



Ecological Impact Assessment

of

The Leys
Adderbury
Oxfordshire

for

Mr Nick Biggam

(13th May 2020)

2020-02(15)

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: 10th April 2020

Report Version	Date	Author:	Quality check by:	Approved by:
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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

- A Preliminary Ecological Appraisal was carried out of an area of land at The Leys, Adderbury in Oxfordshire by a suitably qualified ecologist on 10th April 2020. The survey was undertaken in order to inform an Ecological Impact Assessment for a future planning application relating to the construction of a small residential development of two dwellings at the Site.
- The Site comprised an area of overgrown gardens within the land ownership of the adjacent property; with numerous trees across the Site; an overgrown tennis court and areas of long grassland and shrubs.
- The proposed works involve the removal of much of the on site habitat to enable the construction of two residential properties, access routes and associated lawns. A number of the trees at the Site are subject to tree preservation orders and as such will be retained throughout the works.
- Ecolocation previously undertook great crested newt surveys of ponds in the vicinity of the Site in 2018, which identified a small population of great crested newts in the ponds within 250m of the Site. The data search identified a small number of additional great crested newt records within 1.0km of the Site; with a number of bat records and a single reptile record also noted within the vicinity of the Site.
- The Site was considered to have moderate ecological value due to the well vegetated and overgrown nature of the Site, which was considered to present suitable habitat for a range of protected and notable species including reptiles and amphibians, badgers and bats – although no direct evidence of these species were noted and it was considered likely that terrestrial mammals would utilise the Site only for foraging and commuting and not for sett building or roosting. In addition, snake's head fritillary was identified at the Site (though it could not be established if this was a wild variety or garden species. Due to the rare nature of this plant within Oxfordshire it is recommended that the area of soil embankment in which the plants were growing is translocated to a new location to avoid the loss of this population from the proposed works.
- The proposed development was considered to directly impact terrestrial habitat suitable for great crested newts within a 100m radius of a small population. As such the recommendations made within the Ecolocation great crested newt assessment report – for appropriate mitigation and Reasonable Avoidance Measures – are considered to remain applicable to the Site and this report should be read in conjunction with the aforementioned great crested newt report.
- This report should also be read in conjunction with the Ecolocation bat assessment report for the Site, which makes recommendations specifically relating to bats.
- Additional recommendations such as nesting bird checks, retention of trees and hedgerows where possible, safe disposal of invasive plant species and mitigation measures relating to open excavations and lighting have been made to safeguard wildlife during any construction on Site.

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1 Introduction

1.1 Instruction

Ecolocation were commissioned by Mr Nick Biggam to undertake an ecological impact assessment of an area of land adjacent to The Leys in Adderbury, Oxfordshire (hereafter referred to as the 'Site'), which was understood would be subject to a future planning application for the construction of two residential dwellings at the Site.

1.1.1 Site location

The Site (grid reference SP 46783 35232) was located in the village of Adderbury, approximately 5km south of Banbury. The Site was bordered by other large, detached residential dwellings off The Leys to the west and south, a small public track bound the Site to the north and east. The Site boundary is shown in Figure 1.

