

Meadow School, Royal Ln, Uxbridge UB8 3QU.

Preliminary Ecological Assessment & Mitigation Plan



Meadow School - PEA Report
EHM Ltd

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1. Introduction

EHM Ltd has been commissioned to carry out a Preliminary Ecological Assessment of a part School located in Hillingdon, Uxbridge. This report will provide an assessment of the site reporting on the current conditions of the habitats present and their potential to support protected and notable species. Details of any relevant mitigation will be outlined.

1.1. Project outline

EHM Ltd understands that the proposed development will involve the demolition of the existing school buildings and development of new school buildings and landscaping.

1.2 Site Description

The site is split into two sections, east and west, and are part of an active school site. The surrounding school is in the process of being re developed. The east section of the site is the main school area containing several prefabricated buildings and hardstanding. The west section has a part of the newly constructed running track and sports field, to the north of which lies a small grass and scrub area with several mature trees. Just outside the west-most boundary there is a strip of scrub and mostly young trees, beyond which lies a large amenity grass field.

A small wildlife garden is located in the northeast corner. This has been recently mown. Comprised mostly of short amenity grass. There is a rotten tree stump here, as well as a small brash pile to the north of B6, a soil and vegetation pile northeast of B7 with the remnants of a pond next to this. There appear to be foxes commuting under the fence in the northeast-most corner, likely going under buildings B6 and B7 where substantial holes were seen

Directly north, east and south there are residential areas and a hospital. Directly west lies Philpots Farm open space and the River Pinn beyond this (290m west). The Grand Union Canal lies 1.3km west and beyond this is the River Colne. Colham Green lies 200m to the east.

The site (as shown on figure 1) is located in Uxbridge, London; TQ 06425 81686 and TQ 06544 81710. The area shown in figure 1 is larger than the development area.

1.3 Aims of PEA

The aim of the PEA is to;

- Identify the likely ecological constraints associated with a project;
- Identify any mitigation measures likely to be required, following the 'Mitigation Hierarchy'
- Identify any additional surveys that may be required to inform an Ecological Impact Assessment (EcIA); and
- Identify the opportunities offered by a project to deliver ecological enhancement.



Figure 1: Approximate boundary of the site.

2. Methods

2.1. Site Visit

EHM undertook a site visit on the 22nd of October 2022. This was to carry out a walk over of the site, determining the basic habitats present and their current condition. The potential for these habitats to support protected and notable species was also recorded. The site visit was carried out by an experienced ecologist who is able to appropriately identify habitats and assess their quality and suitability to support species.

The methodology followed that of an Extended Phase 1 Habitat Survey following the methodology of JNCC (1993) as modified by IEA (1995). The Phase 1 Habitat Survey is a standard technique for classifying and mapping British habitats. The aim is to provide a record of habitats that are likely to be ecologically important.

2.2 Protected Species

The following evidence of protected species or habitats to support them was assessed;

Badgers

Evidence of badger activity on site was assessed by searching for:

- Presence of setts, indicated by suitably sized holes or burrows with evidence of badgers such as badger hair and footprints
- Evidence of well runs supported by secondary evidence such as foraging signs or footprints; and
- Presence of badger latrines

Bats

The site was assessed for its potential to support:

- Roosting bats; and
- Foraging and commuting bats.

Features which could indicate a potential bat roost include:

- Holes and fissures in trees; and
- Gaps in buildings that could allow access to areas such as roof voids, e.g. holes in soffits, broken, loose or missing tiles, damaged lead flashing, etc.

The methodology for assessing bat roost potential followed that recommended by the Bat Conservation Trust¹.

Breeding birds

¹ Collins, J. (ed) (2016). Bat Surveys for professional Ecologists; Good Practice Guidelines (3rd edn). The Bat Conservation Trust, London.

The site was assessed for its potential to support nesting and breeding birds, considering factors including sufficient habitat cover and food sources.

Dormice

The site was surveyed for suitable dormouse habitat, such as the presence of a well-connected understorey broadleaf habitat, and suitable food sources such as hazel, oak and other nut-bearing trees, fruiting trees and shrubs, flowers and invertebrates. Where hazel nut shells were found, these were inspected for evidence of dormouse feeding.

Aquatic mammals

Aquatic habitats were assessed for their potential to support aquatic mammals such as Otter or water vole. Signs including; foot prints, droppings and evidence of feeding were searched for.

Reptiles

The site was assessed for its potential to support reptile populations. Suitable habitat for reptiles includes long grass, scrub, woodland and hedgerow borders and wood/rubble piles that act as hibernacula.

Amphibians

Any aquatic habitat was assessed for its potential to support amphibian species, including Great Crested Newts. Any ponds on site were assessed, using the Habitat Suitability Index, for its potential to support Great Crested Newts. Terrestrial habitat was also assessed for its ability to support amphibians.

Other species

The site was assessed for its potential to support other notable species.

2.3 Desktop Study

In conjunction with the site visit a report was compiled of relevant ecological records within 1 km of the site. This provided details of protected and notable species in the area which will help inform the potential of the site to support such species. The report from Greenspace Information for greater London (GIGL) also provides details of protected sites within a 1 km radius of the site. Magic.gov.uk was also reviewed for additional relevant protected species and habitat information.

2.4 limitations

The contents of this report are based on a single site visit and a search of the local records bureau. Though the survey and interpretations of the data were carried out by a competent ecologist there may be things that have been overlooked or missed.

2.5 Relevant Legislation and Planning Policies

A full list of UK wildlife legislation and designations can be seen in the appendix. Relevant legislation implications for this site include;

- The Conservation of Habitats and Species Regulations 2010 (as amended);
- The Wildlife and Countryside Act 1981 (as amended);
- The Countryside and Rights of Way Act 2000;
- The Natural Environment and Rural Communities Act (NERC Act) 2006;
- Environment Act (2022)

Planning policies, both local and national, may affect any proposed development. Relevant planning policies to this development include;

- National Planning Policy Framework (NPPF)

3. Results

3.1 Habitats

The location and extent of the habitats are shown in figure 1. TN refers to a target note and the habitat codes refer to the Phase I habitat classification. CIEEM guidance recommends that the value or potential value of an ecological resource or feature should be determined within a defined geographical context². It recommends the following frame of reference;

- International;
- UK;
- National (i.e. England/Northern Ireland/Scotland/Wales);
- Regional;
- County (or Metropolitan - e.g. in London);
- District (or Unitary Authority, City, or Borough);
- Local or Parish; and
- Site
- Within zone of influence only (of habitat).

The habitats will be assessed based on these criteria.

Building (J3.6)

The site contains 11 buildings and structures, nine in the west section and two on the east section. These are described below:

- B1: Two small plastic storage sheds adjacent to watch other. Both have a pitched roof, but unlikely to have roof voids.
- B2: Single level prefabricated raised building with a slight pitch to the roof for water runoff. The roof appears to be metal material.
- B3: A single level log cabin style structure with a pitched roof lined with roofing felt. No roof void (seen through a window).
- B4: A single level log cabin style structure with a pitched roof lined with roofing felt. No internal inspection and the windows were covered so it is not known if there is a roof void - it is unlikely as this is a similar structure to B3.
- B5: A prefabricated single level raised building with a slight pitch to the roof cladded using several different types of plastic materials.
- B6: Single level prefab building with a flat roof lined with roofing felt.
- B7: Single level green prefab raised building with a slight pitch to the roof, which appears to be metal lined.
- B8: A single level green prefab raised building with a flat roof lined with metal. The outside layer has been damaged and the wood beneath has become like a sponge.

² GUIDELINES FOR ECOLOGICAL IMPACT ASSESSMENT IN THE UNITED KINGDOM. IEEM. June 2006.

