

Former Bartons Infant School, Romney Broadwalk, North Bersted, West Sussex

Preliminary Ecological Assessment Report



Bartons School - PEA Report
EHM Ltd

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Executive Summary

EHM Ltd has been commissioned to carry out a Preliminary Ecological Assessment (PEA) survey of a disused school in North Bersted, West Sussex. 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.

The site covers an area of approximately 6100m² and is located within the centre of the town of North Bersted near Bognor Regis in West Sussex. The site consists of the buildings and grounds of the Former Bartons Infant school. The site (as shown on figure 1) is located in North Bersted, West Sussex; SU 9253 0090



Protected Species Summary

Species	Sites potential to support
Bat roosts- buildings.	Low
Bat roosts- mature trees	Low-
Bat foraging/ commuting areas	Moderate
Badgers	Low
Dormice	Negligible
Small mammals	Moderate
Aquatic mammals	Negligible
Reptiles	Low
Common Amphibians	Low
Great Crested Newts	Negligible
Breeding birds	Moderate
Plants	Low
Invertebrates	Low

Summary of Recommendations

Recommendation	Action
Bat survey of buildings	One dusk emergent and/or dawn re-entry surveys are recommended. Follow BCT survey guidelines.
Retention of habitats	Retention of mature scattered trees, hedgerow and sections of scrub.
Protection of breeding birds	Carry out vegetation clearance (if required)/ building demolition outside of breeding bird season or under supervision of ecologist following a breeding bird survey
Appropriate lighting for bats	Avoid illuminating bat foraging and commuting habitat- woodland/ scattered trees. During and post development.
Remove vegetation in stages	Cut down Grassland/Scrub/shrub habitats in stages to reduce risk of impacting protected/ notable species.
Soft Fell mature trees	Fell mature trees in stages lowering sections to the ground.
Follow badger protection measures	Follow badger protection measurers during construction.
Adequate pollution control	Habitats on site should be adequately protected to ensure no polluted runoff in on site or adjacent land. All oils, fuels and chemicals should be adequately stored on site in bunded contains with appropriate spill kits and emergency procedures in place.
Inclusion of bird and bat boxes in the development/ landscaping	Place boxes in suitable locations in the grounds or on new development.
Use of native plant species during any future planting and landscaping.	Where possible select native tree and plant species in any future landscaping. Inclusion of green roof and walls. Create log piles. Create areas of open green space within development.

1. Introduction

EHM Ltd has been commissioned to carry out a Preliminary Ecological Assessment (PEA) survey of a disused school in North Bersted, West Sussex. 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.

1.1 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 (EclA); and
- Identify the opportunities offered by a project to deliver ecological enhancement.

1.2 Development outline

EHM Ltd understands that the development will involve the demolition of the existing school buildings on site and construction of approximately 21 dwellings on the site. The proposed development will be carried out by West Sussex Property LLP.

1.3 Site Description and Context

The site covers an area of approximately 6100m² and is located within the centre of the town of North Bersted near Bognor Regis in West Sussex. The site consists of the buildings and grounds of the Former Bartons Infant school. The site is accessed off Romney Broadwalk to the west of the site via a surfaced drive way that opens out into parking areas. The site contains a relatively large flat roofed building with a pitched tiled section to the north. Habitats present include areas of amenity grassland, scrub, introduced shrubs as well as some mature and semi-mature trees. The site had evidently been vacant for some time with some of the habitats appearing overgrown, though the grassland appeared to be regularly mown. The buildings had been bordered up and secured with security doors.

The site is located within an urban residential area, bordered by housing to the north, south and west. The eastern edge of the site appeared to border an area of mature trees following the course of a ditch that is connected to an open greenspace located to the north east of the site. The local landscape is dominated by residential areas with a few pockets of open green space dotted across the local area. Though within an urban area the open countryside is located within 500m to the north of the site and the coast is located within 3km to the south.

The site (as shown on figure 1) is located in North Bersted, West Sussex; SU 9253 0090. A location of the habitats is shown on the map in appendix 1.

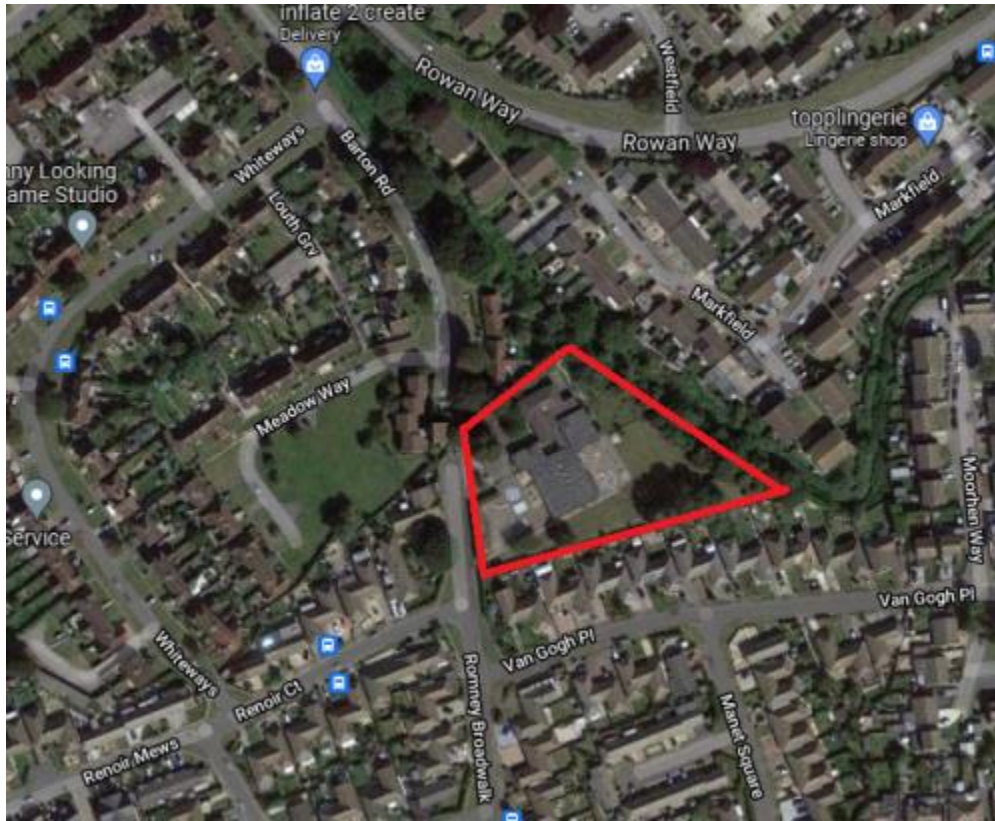


Figure 1: Approximate boundary of the site.

1.4 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.

