exterior lighting on the new buildings is designed and managed appropriately to ensure that the area remains suitable for foraging bats. A sensitive lighting scheme should be developed to allow suitable roosting and foraging areas for bats.

Recommendation 6

Light pollution from any lighting should be minimised both during and after the construction phase. A sensitive lighting scheme should be developed and secured through a planning condition to allow for suitable roosting and foraging areas for bats within the site with maximum use of appropriate luminaries and directed lighting.

Hedgehogs

The site showed natural features that would provide nesting habitats for hedgehogs, including the log pile within the abandoned allotment area. The proximity to ideal foraging habitat increases the risk of nesting hedgehogs on site. Impacts on hedgehogs are possible the demolition or modification of the allotment plot. This could be through the loss or damage of the log piles, or the potential killing or injuring of hedgehogs.

Hedgehogs are listed as a Species of Principal Importance under the NERC Act 2006, it is therefore an offence to intentionally kill or injure individuals of these species (see Appendix 1 for more information).

The instalment of boundary fences between gardens can impact on hedgehogs through loss of habitat connectivity. A planning condition should be secured for the instalment of at least one 13cm x 13cm hole at the bottom of each boundary fence (with a focus on fences separating residential gardens, and excluding fences adjacent to roads), in order to maintain connectivity for hedgehogs between properties. These 'hedgehog highways' (PTES, 2018) should have appropriate signage installed to indicate their purpose and stipulate that they should remain open.

Recommendation 7

Maintain habitat connectivity for hedgehog through the instalment of 'hedgehog highways' at the bottom of each boundary fence. These should be accompanied with appropriate signage and should be secured through a planning condition.

Opportunities for biodiversity enhancement

Following the issue of the National Planning Policy Framework (NPPF; see Appendix 1), all planning decisions should aim to maintain and enhance, restore or add to biodiversity and geological conservation interests. Ecological enhancements should aim to deliver biodiversity gains for the proposed development site.

Planting of native species or those with a known attraction or benefit to local wildlife is recommended in landscape proposals. This will help to increase native plant species diversity, provide more ecologically valuable habitats, and result in a greater diversity of other dependent taxonomic groups.

Recommendation 8

It is recommended that native British species are incorporated within the planting scheme for the final landscaping design in order to enhance the overall value of the site for biodiversity, in line with the requirements of the NPPF.

In particular, planting wildflowers and incorporating a reduced grass cutting regime to areas of the site would create an insect-friendly lawn. This would help achieve overall biodiversity gains for the scheme and enhance existing features for pollinators as outlined by Waltham Forest Borough Council's Local Plan. Other habitats could include green roofs, species rich hedgerows and scrub.

Recommendation 9

Improve grassland habitat on site with the use of pollinator-friendly plants and a reduced grass cutting regime.

Enhanced opportunities for breeding birds should be incorporated into the design scheme. Bird boxes should be incorporated into the fabric of the new buildings, or mounted on trees, fences and built structures at the site. It is recommended that there is focus on swifts and starlings, together with the provision of generalist bird boxes. Examples of suitable boxes are shown in the appendix together with information concerning the correct siting of these enhancement features.

Recommendation 10

A minimum of one bird box for every two residential units should be installed at the site, to include 40% starling, 40% swift and 20% generalist.

The wider landscape has the potential for use by foraging bats. With this in mind, enhanced opportunities for roosting bats should also be provided at the site through instalment of bat boxes. Detailed of bat boxes will be provided following the recommended daytime bat survey.

Summary of recommendations

Table 7 below summarises the recommendations made within this report, and specifies the stage of the development at which action is required. Colour coding of cells within the table is as follows:

Key:

	No action required for this species group at this stage
	Action required (see notes for details)
	Level of action required will be determined following the further survey work

Table 7: Summary of recommendations at Hylands Road

Species	Pre-planning action required?	Pre-construction action required?	Construction phase mitigation required?	Enhancements proposed?
Designated sites	Review density of residential scheme and establish need to Habitat Regulation Assessment	TBC	TBC	TBC
Habitats	No	No	No	Native planting, wildflower planting
Plants	No	Removal of invasive plant species	No	Native planting
Bats	Further survey work	TBC	TBC	TBC
Reptiles	No	No	Method statement for log pile removal	No
Amphibians	No	No	Method statement for rubble pile removal	No
Birds	No	No	Timing of works for vegetation removal Incorporate integrated bird boxes into new buildings	Bird boxes and native planting

6. CONCLUSIONS

Hylands Road contains several habitat types within a relatively small area, which has the potential to support several protected species groups, including bats and birds.