- B9: Small storage structure made with breeze blocks with a flat roof lined with roofing felt.
- B10 - a small brick structure with a flat sloped roof. Believed to be a utilities store due to pipes seen coming from the ground and into the building on the south face. Wooden fascia lined the top edge of the building with gaps underneath all around. The fascia in the southeast corner was coming away from the building.
- B11 - a polytunnel covered with plastic sheeting over a metal frame. This is used as an outdoor classroom.

As will be discussed the buildings were assessed for their potential to support protected and notable species. The buildings are considered as having a benefit at a site level.

Hardstanding (J3.5)

Makes up the majority of the east of the site in the form of a playgrounds and footpaths. The areas of hardstanding provide little opportunities for wildlife and are considered as having a benefit at a zone of influence level.

Amenity Grass (J1.2)

Several patches of amenity grass are located across the site. The wildlife garden to the northeast contained a section along the northern fence line may have been scrub, however this area had recently been mown short. The newly created sports field to the southwest was kept short. To the north of the sports field was an area of amenity grass that wasn't recently mown, but was still relatively short at the time of the survey. Several other small patches of amenity grass are in the southeast corner.

Species include perennial ryegrass (*Lolium perenne*), dock (*Rumex sp.*), narrow leaved plantain (*Plantago lanceolata*), sow thistle (*Sonchus* species) and Creeping buttercup (*Ranunculus repens*).

The grassland contains a relatively short sward that provides little opportunity for protected and notable species. The amenity grassland is considered as having a benefit at a site level.

Introduced Shrub (J1.4)

Small areas of introduced shrubs are located around the buildings at the centre and northeast of the site. A small planted garden is located along the north boundary, at the centre, with a brick footpath lined with planted shrubs. Species include bamboo and laurel with some yew in between

The denser areas may provide some nesting bird opportunities. The introduced shrubs are considered as having a benefit at a site level.

Mixed Scattered Trees (A3.3)

The site contains several scattered trees including mature trees. Majority of the trees are located in the amenity grass area to the northwest - here there are several mature trees with bird and bat boxes on them (TN1). There are also two small dead standing trees along the northern boundary. Species include Oak (*Quercus robur*), common beech (*Fagus sylvatica*), Silver Birch (*Betula pendula*), Yew (*Taxus baccata*) and cherry (*Prunus sp.*).

There were also several mature and young trees across the eastern section. In the southmost part of the east section there are three mature trees surrounded by amenity grass. There is also a mature tree along the eastern boundary, three young trees to the north of the eastern boundary, and a single mature tree in the garden to the northeast. Two young Hornbeam (*Carpinus betulus*) have been newly planted in the planted areas to the northwest of the eastern section. Species noted where cherry (six of the trees), hornbeam and a single ash.

Some of the larger trees have the potential to support protected and notable species and provide connectivity across the local landscape. The scattered trees are considered as having a benefit at a local level.

Scrub (A2.2)

A pocket of scrub is located in the northwest corner of the site, this is sparse and has encroached the site from outside the fence line, growing around the scattered trees. The scrub outside the western fence line is dense and has several young/sapling trees within, as well as several brash piles. Species include Bramble (*Rubus fruticosus*), ivy (*Hedera helix*), nettle (*Urtica dioica*), buddleia (*Buddleia davidii*) and Holly (*Ilex aquifolium*).

Several small areas of scrub, mostly between buildings B2 and B3, a pile of wood planks was noted within the scrub along the west boundary (TN1). Species included bramble, nettle (*Urtica dioica*), Ivy (*Hedera helix*), Blackthorn (*Prunus spinosa*) and Field Maple (*Acer campestre*).

The scrub is likely to provide nesting bird opportunities and provides an increase in native plant species on site. The scrub is considered as having a benefit at a site level.

Summary

The table below summaries the habitats on site and their value within a geographical context.

Habitat	Value	Comments
Hardstanding	Zone of Influence	The areas of hard standing provide little opportunities for wildlife.
Building	Site	Several buildings and structures on site.
Amenity grassland	Site	Several areas of short mown grassland with limited opportunities for protected and notable species.
Scattered trees	Local	A number of trees scattered across the site, some of which are mature. Some of the trees may support protected and notable species.
Introduced shrubs	Site	Small sections of ornamental shrubs.
Scrub	Site	Sections of mostly sparse scrub.

Table 1: Summary of value of habitats present on site.

3.2 Species Desktop Results

Local Biological Records

A recent biological record bureau search from SxBRC produced records of protected and Species of Conservation Concern (SoCC) within 1 km of the site. Table one below summarises the key species groups and protected areas within these results. A full list of the species can be seen on request.

Protected species are those listed on EC Habitats Directive- Annexes II and IV, EC Bird Directive- Annex I, Conservation (Natural Habitats) Regulations 1994- Schedules 2 & 5, NERC 2006 Section 41, Wildlife and Countryside Act 1981 (as amended)-Schedules 1, 5 & 8, Protection of Badgers Act 1992. Notable species are categorised as being a: BAP priority National, Red list species (not least concern) and or Red status bird species, Red Data Book Species, NERC species. Legislation and BAP designation are explained in the appendix.

Sites and Habitats	Present/Absent	Details		
Statutory sites	Absent	There are no statutory protected areas within 1 km of the site.		
Non Statutory sites or Local Wildlife Sites	Present	There are 4 SINCS within 1 km of the site.		
Ancient Woodland	Absent	There is no ancient woodland within 1 km of the site		
Priority Habitats	Present	Several areas of priority habitats are present within 1 km.		
Protected and Notable Species	Number of species	Number of records	Date of nearest record	Date of recent record
Amphibian Species	1	6	1999	2002
Reptile Species	1	2	2021	2021
Invertebrate species	8	191	2015	2015
Terrestrial Mammal Species (excl. Bats)	2	24	2018	2019
Bat Species	8	65	2019	2020
Bird Species	24	91	2002	2019
Plant Species	2	3	2004	2024

Table 2: Summary of protected areas and species (within last 10 years) information

Other Desk Top Results

Additionally, the Natural England resource; Magic map³, was consulted for any granted protected species licences that may be in the area. The closest licence is located approximately 1.2 km to the north east of the site and relates to great crested newts (*Triturus cristatus*).

³ www.magic.gov.uk

3.3 Species Site Assessment

The table below summarises the sites potential to support protected and notable species. This is based on the site surveys and desktop study. Designations for potential are as follows;

- High- Definite signs of species identified on site and habitat considered suitable
- Medium/ moderate- habitat considered suitable but obvious signs not necessarily detected
- Low- no obvious signs and habitat considered sub-optimal. Though species may be present
- Negligible- highly unlikely that species is present

Species	Desktop results	Suitability on Site	Potential
Bat foraging/ Commuting Habitat	The GIGL data provides records of bats within the local area including; serotine (<i>Eptesicus serotinus</i>), Noctule (<i>Nyctalus noctule</i>), common pipistrelle (<i>Pipistrellus pipistrellus</i>), soprano pipistrelle (<i>Pipistrellus pygmaeus</i>) and brown long-eared bat (<i>Plecotus auratus</i>). The closest record is located 206m to the southwest of the site.	All bat species in the UK eat insects and forage along habitats such as hedgerows, woodlands, grasslands and waterways ⁴ . Bats use woodland edges, hedgerows, rivers and other linear features like tree-lined footpaths as corridors to commute from one area of countryside to another ⁵ . The scattered trees and scrub across site but particularly to the west provide suitable foraging and commuting opportunities. These habitats have connectivity for areas where bats have been recorded.	Moderate
Bat roosts Building	The Magic map shows granted EPS licences within 4km of the site to the north in Uxbridge and south in Harmondsworth. Would indicate that bats are within the local area	Buildings are known to provide suitable roosting opportunities for a number of bat species ⁶ . An external inspection of the buildings on site was carried out to assess their potential to support bat roosts, following Bat conservation trust guidelines ⁷ . The buildings on site generally contained little in the way of potential roost features. However some small features were identified in B3- B8 that that were inspected and found not to provide a suitable roost feature or any evidence noted.	Negligible
Bat Roost Trees		All trees were inspected for assessed for any Potential Roost Features (PRFs). The bat conservation trust provides information regarding features that may be present in trees that bats could potentially use for roosting (see figure 3) ⁸ . The only trees with any PRFs were the large Oaks and beech trees in the northeast corner of the site and an Ash tree to the south east.	Low (identified trees)

⁴ <https://www.bats.org.uk/about-bats/where-do-bats-live/bat-habitats/foraging-habitats>

⁵ <https://www.bats.org.uk/about-bats/where-do-bats-live/bat-habitats/commuting-habitats>

⁶ Bats and Buildings. Bats and the Build Environment Series. Bat Conservation Trust. January 2012.