1.5 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;

1.5.1 Planning Policies

Planning policies, both local and national, may affect any proposed development. The proposals were assessed against policy guidance provided by the National Planning Policy Framework (NPPF, 2021) as well as local and district planning policies. The Arun Local Plan 2011-2031¹ (adopted July 2018) contained relevant policies such as;

- Policy GI SP1: Green Infrastructure and development
- Policy ENV SP1: Natural Environment
- Policy ENV DM1: Designated Sites of biodiversity or geological importance
- Policy ENV DM3: Biodiversity Opportunity Areas
- Policy ENV DM4: Protection of Trees
- Policy ENV DM5: Development and Biodiversity

¹ <https://www.arun.gov.uk/adopted-local-plan/>

2. Methods

2.1 Site Visit

EHM undertook a site visit on the 14th of September 2021. 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.

Weather conditions were; Temp: 18°C, Cloud: 90%, Wind: 6 mph, light rain showers.

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 Trust².

² Collins, J. (ed) (2016). Bat Surveys for professional Ecologists; Good Practice Guidelines (3rd edn). The Bat Conservation Trust, London.

Breeding birds

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 Sussex Biological Records Centre (SxBRC) 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.

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 context³. 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 (of habitat) only

The habitats will be assessed based on these criteria.

3.1.1 Buildings (J3.6)

The site contains a single building that is located towards the north west of the site. The building predominately constructed of brick walls with a flat felt roof. This was largely single storey apart from a section on the eastern side which was two storey's high. To the north of the building is a pitched tiled roof section with two ridges, at 90 degrees to each other forming a rough L shape.

As will be discussed the building was assessed for its potential to support protected and notable species. The building is considered as having a benefit at a site level.

A wooden pavilion is located in the south east corner of the site. This was an open structure with a pitched roof.

3.1.2 Hardstanding (J3.5)

Areas of hardstanding were located around the site. These were mainly concreted areas around the building that were likely previously used for car parking and play areas. Some surfaced pathways are also located across the site. The areas of hardstanding are becoming overgrown with shrubs in places though in general provide little opportunities for wildlife. The areas of hardstanding are considered as having a benefit at a zone of influence level.

³ GUIDELINES FOR ECOLOGICAL IMPACT ASSESSMENT IN THE UNITED KINGDOM. IEEM. June 2006.

3.1.3 Amenity Grassland (J1.2)

The site contains relatively large areas of amenity grassland that appeared to be regularly mown. Though the majority of the grassland was uniform in structure some taller sections were noted in particular in the south east corner amongst some tall trees (TN1) and against the edges of the scrub to the east. Species present included; Meadow Grass (*Poa annua*), Yorkshire Fog (*Holcus lanatus*), Fleabane (*Pulicaria dysenterica*), Wood Aven (*Geum urbanum*), Ragwort (*Jacobaea vulgaris*), Yarrow (*Achillea millefolium*) and Hawkbit (*Leontodon hispidus*). The amenity grasslands extends across the majority of the south east of the site, to the rear of the building, as well as in patches to the west of the buildings, at the front of the school.

The grassland mainly consisted of short uniform sward though there were some longer more structurally diverse sections around the edges. The short uniform sward across the majority of the habitat will likely limit the possibility of protected and notable species being present, though the areas of longer sward provide some opportunities. The amenity grassland is considered as having a benefit at a site level.

3.1.4 Mixed Scattered Trees (A3.3)

The site contains a number of mature and semi mature scattered trees. These have been labelled on the habitats map in appendix 1 and are summarised here.

T1- This is a group of semi mature trees, located on the north east of the site, species included; Alder (*Alnus glutinosa*), Silver Birch (*Betula pendula*) and Cherry trees (*Prunus spp.*). Cherry trees appeared to be in poor health. The scattered trees along with the dense scrub in this area create woodland like habitat.

T2- This is a group of mature Oak (*Quercus robur*) trees that run along the fence line to the east of the site. These were tall trees clad in Ivy that overhung the site.

T3- Is a group of mixed large mature trees located towards the south east of the site. This small copse of trees consisted mainly of Ash (*Fraxinus excelsior*) with some Silver Birch also present. These trees were tall and mature in nature.

T4- Consisted of three semi mature Cherry trees, located to the south west of the site in front of the school buildings.

T5- Contained a large Maple (*Acer spp.*) tree on site with an Alder tree on the bordering property, overhanging the site. These were tall mature trees clad in Ivy (*Hedera helix*).

T6- Was a group of three tall and mature Alder trees located to the north of the site in front of the main entrance.

Other smaller scattered trees were located across the site including some relatively newly planted trees still attached to tree stakes.

The scattered trees provide an important habitat resource on site and provide connectivity across the local landscape. They have potential to support nesting birds and likely provide

suitable commuting and foraging habitat for bats. They are considered as having a benefit at a local level.

3.1.5 Scrub (A2.1)

The site contains areas of dense scrub mostly located around the edges of the site. A dense section of scrub is located in the north east corner of the site. This is dominated by Bramble (*Rubus fruticosus*) and Blackthorn (*Prunus spinosa*), with occasional ornamental shrub. Some saplings were noted along with a ground flora including; Yarrow, Wood Aven, Hawkbit (*Leontodon hispidus*) and Ribwort Plantain (*Plantago lanceolata*). Brush piles were noted in the corner. The eastern perimeter of the site was dominated by bramble scrub that extended over the fence line. Blackthorn and Hawthorn (*Crataegus monogyna*) were present along with Ivy, Dock (*Rumex obtusifolius*) and Ragwort. The scrub became thicker towards the south east corner of the site and contained a varied margin with patches of longer grass present in places. Patches of dense Buddleia (*Buddleja spp.*) scrub was located around the building.

A strip of scrub is located along the eastern edge of the site outside of the boundary fence running along the top of a steep bank. This consists mainly of dense bramble with pockets of Blackthorn, hawthorn and elder with occasional Buddleia. The scrub is located amongst some of the mature Oka trees located on the edge of the site. This section of scrub borders an open area located adjacent to a small stream known as Aldingbourne Rife

The scrub provides a suitable habitat for species of mammal such as hedgehog and likely supports nesting birds. The patches of scrub on site provide a varied habitat and increase the micro-habitat diversity on site. The scrub habitat is considered as having a benefit at a site level.

3.1.6 Hedgerows (J2.1.2)

A native species diverse hedgerow runs along the southern boundary of the site. This contained a gap towards the eastern end. This was an established hedgerow that is tall and scrubby in places with a more formal square shape towards the eastern end. Species present included; Hazel (*Corylus avellana*), Field Maple (*Acer campestre*), Hornbeam (*Carpinus betulus*), Hawthorn, Elder (*Sambucus nigra*), Bramble and Ash.