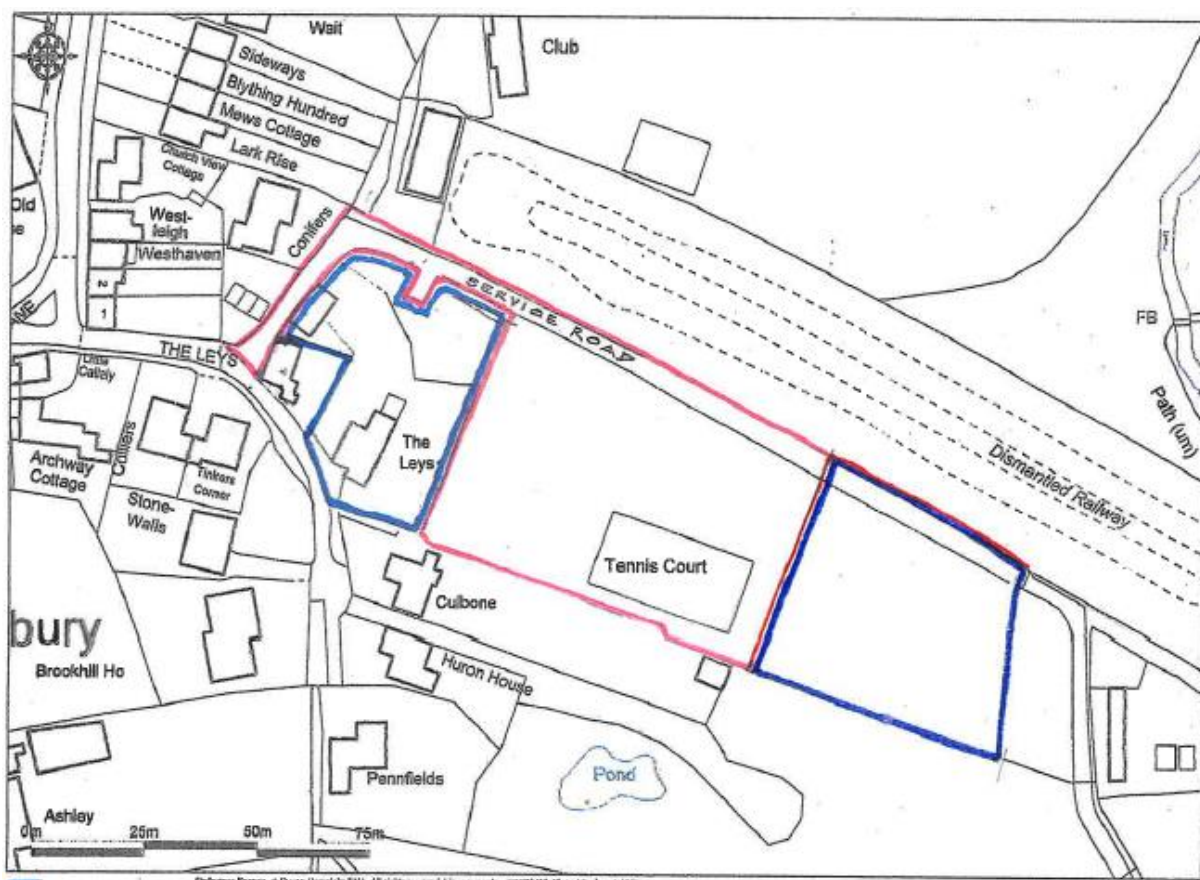


Figure 1: Survey boundary marked in red, with the wider client ownership shown in blue.

1.1.2 Proposed Plans

The drawing Site Layout Plan, drawing number 5392.02 revision D, originally produced in October 2018 and updated in November 2019, by Nicholas D Price was used in the production of this report.

The proposals involve the construction of two residential properties at the Site, with associated gardens and access routes.

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; and
- 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 into 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 (re-adopted December 2016) 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 Jeff Grant (Senior Ecologist, MCIEEM) on Friday 10th April 2020. The survey took approximately 1.5 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 1). Incidental sightings of fauna were recorded and included within the species list for the Site (Appendix 1).

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 – 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 (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 and that due to the nature of the habitats on site the time of year did not prevent a robust ecological assessment. There were no other limitations experienced during the survey.

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. Adderbury Lakes Local Nature Reserve (LNR) was situated approximately 0.8km to the north east of the Site. The reserve consisted of two lakes and a small pocket of woodland. The Northern Valleys Conservation Target Area was located some 0.5km north of the Site at its closest point; the area comprised the valleys of the Sor Brook with a mosaic of woodland, grassland and wetland biodiversity.

No non-statutory designated sites were present within 1.0km of the Site.

3.1.2 Habitat Connectivity

The habitat connectivity of the Site was considered to be good, located on the urban edge of the small village of Adderbury with a mosaic of fields to the south of the Site and a disused railway cutting to the north between the Site and the main area of the village.

The urban environment was considered to offer a range of potential roosting opportunities or nesting birds and bats; with the gardens of the area providing foraging and commuting habitats for a range of species including bats, badgers and amphibians. However, it was also considered to present a partial barrier to the dispersal of notable species due to the fencelines, road network and lighting associated with urban areas; which would limit suitability for more light shy species.

A partially dismantled railway line ran from east to west within 20m north of the Site. The highly wooded nature of this feature was considered to offer good terrestrial habitat, foraging and commuting habitat for a range of species, with sett building habitat for badgers also considered likely to be present.

The River Cherwell and associated Sor Brook ran from north to south approximately 60m to the east of the Site. The tree lined banks of the river offered linear commuting routes for species such as otter, water vole and Daubenton's bat.

To the south and east of the Site field hedgerows provided increased connectivity to the wider landscape, although beyond the river and railway corridors the landscape largely opened out to a network of open arable fields with limited areas of habitat suitable for supporting protected and notable species.

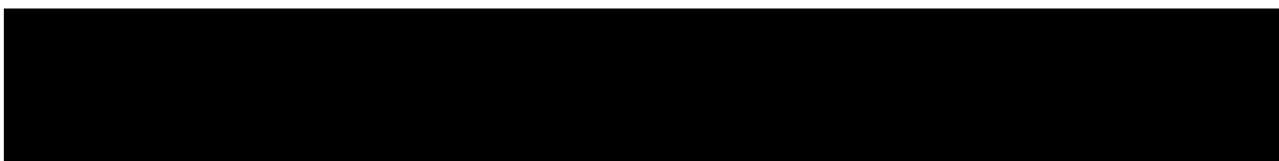
The habitat connectivity of the Site is summarised in Figure 2.