⁷ Collins, J. (ed) (2016). Bat Surveys for professional Ecologists/; Good Practice Guidelines (3rd edn). The Bat Conservation Trust, London.

⁸ http://www.bats.org.uk/pages/bat_roosts.html#TreeRoosts

Species	Desktop results	Suitability on Site	Potential
Badgers	The GIGL data did not produce any records of Badgers within vicinity of the site.	The site was investigated for evidence of Badger (<i>Meles meles</i>); setts or signs such as tracks, hair or latrines. No badger setts or other signs of badger were noted on site. Possible suitable badger habitat in local area particularly bordering west of site.	Low
Small mammals	Local records of Hedgehog. The closest record being 326m to the south of the site.	Hedgehogs prefer habitats such as woodland edges and hedges as well as suburban areas ⁹ . No direct evidence of this species, potential habitat in hedgerows, shrubs and scrub site.	Low
Dormouse	No local records of this species or granted licences on the magic map.	No evidence of dormice (<i>Muscardinus avellanarius</i>) activity, such as feeding remains or nests was observed on site. Across its range dormice prefer the successional stage of woody vegetation; this is the new growth that arises after woodland management such as coppicing, ride widening, thinning or glade creation, they may also occur in scrubby habitat ¹⁰ . No suitable habitat on site.	Negligible
Reptiles	There are records for Slow-worm (<i>Anguis fragilis</i>) within proximity of the site. The closest record is located within 500m to the west of the site.	Reptiles prefer sites with a diversity of habitats containing a number of micro habitats that provide suitable foraging and refuge sites ¹¹ . The site in general lacks suitable habitat for reptiles, the grassland in the north west corner provides some suitability and is connected to wider open areas.	Low
Great Crested Newt	There are local records of GCN within proximity to the site. The magic map showed granted EPL licences within 1 km.	The European protected species Great Crested Newt (<i>Triturus cristatus</i>) require both suitable aquatic habitats for breeding and terrestrial habitats to forage and shelter during the active season and hibernate over winter ¹² . There are no suitable waterbodies on site and the terrestrial habitat is considered sub-optimal.	Negligible.
Common Amphibians	The GIGL data provides records of common amphibians such as Common Frog (<i>Rana temporaria</i>).	Though there are no aquatic habitats on site the terrestrial habitats on site provide some suitability though this is likely limited to the north west corner.	Low
Nesting Birds	There are several records of notable bird species within proximity of the site.	The site has potential to support nesting birds particularly the scattered trees, hedgerows, scrub and shrubs.	Moderate.
Invertebrates	The GIGL data provides some records of notable invertebrates. Including stag beetles (<i>Lucanus cervus</i>) and several butterfly species.	In general the habitats on site lack the structural complexity required to support notable invertebrates. Some of the mature trees and scrub habitats may attract stag beetles.	Negligible.

Table 3: Summary of protected and notable species information

⁹ http://www.mammal.org.uk/sites/default/files/factsheets/hedgehog_complete_0.pdf

¹⁰ <https://ptes.org/get-informed/facts-figures/hazel-common-dormouse-muscardinus-avellanarius/>

¹¹ Edgar, P., Foster, J. and Baker, J. (2010). Reptile Habitat Management Handbook. Amphibian and reptile Conservation, Bournemouth

¹² Great crested newt mitigation guidelines. August 2001. English Nature.

3.4 Protected Areas

Statutory protected Areas

There are no statutory protected areas within 1 km of the site.

Non statutory protected areas

There are four Sites of Importance for Nature Conservation (SINCs) within 1 km of the site (figure 2). SINCs are recognised by the Greater London Authority and London borough councils as important wildlife sites. The closest is River Pinn and Manor Farm Pastures (HIBII07) which is located to the west and south west of the site but does not boarder the site directly. This stretch of the River Pinn is bordered on both sides by open grassland, much of which comprises rank grasses and tall herbs with scattered scrub, although some of it is managed as sports fields.

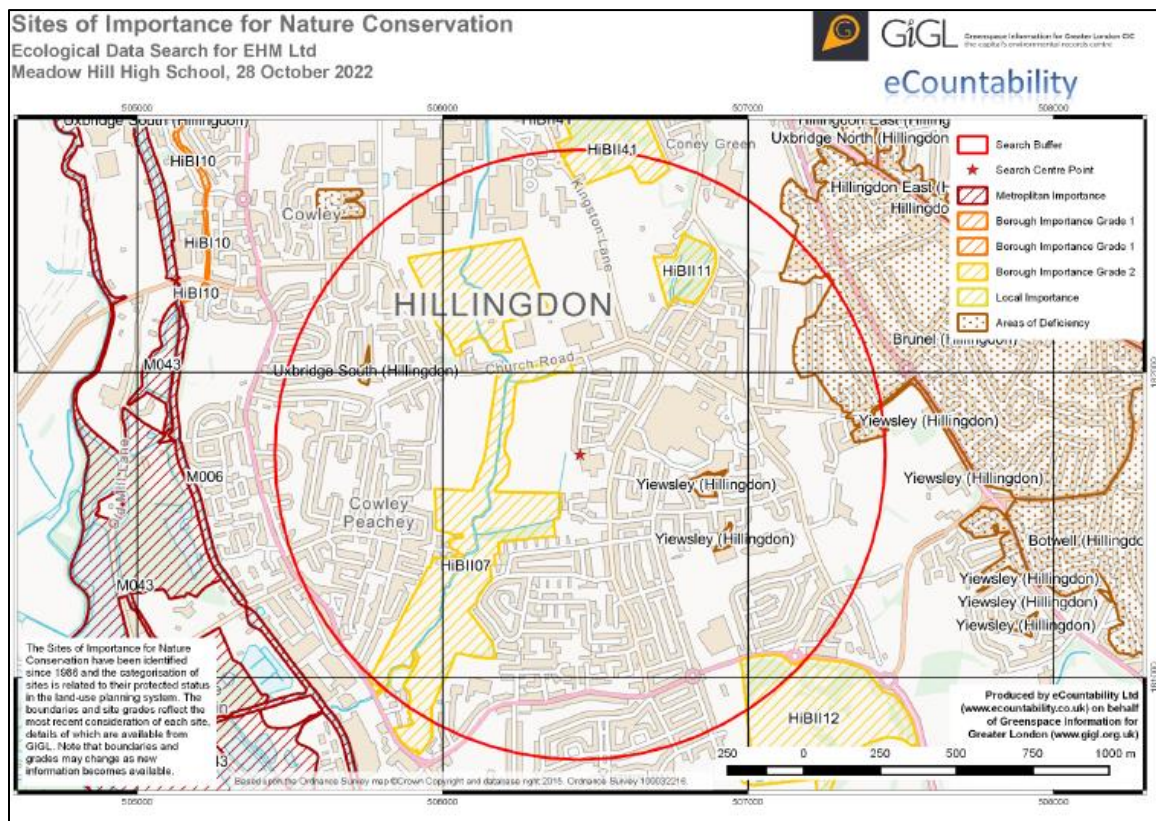


Figure 2: Location of statutory and non-statutory protected areas, (from GIGL).

