Ecological Impact Assessment

of

Land at The Beeches
Steeple Ashton
Oxfordshire

for

Mr Adrian Shooter

(29th January 2019)

2019-01(03)

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PROTECTED SPECIES

This report contains sensitive information relating to protected species. The information contained herein should not be disseminated without the prior advice of Ecolocation.

Survey date: 9th January 2019

Report Version	Date	Author:	Quality check by:	Approved by:
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Comments				
Rev A	11/03/2019	Inclusion of updated proposed plans.		

This report has been prepared in accordance with the CIEEM Guidelines for Ecological Report Writing Second Edition (2017) and is compliant with the CIEEM Code of Professional Conduct.

Summary

- An ecological impact assessment was carried out at The Beeches, Steeple Ashton, in Oxfordshire by a suitably qualified ecologist on 9th January 2019. The survey was undertaken in order to inform a future planning application for a small residential development.

- The Site comprised 1.3 hectares of land associated with a single dwelling and managed to facilitate a private narrow gauge railway. It was understood the house and garden would not be impacted by the proposed development.

- Habitats identified on Site included areas of mixed and coniferous plantation woodland, improved and a small patch of semi-improved grassland; interspersed with bare ground and ephemeral vegetation associated with the railway. A species rich hedgerow made up the southern boundary and species poor hedgerows were located to the east and west, while a post and wire fence comprised the northern boundary. In addition to the main house, a total of seven other buildings were identified within the Site boundary, mostly used for storing vehicles or materials.

- The Site was found to have potential to support a number of protected species including badgers, bats and nesting birds. Additionally a single pond within 250m of the southern Site boundary was assessed for suitability for great crested newts. Although the pond was located within an area of woodland offering good terrestrial habitat for newts, it was found to be slowly flowing and shallow with little to no aquatic vegetation of connections to other waterbodies. The HSI assessment indicated below average suitability for great crested newts.

- The proposed plans outlined the construction of eight dwellings with associated gardens, access road and footpath; as well as the construction of a new garage on hardstanding north of the main dwelling. The proposed development would result in the demolition of all buildings save the main dwelling, the loss of all the improved grassland, with potential partial loss of the semi-improved grassland. The woodland and hedgerows were likely to be indirectly impacted through increased noise and light disturbance.

- Further surveys of the buildings to assess their potential to support roosting bats has been recommended, in addition to preservation and buffering of high value features, pre works checks, sensitive lighting design and sensitive working practices. A number of enhancements have also been suggested.

Contents

1 Introduction

1.1 Instruction

Ecolocation were commissioned by Mr Adrian Shooter to undertake an ecological impact assessment of an area of land at The Beeches, Steeple Ashton in Oxfordshire (hereafter referred to as the 'Site'), which was understood would be subject to a future planning application for a residential development.

1.1.1 Site location

The Site (grid reference SP 47649 25230) was located within a largely rural setting, on the southern outskirts of the small village Steeple Ashton, approximately 9km west of Bicester.

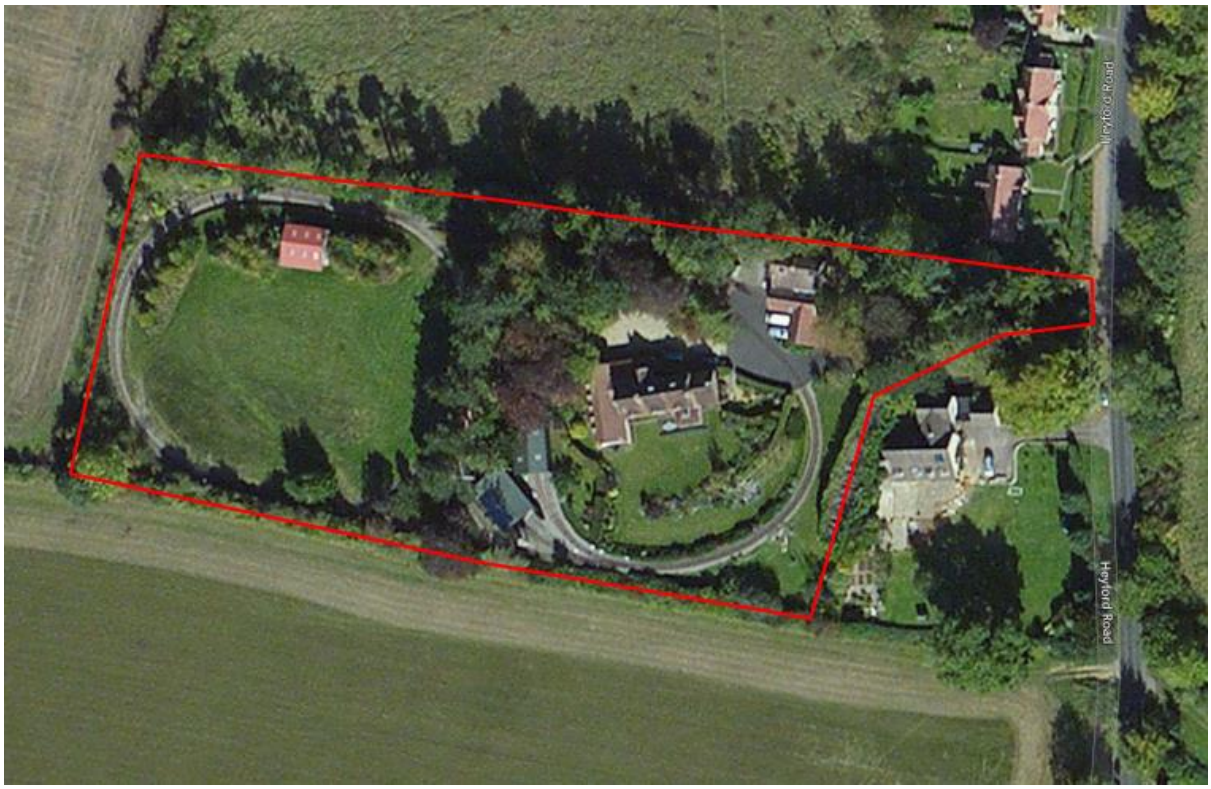


Figure 1: Survey boundary shown in red.

1.1.2 Proposed Plans

The Indicative Site Plan, drawing number 372A01_101, produced by Malcom Payne Group and dated February 2019 was used in the production of this report and can be seen in Appendix 1.

1.2 Survey Purpose

The purpose of the survey was to:

- Identify and provide a description of the habitats present on the Site
- Identify the potential for the presence of protected species on the Site
- Determine the need for further ecological surveys

- Assess the ecological impact of the proposed works
- Identify any ecological constraints or opportunities on the Site

1.3 Legislation & Planning Policies

A number of UK and European policies and legislation deal with the conservation of biodiversity. This section briefly outlines the legal and policy protection afforded to species and habitats scoped in to this survey and described within the report.

1.3.1 Protected habitats & species

The Wildlife and Countryside Act 1981 (as amended by the Countryside Rights of Way Act 2000) Section 9 protects great crested newt (*Triturus cristatus*) and all UK species of bat and their resting places from disturbance, damage and destruction. The Conservation of Habitats and Species Regulations 2010 additionally lists great crested newt and all UK species of bat as European Protected Species, and additionally prohibits killing or injury of individuals, as well as protecting their resting places from disturbance and destruction.