Figure 2: Habitat connectivity features within a 1km radius of the Site. The Site boundary is shown in red, with a 1km buffer shown in orange.

3.2 Protected Species Records

3.2.1 Badger



3.2.2 Bats

A total of seven records of indeterminate species of bats within 1km radius of the proposed site were made between 2003 and 2016, including a number of unidentified bat species and single records of Brandt's (*Myotis brandtii*) and brown long-eared bat (*Plecotus auritus*).

In addition, Ecolocation undertook bat surveys of a barn within the wider client ownership in 2018 (although outside of the current Site red line boundary); which identified a day roost of brown long-eared bats and a feeding perch of brown long-eared bats within the barn.

In the wider area, two protected species licences for bats were identified within 1.0km of the Site. These included licence to damage resting places of common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle (*Pipistrellus pygmaeus*), brown long-eared bats and natterers bat (*Myotis nattereri*).

3.2.3 Otter

Two records of European Otter (*Lutra lutra*) spraint were made in 2014, on the Sor brook which is, at closest 60m from the Site.

3.2.4 Notable mammals

There were five records of European hedgehog (*Erinaceus europaeus*) found within a 1km search radius of the site. No other notable mammal records were returned within 1.0km of the Site.

3.2.5 Birds

A large number of records of notable bird species were recorded within a 1km radius of the Site, including swift (*Apus apus*), golden plover (*Pluvialis apricaria*), green woodpecker (*Picus viridis*), lesser redpoll (*Acanthis cabaret*), corn bunting (*Emberiza calandra*), fieldfare (*Turdus pilaris*) and lesser spotted woodpecker (*Dendrocopis minor*).

3.2.6 Amphibians

There were two records of great crested newt (*Triturus cristatus*) made between 2012 and 2016 within 1.0km of the Site. In 2016, a female and male smooth newt (*Lissotriton vulgaris*) were recorded within 1.0km of the Site.

Ecolocation undertook great crested newt surveys of ponds within 250m of the Site in 2018 which identified a small population of this great crested newts in ponds 100m south of the Site and suitable habitat within the Site boundary to support foraging and commuting amphibians, although no breeding ponds were present on the Site itself.

3.2.7 Reptiles

There was one record of a grass snake (*Natrix helvetica*) within 1.0km of the Site, located approximately 0.3km north west of the site and dating from 2011.

3.2.8 Invasive species

There were records of a number of invasive species within 1.0km of the Site, though these were all species associated with aquatic environments such as the nearby Sor Brook.

3.3 Extended Phase 1 Habitat Survey

3.3.1 Weather

The weather conditions during the Site visit on Friday 10th April 2020 were as shown in Table 1.

Table 1: Weather conditions during site visit

Parameter	Recorded Figure
Temperature	12°C
Cloud cover	0%
Precipitation	None
Wind speed (Beaufort scale)	2 – Light breeze

3.4 Habitats

The Site comprised an area of overgrown area of disused garden within the land ownership of the adjacent property; with numerous scattered trees, an overgrown tennis court and areas of long grassland and shrubs (Photos 1 and 2).



Photo 1: Long grassland and scrub typical of the Site (looking west). Photo 2: Eastern extent of the Site

Please see the Phase 1 Habitat Map overleaf:

**Phase 1 Habitat Map
10th April 2020
Land at The Leys, Adderbury**

2020-02(15)