Priority Habitats

The local landscape contains areas of priority habitats including pockets of deciduous woodland. The closest area is located within 200m to the west of the site which is also part of the SINC site in this area.

4 Discussion

The following sections consider the effects on protected areas, priority habitats, protected species, notable species, and habitats on site. Recommendations for additional surveys and or enhancements are made as necessary.

4.1 Effects of Designated Sites

The development is unlikely to directly impact any designated sites due to the distance from the site. A SINC site is located close to the south and west of the site but does not directly boarder it. General pollution control measures are recommended below to help ensure any residual impacts are limited. The retention of the trees and scrub along the western boundary will also help to provide a buffer for the site.

4.2 Effects on Priority Habitats

The development is unlikely to impact areas of priority habitat. By following the general protection measures set out below any indirect impacts will be minimised.

4.3 Effects on Habitats on Site

As can be seen in appendix 2 the development will largely occur on the areas of existing buildings and hardstanding. Some areas of introduced shrubs and amenity grassland will be disrupted though these are considered to be of a relatively low ecological value. The larger areas of trees and grassland to the west of the site will be retained and not directly impacted. These areas will be protected during construction.

Any retained trees should have adequate root and crown protection.

The development provides an opportunity for additional habitat enhancements.

4.4 Effects on Protected and Notable Species

4.4.1 Bats

The buildings on site are not considered likely to support a bat roost. Therefore, additional bat surveys are not recommended at this time.

It should be noted that bat absence is very difficult to prove definitively due to their mobility and size, and single or small numbers of bats are able to roost in extremely small spaces, such as in gaps between panels. The development work should be undertaken with care, for example with roof tiles lifted rather than dragged. If during development works a bat (or an accumulation of bat droppings) is discovered at any time, work is to temporarily cease whilst an experienced bat ecologist is contacted for guidance and assistance. This can be the Bat Conservation Trust (BCT) helpline (0845 1300 228).

If any mature trees are to be removed this should be subjected to an updated aerial survey. The aerial surveys should follow BCT guidelines and be carried out by an experienced and licensed ecologist. Trees are likely to require to be soft felled; felled in sections and lowered to the ground. With the cut sections left in situ overnight.

The site is considered as having potential to support bat foraging and commuting habitat. This is mainly around the western edge of the site consisting of scattered trees and scrub. It is recommended that the boundary vegetation, including scattered trees are retained within the proposal to avoid impacts on commuting and foraging bats over the site. If any of these features are to be removed, they should be replaced with suitable alternative habitats such as hedgerows within the final design, to reduce the proposals impact on commuting and foraging bats.

Furthermore, a sensitive lighting scheme should be incorporated into the final design to protect these edge habitats and any newly created habitats on the site. To protect potential roost or bat foraging/ commuting habitat in the area it will be important to;

- Avoid illuminating the wider habitats on site, particularly the scrub, scattered trees, at dusk or night time- Guidelines provided by the Bat Conservation trust and ILP should be followed¹³
- Limit work to daylight hours
- Limit noise disturbance and other forms of pollution such as dust
- Maintain the wider habitats on site
- Lighting should also be considered post-development with any external lighting positioned so as not to illuminate potential foraging or commuting habitats.

4.4.2 Badgers

Though no evidence of badgers was seen during the site visit, to help ensure badgers are not harmed during the development the following actions are recommended:

- To prevent badgers becoming trapped in open earth works or excavations that any excavations, that are to be left overnight, should either be covered over or a board placed securely within the excavation that allows access from the bottom of the excavation to the ground level.
- All excavations and trenches should be inspected each morning before works commence. If a badger is found trapped on site the ecologist or local badger group/ RSPCA should be contacted.
- Any loose or soft material such as topsoil should be covered overnight and when not in use to discourage their use by badgers as potential setts. Any mounds should be inspected daily to ensure badgers have not established a sett. If a potential sett is discovered an ecologist should be consulted immediately and the area not disturbed.
- If pipework (over 120mm in diameter) is stored on site the ends should be covered and inspected before use.
- Chemicals will be stored in a secure/ bunded container to avoid disturbance by badgers

¹³ <https://www.theilp.org.uk/documents/guidance-note-8-bats-and-artificial-lighting/>

Retention of the scrub habitats around the periphery of the site will ensure suitable corridors for this species are maintained.

4.4.3 Small Mammals

Small mammals such as hedgehogs may be present on the site. Retaining the sections of the scrub habitat on the site will help retain potential habitats for this species as well as providing connectivity across the local landscape. If any scrub or shrub habitat is required to be removed this should be cleared systematically by hand and cut down to ground level. Any debris such as log or brush pile should be dismantled by hand and removed. This will allow any animals present to leave the work area safely.

4.4.4 Dormouse

The habitats on site are not considered likely to contain this species. Therefore the proposed development is unlikely to have any direct impacts. No additional surveys or recommendations are made with respect to this species.

4.4.5 Aquatic Mammals

The site is not considered likely to support aquatic mammals.

4.4.6 Reptiles

The site is considered as having a low potential to support reptiles. Suitable habitat is predominately located on the west of the site within the grassland and scrub. The development will largely occur in areas of existing hardstanding and buildings. This is unlikely to impact reptile habitats. If any vegetation is required to be removed this should be cut down by hand in stages to allow any reptiles to safely leave the work area.

4.4.7 Amphibians

The site is considered unlikely to support the European Protected Species Great Crested Newt. No ponds are on the site and there are no records of GCN within 1 KM of the site. GCN typically inhabit terrestrial habitat within 100m of a breeding pond¹⁴. The terrestrial habitats on site are not considered likely to support GCN. The potential impacts to GCN habitat are considered to be negligible.

The site has potential to support terrestrial habitats of common amphibians. By clearing any ground vegetation in stages will insure any amphibians present will be able to safely leave the work area.

4.4.8 Birds

To ensure breeding birds are not impacted any buildings, trees, scrub or shrubs that may require removal should be removed outside of the breeding bird season, this typically runs from March to September. If vegetation/ buildings require removal during the nesting bird season the area

¹⁴ HERPETOLOGICAL JOURNAL, Vol. 10, pp. 137-142 (2000). THE TERRESTRIAL SUMMER HABITAT OF RADIO-TRACKED GREAT CRESTED NEWTS (*TRITURUS CRISTATUS*) AND MARBLED NEWTS (*T. MARMORATUS*). Robert Jehle.

should be subjected to a survey by an experienced ecologist. If there are any nest sites located within the work area a suitable exclusion zone will have to be established until the chicks have fledged. All bird nests are protected in the Wildlife and Countryside Act (see appendix).

Additional planting and inclusion of nest boxes would help replace any potential loss in nesting habitat.

4.4.9 Invertebrates

Retention of scattered trees will help maintain suitable habitats on site for invertebrates. Inclusion of log or brush piles is also recommended in retained habitats. Post development planting could also be used to provide enhancements to invertebrate species.