Common reptiles (grass snake (*Natrix natrix*), adder (*Vipera berus*), common lizard (*Zootoca vivipara*) and slow worm (*Anguis fragilis*)) are listed under Schedule 5 of the Wildlife and Countryside Act (as amended) and are protected from killing and injury.

The Wildlife and Countryside Act 1981 (as amended) provides protection to all species of wild bird and their nests. Under Section 1 it is an offence to intentionally or recklessly take, damage, destroy, or otherwise interfere with nests or eggs, or to obstruct or prevent any wild bird from using its nest.

Under the Protection of Badgers Act 1992 it is an offence to disturb, kill, injure or take a badger (*Meles meles*) or to disturb, damage, obstruct access to, allow a dog to access or destroy a sett.

1.3.2 Priority habitats & species

The NERC Act 2006 places a duty on public authorities to conserve biodiversity. Additionally, this Act states that a list of priority species and actions must be drawn up and published, to contain species and habitats of principal importance for the purpose of conserving biodiversity. These lists of Priority Species and Priority Habitats, which encompass the previous UK Biodiversity Action Plan (BAP) habitats and species, are those identified as being the most threatened and requiring conservation action. Priority habitats and species were chosen based on international importance, rapid decline and high risk. The list contains over 1000 habitats and species in total.

1.3.3 Invasive species

Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) contains introduced species which have been identified as having a severe economic and ecological impact through their introduction. It is an offence to release or allow to escape into the wild any species which is listed under Part I or Part II of Schedule 9, or any species which is not native.

1.3.4 Planning policies

The ODPM Circular 06/05 makes the presence of a protected species a material consideration within the planning process. It states that it is essential for the presence of protected species and the extent they may be affected by proposed development be established through appropriate surveys before the planning permission is granted and encourages the use of planning conditions to secure the long-term protection of the species.

The National Planning Policy Framework (NPPF) section 15 outlines how applications need to conserve and enhance the natural environment. Paragraphs 174 to 177 state that sites with biodiversity value should be protected and enhanced, minimising impacts on biodiversity and establishing ecological connectivity. Furthermore, the protection of priority sites and species through developments is outlined and states where significant harm is unavoidable through alternatives or mitigation, planning permission should be refused. Finally, this section concludes that developments with aims to conserve or enhance biodiversity should be supported and any improvement around developments should be encouraged to achieve net gains for biodiversity.

Cherwell's Local Plan 2011-2031 Part One Adopted 2015 contains policy ESD 10 relating to environmental assets. This policy states that when considering proposals for development, a net gain in biodiversity will be sought by protecting, managing, enhancing and extending existing resources, and by creating new ones. It leads on to say that "development proposals will be expected to incorporate features to encourage biodiversity … and where possible enhance existing features of nature conservation value within the site; in addition to identifying existing ecological networks and maintaining these to avoid habitat fragmentation".

2 Methodology

2.1 Desk Study

Prior to the site visit a desk-top data gathering exercise was undertaken. The MAGIC website was accessed to search for statutory designated sites within a 1km radius of the Site. The Thames Valley Environmental Records Centre (TVERC) was contacted for information on non-statutory designated sites and protected and notable species records within a 1km radius of the Site.

2.2 Extended Phase 1 Habitat Survey

The Site was visited by suitably qualified ecologist Alex Robinson (Assistant Ecologist) on 9th January 2019. The survey took approximately 2 hours and weather conditions at the time of survey were recorded.

2.2.1 Phase 1 Habitats

The walkover survey of the Site was carried out based primarily on the standard methodology for Phase 1 Habitat Assessment (JNCC, 1993). The survey covered all accessible areas of the Site including the boundaries. Habitats were identified, described and mapped and a list of plant species was made, with relative abundances recorded using the DAFOR scale (see Appendix 2). Incidental sightings of fauna were recorded and included within the species list for the Site (Appendix 2).

2.2.2 Protected & Priority Species

The survey additionally included an assessment of the potential for protected and priority species to be present on the Site:

Badger – the Site was searched for areas that might be used for foraging and sett building. Incidental foraging signs, tree scratching, paths, latrines and setts were recorded if found (Harris *et al.*, 1989). The Site itself and land immediately adjacent to the Site and visible from the Site boundaries were included within the survey.

Bats – the Site was searched for suitable trees and natural features for roosting and an assessment was made of potential foraging value. All trees found were assessed from the ground to determine the suitability for roosting bats (BCT, 2016).

Notable mammals – the Site was searched for evidence and suitable habitat for BAP/Priority Species mammals (Cresswell *et al.*, 2012).

Nesting birds – the Site was searched for areas of habitat/structures that could be used for constructing a nest or for foraging and any evidence of current or historic nesting.

Amphibians – water bodies within a 250m radius of the Site were scored for their suitability for use by breeding great crested newts using the Habitat Suitability Index (ARG UK, 2010). Terrestrial habitat on the Site was assessed for suitability to support amphibians.

Reptiles – the Site was searched for areas that could be used for insolation, shelter, foraging and breeding (Froglife, 1999).

Invertebrates **–** the Site was searched for areas of habitat that may be used for shelter, and include food plants and species suitable for egg-laying.

Invasive species – the Site was searched for evidence of species listed under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended).

All other protected and notable species were scoped out of the survey work due to an absence of records and lack of suitable habitat within the surrounding area.

2.3 Ecological Impact Assessment

The results of the desk study and field surveys were then used in an assessment of the ecological impacts of the proposed development works, following the Guidelines for Ecological Impact Assessment in the UK and Ireland (CIEEM, 2018).

2.4 Limitations

The survey was undertaken at a suboptimal time of year for botanical identification. However, it was considered that enough plants were identified during the survey to provide an accurate classification of the broad habitat types present.

3 Results

3.1 Desk Study

3.1.1 Designated Sites

The Site had no statutory or non-statutory designation for nature conservation within or directly adjacent to its boundary. The Site lay within the impact risk zones of two Sites of Species Scientific Interest (SSSI), namely Horsehay Quarries, some 2.8km to the north-west and Middle Barton Fens some 3.4km to the west. Horsehay Quarries was designated for its geology and was therefore unlikely to be impacted by the proposed development. The Middle Barton Fen was designated for its calcareous fen-meadows, supporting a diverse range of habitats, flora and invertebrates of county level importance; however recent reports describe the condition of the designation as unfavourable to declining. Due to the significant distance from the Site and lack of similar habitats within the survey boundary it was considered highly unlikely that the proposed development would have an impact on local statutory designations.

A single non-statutory designation was identified within a 1km radius of the Site boundary, a target area associated with the River Cherwell some 250m to the south-east of the Site. This included the river and associated meadowlands which were noted as potentially supporting otters, water voles and a number of BAP birds species including curlew (*Numenius arquata*) and lapwing (*Vanellus vanellus*). Due to the lack of similar habitats on Site and small scale of the development, the proposed was considered unlikely to impact this designation.

3.1.2 Habitat Connectivity

The habitat connectivity of the Site was considered to be good, as summarised in Figure 2 (below). The Site was situated within a rural setting, largely surrounded by fields bounded by hedgerows and situated within close proximity of parkland, woodland and the River Cherwell.