The buildings, scattered trees and introduced shrubs have potential to support breeding birds. It is considered that by adhering to the timing constraints for the removal of suitable nesting bird habitat, proposed within this report, that the potential for direct disruption and adverse impacts on breeding birds at the Site can be avoided.

The buildings have features which have the potential to support roosting bats. It is recommended that a daytime bat inspection survey should be completed at the earliest opportunity. It will be required to fully assess the bat roosting potential and inform the requirement for any mitigation or further assessment.

Buddleia *Buddleia davidii* and green alkanet *Pentaglottis sempervirens* were found on site and these should be removed before construction begins to prevent the spread of these species outside the site boundary.

There are several opportunities to increase the biodiversity of the Site post-development. These include the planting of native species and integrating bird and bat boxes within the new buildings to assist in making the development more permeable to wildlife. Incorporating log-piles, bug bricks and hedgehog domes may provide considerable scope for encouraging wildlife onto the site. These recommendations for biodiversity gains are in line with local and national planning policy and will ensure a sustainable development.

7. REFERENCES

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8. APPENDICES

8.1. Appendix 1: Relevant wildlife legislation and planning policy

Please note that the following is not an exhaustive list, and is solely intended to cover the most relevant legislation pertaining to species commonly associated with development sites.

Subject	Legislation (England)	Relevant prohibited actions
Amphibians		
Great crested newt *Triturus cristatus* Natterjack toad *Epidalea calamita*	Schedule 2 of Conservation of Habitats and Species Regulations 2017 (as amended) Schedule 5 of The Wildlife and Countryside Act 1981 (as amended)	• Deliberately capture or kill, or intentionally injure; • Deliberately disturb or recklessly disturb them in a place used for shelter or protection; • Damage or destroy a breeding site or resting place; • Intentionally or recklessly damage, destroy or obstruct access to a place used for shelter or protection; and • Possess an individual, or any part of it, unless acquired lawfully.
Reptiles		
Common lizard *Zootoca vivipara* Adder *Vipera berus* Slow-worm *Anguis fragilis* Grass snake *Natrix helvetica*	Part of Sub-section 9(1) of Schedule 5 of The Wildlife and Countryside Act 1981 (as amended)	• Intentionally kill or injure individuals of these species (Section 9(1)).

Subject	Legislation (England)	Relevant prohibited actions
Sand lizard *Lacerta agilis* Smooth snake *Coronella austriaca*	Full protection under Section 9 of Schedule 5 of The Wildlife and Countryside Act 1981 (as amended)	• Deliberately or intentionally kill, capture (take) or intentionally injure; • Deliberately disturb; • Deliberately take or destroy eggs; • Damage or destroy a breeding site or resting place or intentionally damage a place used for shelter; or • Intentionally obstruct access to a place used for shelter.
Birds		
All wild birds	Wildlife and Countryside Act 1981 (as amended)	• Intentionally kill, injure, or take any wild bird or their eggs or nests.
'Schedule 1' birds	Schedule 1 of the Wildlife and Countryside Act 1981 (as amended)	• Disturb any wild bird listed on Schedule 1 whilst it is building a nest or is in, on, or near a nest containing eggs or young; or • Disturb the dependent young of any wild bird listed on Schedule 1.
Mammals		
Bats (all UK species)	Schedule 2 of Conservation of Habitats and Species Regulations 2017 (as amended)	• Deliberately capture, injure or kill a bat; • Deliberately disturb a bat (disturbance is defined as an action which is likely to: (i) Impair their ability to survive, to breed or reproduce, or to rear or nurture their young; (ii) Impair their ability to hibernate or migrate; or (iii) Affect significantly the local