4.5 General Ecological Protection Measures

The site is located within proximity of priority habitats. The following measures are suggested to help minimise the impact to these areas;

- Establish a biodiversity protection zone around retained habitats. This will encompass the retained trees, scrub and grassland to west of site. All construction personnel and materials will be excluded from this area; these areas should be clearly marked on site.
- Suppression and monitoring of dust where relevant.
- Control sources of aquatic pollution, particularly from entering local water courses or ground water.
- All proposed work must strictly be in accordance with all relevant Pollution Prevention Guidelines (PPG) published by the Environment Agency which may include but is not limited to PPG1 (general), PPG5 (works in, near, or liable to affect watercourses) and PPG6 (work at construction & demolition sites). Contingency plans should be drawn up to address chemical spillage, collision, etc.

5 Ecological Enhancement Measures

The plan in appendix 2 shows the proposed landscaping enhancements for the site post development. This shows that additional planting will be incorporated into the development, this will include;

- Tree planting
- Shrub Planting
- Woodland edge planting
- Ornamental planting/ sensory planting
- Grass seeding
- Rain garden planting
- Hedgerow planting

Additional habitat features will also be incorporated such as;

- Bird and Bat boxes
- Log piles

Existing habitats will be enhanced through appropriate management.

Information below is provided as to how these enhancements should be implemented and what species could be used that will provide a local wildlife benefit.

A Biodiversity Net Gain Report will be produced for this project and an Urban Greening Factor calculation has been carried out (see appendix 3). This will help ensure a long-term benefit of the proposed enhancements.

5.1 Hedgerow, rain garden and shrub planting

Hedgerow and shrub planting will be carried out across the site. Recommendations on species and planting methodology are outlined below.

Site preparation

Areas for planting should be appropriately prepared.;

- All temporary surfaces (such as type 1) should be removed
- The ground should be level and evenly spread across the reinstated area
- All loose stones or debris should be removed
- Import of additional topsoil if required

Planting

Planting is best carried out in late winter. Planting should be carried out by competent horticulturalists.

- Plant whips in double staggered rows
- Trim off broken or damaged branches. If you are planting whips, trim damaged roots.

- Dig a hole deeper and wider than the root ball. Backfill the hole, gently firming the soil as you go. Ensure there are no air pockets around the roots. Incorporate plenty of well-rotted compost.
- Plant climbers in between at least 30 cm from the bottom of fence or wall.
- Avoid backfilling above the 'nursery line'. This is an obvious mark at the base of the plants stem, indicating the level at which the plant was originally grown.
- To cover a bare wall or fence, add trellis or wires before planting your climbers for support.
- With pot grown shrubs, check the roots are not tightly wound round inside the pot. This indicates the plant is pot bound and has been lying around the nursery for a long time.
- Cover the soil afterwards with mulch such as grass clippings or bark chippings.

Benefit of hedgerow and shrub planting

The aim of the proposed hedge planting is to create areas for wildlife to find suitable forage and shelter, such as birds and small mammals. The hedgerows and shrubs will also provide potential bat foraging and commuting habitat. The hedgerow habitats will help screen the site and provide connectivity across the site.

The use of mixed native species in the hedgerows will provide an additional benefit. The mixture of tree species will provide a variety of flowers for pollinators and fruits for birds and mammals. These will flower and fruit at different times of year.

The shrub species, though ornamental, will provide an additional nectar source as well as potential nesting habitat once established.

The rain gardens will help break up areas of hardstanding and provide areas where water run off can be stored and filtered back into the ground water. This will stop potential contaminants from impacted other habitats and reduce risk of flooding. The species in the rain garden will also provide additional floral species which will have a benefit for the site.

The sensory garden areas will provide additional floral planting. Some of these species will have a positive impact for pollinators.

Benefit of Woodland Edge Planting

The woodland edge planting will provide a scrubby woodland edge habitat. This will provide a buffer between the site and the habitats to the west and along with the proposed meadow areas will provide a well-structured habitat with micro habitat diversity.

The mixture of species includes mostly native species that will attract invertebrates which in turn will provide foraging opportunities for species such as bats. Once these areas mature they will provide habitat for nesting birds and small mammals.

5.2 Tree Planting

Scattered Trees

Scattered trees will be or have been added across the site. The proposed tree size is 1.8-2m clear stem.

Trees should be planted by adequately experienced and trained personnel. Trees should be planted using a correct industry standard such as;

- Plant trees when soils are moist and free from frost, the traditional tree planting period is November through to March.
- Dig the planting pit to the correct depth - recommend a planting pit no deeper than the container, unless you have specific issues with drainage throughout your site.
- The width of the planting pit should be a minimum of one and a half times as large as the root-ball/container and up to a maximum of two times as wide, if the soil is very compacted. This means that a root-ball of 40cm wide should be planted in a hole at least 60cm wide.

Trees will require adequate stacking and rabbit guards. Standard trees should be staked, to anchor the roots while they establish. These should be short stakes that protrude no more than 12 inches (30cm) above ground and are removed 12–15 months after planting. The stem must be allowed to sway in the wind to strengthen it and encourage the roots to spread. Tall staked trees develop thin stems and poor root systems and are thus more prone to wind damage.

Benefit of tree planting

The scattered trees will provide additional connectivity across the site and break up the urban nature. As the trees mature they will provide additional nesting bird habitat as well as foraging habitat for bats. The trees will also benefit invertebrate species.

The tree species, though not native, will provide opportunities for pollinators when they flower.

5.3 Grassland Creation

The landscape plan will create areas of grassland.

Ground Preparation

Endeavour to select ground that is not highly fertile and does not have a problem with perennial weeds. Good preparation is essential to success so aim to control weeds and produce a good quality seed bed before sowing.

To prepare a seed bed first remove weeds using repeated cultivation. Then plough or dig to bury the surface vegetation, harrow or rake to produce a medium tilth, and roll or tread to produce a level firm surface.

Sowing

Seed is best sown in the autumn or spring but can be sown at other times of the year if there is sufficient warmth and moisture. The seed must be surface sown and can be applied by machine

or broadcast by hand. To get an even distribution and avoid running out, divide the seed into two or more parts and sow in overlapping sections. Do not incorporate or cover the seed, but firm in with a roll, or by treading, to give good soil/seed contact.

Benefit of grassland

Some of the grassland will be of a lower value amenity grassland. This will provide some ecological value though is likely to be maintained as a short sward. The meadow grass areas will contain a high floral diversity that will attract invertebrates. This will be managed as a longer sward grassland which may attract species such as reptiles and amphibians.

5.4 Habitat Enhancement

Alongside the additional planting it is recommended that habitats on site be enhanced through appropriate management. This will predominantly be areas of grassland and woodland enhancement..

Woodland Enhancement

The area of scrub and scattered trees to the northwest will be managed and allowed to develop into a woodland habitat. This will primarily be achieved by natural colonisation:

- Allow scrub to develop under the existing tree canopy
- Periodically thin areas of bramble scrub to create some temporary open areas
- Once scrub begins to establish create some structural diversity by coppicing/ thinning areas. Follow woodland trust guidelines¹⁵.
- Add areas of deadwood.

Grassland Enhancement

The area of grassland to the northwest, to the north of the new running track, will be enhanced through management. This will involve leaving the grassland to grow throughout spring and summer and then cut and collected in autumn. The arisings can be piled on the edge of the woodland to create habitat piles.

The interface between the grassland and establishing woodland should be managed to create a diverse micro habitat, e.g. scalloped edges.

By allowing the sward to develop throughout the spring and summer and then cut and collecting in the autumn a more diverse sward will develop.

5.5 Additional Enhancements

As well as the planting and habitat management additional wildlife features will be added to the site.