A tall dense conifer hedgerow is located in south west boundary of the site. This appeared to be maintained into a rough square shape.

The hedgerow along the southern boundary provides a suitable habitat for nesting birds as well as small mammal species. The hedgerow likely provides suitable habitat for foraging and commuting bats. The hedgerows are considered as having a benefit at a site level.

3.1.7 Introduced shrub (J2)

The site contains a number of areas of introduced or ornamental shrubs. Dense shrubs with ornamental shrubs are located along the North West boundary of the site below some overhanging trees. This contained species such as Laurel and Cotoneaster with thickets of bramble. Dense and tall in places with Ivy, Bindweed (*Convolvulus arvensis*) and Common Nettle (*Urtica dioica*) also present. Other ornamental planting is located along the east side of the

building and included species such as bamboo. Patches of smaller shrubs were present across the site.

The shrubs, though ornamental in nature, contained a varied structure and contain a good diversity of species. They have established well and are considered as having a benefit at a site level.

3.1.8 Summary

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

Habitat	Value	Comments
Buildings	Site	The buildings are considered as having a potential to support protected and notable species.
Hard standing	Zone of influence	The areas of hard standing provide little opportunities for wildlife.
Amenity grassland	Site	Large area of amenity grassland with a mostly uniform short sward, some areas of structurally diverse grassland.
Scattered Trees	Local	A large number of scattered trees across the site. A variety of species including mature and semi mature trees.
Introduced shrubs	Site	Areas of ornamental planting with varied species composition and structure.
Scrub	Site	Areas of dense scrub across the site with potential to support notable species.
Hedgerow	Site	Sections of species diverse hedgerows as well as ornamental conifer hedgerow.

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

3.2 Species Desktop Results

3.2.1 Local Biological Records

A recent biological record bureau search from SxBRC produced some 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	Present	Local Nature Reserve, The Brooks, to the North east of the site. On the boundary of the 1 km search area.		
Non Statutory sites or Local Wildlife Sites	Absent	No features present within 1 KM		
Ancient Woodland	Absent	No features present within 1 km.		
Priority Habitats	Present	Deciduous Woodland and Coastal & floodplain grazing marsh located to north of site. Open water (ditches) are located across the local area including bordering the site to the north.		
Protected and Notable Species	Number of species recorded within 1KM	Location of Closest Record	Details Of Closest Record	Date of Closest Record
Amphibian Species	4 species	C. 340m to south.	Common Frog (<i>Rana temporaria</i>)	2013
Reptile Species	3 Species	C. 240m to south	Slow-worm (<i>Anguis fragulis</i>)	2012
Invertebrate species	8 species	C. 630m to north.	Common Darter (<i>Sympetrum striolatum</i>)	2019
Terrestrial Mammal Species (excl. Bats)	4 species	C.140m to north east	Water Vole (<i>Arvicola amphibious</i>)	2018
Bat Species	4 Species	C. 620m to west	Brown Long-eared Bat (<i>Plecotus auritus</i>)	2010
Bird Species	127 Species	C. 620m to North	Several Bird species	2012
Plant Species	12 species	C. 700m to east	Musk Stork's-bill (<i>Erodium moschatum</i>)	2013

Table 2: Summary of protected areas and species information

3.2.2 Other Desk Top Results

Additionally the Natural England resource; Magic map⁴, was consulted for any granted protected species licences that may be in the area. No European Protected Species (EPS) Licences are located within 1 KM of the site. A bat licence has been granted to the north of the site approximately 1.5 km at a solar Farm.

3.3 Species Site Assessment

The following assessment takes into account the information from the desktop study as well an assessment of the habitats on site and their potential to support protected and notable species. The likelihood of species being found on site is defined 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

3.3.1 Bat Commuting/ Foraging Habitat

The protected species licencing information from the Magic map does not show any records of granted bat mitigation license within 1 km of the site. There is a granted EPS licence approximately 1.5 Km to the north of the site at a Solar Farm. The SxBRC data contained records of bat species including; Common Pipistrelle (*Pipistrellus pipistrellus*) and Brown Long-eared bat (*Plecotus auratus*). The closest of these records is located to the west of the site within 650m within a residential area. These records would indicate that bats are known within the local landscape. The site, though within an urban environment, has some connectivity across the wider landscape. The ditch and tree line to the north and east of the site links with green spaces to the east and north. Patchy connectivity is also provided through scattered trees and garden habitats.

All bat species in the UK eat insects and forage along habitats such as hedgerows, woodlands, grasslands and waterways⁵. Bats use woodland edges, hedgerows, rivers and other linear features like tree-lined footpaths as corridors to commute from one area of countryside to another⁶. The site contains some areas of suitable foraging/ commuting habitat particularly along the scattered trees, scrub and hedgerows. The site has connectivity to the wider landscape where bats are known.

The presence of foraging/ commuting habitat is considered **moderate**.

⁴ www.magic.gov.uk

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

⁶ <https://www.bats.org.uk/about-bats/where-do-bats-live/bat-habitats/commuting-habitats>

3.3.2 Internal and External Building Inspection for Bat roosts

As discussed bats are predicted to be within the vicinity of the site and may use habitats on site for foraging and commuting.

Buildings are known to provide suitable roosting opportunities for a number of bat species⁷. An external inspection of the buildings on site was carried out to assess their potential to support bat roosts, following Bat conservation trust guidelines⁸. The external inspection of the buildings was looking for potential ingress points through soffits, eaves, missing roof tiles/slates and brickwork and windows.

The external and internal inspection was conducted in two phases. An initial ground level external assessment was undertaken during the PEA site visit on the 14th of September 2021 by James Webster (MCIEEM). A follow up internal and external roost feature assessment was undertaken by Richard Law (Bat Licence no.: 2015-12576-CLS-CLS) on the 2nd of November 2021. The survey on the 2nd November was a more detailed assessment of the identified external features using an endoscopic camera and video camera mounted on a telescopic pole. The November survey also involved an internal inspection of roof voids.

The building was no longer in use and at the time of the site visit had been bordered up with all windows and doors being secured with external and internal fittings. The majority of the building contained a flat roof which had no real roof void on the interior. This was inspected through gaps in the false ceiling, hung below the interior of the roof, no evidence of bats or potential egress points were noted. The building contained a pitched tiled roof section to the north. A relatively large roof void existed in these areas. This roof void was inspected using a telescopic camera. The roof space was separated from the building by a false ceiling of foam tiles with rock wool insulation suspended in netting above this. The roof was constructed of wooden beams with felt backing the tiles. The roof appeared to be in good condition with no obvious egress points, no evidence such as droppings, feeding remains, staining or bats themselves were seen. The interior of the roof was also very dusty and contained established cobwebs, which would indicate a lack of disturbance. The interior of the building was inspected for any evidence of bats. No evidence was found and the building, being secured to stop unauthorised access, did not contain any obvious egress points.