Subject	Legislation (England)	Relevant prohibited actions
	Schedule 5 of Wildlife and Countryside Act 1981 (as amended)	distribution or abundance of the species); • Damage or destroy a bat roost; • Intentionally or recklessly disturb a bat at a roost; or • Intentionally or recklessly obstruct access to a roost. In this interpretation, a bat roost is "*any structure or place which any wild [bat]...uses for shelter or protection*". Legal opinion is that the roost is protected whether or not the bats are present at the time.
Badger *Meles meles*	Protection of Badgers Act 1992	Under Section 3 of the Act: • Damage a sett or any part of it; • Destroy a sett; • Obstruct access to, or any entrance of, a sett; or • Disturb a badger when it is occupying a sett. A sett is defined legally as any structure or place which displays signs indicating current use by a badger (Natural England 2007).
Hazel dormouse *Corylus avellana*	Schedule 2 of Conservation of Habitats and Species Regulations 2017 (as amended)	• Intentionally or deliberately capture or kill, or intentionally injure; • Deliberately disturb or intentionally or recklessly disturb them in a place used for shelter or protection;

Subject	Legislation (England)	Relevant prohibited actions
	Schedule 5 of Wildlife and Countryside Act 1981 (as amended)	• Damage or destroy a breeding site or resting place; • Intentionally or recklessly damage, destroy or obstruct access to a place used for shelter or protection; and • Possess an individual, or any part of it, unless acquired lawfully.
Otter *Lutra lutra*	Schedule 2 of Conservation of Habitats and Species Regulations 2017 (as amended) Section 9(4)(b) and (c) of Schedule 5 of Wildlife and Countryside Act 1981 (as amended)	• Deliberately capture, injure or kill an otter; • Deliberately disturb an otter in such a way as to be likely to significantly affect the local distribution or abundance of otters or the ability of any significant group of otters to survive, breed, rear or nurture their young; • Intentionally or recklessly disturb any otter whilst it is occupying a holt; • Damage or destroy or intentionally or recklessly obstruct access to an otter holt.
Water vole *Arvicola amphibius*	Section 9 of Schedule 5 of Wildlife and Countryside Act 1981 (as amended)	• Intentionally kill, injure or take water voles; • Possess or control live or dead water voles or derivatives; • Intentionally or recklessly damage, destroy or obstruct access to any structure or place used for shelter or protection; or • Intentionally or recklessly disturb water voles whilst occupying a structure or place used for that purpose.
Crustaceans		

Subject	Legislation (England)	Relevant prohibited actions
White-clawed crayfish *Austropotamobius pallipes*	Section 9(1) of Schedule 5 of Wildlife and Countryside Act 1981 (as amended)	• Intentionally kill, injure or take white-clawed crayfish by any method.

Conservation of Habitats and Species Regulations 2017 (as amended)

Full legislation text available at: http://www.legislation.gov.uk/uksi/2017/1012/contents/made

The Wildlife and Countryside Act 1981 (as amended)

Full legislation text available at: http://www.legislation.gov.uk/ukpga/1981/69/contents.

Countryside and Rights of Way Act 2000

Full legislation text available at: http://www.legislation.gov.uk/ukpga/2000/37/contents

Protection of Badgers Act 1992

Full legislation text available at: http://www.legislation.gov.uk/ukpga/1992/51/contents

Section 41 of Natural Environments and Rural Communities (NERC) Act 2006

Full legislation text available at: http://www.legislation.gov.uk/ukpga/2006/16/section/41

Many of the species above, along with a host of others not afforded additional protection, are listed on Section 41 of the NERC Act 2006.

Section 41 (S41) of the Natural Environment and Rural Communities (NERC Act 2006) requires the Secretary of State to publish a list of habitats and species that are of principal importance for the conservation of biodiversity in England. The list (including 56 habitats and 943 species) has been drawn up in consultation with Natural England and draws upon the UK Biodiversity Action Plan (BAP) List of Priority Species and Habitats.

The S41 list should be used to guide decision-makers such as local and regional authorities to have regard to the conservation of biodiversity in the exercise of their normal functions – as required under Section 40 of the NERC Act 2006. The duty applies to all local authorities and extends beyond just conserving what is already there, to carrying out, supporting and requiring actions that may also restore or enhance biodiversity.

Schedule 9 of Wildlife and Countryside Act 1981 (as amended)

In addition to affording protection to some species, The Wildlife and Countryside Act 1981 (as amended) also names species which are considered invasive and require control. Section 14 of the Act prohibits the introduction into the wild of any animal of a kind which is not ordinarily resident in, and is not a regular visitor to, Great Britain in a wild state, or any species of animal or plant listed in Schedule 9 to the Act. In the main, Schedule 9 lists non-native species that are already established in the wild, but which continue to pose a conservation threat to native biodiversity and habitats, such that further releases should be regulated.