¹⁵ <https://www.woodlandtrust.org.uk/media/50673/woodland-trust-woodland-creation-guide.pdf>

Bird Boxes

House sparrow boxes are recommended as there is a local BAP priority species and likely to be in the area. House Sparrows like to nest colonially, so one box on its own is unlikely to attract a breeding pair¹⁶. The below examples provide an example of the type of nest box preferred by house sparrows. Nest boxes should have a small hole (32mm) and be placed over 2m above the ground. These can be placed in suitable locations within the landscaping or incorporated on to the building. A minimum of 2 should be placed around the site and sited by a suitably knowledgeable person once construction is completed.



<http://shopping.rspb.org.uk/rspb-sparrow-terrace-nestbox.html>

Bat Boxes



The Schwegler Bat Box 2F is a good general purpose bat box that is used by species such as Noctules and Pipistrelles. Dimension of these boxes are;

Material: SCHWEGLER wood-concrete

Colour: Black, grey front panel

Dimensions: Ø 16 cm

Height: 33 cm

Weight: 3.8 kg

These bat boxes can be positioned on buildings or on trees. They are best positioned near existing habitat such as woodland or hedgerows, the North West corner of the wider site would be a suitable location. See bat conservation trust guidelines around positioning bat boxes¹⁷. Proposed 2 bat boxes be added to the site.

Log Piles

Create log piles, from site clearance works, in the north west corner of the site. This will provide additional ecological benefits.

¹⁶ <http://www.bto.org/about-birds/nnbw/nesting-birds/house-sparrow>

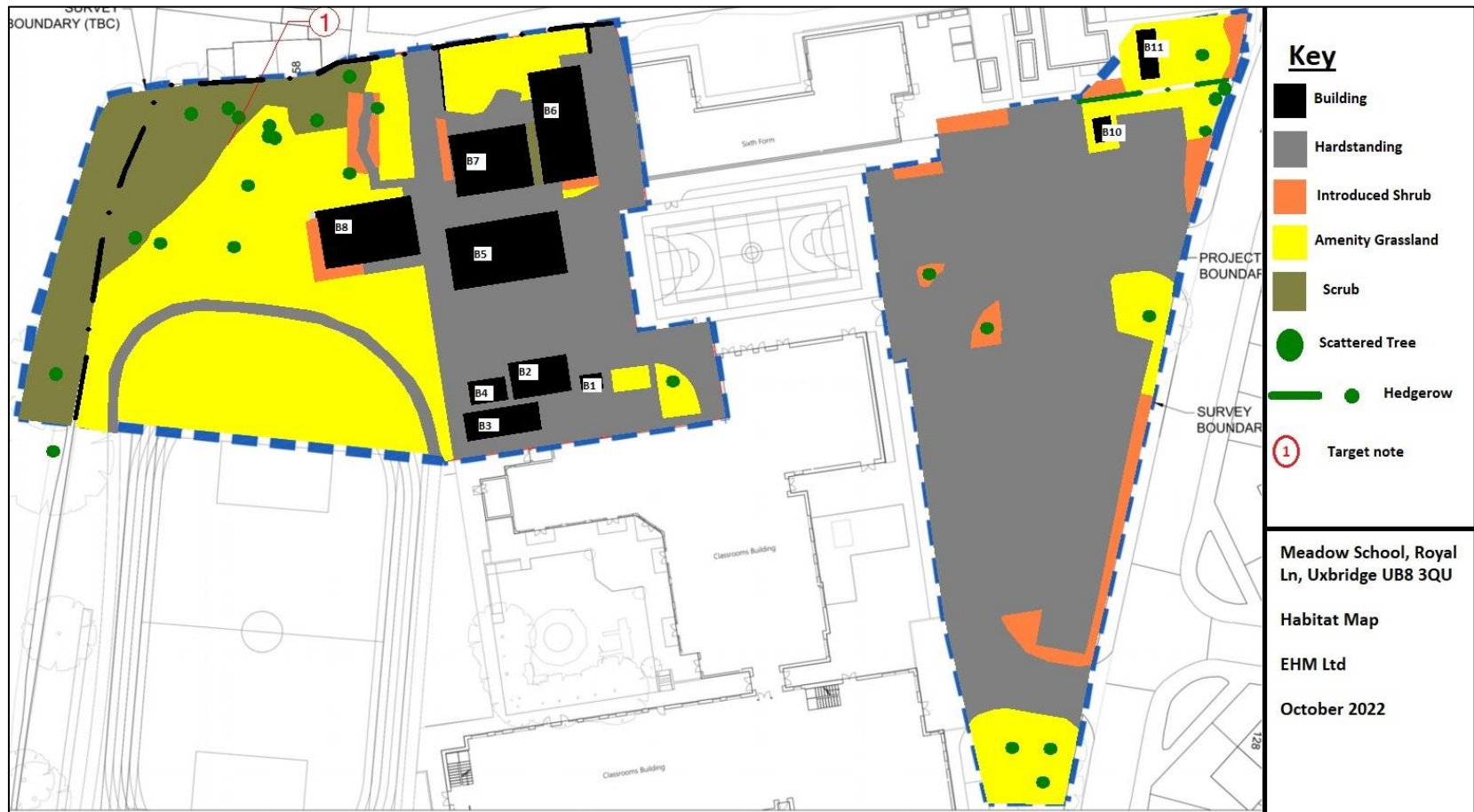
¹⁷ http://www.bats.org.uk/pages/bat_boxes.html

6. Conclusions

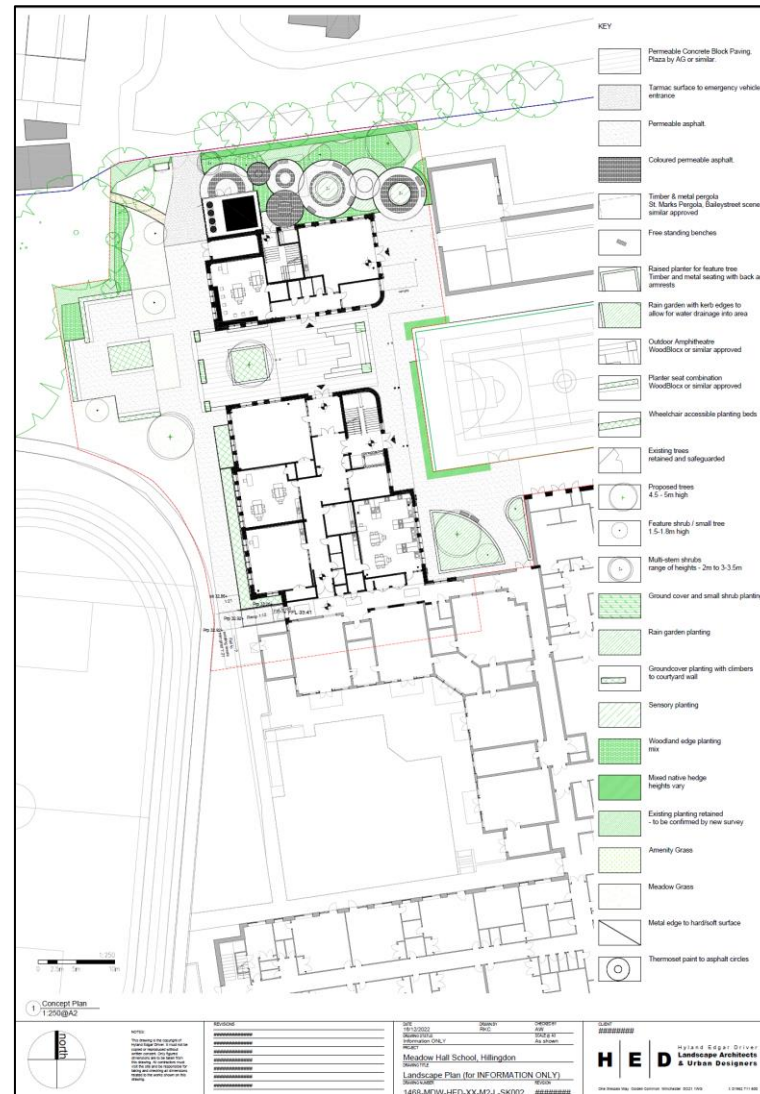
The above report provides a summary of the ecological value of the site as well as suitable protection measures during construction. Ecological enhancement measures are also provided to ensure the project provides an overall ecological enhancement.