The exterior of the building was also inspected. Initially from the ground level using binoculars and then, during the November Survey, a more detailed survey of identified features using an endoscopic camera. The surveys identified a number of small features that could support individual or small numbers of bats. The tiles on the roof were of a curved, pan tile, design which creates a small crevice under the curve of the tile. The end tiles along the eaves contained an open void which was in places partially blocked by a plastic mesh or mortar. However in a

⁷ Bats and Buildings. Bats and the Build Environment Series. Bat Conservation Trust. January 2012.

⁸ Collins, J. (ed) (2016). Bat Surveys for professional Ecologists/; Good Practice Guidelines (3rd edn). The Bat Conservation Trust, London.

number of places, particularly along the north east (TN2) and south west (TN3) edge of the roof, these were open and provided an opportunity for bats to roost between the tile and the roof lining. A small feature was also noted on the southern edge of the tiled roof that provided a roosting potential (TN4).

Following the two inspections by competent and licensed ecologists the building is considered unlikely to support a significant roost such as a maternity or hibernation roosts. The tiled roof contained a number of small features that provide opportunity for small number of bats to roost (figure 2). Figure 3 summarises the roost classification guidance from the BCT. The building on site is considered as having a **low** potential to support a bat roost as the features on the building have potential to provide opportunistic roosts for individual of small numbers of bats.



Figure 2: Showing the interior of the pitched roof section and two pictures of potential roost features in the external tiles.

Suitability	Description Roosting habitats	Commuting and foraging habitats
Negligible	Negligible habitat features on site likely to be used by roosting bats.	Negligible habitat features on site likely to be used by commuting or foraging bats.
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions ⁹ and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e. unlikely to be suitable for maternity or hibernation ¹⁰). A tree of sufficient size and age to contain PRFs but with none seen from the ground or features seen with only very limited roosting potential. ¹¹	Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or unvegetated stream, but isolated, i.e. not very well connected to the surrounding landscape by other habitat. Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub.
Moderate	A structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions ⁹ and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only – the assessments in this table are made irrespective of species conservation status, which is established after presence is confirmed).	Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.
High	A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions ⁹ and surrounding habitat.	Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge. High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree-lined watercourses and grazed parkland. Site is close to and connected to known roosts.

⁹ For example, in terms of temperature, humidity, height above ground level, light levels or levels of disturbance.
¹⁰ Evidence from the Netherlands shows mass swarming events of common pipistrelle bats in the autumn followed by mass hibernation in a diverse range of building types in urban environments (Kunsten et al., 2015). This phenomenon requires some research in the UK but ecologists should be aware of the potential for larger numbers of this species to be present during the autumn and winter in large buildings in highly urbanised environments.
¹¹ This system of categorisation aligns with BS 8596:2015 Surveying for bats in trees and woodland (BSI, 2015).

Figure 3: Summary of BCT guidance for classifying bat roost potential.

3.3.3 Tree Roost Assessment

The trees on the sites were also 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 roosting⁹. All the trees on the site were assessed for any PRFs that may be present.

The trees described above in section 3.1.4 either contained small features, such as roth holes, or were of a size and structure that could support bat roost. Following the guidance in figure 3 the mature trees on site are considered as having a **low** potential to support bat roost.

3.3.4 Badgers Assessment

The site was investigated for evidence of Badger (*Meles meles*); setts or signs such as tracks, hair or latrines. No badger setts or other signs of badger were noted on site. The SxBRC data does not provide any records of Badger in the local area. The habitat on site does provide suitable habitat for badgers to forage or establish setts, though this is relatively isolated from the wider landscape being in an urban setting.

⁹ http://www.bats.org.uk/pages/bat_roosts.html#TreeRoosts

Though no signs of badgers were noted it is possible they could use sections of the site. The likelihood of badger being on site is considered **low**.

3.3.5 Dormouse Assessment

No evidence of dormice (*Muscardinus avellanarius*) 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 habitat¹⁰. In general the habits on site are considered sub optimal for this species. The hedgerow provides some suitability though no evidence was seen and the site is relatively isolated in an urban environment.

There are no local records of this species and no granted EPS licences within the local area. The likelihood of dormouse being present is considered **negligible**.

3.3.6 Small mammal Assessment

Hedgehogs (*Erinaceus europaeus*) prefer habitats such as woodland edges and hedges as well as suburban areas¹¹. The SxBRC data provides local records of this species, within 250m to the east of the site. The habitats on site provide a number of opportunities for these species particularly the hedgerows, scrub and tall grassland habitats. Therefore the likelihood of the presence of small mammals, such as Hedgehog, is considered **moderate**.

3.3.7 Reptile Assessment

There are records for Adder (*Vipera berus*), Slow-worm (*Anguis fragulis*) and Common Lizard (*Common Lizard*) within 1 km of the site. The closest record is of a Slow-worm within 250m of the site to the south within a residential area. The records of Adder and Common Lizard are from the same site approximately 670m to the south west. The site is relatively isolated within an urban area however there is some connectivity for reptiles to the wider landscape via the ditch habitat adjacent to the site to the north east. This habitat, though not considered optimal to support reptiles, does provide connectivity to larger greenspaces in the local area.

Reptiles prefer sites with a diversity of habitats containing a number of micro habitats that provide suitable foraging and refuge sites¹². The short mown grass and areas of buildings and hardstanding that dominate the site are unlikely to provide suitable habitats for reptiles. The Patches of longer grass bordering the scrub provide some suitable foraging and basking habitats and the brush piles provide potential refuge areas. The suitable habitat for reptiles on site is limited though there is connectivity to wider areas and reptiles are present within the local landscape. Therefore is it possible for reptiles to be present on site in restricted areas. The likelihood or reptiles being present is considered **low**.

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

¹¹ http://www.mammal.org.uk/sites/default/files/factsheets/hedgehog_complete_0.pdf

¹² Edgar, P., Foster, J. and Baker, J. (2010). Reptile Habitat Management Handbook. Amphibian and reptile Conservation, Bournemouth

3.3.8 Great Crested Newt Assessment

The European protected species Great Crested Newt (*Triturus cristatus*) require both suitable aquatic habitats for breeding and terrestrial habitats to forage and shelter during the active season and hibernate over winter¹³. The SxBRC data contained a single record of GCN located approximately 800m to the east of the site separated by urban areas, this record is from 2004. No EPS licences have been granted within 1 km of the site.

The site does not contain any water bodies and on inspecting the OS map there does not appear to be any ponds within 500m of the site. The terrestrial habitats are limited on site with the majority of the site consisting of built up areas or short mown amenity grassland. There are patches of suitable habitat such as more structurally diverse grassland and brush piles however these are limited. There is some potential connectivity across the local landscape though in general the urban nature of the local landscape limits connectivity. The likelihood of GCN being on site is considered **negligible**.