The hedgerows on Site were found to connect to mature, well-structured hedgerows at a number of points, providing commuting corridors for a range of species moving throughout the local habitats such as reptiles, amphibians, birds, bats and terrestrial mammals. However, it was noted that where pasture and arable fields extended to the west of the Site the hedgerows appeared to lack further connections, reducing the connectivity in this direction. Larger, more mobile species, such as badger, may still cross large expanses of fields without hedgerow cover; however most other species, including bats, often avoid commuting across open expanses. This increases the likelihood that any species using the Site or moving through the local landscape would disperse to the north, south or east of the Site.

Areas of open parkland were noted throughout the locality situated to the north-east and south-east of Site. Parkland with long grass pasture and scattered trees offers opportunities for a range of species, including foraging and roosting habitat for birds and bats. These habitats increased the likelihood of dispersal between the similar habitats and the Site, particularly due to the presence of woodland and mature trees within the Site boundary.

A number of areas of deciduous woodland were present within the vicinity of the Site, the largest of which was located some 300m to the south of the Site, known as Dean plantation. Deciduous woodland is a particularly valuable habitat, often supporting a diverse and complex understory, providing opportunities for a number of species and likely increasing the density of populations within the locality of the Site. The presence of additional woodland pockets to the north of the Site and woodland within the Site boundary would allow for dispersal via the Site.

The River Cherwell ran some 200m to the south of the Site, with associated flood-plain meadow and tributaries. A significant watercourse such as the river was likely to support aquatic species such as grass snakes, otters and crayfish. Similarly, the distinct habitats associated with the flood plain was likely to support a variety of specialist flora and invertebrates, subsequently attracting a greater diversity of other species. The presence of a small stream running through the centre of the village to the north may result in occasional commuting via the Site,

however a large expanse of green open country where the two water courses were closest would be more likely to facilitate commuting for aquatic associated species.

Finally, the small village of Steeple Ashton was situated some 100m north of the Site and represented the only built up habitat within the vicinity of the Site. The village was only considered to represent a partial barrier to dispersal, due to its green and open nature. Similarly, the Heyford Road that bounded the Site to the east was not considered to represent a significant dispersal barrier due to the lack of raised kerbs and regular storm drains.

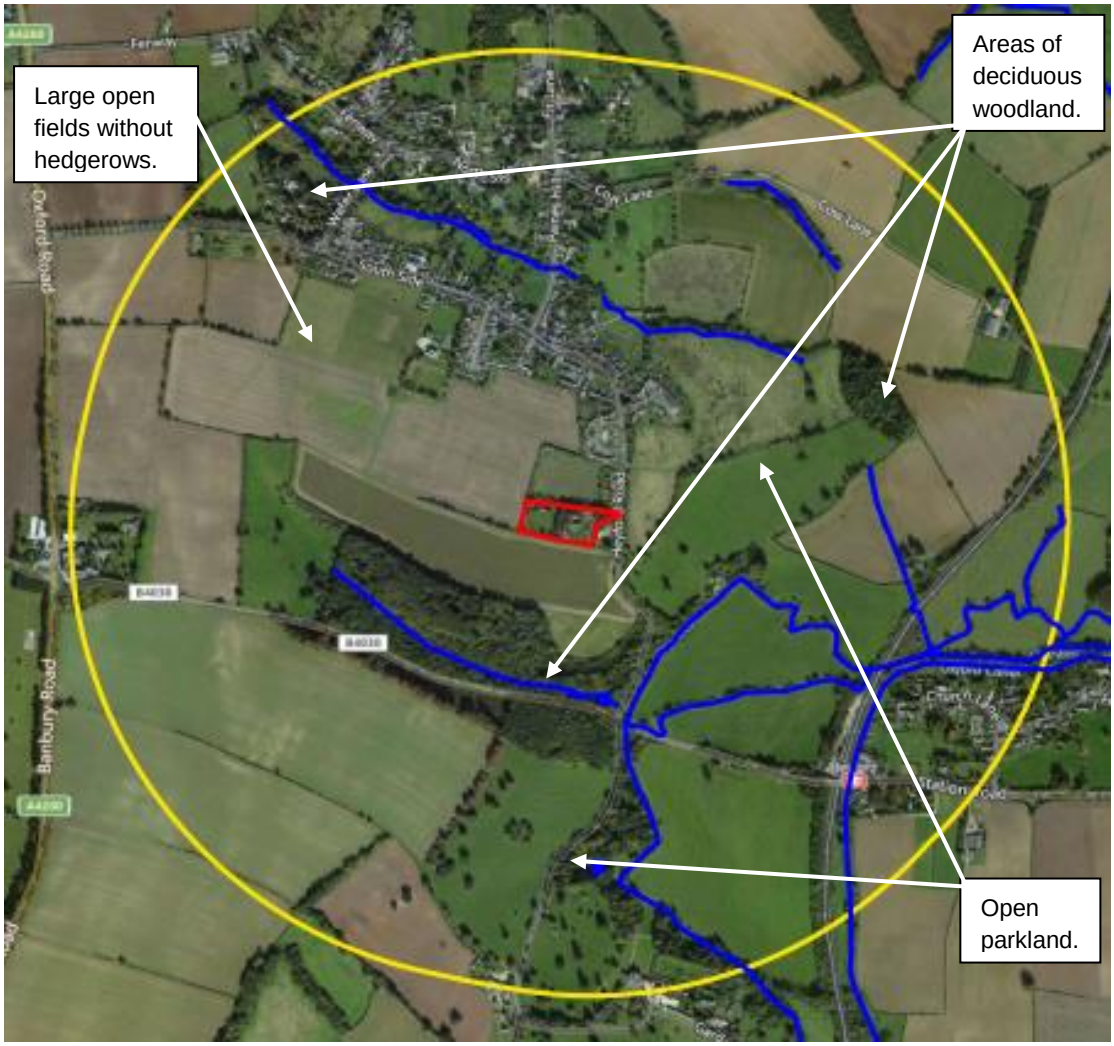


Figure 2: Habitat connectivity features within a 1km radius of the Site. The survey boundary is shown in red with a 1km radius marked in yellow. Waterbodies and watercourses are shown in blue.

3.2 Protected Species Records

3.2.1 Badger

****** All badger information should be kept confidential and remain out of the public domain******

[redacted]

3.2.2 Bats

A single bat record of common pipistrelle (*Pipistrellus pipistrellus*) was returned from within a 1km radius of the Site. This was from 1997 and associated with the village of Steeple Ashton. The lack of historical records was not considered likely to indicate a lack of presence base on the local habitats and was attributed to under recording.

3.2.3 Birds

A large number of records of notable bird species were found within a 1km radius of the Site. Many of these were birds associated with water and likely associated with the River Cherwell. Also included were six records of barn owl (*Tyto alba*), with one record detailing nesting within the local parkland. Other species included 25 instances of swift (*Apus apus*), 3 records of lesser spotted woodpecker (D*endrocopus minor*) and 11 records of yellowhammer (*Emberiza citrinella*). A number of these records were associated with Dean Plantation.

3.2.4 Amphibians

There were no records of amphibian species within a 1km radius of the Site. This was likely due to under recording rather than absence within the locality.