Wild Mammals (Protection) Act 1996

Full legislation text is available at: http://www.legislation.gov.uk/ukpga/1996/3/contents

Under this legislation it is an offence to cause unnecessary suffering to wild mammals, including by crushing and asphyxiation. It largely deals with issues of animal welfare, and covers all non-domestic mammals including commonly encountered mammals on development sites such as rabbits, foxes and field voles.

Birds of Conservation Concern (BoCC)

This is a quantitative assessment of the status of populations of bird species which regularly occur in the UK, undertaken by the UK's leading bird conservation organisations. It assesses a total of 246 species against a set of objective criteria to place each on one of three lists – Green, Amber and Red – indicating an increasing level of conservation concern. There are currently 52 species on the Red list, 126 on the Amber list and 68 on the Green list. The classifications described have no statutory implications, and are used merely as a tool for assessing scarcity and conservation value of a given species.

National Planning Policy Framework (NPPF)

Full text is available at: https://www.gov.uk/government/collections/revised-national-planning-policy-framework

The revised NPPF was updated on 19 February 2019 setting out the Government's planning policies for England and the process by which these should be applied. The policies within the NPPF are a material consideration in the planning process. The key principle of the NPPF is a presumption in favour of sustainable development, with sustainable development defined as a balance between economic, social and environmental needs.

Policies 170 to 183 of the NPPF address conserving and enhancing the natural environment, stating that the planning system should:

- Contribute to and enhance the natural and local environment by protecting and enhancing valued landscapes;
- Recognise the wider benefits of ecosystem services; and
- Minimise impacts on biodiversity and provide net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity.

Furthermore, there is a focus on re-use of existing brownfield sites or sites of low environmental value as a priority, and discouraging development in National Parks, Sites of Specific Scientific Interest, the Broads or Areas of Outstanding Natural Beauty other than in exceptional circumstances.

Where possible, planning policies should also

"promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity".

8.2. Appendix 2: Phase 1 Habitat species list

Please note that these lists are intended to be incidental records and do not constitute a full botanical survey of the site. Relative abundance is given using the DAFOR scale. Please see Table 2 for details.

Amenity grassland

Common Name	Systematic Name	Relative abundance
Brome species	*Bromus sp.*	A
Annual meadow-grass	*Poa annua*	A
Creeping buttercup	*Ranunculus repens*	F
Cock's-foot	*Dactylis glomerata*	F
Dandelion	*Taraxacum sp*	F
Daisy	*Bellis perennis*	F
Herb-Robert	*Geranium robertianum*	F
Perennial rye-grass	*Lolium perenne*	F
Red fescue	*Festuca rubra agg.*	F
Ribwort plantain	*Plantago lanceolata*	F
Smooth hawk's-beard	*Crepis capillaris*	F
Violet species	*Viola sp.*	O
Wall barley	*Hordeum murinum*	O
Wood avens	*Geum urbanum*	O
Yarrow	*Achillea millefolium*	O
Ground-ivy	*Glechoma hederacea*	R
Oxeye daisy	*Leucanthemum vulgare*	R
Red clover	Trifolium pratense	A
Yorkshire fog	Holcus lanatus	A
Goat’s beard	Tragopogon sp.	O
Creeping cinquefoil	Potentilla reptans	O
Cat’s ear	Hypochaeris radicata	A

Scattered trees

Common Name	Systematic Name	Relative abundance
Ash	*Fraxinus excelsior*	A
Cherry	*Prunus sp.*	R
Sycamore	*Acer pseudoplatanus*	A
Holly	*Ilex aquifolium*	O
Lime	*Tilia cordata x platyphyllos (T. x vulgaris)*	O

Introduced shrubs

Common Name	Systematic Name	Relative abundance
Buddleia	*Buddleja davidii*	F
Hydrangea	*Hydrangea sp.*	O
Wilson's honeysuckle	*Lonicera nitida*	O
Rose species	*Rosa sp.*	R

Scrub

Common Name	Systematic Name	Relative abundance
Bramble	*Rubus fruticoses agg..*	A
Green alkanet	*Pentaglottis sempervirens*	F
Greater celandine	*Chelidonium majus*	F