3.3.9 Common Amphibian Assessment

The SxBRC data provides records of common amphibians such as Common Frog (*Rana temporaria*), Palmate Newt (*Lissotriton helveticus*) and Smooth Newt (*Lissotriton vulgaris*). The most recent of these records (2016) come from Newbarn Lane approximately 920m to the west of the site in a rural area.

The site does not contain any aquatic habitats and there does not appear to be any in proximity of the site. The terrestrial habitats provide some limited opportunities such as the patches of longer grass and brush piles. Likelihood of common amphibians being present is considered **low**.

3.3.10 Bird Assessment

The site contains suitable habitat for nesting birds, all bird nests are protected whilst they are in use. The shrubs, hedgerows, scattered trees, scrub and buildings provide suitable nesting bird opportunities. The likelihood of birds being present is considered **high**.

The local records data contains a number of notable bird species. A number of these are wetland species associated with wetland habitats in the rural areas to the north of the site, some of these areas overlap with the LNR. Other species such as Blackbird (*Turdus merula*), Song Thrush (*Turdus philomelos*), House Sparrow (*Passer domesticus*) and Starling (*Sturnus vulgaris*) have also been recorded in the local area. The habitats on site provide some suitable nesting and foraging habitats for species such as this. The likelihood of notable bird species being present is considered **moderate**.

3.3.11 Plant Assessment

The SxBRC results produced a number of records of notable plant species including Bluebell (*Hyacinthoides non-scripta*) and Wild Strawberry (*Fragaria vesca*). The majority of the plant

¹³ Great crested newt mitigation guidelines. August 2001. English Nature.

records are over ten years old and located some distance from the site in the areas of open countryside. The nature of the habitats on site mean they are unlikely to support notable plant species though it is possible that species such as Bluebells are located on the site. The likelihood of notable plant species being on site is considered **Low**.

3.3.12 Invertebrate Assessment

The local records data contained a number of records of notable and protected invertebrate species. This included records of Stag Beetle (*Lucanus cervus*) approximately 950m from the site to the North East. The areas of dead wood on site provide some suitable habitat for this species as do the mature trees on site. There is connectivity across the local landscape for this mobile species. A number of Dragonflies and Damselflies are included in the local records data associated with the wetland habitats across the local landscape. There is a ditch habitat to the north east of the site which may attract these species and they may therefore be seen hawking across the site.

The habitats on site do not provide optimal opportunities for invertebrates, generally lacking the structural complexity, however there is potential for some notable invertebrates to be seen on site on occasion. Therefore the likelihood of notable invertebrate species being seen on site is considered **low**.

3.3.13 Aquatic mammal assessment

The site does not contain any suitable aquatic habitats on site. A section of the Aldingbourne Riffle is located to the east of the boundary fence approximately 15m away. The local records from SxRBC contains several records of water voles (*Arvicola amphibius*) including records from 2018 located on the Aldingbourne Riffle to the north east of the site within 100m. Other records of water voles, within last 10 years, are located to the edge of North Bersted to the north of the site approximately 700-800m from the site.

Water voles prefer soft, undisturbed earth banks which they can burrow into with wide margins which have tall grasses, stands vegetation, often fringed with emergent vegetation, as well as slow flowing water¹⁴. The section of the stream to the east of the site contained some of these elements and the location of local records on the same water course would indicate that water voles are possibly present in this area though no evidence was seen during the site visits. Though water voles are known to inhabit terrestrial habitats there was no evidence of this on the site.

No records of otter (*Lutra lutra*) were provided in the SxBRC data. Records of otters in Sussex are considered to be rare with otters requiring quiet, undisturbed places to rest and breed¹⁵. No

¹⁴ <https://watervole.org.uk/home/water-vole-habitat-management/>

¹⁵ <https://sussexwildlifetrust.org.uk/discover/around-sussex/wetlands/wetland-species/otter>

evidence of otter was seen during the site visits and the habitats on site and adjacent to the site are not considered to be likely to support this species due to the urban nature of the site.

The likelihood of aquatic mammals such as water vole and otter being present on site is considered to be **negligible**. There is potential for the Aldingbourne Riffle to the east of the site to support water voles.

3.4 Summary

Table 3 below summarises the sites potential for protected and notable species.

Species	Sites potential to support	Justification
Bat roosts-buildings.	Low	The buildings on site contained a number of small features that could support a small number of roosting bats.
Bat roosts-mature trees	Low-	A number of the mature trees on site, contained small features or are of an age and structure that have potential to support bat roosts.
Bat foraging/commuting areas	Moderate	Suitable habitat on site with connectivity to wider landscape and bats are known to be in the area.
Badgers	Low	No setts or other evidence on site. Suitable habitat on site for badgers.
Dormice	Negligible	No evidence of dormouse seen. Site contains some fragments of sub-optimal habitat, though this is isolated in the landscape. No records of Dormouse in the local area.
Small mammals	Moderate	The habitats on the site provide potential to support small mammals.
Aquatic mammals	Negligible	No evidence of aquatic mammals or suitable habitats on site. Possible that water voles are present within ditch to east of site.
Reptiles	Low	In general, the site lacks suitability to support reptiles though there are pockets of suitable habitat on site and connectivity to wider areas.
Common Amphibians	Low	No waterbodies on site or within proximity to the site. The terrestrial habitats are considered sub optimal.
Great Crested Newts	Negligible	No ponds on site or within local area. The terrestrial habitats on site are considered unlikely to support this species.
Breeding birds	Moderate	The scrub, shrubs, hedgerows and buildings all provide suitable nesting opportunities for birds.
Plants	Low	The site provides some limited suitability for notable plant species.
Invertebrates	Low	The habitats on site have some potential to support notable invertebrates.

Table 3: Summary of sites potential to support certain protected and notable species.

3.5 Protected Areas

3.5.1 Statutory Protected Areas

One Statutory Protected Area is located to the north east of the site, a Local Nature Reserve called the Brooks. Local Nature Reserves (LNR) may be declared by local authorities under the National Parks and Access to the Countryside Act 1949. LNRs are declared and managed for nature conservation, and provide opportunities for research and education, or simply enjoying and having contact with nature. As can be seen in figure 4 this is located on the border of the 1 km search area to the north east of the site.