3.2.5 Reptiles

A single record of a grass snake was returned from within a 1km radius of the Site from 2012. This was located some 700m south of the Site and appeared to be associated with the wet meadows adjacent to the River Cherwell.

3.2.6 Invertebrates

Seven invertebrate records were returned from within a 1km radius of the Site including five butterflies and two molluscs. The butterfly species included wall (*Lasiommata megera*), small heath (*Coenonympha pamphilus*), small pearl-bordered fritillary (*Boloria selene*) and large tortoiseshell (*Nymphalis polychloros*). All the butterfly records were dated from between 1990 and 1994. The two species of molluscs were the large black slug (*Arion ater*) and fine-lined pea mussel (*Pisidium tenuilineatum*), the latter of which was associated with the River Cherwell.

3.2.7 Invasive Species

A total of six invasive species records were returned from within a 1km radius of the Site, four of which were of invasive crustaceans associated with the River Cherwell. The remaining invasive species records included Russian-vine (*Fallopia baldschuanica*) dated 2017.

3.3 Extended Phase 1 Habitat Survey

3.3.1 Weather

The weather conditions during the Site visit on 9th January 2019 were as follows:

Table 1: Weather conditions during site visit

Parameter	Recorded Figure
Temperature	10ºC
Cloud cover	10%
Precipitation	None
Wind speed (Beaufort scale)	1 – light air

3.4 Habitats

The Site was an area of land approximately 1.3 hectares in size associated with a single residential dwelling, managed to facilitate a private narrow-gauge railway.

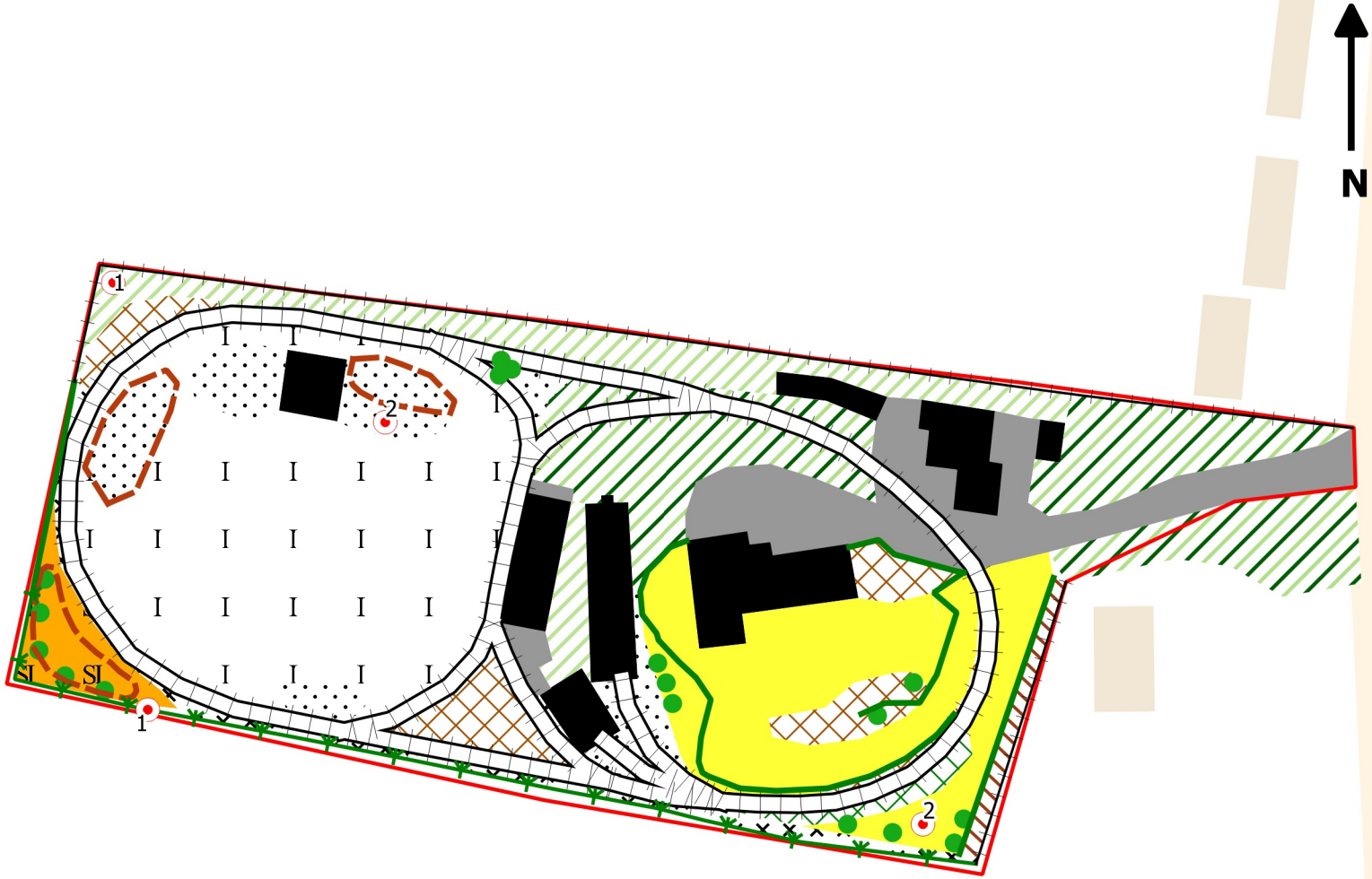
The Site included a house and garden including areas of introduced shrubs, planted beds and fruit trees. A small area of scrub of bramble, blackthorn with primrose ground flora and recently cut tall ruderal vegetation adjacent to a newly planted ornamental hedge was noted in the south-eastern corner of the Site. It was understood would not be impacted by the development. In addition to the main house, a total of seven other buildings were identified within the Site boundary, mostly used for storing vehicles or materials. The remainder of the Site comprised areas of plantation woodland and grassland interspersed with bare ground and ephemeral vegetation associated with the railway. Hedgerows made up the boundaries to the south, east and west, while a post and wire fence comprised the northern boundary. No natural depressions or ephemeral waterbodies were noted during the survey and the topography of the survey area was largely flat with a gentle slope down towards the dwelling, where the slope became steeper towards the main Heyford Road. Where the railway had been built some soil appeared to have been excavated and remained on Site forming a number of bunds, particularly around the northern and eastern boundaries.

Please see the Phase 1 Habitat Map overleaf:

Phase 1 Habitat Map
January 2019

Land at The Beeches, Steeple Ashton

2019-01(03)



Key

- Site boundary
- Coniferous plantation woodland
- Mixed plantation woodland
- Dense/continuous scrub
- SI Semi-improved neutral grassland
- I Improved grassland
- Tall ruderal vegetation
- Amenity grassland
- Ephemeral/short perennial vegetation
- Introduced shrubs
- Buildings
- Bare ground
- Hard standing
- Bund
- Species rich intact hedge
- Species poor intact hedge
- Fence
- Tree
- Railway line
- Target note

Target notes:

1. Mammal path.

2. Pile of chippings and brash

25 0 25 50 75 100 m

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3.4.1 Improved grassland

A large area of improved grassland was identified dominating the centre of the railway circuit in the eastern half of the Site (Photo 1). This appeared to be well managed, with the sward height maintained at approximately 20cm. Species present throughout the sward included abundant perennial rye grass (*Lolium perenne*), Yorkshire fog (*Holcus lanatus*), frequent white clover (*Trifolium repense*), plantain (*Plantago lanceolata*), dandelion (*Taraxacum officinale*), locally frequent dove's-foot crane's-bill (*Geranium molle*) and occasional yarrow (*Achillea millefolium*). At the south-western edge of this habitat a gently sloping ramp had been created which was found to be sparsely vegetated compared to the centre of the habitat (Photo 2). As previously mentioned, a number of bunds were situated throughout this area. This habitat was considered to have low ecological value.