8.3. Appendix 3: Site photographs

Photograph 1: Amenity grassland

Photograph 2: Scattered trees

Photograph 3 and Target Note 7: Scrub and scattered trees

Photograph 4: Introduced shrubs

Photograph 5 and Target Note 1: Residential buildings with gap under hanging tiles

Photograph 6: Residential buildings

Photograph 7: Garage block

Photograph 8 and Target Note 8: Allotment plot

Target Note 4: Gap under capping tile near vent

Target Note 6: Gap under gable end where mortar has fallen out

8.4. Appendix 4: Bird box recommendations

Bird box recommendations

A large number of bird boxes are available, designed for the specific needs of individual species. These are normally either designed to be mounted onto trees, external walls or integrated into a building. In general, bird boxes should be mounted out of direct sunlight and prevailing winds, out of reach of predators, with suitable foraging habitat for the subject species close by. Bird boxes should also be left up over winter as they can provide useful roosting sites for birds in bad weather.

Nest boxes should be cleaned at the end of each bird breeding season. All nesting material and other debris should be removed from the box. It should then be scrubbed clean with boiling water to kill any parasites (avoid using any chemicals). Once the box is clean, it should be left to dry out thoroughly. Under the Wildlife and Countryside Act 1981 it is an offence to disturb breeding birds and therefore annual cleaning is best undertaken from October to January when there is no risk of disturbing breeding birds.

Generalist boxes

Boxes to attract garden birds and woodland breeding species such as tits, nuthatch, redstart and pied flycatcher can be placed in gardens, orchards, woodlands and a wide variety of other habitats. The species of birds attracted to the box will depend upon the size of the entrance hole (see table below).

Boxes should be fixed two to five metres up a tree or wall, out of the reach of predators such as domestic cats. Unless there are trees or buildings, which give permanent shelter, it is best facing between north and east.

General		
Example	**Description**	**Picture**
1. Bird Brick Houses Integrated bird box	http://www.birdbrickhouses.co.uk/brick-nesting-boxes/integrated-bird-box/ Integrated into outside skin of 75mm and most 3” brickwork courses. Comes with a variety of hole sizes to suit particular bird species (see below).	
Entrance Hole	**Species**	

28mm	Blue-, Marsh-, Coal- and Crested Tit, Wren.	
34mm	Great-, Blue-, Marsh-, Coal- and Crested Tit, Nuthatch, Pied Flycatcher, House Sparrow	
40mm	Redstart and Black Redstart	
50m	Starling	
60m	Spotted Flycatcher	
2. Schwegler No. 1B General Purpose Nest box	www.schwegler-nature.com Suitable for various garden and woodland birds, created with different sized entrance holes to avoid competition between species. Other variations (e.g. 2M) can be free hanging, to deter predators.	

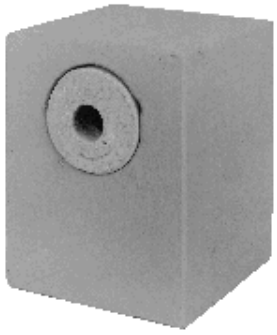
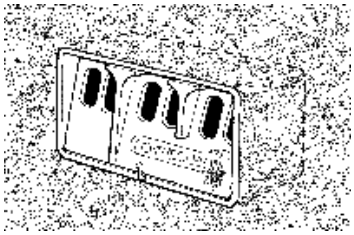
Entrance Hole	**Species**
26 mm	Blue-, Marsh-, Coal- and Crested Tit, possibly Wren. All other species are prevented from using the nest box due to this smaller entrance hole
32 mm	Great-, Blue-, Marsh-, Coal- and Crested Tit, Redstart, Nuthatch, Pied Flycatcher, Tree and House Sparrows.
Oval	Redstart; also used by species that nest in the diameter 32 mm boxes. However, because more light enters the brood chamber, it is preferred by Redstarts.

House Sparrow boxes

House Sparrow typically nest in loose colonies of around 10-20 pairs and, as they do not defend a territory, boxes can be placed as close as 20-30cm apart. Several individual boxes can be placed together or a terrace (see below) can be installed. House Sparrow's typical range is less than 2km; however, during breeding season adult birds will forage within just 60–70 m metres of their nest site with residential gardens, with native deciduous shrubbery, trees and grassland being favourable foraging habitat

The brick design box can be incorporated into the building or attached the outside of the building. Ideally the box will be placed at soffit/eaves level or at least 2m high.