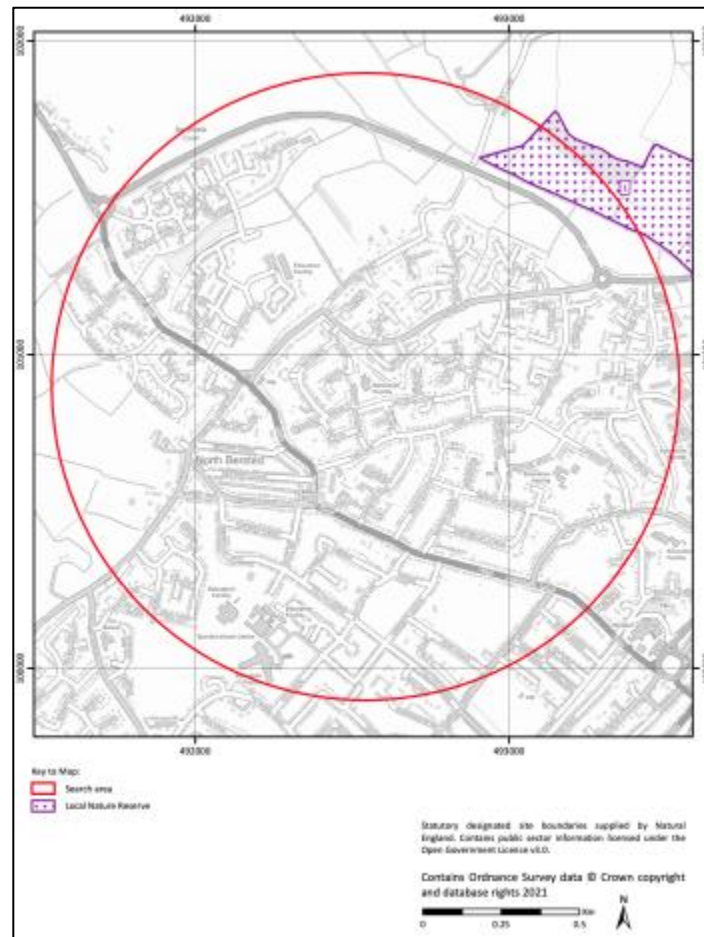


Figure 4: Location of statutory protected areas (from Sussex Biological Records Centre).

3.5.2 Non statutory protected areas

There are no non-statutory protected areas within 1 KM of the site.

3.5.3 Priority Habitats

There are areas of priority habitat within 1 km of the site. The local area contains habitats that are listed on the Priority Habitat Index (PHI). These includes an area of Coastal & Floodplain grazing marsh located in the open countryside to the north of the site. An area of priority woodland is also located to the north of the site close to the grazing marsh. Areas of open water, likely ditches and drains, are located across the wider landscape and include the ditch to the north east of the site. The location of these habitats can be seen in figure 5 below.

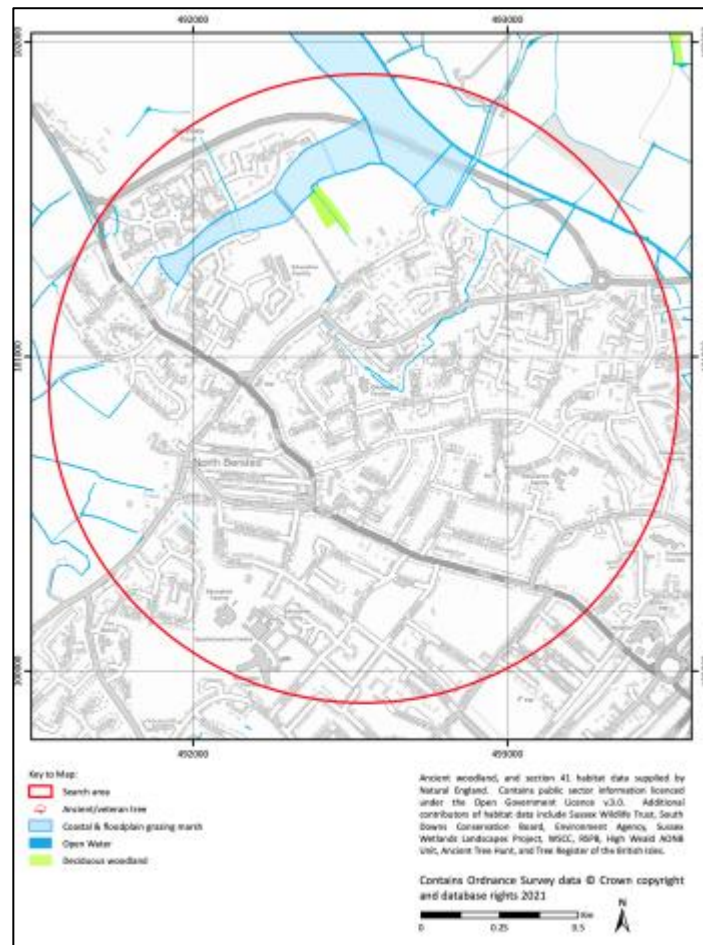


Figure 5: Location of priority habitats (from Sussex Biological Records Centre).

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 the LNR reserve as this is some distance from the proposed development and separated by urban areas. Any potential indirect impacts could be mitigated by the proposed pollution controls measures set out below.

4.2 Effects on Priority Habitats

As discussed and shown in figure 4 the site is located within proximity of priority habitats in the form of open water ditch habitat. The proximity of this habitat means there is a potential for it to be impacted by the proposed development. To protect this habitat from impacts it is recommended that the scattered trees in this area be retained and the sections of the scrub are retained to screen the proposed development. The scrub could be managed into a more formal hedgerow which would continue to provide an important habitat whilst having a increased amenity value. The pollution control measures set out below should also be followed.

4.3 Effects on Habitats on Site

At this stage the precise details of the proposed development are not yet known. However the proposed development is likely to involve the construction of around 20 residential units. This is likely to involve the disruption of the majority of the habitats on site including the areas hardstanding, building and amenity grassland. Some recommendations are made below regarding different species.

It is recommended that wherever practical that the scrub around the edges of the site retained to ensure this established habitat continues to provide a benefit for local wildlife as well as screening the proposed development. EHM understands that the scrub habitat on the eastern edge of the site will be retained and enhanced.

It is recommended that the scattered trees on site be retained and have adequate root and crown protection during construction. If a tree is required to be removed this should be done outside of nesting bird season and using a soft fell methodology (outlined below). EHM understands that several of the mature trees will be retained.

A section of community green space could also be incorporated within the proposed development that will include habitats to benefit wildlife species. EHM has undertaken a Biodiversity Net Gain assessment which includes proposals to ensure the development achieves a 10% net gain.

4.4 Effects on Protected and Notable Species

4.4.1 Bats

The building on site was considered as having a low potential to support a bat roost. Therefore additional surveys are required. The number of surveys required corresponds to the potential for bats to be present. A building with low potential to support roosting bats requires only a single visit to be confident in a null result, moderate potential two, and high potential three. The site has been identified as having low potential and therefore requires one survey. However, this number may be increased if a bat roost is identified during these surveys.