Photo 1: Improved grassland, facing south-west.

Photo 2: Gently sloping ramp within he south-western area of the improved grassland.

3.4.2 Mixed broad-leaved plantation woodland

North of the main dwelling and access road was an area dominated by mature mixed plantation woodland (Photo 3). Species present included beech (*Fagus sylvatica*), scots pine (*Pinus sylvestris*) and larch (*Larix sp*.) with an understory including yew (*Taxus baccata*) and occasional rhododendron (*Rhododendron sp.*). A number of buildings were situated in and around this habitat, with some constructed to specifically avoid mature trees. Although some structured understory vegetation was present, particularly adjacent to the access road, this was sparser where foot traffic appeared to be high and the presence of pine and beech restricted the growth of ground flora. Despite the lack of leaves at the time of survey the canopy structure was complex, and a number of bird nests were noted. This habitat was considered to have medium to high ecological value and had the potential to support a range of species.

Photo 3: Area of mixed plantation woodland, facing east.

3.4.3 Coniferous plantation woodland

Along the length of the northern boundary ran a strip of coniferous woodland some 5m wide (Photo 4). A second smaller area was noted between the station and carriage building. The strip along the northern boundary was dominated by larch and pine, with dense laurel (*Prunus* sp.) present within a number of areas. Compared to the area of mixed woodland the understory was denser, providing higher levels of ground cover and representing a potential linear commuting route through the Site. In comparison, the small area between the two buildings comprised scots pine only and had a bare understory associated with this type of woodland. These habitats were considered to have medium to high ecological value within the context of the Site.

Photo 4: Band of coniferous woodland along the northern boundary.

3.4.4 Ephemeral vegetation

Around the edges of the railway line, particularly towards boundary vegetation and the area of improved grassland, an ephemeral vegetation community had developed on top of and around the track ballast (Photo 5). Species present included: frequent bulbous buttercup (*Ranunculus bulbosus*), herb robert (*Geranium robertianum*), greater plantain (*Plantago major*), oxeye daisy (*Leucathemum vulgare*) and occasional self-heal (*Prunella vulgaris*). The species composition was considered likely to provide pollen and nectar sources for bees and butterflies but was considered to have negligible to low ecological value within the context of the larger Site.

Photo 5: Railway line with edges of ephemeral vegetation.

3.4.5 Semi-improved grassland

A small triangle of semi-improved grassland was identified within the south-western edge of the Site on top of and around a bund (Photo 6). This area appeared to lack management with a tall and structurally complex sward. Species present included: abundant red fescue (*Festuca rubra*), frequent cock's foot (*Dactylis glomerata*), ladies bedstraw (*Galium verum*), common knapweed (*Centaurea nigra*), occasional false oat grass (*Arrhenatherum elatius*), hedge bedstraw (*Galium mollugo*) and bush vetch (*Vicia sepium*). The dense sward structure and vegetative diversity was considered to offer opportunities for sheltering and foraging small mammals, common amphibians and reptiles, as well as providing a range of food plants for invertebrates; however, the small size of the habitat reduced the overall benefits within the context of the Site. Overall this habitat was considered to be of medium ecological value.

Photo 6: Area of semi-improved grassland in south-west corner of the Site, facing south.

3.4.6 Introduced shrubs

A number of areas of introduced shrubs were noted on Site outside of the ornamental garden situated south of the main dwelling. The first of these was located within the north-west corner of the Site and supported a number of ornamental palms and a small stand of bamboo (Photo 7). This area was considered to have negligible ecological value due to the lack of structure created by this feature. Additionally, a triangle of dense shrub was noted south of the station building which largely comprised cotoneaster (*Cotoneaster sp.*), forming a closed structure close to the ground and extending to approximately 2m (Photo 8). A small amount of bramble (*Rubus fruticosus*) was also noted throughout this area. A similar patch was also noted north of the railway line in the south-eastern corner of the Site. The areas of introduced shrubs was considered to have negligible to low ecological value, with some potential sheltering opportunities for small species offered.

Photo 7: Area of ornamental plants in north-western corner of the Site.

Photo 8: Area of dense introduced shrub on southern boundary.

3.4.7 Amenity grassland

Outside of the garden associated with the main dwelling, two areas of amenity grassland were identified. These were located to the west and east of the garden. The sward height was well managed forming a close-cropped lawn of perennial rye grass and red fescue with broad leaved plants associated with this habitat such as daisy (*Bellis perennis*) and dandelion (*Taraxacum officinale*). A number of ornamental trees were noted in both areas including cherry (*Prunus sp*.) and paper birch (*Betula papyrifera*) with limited structure to support nesting birds. This habitat was considered to have negligible to low ecological value, providing some foraging opportunities for common birds and mammals.

3.4.8 Bare ground and hardstanding

The access drive, parking area north of the main dwelling and various access routes around the buildings on Site comprised areas of hard standing. Where the railway line ran out of the south-east of the two buildings used for storing carriages and locomotives, track ballast had been laid forming a wide area devoid of vegetation (Photo 9). Finally, areas of bare ground were identified where foot traffic appeared to be high and where trees had recently been felled within the improved grassland area (Photo 10). All of these habitats were considered to have negligible ecological value.

Photo 9: Area of track ballast south of the storage buildings.

Photo 10: Area of bare ground where trees had recently been felled.

3.4.9 Species-rich continuous hedgerows

The southern boundary was formed by a species-rich continuous hedgerow with trees, supported by a post and wire fence (Photo 11 and 12). This was found to possess a dense structure with no signs of laying or coppicing and a well vegetated field base. Species present included: yew, ash (*Fraxinus excelsior*), elder (*Sambucus nigra*), box (*Buxus sp.*), beech (*Fagus sylvatica*), holly (*Ilex aquifolium*) and dog rose (*Rosa cannina*). The ground flora included abundant ladies bedstraw, frequent salad burnet (*Sanguisorba minor*), germander speedwell (*Veronica chamaedrys*), occasional white dead nettle (*Lamium album*) and black medick (*Medicago lupulina*). Additionally, ivy (*Herea helix*) and clematis (*Clematis vitalba*) were noted scrambling throughout the hedgerow. Due to the complex structure and diverse ground flora this feature was considered to have medium ecological value within the context of the Site.

Photo 11: Species-rich continuous hedgerow, facing east.

Photo 12: Species-rich continuous hedgerow, facing west.

3.4.10 Species-poor continuous hedgerow

Two species-poor continuous hedgerows were identified on Site. The first formed the western boundary of the Site and appeared to comprise a monoculture of ornamental hawthorn (*Crataegus sp*) (Photo13). The hedgerow was well laid at the base with a thin upper structure. The ground flora associated with the hedgerow was of a similar composition to the species-rich hedgerow. This feature was considered to have low to medium ecological value.