6. Appendix

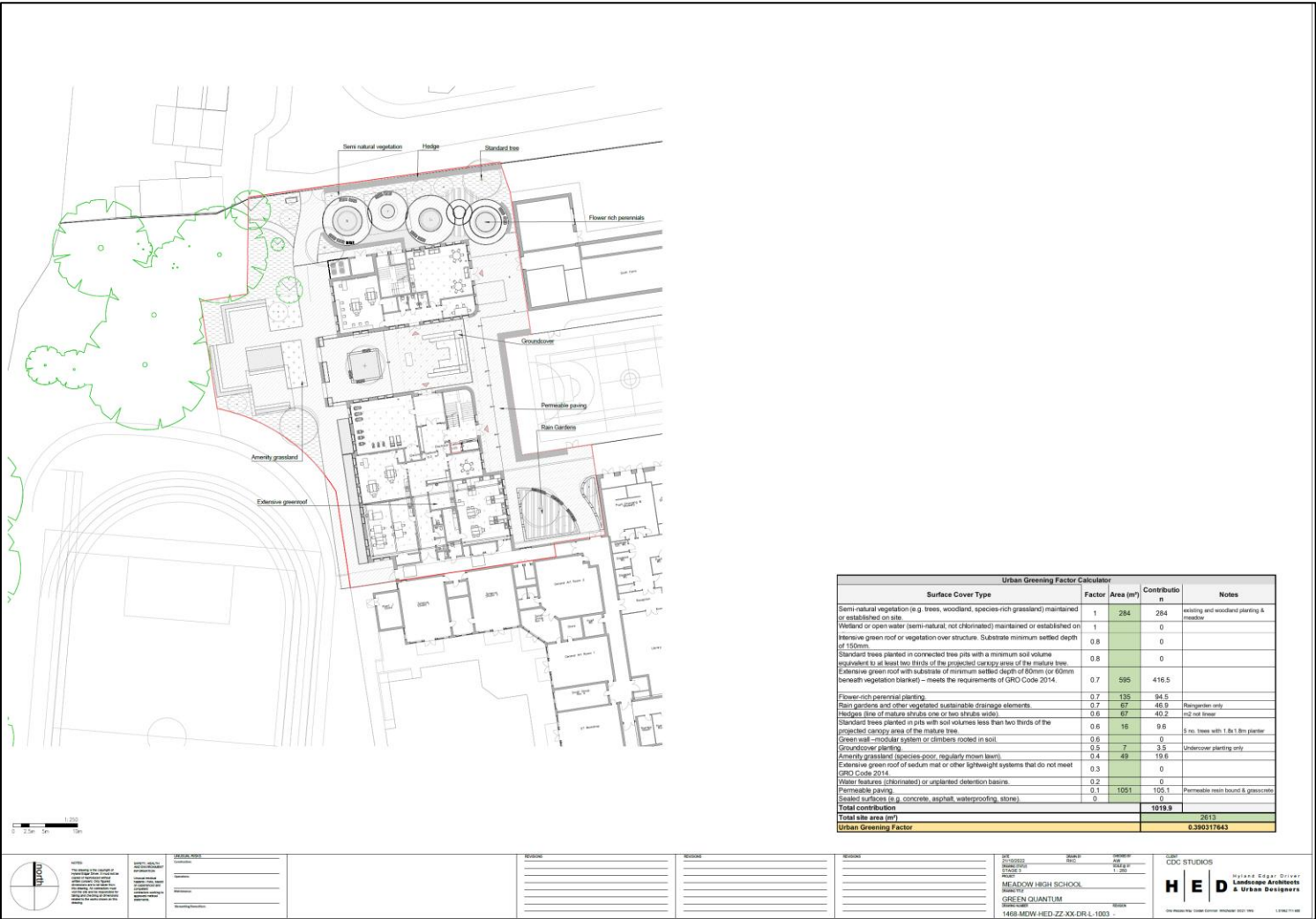
6.1 Appendix 1: Habitat Map



6.2 appendix 2: Proposed Layout



6.3 Appendix 3: Urban Green Factor



6.4 Appendix 4: Legislation

Protected species have protection under national legislation such as the Wildlife and Countryside Act 1981 and European legislation such as the Habitats Directive.

Please note the following:

- (1) If there is no record of a particular protected species, this does not signify that the species is absent from the site in question. It may mean that it has not been recorded, that the site has not been surveyed for this species, or that data relating to its presence has not been made available to us.
- (2) The presence of a protected species record does not mean that the species is still present. It means that the species was recorded at that time and place. The implications of the record should be further evaluated, and a survey to establish the current status may be required.
- (3) The following summary of legislation is designed purely as a basic guide, if any action is to be taken regarding any of the protected species listed, then it is imperative that the full relevant legislation be consulted.

WILDLIFE PROTECTION LEGISLATION IN ENGLAND

Legislation that protects wildlife in England exists at the European and national level.

European Law

The Bern Convention on the Conservation of European Wildlife and Natural Habitats (1979) was aimed at ensuring conservation and protection of all wild plants and animals, increasing cooperation between states, and affording special protection to the most vulnerable or threatened species. It was implemented by the EC Birds Directive (Council Directive 79/409/EEC) and the EC Habitats Directive (Council Directive 92/43/EEC).

The Bonn Convention on Migratory Species of Wild Animals (1979 & 1994) requires the protection of migratory animals. It was implemented by the EC Birds Directive (Council Directive 79/409/EEC) and the EC Habitats Directive (Council Directive 92/43/EEC).

The EC Habitats Directive aims to establish a network of protected areas in order to maintain the distribution and the abundance of threatened species and habitats. A number of species are listed in the annexes.

Annex II lists animals and plants whose conservation requires the designation of Special Areas of Conservation (SACs).

Annex IV lists animals and plants in need of strict protection. For the animals, this prohibits deliberate capture, killing, disturbance (especially during breeding period), destruction or taking of eggs from wild, and destruction or deterioration of breeding sites or resting places. For the

plants, this prohibits deliberate picking, collecting, uprooting, cutting, destruction, and trade in entire plants or parts, at all stages of life.

Annex V lists animals and plants for which taking in the wild may be subject to management measures

National Law

Wildlife and Countryside Act The Wildlife and Countryside Act 1981 (as amended) is the main source of legal protection for wildlife in England and was strengthened by the Countryside and Rights of Way Act 2000. A statutory five-yearly review of Schedules 5 and 8 (protected wild animals and plants) is undertaken by the relevant authorities. Species protection is provided under Schedules 1, 5, 6 and 8:

Schedule 1 lists bird species that are rare, endangered, declining or vulnerable. The Schedule is divided into two parts. Part I lists birds which receive special protection; these birds receive additional protection from disturbance at the nest. Part II lists birds that receive the same level of special protection, but only during the breeding season.

Schedule 5 protects animal (other than bird) species from certain actions, according to the sections of the Act under which they are listed:

S9 (1) prohibits the intentional killing, injury or taking. S9 (2) protection is limited to possessing and controlling. S9 (4a) prohibits the damaging, destroying or obstructing access to any place used by the animal for shelter or protection. S9 (4b) prohibits disturbing the animal while it is occupying any structure or place which it uses for shelter or protection. S9(5) prohibits the selling, offering for sale, possessing or transporting for purpose of sale, or advertising for sale, any live or dead animal, or any part of, or anything derived from such an animal. Species on this Schedule do not appear on the PSI.