The surveys may only be carried out during the active season for bats (**May – August**, inclusive) and in suitable weather conditions.

If the mature trees with a low roost potential are required to be removed then this should 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 edges of the site consisting of scattered trees, hedgerows and scrub. It is recommended that the boundary vegetation, including sections of the scrub habitats, southern hedgerow and 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. Habitats should also be incorporated into the final design to increase potential foraging and commuting habitats across the site.

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 and hedgerows, at dusk or night time- Guidelines provided by the Bat Conservation trust and ILP should be followed¹⁶
- 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.

¹⁶ <https://www.theilp.org.uk/documents/guidance-note-8-bats-and-artificial-lighting/>

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;

- Site walk over immediately before development starts to check for any new evidence of badgers
- 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

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 as well as the southern hedgerow will help retain potential habitats for this species as well as providing connectivity across the local landscape. If any scrub 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 Reptiles

The site is considered as having a low potential to support reptiles. However the potential habitat for reptiles is restricted to the eastern edge and south east corner. It is recommended that the suitable habitat on site be reduced in stages.

Under ecological supervision.

Stage 1

The vegetation will need to be reduced to a height 150-200mm using hand tools (e.g. strimmers). It is recommended that cutting works towards the eastern edge of the site, where there is connectivity to wider habitats. All potential refugia such as log or rubble piles should be removed by hand to outside of work area.

Stage 2

After a period of at least two days has passed a second vegetation cut should be undertaken to ground level. Again, it is recommended that this second-stage cutting works towards the eastern edge of the site. All cuttings to be removed from work area. The site can then be completely cleared and worked upon as necessary.

If a reptile is seen then works should stop until an appropriate mitigation strategy can be agreed and implemented.

Additional enhancements for reptiles could be incorporated into the final development, particularly within any retained habitats or green spaces.

4.4.6 Amphibians

The site is considered unlikely to support the European Protected Species Great Crested Newt. The closest record for GCN is approximately 800m from the site. No ponds are on the site or within the local area. GCN typically inhabit terrestrial habitat within 100m of a breeding pond¹⁷. The terrestrial habitats on site are not considered likely to support GCN. The potential impacts to GCN habitat is considered to be negligible.

The site has potential to support terrestrial habitats of common amphibians. By following the above vegetation clearance methodology common amphibians will be able to leave the site safely.

4.4.7 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 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.

¹⁷ 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.

4.4.8 Invertebrates

Retention of scattered trees and areas of scrub and hedgerows 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.

4.4.9 Aquatic Mammals

The site is not considered as having a potential to support aquatic mammals though a section of ditch to the east of the site is considered as having a potential to support water voles. The water vole mitigation handbook recommends protecting a buffer zone of around 3-5m from the toe of the bank¹⁸. As the proposed development will occur around 15m from the water course there are unlikely to be any direct impacts. The general protection measures set out below will insure there are no indirect impacts to this habitat and any water voles that may be present.

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 along the east of the site. This will encompass the retained trees and sections of scrub. 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.

4.6 Ecological Enhancements

A number of enhancements can be made to the final development to help reduce potential ecological impacts, as well as to try and achieve biological net gain. It is important to utilise native species of local provenance in landscaping schemes to enhance the ecological value of the development. However, as the proposals for the site have not been finalised, the full impacts on the site are currently unknown, nevertheless a few general enhancements can be recommended to be taken into account when designing the final plan.

¹⁸ Dean, M., Strachan, R., Gow, D. and Andrews, R. (2016). The Water Vole Mitigation Handbook (The Mammal Society Mitigation Guidance Series). Eds Fiona Mathews and Paul Chanin. The Mammal Society, London.

4.6.1 Planting

Native tree and flower planting will be used to provide additional habitats. The retained scrub and trees will be further enhanced with appropriate hedgerow planting. Tree or hedgerow planting could be incorporated across the site. Additional native planting will provide a benefit for invertebrates, bats, birds and mammals.

Any retained green spaces will include native planting that is appropriately managed to provide biodiversity enhancements. The Biodiversity Net Gain report sets out details of the proposed planting that will have a benefit for wildlife.

4.6.2 Additional Features

To enhance the local bat population and provide roosting opportunities within the site artificial roost sites could be incorporated into the development. Bat boxes could be incorporated into the fabric of the building; the Ibstock Enclosed Bat Box (B and C) ¹⁹ can be easily incorporated into the exterior of a building. Boxes could also be added to the retained trees, the Schwegler 2F is a good general purpose box that can be hung on trees or buildings.

The inclusion of bird boxes into the proposed development would provide a benefit for local bird population. A range of different boxes is recommending including nest features that can be incorporated into the buildings such as Swift nest boxes²⁰ or house martin nest cups²¹.

It is also recommended that log piles could be made in areas of retained green spaces and/or scrub habitats along the boundary of the site. The log piles can be created from any trees that are being removed as part of the proposal. Log piles offer shelter for hibernating small mammals and insects, as well as a foraging area for some birds.

Hedgehog homes could also be placed along the boundaries of the site. These provide areas of shelter for hedgehogs within the site, helping support the local population. Where possible, fencing will be made hedgehog-friendly by creating a 13cm x 13cm hole at the base²². These simple features allow hedgehogs to travel between gardens and increase habitat connectivity. To ensure these are not blocked, small signs can be painted or erected above the hole.

4.6.3 Further protection and enhancement plans

It may be that for this project a more formal and detailed ecological enhancement and protection plan will be required by the LPA. This could be conditioned as part of planning consent.

¹⁹ <https://www.ibstockbrick.co.uk/kevington/eco-products/>

²⁰ <https://www.ibstockbrick.co.uk/kevington/eco-products/>

²¹ https://shopping.rspb.org.uk/INTERSHOP/web/WFS/RSPB-rspbUK-Site/en_GB/-/GBP/ViewProduct-Start?SKU=house-martin-terracotta-nest-box

²² <https://www.hedgehogstreet.org/help-hedgehogs/link-your-garden/>

5. Impact Assessment

The following section provides an ecological impact assessment of the proposed development and is designed to quantify and evaluate the potential impacts of the development on habitats and species present on site or within the local area.

5.2 Methodology

The approach to this assessment accords with guidance presented within the CIEEM Guidelines for Ecological Impact Assessment (EclA) in the UK and Ireland (CIEEM 2018). In essence, an EclA assesses the activities associated with a proposed scheme that are likely to generate changes within identified zone of influences, on identified ecological features and receptors. The proposals are subsequently reviewed and mitigation and compensation measures are outlined which help to reduce negative impacts.

5.2.3 Zone of Influence

The zone of influence for the development is defined as:

- The project red line, for effects on habitats and species;
- Adjacent habitats, considered by species, for mobile species with territories or foraging ranges that may overlap the site.