The second hedgerow was noted surrounding the garden in the eastern section of the Site comprising a combination of beech (*Fagus sylvatica*) and box (*Buxus sp*.) of negligible to low ecological value.

Photo 13: Species-poor continuous hedgerow, facing north.

3.4.11 Scattered trees

A number of scattered trees were noted throughout the Site outside of the woodland areas and hedgerows. These were largely constrained to the south-western corner of the Site associated with the bund and included silver birch (*Betula pendula*) and an acer (*Acer sp*). These trees were smaller than those in the woodland and appeared to be semi-mature, possessing suitable structure for nesting birds. They were considered to be of low to medium ecological value in the context of the Site.

3.4.12 Buildings

Aside from the main dwelling, a total of seven buildings were identified within the red line boundary and were due to be demolished as part of the proposed development. Three of these were situated within the southern central area of the Site, two used for storing locomotives and carriages and the other as a station. The two storage buildings comprised profile metal sheeting on a steel frame. The station building was also made up of profiled metal sheeting, but was lined internally by plaster board. Out of the remaining buildings three were wooden framed with wooden slat walls and various roof types. One of these was located within the northern portion of the improved grassland and the other two were situated both east and west of the garage building. The garage building was of brick construction with a clay tiled pitched roof and included a first-floor level converted into an office, as well as multiple rooms and workshops at ground level. A single bird nest was noted within the wooden frame building situated within the northern portion of the improved grassland.

3.5 Protected & Priority Species

3.5.1 Badger

****** All badger information should be kept confidential and remain out of the public domain******

[redacted]

3.5.2 Bats

No trees were identified on Site that possessed suitable rot holes, cracks or peeling bark that may facilitate roosting bats. The varied habitats on Site offered a range of foraging opportunities for bats, particularly the woodland and grassland that were likely to support a range of invertebrate species. Many species favour the edges of woodland, increasing the likelihood that a range of bats may use the Site for foraging. The hedgerows were also considered likely to support a range of habitats for invertebrates, in turn providing foraging for bats. The southern boundary hedgerow was connected to the eastern road verge vegetation which was in turn connected to Dean Plantation. As many bats prefer to commute and disperse via connected hedgerows this increased the likelihood that bats roosting and foraging in the plantation may disperse via the Site. Finally, a number of the buildings on Site were considered to have features suitable to support roosting bats, particularly the garage building.

3.5.3 Notable mammals

Brown hare are typically associated with farmland and due to the presence of suitable habitat surrounding the Site it was likely that this species was present within the locality. However, due to the small size of the habitats on Site it was considered unlikely that it represented a valuable stronghold for this species; although it could not be ruled out that they might pass through the Site on occasion. Additionally, the habitats on Site offered a number of opportunities for hedgehogs particularly foraging and commuting habitats, as well as shelter within the longer grass and introduced shrubs.

3.5.4 Birds

The majority of the trees on Site were considered to have suitable structure to support nesting birds and a number of old nests were noted. Additionally, the grassland offered suitable foraging habitat for a range of species and the southern hedgerow possessed a complex structure favoured by smaller birds.

Incidental sightings of birds during the site visit in January included pigeon (*Columba palumbus*), crow (*Corvus corone*), blue tit (*Cyanistes caeruleus*), robin (*Erithacus rubecula*), magpie (*Pica pica*) and blackbird (*Turdus merula*).

3.5.5 Amphibians

There was one pond within a 250m radius of the Site, to the south as shown in Figure 3. This was subject to a Habitat Suitability Index (HSI) assessment.

Figure 3: Ponds within a 250m radius of the Site

The Habitat Suitability Index (HSI) for great crested newts was developed by Oldham *et al.* in 2000 as a measure of habitat suitability in order to estimate presence/absence. A waterbody is assessed based on a geometric mean of ten features, each given a score relating to the current condition of the ponds characteristics and surroundings. Where the overall result is closer to 0 this indicates a more unsuitable habitat and a score closer to 1 represents more optimal habitats.

HSI can be useful in:

- Evaluating the general suitability of a sample of ponds for Great Crested Newt
- Comparing general suitability of ponds across different areas
- Evaluating the suitability of receptor ponds in a proposed mitigation scheme

HSI is limited by being insufficiently precise to allow one to draw conclusions that a pond with a high score will support Great Crested Newts nor that a pond with a low score will not do so. The results do not allow conclusions on newt populations to be reached. Therefore a HSI assessment is not a substitute for further great crested newt surveys.

The pond was large, shallow and slowly flowing into a culvert at the eastern end that travelled under the road towards the River Cherwell (Photo 14 and 15). The pond appeared to have formed naturally at the bottom of a deep depression within the plantation and was completely shaded by surrounding trees. The pond had indistinct banks and supported limited aquatic vegetation, with a sandy bed. Although the location of the pond within the woodland was considered to offer excellent terrestrial opportunities for great crested newts, the shallow and flowing nature of the waterbody reduced the overall suitability to support breeding great crested newts. Furthermore the waterbody had limited connectivity to other ponds, with only two others some 200m to the south. The HSI assessment of this pond identified 'below average' suitability for great crested newts and the results have been summarised in Table 2.

Photo 14: Eastern end of the pond, facing west.

Photo 15: Deepest portion of the pond, facing south.

Table 2: HSI calculation for the pond

Pond 3		
Factor	**Result**	**Suitability Index**
SI 1- Location	A (optimal)	1
SI 2- Pond area	~1600m^2	0.85
SI 3-Pond drying	Sometimes	0.5
SI 4-Water quality	Good	1
SI 5-Shade	100%	0.2
SI 6-Fowl	Minor	0.67
SI 7-Fish	Possible	0.67
SI 8-Ponds	2	0.55
SI 9-Terrestrial	Good	1
SI 10-Macrophytes	20%	0.5
SI1 x SI2 x SI3 x SI4 x SI5 x SI6 x SI7 x SI8 x SI9 x SI10 (1 x 0.85 x 0.5 x 1 x 0.2 x 0.67 x 0.67 x 0.55 x 1 x 0.5) $^{1/10}$ = 0.57 equates to **"below average"** habitat suitability for great crested newts		

The hedgerows around the Site offered potential shelter and commuting routes for amphibians. The semi-improved and improved grassland was likely to support common invertebrates and in turn provide a foraging source for amphibians. However, the Site was largely surrounded to the south and east by large, unconnected arable fields with the closest waterbodies some 250m to the south. Amphibians could travel to the Site via the rough grassland to the north, by crossing the road from the parkland to the east or by following the roadside vegetation from the south. However, based on the location of ponds and waterbodies within the local area it was

considered likely that great crested newts were only present to the south of the Site and that they would be unlikely to travel the considerable distance from these ponds to the Site.