The ideal nest box for this species will be approximately 350mm (h) x 150mm (w) x 150mm (d) with a hole approximately 32mm in diameter.

House Sparrow		
Example	**Description**	**Picture**
Schwegler Brick Box Type 24	(www.schwegler-nature.com) This brick design can be built into the wall of the new development and the external surface, excluding the hole, can be rendered to match the surrounding wall.	
Schwegler Sparrow Terrace 1SP	www.schwegler-nature.com A multiple nest site for this species which can be mounted into or on the external surface of the wall.	 

Starling boxes

Starlings are often found in areas where there are established pasture fields close to their roosting site, with further foraging provided by hedges close by.

The nest box should be placed at soffit/eaves level, or at a similar height on a tree, and should not be situated closer than 3m to the ground. Although Starlings do not defend a territory, boxes should be spaced at least several metres apart.

The ideal nest box for Starlings is approximately 400mm (h) x 180mm (w) x 180mm (d) with a hole approximately 45mm in diameter.

Starling		
Example	**Example**	**Example**
Schwegler Starling box 3S	www.schwegler-nature.com Can be mounted on buildings or trees, ideally out of direct sunlight.	

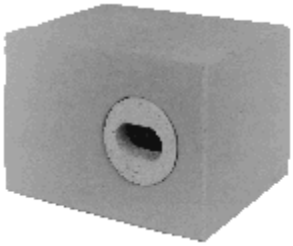
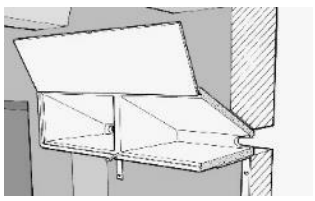
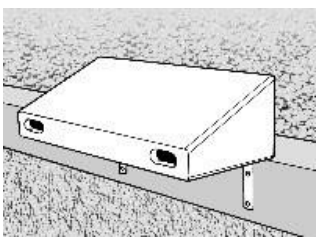
Swift boxes

Swifts are colonial nesters and it is important to have several nest sites in one area. It is recommended that most buildings should have between 4 and 10 nest provisions. Swifts also feed almost exclusively on the aerial plankton of flying insects and airborne spiders of small to moderate size, so therefore require habitats which support these invertebrates.

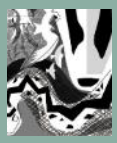
Nest boxes designed for Swifts should be installed at least 5m high, around the eaves of the building or under deeply overhanging eaves to allow Swifts to drop into the air to forage. The boxes should be positioned away from climbing plants to avoid access for predators such as rodents.

Swifts typically nest in flat spaces within buildings or within a crevice or cavity. The ideal nest box should have an oval or rectangular hole around 30mm (h) x 65mm (w). The internal dimensions of the box should be approximately 400mm (w) x 200mm (d) x 150mm (h).

Swifts can be attracted to areas that they have not previously colonised using 'Swift response calls'. Audio CDs are available for this purpose and are available on the Schwegler website (www.schwegler-nature.com).

Swift		
Example	**Description**	**Picture**
Ibstock Swift Box	www.Ibstock.com This Swift brick can be built into a wall on new buildings.	
Schwegler Brick Box Type 25	www.schwegler-nature.com This brick design can be built into the wall of the new development and the external surface, excluding the hole, can be rendered to match the surrounding wall.	
Schwegler Swift Box Number 18	www.schwegler-nature.com This Swift Box No. 18 is ideally suited for creating Swift colonies under overhanging eaves.	
Schwegler Delta Shaped Swift Box	www.schwegler-nature.com This wedge-shaped box can be installed at a number of different sites inside or outside buildings. For example, boxes can be attached inside roof spaces and swifts will find their way into the boxes through existing ventilation apertures or other openings in buildings. Outside buildings boxes can be attached to walls, placed on top of flat roofs or under overhanging eaves.	  

Swift		
Example	**Description**	**Picture**
Schwegler Swift and Bat Box 1MF	www.schwegler-nature.com This box contains two nesting chambers for Swifts, each with its own entrance, allowing two pairs to breed. In addition a recess in the rear panel creates a space between the wall of the building and box, making it ideal for bats that inhabit buildings, such as the Pipistrelle.	



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