5.2.4 Features Considered

The types of features considered in the assessment of effects, to meet legislative and policy requirements are:

- Designated sites (European, national and local);
- Protected species;
- Habitats and species of principal importance (Section 41 list);
- Hedgerows and woodland, where not of principal importance; and
- Habitats, where not of principal importance, that may function as wildlife corridors or stepping stones.

5.2.5 Features on Site

The site contains the following important ecological features:

- Scattered trees
- Hedgerow

- Priority habitats (adjacent)

The site is also considered as having potential to support the following ecological features;

- Bats;
- Badgers;
- Small mammals;
- Reptiles;
- Common Amphibians;
- Nesting Birds;
- Notable Plants; and
- Notable invertebrates

5.3 Impact Assessment & Mitigation

A detailed Ecological Impact Assessment (EclA) cannot be carried out at this stage as the plans for the site are not known and additional surveys are required. An assessment should be carried out following the completion of the further surveys in order to quantify and evaluate the potential impacts of the development on the habitats and species present on site and within the local area.

The table below summarises the features present on site, their geographical scale of importance and proposed mitigation.

Feature	Scale of Importance	Potential Impact	Suggested Mitigation/ Compensation
Scattered Trees	Local	Loss of habitat. Damage during construction	Retain mature trees where possible. Establish adequate root and crown protection during construction. Including native trees in post development planting.
Hedgerow	Site	Loss of habitat. Damage during construction	Include new hedgerows in post development landscaping.
Priority habitats	Local	Damage during construction. Impact from development.	Retain trees/ scrub habitats east boundary to screen priority habitats. Establish Biodiversity exclusion zones. Adequate pollution control measures. Appropriate lighting to protect habitats.
Roosting Bats	Local	Loss of bat roosts.	Retain mature trees on site. If trees are to be removed they should be felled using a soft fell methodology. Further surveys are to be conducted on the school buildings. Install artificial roost features within the development.
Commuting/ foraging Bats	Local	Loss of commuting and foraging habitats.	Retain habitats on edge of site such as scattered trees, scrub and hedgerow.

Feature	Scale of Importance	Potential Impact	Suggested Mitigation/ Compensation
			Sensitive lighting scheme during development and as part of the development. Suitable planting to provide additional commuting and forging habitat for bats.
Badgers	Local	Loss of habitats. Harm during construction.	Retain scattered trees, sections of scrub and hedgerow. Follow badger protection measures.
Small mammals	Site	Loss of habitats. Direct impact to animals	Retention of sections of scrub. Follow method statement for clearing scrub habitat. Additional planting included within development. Include suitable gaps in fences for hedgehogs.
Reptiles/ Common amphibians	Local	Loss of potential habitat. Direct impact to animals.	Follow method statement for clearing habitats. Enhance retained areas with additional log piles etc. Include habitats for reptiles in development.
Nesting birds	Local	Loss of habitats/ nests.	Remove vegetation outside of nesting bird season. Inclusion of artificial nest sites within new development. Including native planting in the development.
Plants and invertebrates	Local	Loss of habitat.	Retention of scattered trees and sections of scrub. Suitable planting included within development. Inclusion of features such as log piles.

Table 4: Assessment of potential Impacts from development and proposed mitigation.

6. Conclusion

The site was assessed as having potential to support protected and notable species. Following and initial impact assessment recommendations have been made to reduce the proposed development impacts on wildlife as well as ensuring compliance with relevant legislation and planning policies.

The below table summarises the recommendations.

Recommendation	Action	Justification
Bat survey of buildings*	One dusk emergent and/or dawn re-entry surveys are recommended. Follow BCT survey guidelines.	This will provide information on the presence/ absence of bat roosts.
Retention of habitats*	Retention of mature scattered trees, hedgerow and sections of scrub.	This will ensure that important habitat is protected.
Protection of breeding birds*	Carry out vegetation clearance (if required)/ building demolition outside of breeding bird season or under supervision of ecologist following a breeding bird survey	The buildings are likely providing several opportunities for breeding birds.
Appropriate lighting for bats*	Avoid illuminating bat foraging and commuting habitat- woodland/ scattered trees. During and post development.	This will help limit disturbance to bat species in the longer term.
Remove vegetation in stages*.	Cut down Grassland/Scrub/shrub habitats in stages to reduce risk of impacting protected/ notable species.	This will allow small mammals, reptiles or amphibians, if present to leave the area safely.
Soft Fell mature trees*	Fell mature trees in stages lowering sections to the ground.	This will protect any species using the tree.
Follow badger protection measures*	Follow badger protection measures during construction.	This will stop badgers becoming potentially trapped.
Adequate pollution control	Habitats on site should be adequately protected to ensure no polluted runoff in on site or adjacent land. All oils, fuels and chemicals should be adequately stored on site in bunded contains with appropriate spill kits and emergency procedures in place.	This will protect habitats on site and those in the nearby landscape.
Inclusion of bird and bat boxes in the development/ landscaping	Place boxes in suitable locations in the grounds or on new development.	This would benefit local bird and bat populations on the site and within the local area. .
Use of native plant species during any future planting and landscaping.	Where possible select native tree and plant species in any future landscaping. Inclusion of green roof and walls. Create log piles. Create areas of open green space within	This will provide a greater longer term benefit for wildlife.

* Indicates recommendation to avoid impact to legally protected species.

	development.	
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Table 5: Summary of recommendations.

7. APPENDIX

7.1 Appendix 1: Habitat Map



7.2 Appendix 2: Photos



Photo 1: Looking across an area of amenity grassland towards the school buildings, from the south east corner of the site. Scrub is visible around the buildings as well as small planted trees/ shrubs in the foreground.



Photo 2: Showing the western side of the buildings showing Buddleia scrub developing around edges of the building.



Photo 3: Showing the dense scrub in the north east of the corner of the site. The mature trees (T1) are visible in the back ground.



Photo 4: Scrub and trees along the north eastern boundary of the site.



Phot 5: Looking towards the south east corner of the site with trees (T2) visible on the left of the picture and trees (T3) on the right. The pavilion is visible in the background.



Phot 6: Area of tall structurally diverse grassland (TN1) under tall trees (T3).



Photo 7: Sowing the scrubby boundary along the east of the site with pockets of structurally diverse grassland against the short mown grassland.



Photo 8: Showing a section of the native species hedgerow along the southern boundary of the site. .



Photo 9: Showing mature ivy clad tree on the northern boundary of the site (T5).



Photo 10: Showing the mature Alder trees to the north west of the site (T6)



Photo 11: Looking towards the north of the site from the entrance gate of the school. T6 visible on the left and T5 visible in background.

8.3 Appendix 3: 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.