3.5.6 Reptiles

The Site was considered to offer some opportunities for reptiles, with some basking habitat within the ephemeral vegetation adjacent to the hedgerows and some foraging opportunities within the grassland and woodland. Furthermore, the hedgerows, woodland, bunds, large woodchip pile and brash pile (Target note 2) possessed suitable structure for sheltering and potentially hibernating. Based on the local habitats it was considered possible that reptiles may be present within the rough grassland to the north of the Site and within the parkland to the east. However in both cases these habitats were more suitable for reptiles and therefore it was considered unlikely that the Site represented important habitat for local populations. Similarly, as with amphibians, the presence of unsuitable habitat to the south and west reduced the likelihood of dispersal via the Site.

3.5.7 Invertebrates

A number of plants were identified on Site that represented good sources of pollen and nectar for invertebrates such as butterflies, moths and bees; particularly within the grassland and hedgerows. However, due to the small size of the habitats on Site it was considered unlikely that notable invertebrates would be present in significant numbers.

3.5.8 Invasive Species

There were no signs of any invasive species found during the survey.

4 Assessment of Ecological Impacts

The Site was found to comprise an area of land associated with a single residential dwelling, managed to facilitate a private narrow-gauge railway. Habitats present included areas of mixed and coniferous woodland, improved grassland, a small patch of semi-improved grassland, introduced shrubs, areas of bare ground, ephemeral vegetation and hard standing associated with the railway and access routes; as well as species rich and species poor hedgerows. A number of soil bunds were also noted, some of which had recently been felled of standard trees with the resulting woodchip stored on Site (Target note 2). A total of seven buildings aside from the main dwelling were present throughout the Site.

The proposed plans outlined the construction of eight dwellings with associated gardens, access road and footpath; as well as the construction of a new garage on hardstanding north of the main dwelling. The existing garage building and associated buildings are outlined to be demolished in order to construct two new houses. The existing main house and associated gardens will be retained with the railway line removed.

The remaining six new buildings were due to be constructed within the improved grassland habitat in the western half of the Site. It was understood that most of the trees that were within the boundary of the proposed development had already been removed at the time of the survey. Largely the remaining trees were outlined to be retained and buffered in line with root protection orders. It was discussed during the Site visit that the new access road and footpath would be created through a “no dig” construction. The proposed development would result in the loss of all the improved grassland, with potential partial loss of the semi-improved grassland. The woodland and hedgerows were likely to be indirectly impacted through increased noise and light disturbance. Overall a net loss of biodiversity was anticipated through the proposed development. Impacts have been discussed further below and recommendations have been made in Section 5 in order to avoid impacts to protected species and off-set biodiversity loss.

All other habitats on Site were either considered to have negligible value to ecology or were not due to be impacted by the proposed development.

4.1 Improved Grassland and Semi-improved Grassland

Through the proposed development the area of improved grassland would be lost to new buildings and associated access and gardens. The grassland was considered suitable to support a range of protected species and therefore in order to avoid committing an offence under the Wildlife and Countryside Act 1981 (as amended) and Protection of Badgers Act 1992 sensitive working practices have been recommended in Section 5.

Additionally, there appeared to be a risk of potential impacts from the proposed plot 5 dwelling on the area of semi-improved grassland associated with the south-western bund. Due to the high herbaceous diversity of this habitat and value to protected species, impacts to this habitat should be avoided or reduced where possible. In comparison the north-western bund was found to be less valuable to wildlife. It is recommended that the bund in the south-western corner should be retained and buffered by 1m. This should be maintained as a green open space corridor and fenced in order to prevent possible destruction or removal by future residents.

4.2 Hedgerows and Woodland

Through the proposed development the boundary vegetation and woodlands will be retained. However there exists risk of indirect impacts through light and noise disturbance. In order to preserve the hedgerow for protected species such as foraging bats and commuting badgers, it is recommended that the hedgerows and boundary trees are buffered by approximately 3m from the centre of the hedgerow base and maintained as open green space. Specifically the western and southern boundary vegetation should not be within private gardens and should be fenced in order to prevent possible destruction or removal by future residents. All areas of woodland should similarly be retained and buffered by 3m from permanent constructions, avoiding large areas of trees being sited within gardens to prevent possible destruction or removal by future residents. Additionally, any lighting through the proposed design should be directed away from the trees and hedgerows to avoid deterring foraging and commuting wildlife. Finally, it was noted that supplementary planting within the boundary vegetation

has been proposed and it is recommended that this comprise native species that are known to thrive within the locality to reduce the total loss of biodiversity.

4.3 Badgers and Notable Mammals

[redacted]

4.4 Bats

As previously mentioned the hedgerows and woodland edges were considered to have potential to support bat foraging behaviour and measures have been recommended to preserves these features. In addition to this, a number of the buildings on Site due to be lost through the development were considered to have potential to support rooting bats. In order to avoid committing an offence under the Wildlife and Countryside Act 1981 (as amended) it is recommended that a preliminary roost assessment is undertaken to assess the seven buildings due to be lost for potential to support roosting bats.

4.5 Birds

All trees and hedgerows on Site were considered to be of a suitable height and structure to support nesting birds and evidence of past nesting was observed throughout the Site. In order to avoid impacts to nesting birds a pre-works check should be carried out prior to any tree or shrub removal, or these works should take place outside of nesting bird season. Additionally, sensitive design of access and lighting will further reduce indirect impacts to nesting and foraging birds that may be using the woodland. Planting of native species and large trees through the development will offer new nesting opportunities for birds, as well as the provision of artificial nest boxes where possible.

4.6 Reptiles and Amphibians

The hedgerows, woodland and semi-improved grassland were considered to have potential to support amphibian and reptile commuting and foraging behaviours; although it was presumed unlikely they were present in the locality in significant numbers due to the limited nature of suitable habitats and connectivity between such habitats. Buffering and preservation of these features will reduce potential impacts to individuals that may on occasion use the Site and may act to preserve the favourable conservation status of these species within the local area. Furthermore, the bunds and chip pile had potential for amphibian and reptile hibernation behaviours. It is therefore recommended that these features be removed carefully to avoid harming sheltering individuals.

5 Avoidance, Mitigation and Compensation

The National Planning Policy Framework paragraph 174 states that "To protect and enhance biodiversity and geodiversity, planning policies should: ...promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species populations". In order to ensure no net loss of biodiversity in accordance with NPPF & Circular 06/2005 recommendations are made below.

5.1 Avoidance & Protection of High Value Features

- All areas of woodland, the southern and western boundary hedgerows and the area of semi-improved grassland on Site must be retained, buffered and protected both during works and post development. It is recommended that the woodland and hedgerows are buffered by 3m and the semi-improved grassland buffered by 1m. This is in order to preserve the condition of the habitats for foraging and commuting bats, badgers, notable mammals, amphibians and reptiles. There is to be: no construction of permanent structures within the buffer zones and no private gardens, footpaths, patio or managed lawns within the buffer zone. The buffer areas should be maintained as long grassland with wildflowers to encourage invertebrates and provide shelter to commuting wildlife.

5.2 Further Survey Work

- Further survey work for bats should be undertaken in accordance with Bat Conservation Trust Guidelines (Collins, 2016). All buildings within the Site boundary to be impacted by the proposed works should be subject to a Preliminary Roost Assessment (PRA) survey for bats. This PRA survey comprises a detailed external and internal inspection of the buildings to assess for signs of bats and/or features within the building which could be used for roosting locations or as potential entry/exit points for bats.

5.3 Mitigation

All recommendations and mitigation measures set out as a result of species-specific surveys on Site to be followed in full.