Schedule 6 lists animals that may not be killed by certain methods. Even humane trapping for research requires a licence.

Schedule 8 lists plant species for which it is prohibited to intentionally pick, uproot, destroy, trade in, or possess (for the purposes of trade).

Under the Wildlife and Countryside Act, all wild plants in Britain are protected from intentional uprooting by an unauthorised person. Landowners, land occupiers, persons authorised by either of these, or persons authorised in writing by the Local Authority for the area are exempt from this, except for Schedule 8 species.

Conservation Regulations the Conservation of Habitats and Species Regulations 2010 (as amended) transpose the EC Habitats Directive into national law. In addition to enabling the designation of SACs, the regulations also provide species protection:

Schedule 2 protects the listed animals from deliberate capture, killing, disturbance or trading in.

Schedule 4 protects the listed plants from picking, collecting, uprooting, destroying or trading in.

These actions can be made lawful through the granting of licences by the appropriate authorities. Licences may be granted for a number of purposes, but only after the appropriate authority is satisfied that there are no satisfactory alternatives and that such actions will have no detrimental effect on wild the population of the species concerned.

Protection of Badgers Act the Protection of the Badgers Act prohibits the killing, injuring or taking of badgers and damage or interference with a badger sett, unless licensed to do so by a statutory authority.

International and European Obligations

In the UK, species receiving protection under international legislation and agreements are protected through the Wildlife and Countryside Act, so are not shown separately in the BMERC notable species lists. For reference, the relevant categories are shown below.

Bern Convention on the Conservation of European Wildlife and Natural Habitats the Bern Convention aims to ensure the conservation of wild flora and fauna species and their habitats.

- Appendix 1 (strictly protected flora) - Plants for which contracting parties will prohibit deliberate picking, collecting, cutting or uprooting.
- Appendix 2 (strictly protected fauna) - Animals for which contracting parties will prohibit deliberate capture, possession, killing, damage to or destruction of breeding or resting sites, disturbance or destruction or taking of eggs. Appendix 3 (protected fauna) - Animals for which contracting parties will include closed seasons and regulate their sale, keeping for sale, and transport for sale or offering for sale of live and dead wild animals. (Not included in Notable Species List).

Bonn Convention on Migratory Species the Bonn Convention aims to conserve terrestrial, marine and avian migratory species throughout their range.

- Appendix 1 (migratory species threatened with extinction) - Species for which contracting parties will strictly protect and endeavour to conserve or restore the places where they live, mitigating obstacles to migration and controlling other factors that might endanger them.
- Appendix 2 (migratory species that need or would benefit from international co-operation) - Species for which contracting parties will be encouraged to conclude global or regional agreements for the conservation and management of individual species or, more often, of a group of species. (Not included in Notable Species List).

The EC Council Directive on the Conservation of Wild Birds the Birds Directive provides a framework for the conservation and management of all wild birds in Europe. As well as designating important sites for birds as Special Protection Areas, birds are generally protected from deliberate killing or capture and destruction of or damage to their nests or eggs, and deliberate disturbance. Allowances are made for game birds.

UK BAP & notable species

UK Biodiversity Action Plan and Section 41 Species

Biodiversity, or biological diversity, is the whole variety of life on Earth. The Convention on Biological Diversity (CBD) came about as a result of the 1992 Earth Summit. As one of 168 countries to sign up to the CBD, the UK was required to develop a national strategy for the conservation of biodiversity; the UK Biodiversity Action Plan (UKBAP) was born.

The UKBAP is the result of contributions involving a wide range of people and organisations, enabling the identification of species and habitats that are listed as priorities for conservation action. A 2007 review of the UKBAP has resulted in 1149 species and 65 habitats being listed as conservation priorities. For more information see www.ukbap.org.uk.

In addition to the national priorities and targets, action is also being taken at local level. The Essex Biodiversity Project is responsible for implementing the Essex Biodiversity Action Plan, which has 28 priority species and 15 priority habitats currently listed. For more information see www.essexbiodiversity.org.uk.

The UK BAP

(From Explanatory Note by Defra and Natural England on Section 41 of the Natural Environment and Rural Communities

(NERC) Act 2006 - Habitats and Species of Principal Importance in England)

The England Biodiversity List has been developed to meet the requirements of Section 41 of the Natural Environment and Rural Communities Act (2006). This legislation requires the Secretary of State to publish a list of species of flora and fauna and habitats considered to be of principal importance for the purpose of conserving biodiversity.

The S41 list will be used to guide decision-makers such as public bodies, including local and regional authorities, in implementing their duty under section 40 of the Natural Environment and Rural Communities Act 2006 'to have regard' to the conservation of biodiversity in England, when carrying out their normal functions. In particular:

- Regional Planning Bodies and Local Planning Authorities will use it to identify the species and habitats that should be afforded priority when applying the requirements of National Planning Policy framework (NPPF) and PPS9 Circular to maintain, restore and enhance species and habitats.
- Local Planning Authorities will use it to identify the species and habitats that require specific consideration in dealing with planning and development control, recognising that under NPPF and PPS9 Circular the aim of planning decisions should be to avoid harm to all biodiversity.

- All Public Bodies will use it to identify species or habitats that should be given priority when implementing the NERC Section 40 duty.

Habitats of Principal Importance Fifty-six habitats of principal importance are included on the S41 list. These are all the habitats in England that have been identified as requiring action in the UK Biodiversity Action Plan (UK BAP). They range from habitats such as upland hay meadows to lowland mixed deciduous woodland and from freshwater habitats such as ponds to marine habitats such as subtidal sands and gravels.

Species of Principal Importance There are 943 species of principal importance included on the S41 list. These are the species founding England which have been identified as requiring action under the UK BAP. In addition, the Hen Harrier has also been included on the List because without continued conservation action it is unlikely that the Hen Harrier population will increase from its current very low levels in England.

Relationship with the UK Biodiversity List of Species and Habitats the UK BAP list of priority species and habitats is an important reference source and will be the focus for conservation action across the UK over the next decade. It has been used to draw up the species and habitats of principal importance in England under S41 of the NERC Act.

The revised UK BAP list of priority species and habitats can be downloaded from the UK Biodiversity Website: <http://www.ukbap.org.uk/NewPriorityList.aspx>

Relationship with the biodiversity duty under Section 40 of the NERC Act There is a general biodiversity duty in the NERC Act (Section 40) which requires every public body in the exercising of its functions to 'have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity'.

There is no direct relationship between the Section 41 duty on the Secretary of State to publish the list and promote the taking of steps to conserve the habitats and species on it, and the Section 40 duty on public bodies to have regard to the purpose of conserving biodiversity. Importantly:

- (a) Biodiversity, as covered by the Section 40 duty includes all biodiversity and not just the habitats and species of principal importance. However, there is an expectation that public bodies would refer to the S41 list when complying with the section 40 duty.
- (b) The duty on the Secretary of State to promote the taking of steps by others is not restricted to public bodies.

Defra guidance for local authorities and public bodies on implementing the biodiversity duty in the NERC Act draws attention to the S41 list, emphasising that local authorities and public bodies have a role to play in ensuring the protection of these species and habitats. Copies of the guidance can be downloaded from:

<http://archive.defra.gov.uk/environment/biodiversity/documents/pa-guid-english.pdf>

The overall aim of the Essex Biodiversity Project is to protect, conserve and enhance the variety of wildlife species and habitats in Essex through the successful implementation of the Essex Biodiversity Action Plan.