- All tree removal should be carried out outside of the nesting bird season (March to September inclusive) or alternatively the Site should be checked by a suitably qualified ecologist immediately prior to commencement of these works. If nesting birds are found to be present during works a 5m buffer of no disturbance must be maintained around the nest(s) until all of the young have naturally fledged.

- Lighting during works and permanent lighting once the development has been completed should be cowled to direct light towards the ground and away from all areas of woodland, linear trees and the associated buffer zone in order to preserve the condition of the habitat for foraging and commuting bats, badgers, notable mammals, amphibians and reptiles.

- Any excavations and foundation trenches which must be left open overnight must have sloping boards installed to ensure that any animals that fall in are able to escape.

- The top soil of the bunds and the chip pile should be removed using hand tools in order to avoid disturbing, injuring or killing sheltering reptiles, amphibians or small mammals.

- Should non-protected animals such as hedgehog, frog, smooth newt or toad be found during works these should be moved carefully by hand to an area to be left undisturbed by works.

- Should evidence of protected species, such as nesting birds or great crested newts, be discovered during works, works should temporarily stop while Ecolocation or the local office of Natural England are contacted for advice on the best way to proceed.

5.4 Compensation for Residual Biodiversity Loss

The National Planning Policy Framework paragraph 175 states that "Opportunities to incorporate biodiversity in and around developments should be encouraged". Therefore, additional recommendations for biodiversity enhancements across the Site are provided below:

- Any new landscaping or planting proposed should make use of native species, preferably of local provenance, which are of higher value to local wildlife. The planting of native species which are appropriate to the landscape character may improve local species diversity as well as increase the potential for use of the Site by wildlife.
- 10 Nest boxes could be provided on Site to maintain and enhance the existing breeding possibilities. Such nesting facilities should be sited away from roads, erected on any suitable proposed buildings and facing away from prevailing wind and rain.
- A small number of bat boxes could be erected on retained or new trees or buildings, in order to provide additional opportunities for roosting bats. Boxes should be placed in a south-facing direction between 4 and 5m high. Ecolocation would be happy to offer further advice on this if necessary.
- Consideration could be given to creating log piles within areas of retained woodland or along hedgerows to provide suitable habitat for invertebrates and shelter for amphibians, reptiles and small mammals. These should be sited in shady places and the lowest logs should be buried a few centimetres into the soil to keep them damp.

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Appendix 1 – Proposed Plans

Key:

- Site Boundary
- Site entrance
- Existing Footpath
- Existing Buildings
- Existing buildings/ structures to be removed
- Proposed New Dwellings
- Existing Access Drive Widened
- Proposed New Roads (Permeable surface with below ground surface water attenuation - subject to civil eng's advice)
- New/existing private gravel driveways
- No dig construction
- Existing Cat A Trees
- Existing Cat B Trees
- Existing Cat C Trees
- Existing Cat U Trees
- Existing Trees Proposed to be Removed
- Root Protection Areas
- Proposed Replacement Tree Planting
- Proposed new planting/ boundary reinforcement
- PS — Pumping Station - refer to drainage strategy
- Allocated on-plot parking spaces
- V — Unallocated visitors parking spaces
- New fencing protecting buffer to site boundary

NOTE: Retention of trees T73 & T76 subject to feasibility of provid ng adequate root protection during demolition of existing adjacent buildings. Should retention not prove feasible replacement trees to be provided as part of detailed landscape scheme.

SCALE BAR
0m 5m 10m 20m 30m 40m

Rev	Amendments	Date

Client
Mr & Mrs Shooter

Project
The Beeches
Steeple Aston

Drawing
Indicative Site Plan

Date	Purpose
Feb 2019	Planning

Scale	Drawing Size
1:500	@ A2

N

Project No.	Drawing No.	Revision
372A01	101	

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INDICATIVE SITE PLAN

THE BEECHES, STEEPLE ASTON

Appendix 2- Species List 09/01/2019

Common Name	Scientific Name	Abundance
DAFOR – D - dominant A – abundant F – frequent O – occasional R – rarely occurring, L - locally		
Trees/Shrubs		
Acer species	*Acer sp*	O
Silver birch	*Betula pendula*	O
Paper birch	*Betula papyrifera*	R
Box	*Buxus sp.*	O
Dogwood	*Cornus sanguinea*	O
Cotoneaster species	*Cotoneaster sp.*	LA
Hawthorn sp	*Crataegus sp*	F
Beech	*Fagus sylvatica*	F
Ash	*Fraxinus excelsior*	O
Holly	*Ilex aquifolium*	F
Larch	*Larix sp.*	F
Privet species	*Ligustrum sp.*	O
Pine species	*Pinus sp.*	F
Scots pine	*Pinus sylvestris*	O
Laurel	*Prunus laurocerasus*	LA
Cherry species	*Prunus sp.*	R
Rhododendron	*Rhododendron sp.*	O
Dog rose	*Rosa canina*	O
Elder	*Sambucus nigra*	O
Lilac	*Syringa vulgaris*	O
Yew	*Taxus baccata*	O
Lime species	*Tilia sp.*	O
Herbs		
Yarrow	*Achillea millefolium*	O
Scarlet pimpernel	*Anagallis arvensis*	O
Cow parsley	*Anthriscus sylvestris*	O
Daisy	*Bellis perennis*	F
Common knapweed	*Centaurea nigra*	LF
Clematis	*Clematis vitalba*	O
Hedge bedstraw	*Galium mollugo*	O
Ladies bedstraw	*Galium verum*	LF
Dovesfoot cranesbill	*Geranium molle*	LF
Herb robert	*Geranium robertianum*	O-LF
Ground ivy	*Glechoma hederacea*	O
Ivy	*Hedera helix*	F
Stinking iris	*Iris foetidissima*	R
White dead nettle	*Lamium album*	O
Oxeye daisy	*Leucathemum vulgare*	F
Black medick	*Medicago lupulina*	O
Ribwort plantain	*Plantago lanceolata*	F
Greater plantain	*Plantago major*	O
Primrose	*Primula vulgaris*	R
Self-heal	*Prunella vulgaris*	O
Bulbous buttercup	*Ranunculus bulbosus*	LF
Bramble	*Rubus fruticosus*	LO
Salad burnet	*Sanguisorba minor*	LF
Ragwort species	*Senecio sp.*	O
Field madder	*Sherardia arvensis*	R
White clover	*Trifolium repens*	F

Germander speedwell	*Veronica chamaedrys*	F
Bush vetch	*Vicia sepium*	O
Grasses, sedges and rushes		
Bent grasses	*Agrostis spp.*	O
False oat grass	*Arrhenatherum elatius*	O
Cock's foot	*Dactylis glomerata*	F
Red fescue	*Festuca rubra*	A
Yorkshire fog	*Holcus lanatus*	O
Perennial rye grass	*Lolium perenne*	A
Meadow grasses	*Poa spp.*	O
Arrow bamboo	*Pseudosasa japonica*	O
Fauna		
Pigeon	*Columba palumbus*	
Crow	*Corvus corone*	
Blue tit	*Cyanistes caeruleus*	
Robin	*Erithacus rubecula*	
Magpie	*Pica pica*	
Blackbird	*Turdus merula*	