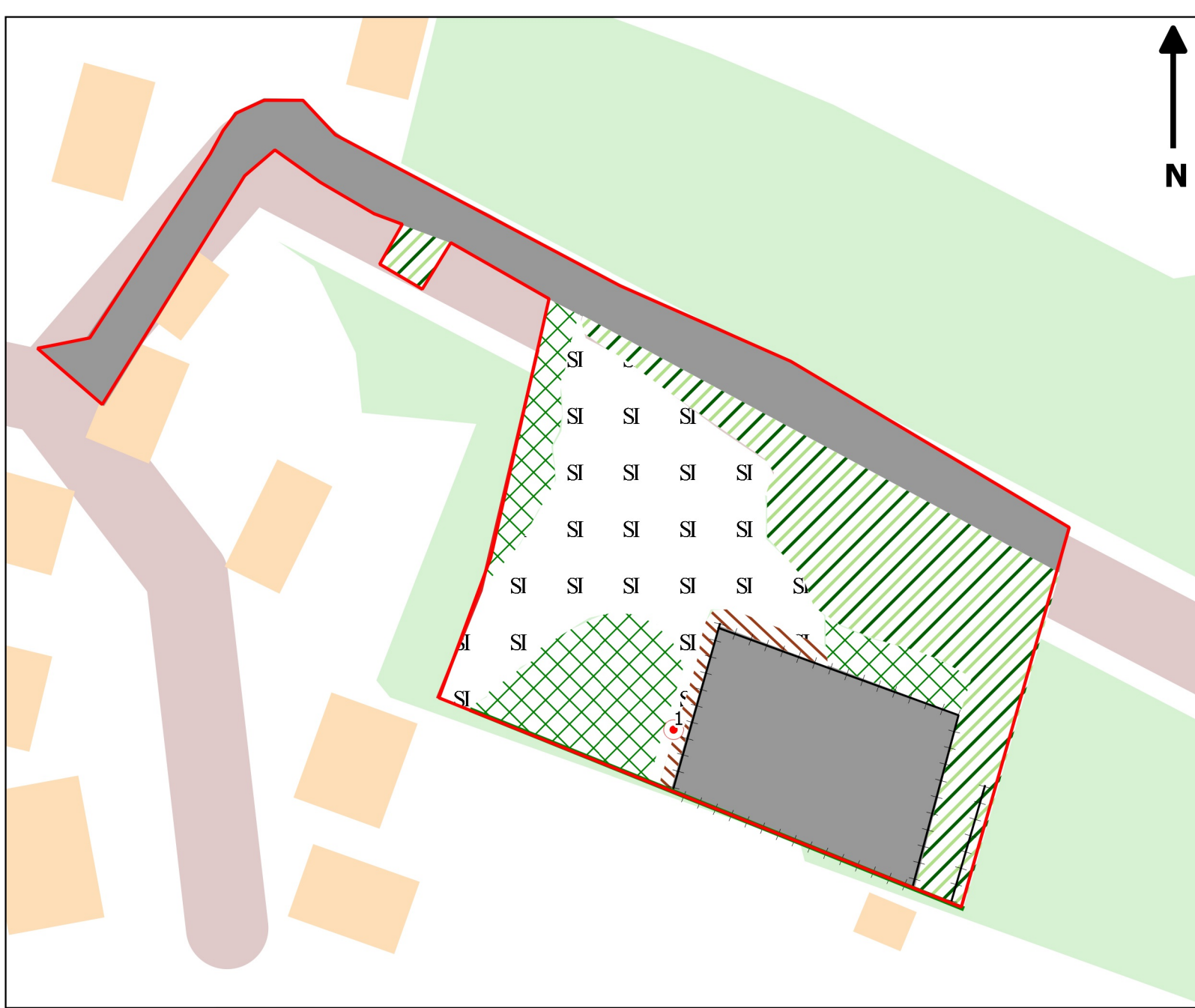


Key

- Site Boundary
- Target Note
- Species-poor intact hedge
- Fence
- Wall
- Mixed plantation woodland
- Dense/continuous scrub
- Species-poor semi-improved grassland
- Tall ruderal vegetation
- Buildings
- Hardstanding

Target notes:

1. Snake's head fritillary



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3.4.1 Species-poor semi-improved grassland

The majority of the Site, including the understorey of the trees, comprised unmanaged grassland with a sward height of up to around 30cm (Photo 3). A public footpath cross the Site through the western area, with a number of mammal trails also noted within the grassland of the Site.

The habitat was dominated by perennial rye grass (*Lolium perenne*), with tufted hair-grass (*Deschampsia cespitosa*) and cock's-foot grass (*Dactylis glomerata*) also present. Also noted within the grassland were occasional white clover (*Trifolium repens*), creeping buttercup (*Ranunculus repens*) spear thistle (*Cirsium vulgare*), forget-me-not (*Myosotis* sp.), daisy (*Bellis perenis*), dandelion (*Taraxacum officinale*), pansy (*Viola tricolor*), bristly ox-tongue (*Helminthotheca echioides*), dog violet (*Viola riviniana*), daffodil (*Narcissus* sp.) and cyclamen (*Cyclamen* sp.).

On the embankment to the west of the tennis court at the Site a number (approximately 20-30) snake's head fritillary (*Fritillaria meleagris*) were noted (Target Note 1, Photo 4). This plant is considered rare in the wild within Oxfordshire and is known only at around 30 sites in the wild throughout the county. It could not be established if the specimens noted were wild or planted garden varieties, though based on the nature of the Site the latter was considered more likely.



Photo 3: Grassland typical of the Site



Photo 4: Snake's head fritillary

3.4.2 Mixed Plantation woodland

The eastern element of the Site, from the tennis court to the eastern Site boundary, comprised a range of mixed trees which appeared to have been developed as part of a small arboretum due to the mixture of coniferous, broadleaved and fruit trees present across the habitat. The age of the trees varied, with some younger saplings amongst the early mature and mature trees.

Species present included cherry (*Prunus* sp.), ash (*Fraxinus excelsior*), goat willow (*Salix caprea*), silver birch (*Betula pendula*), hazel (*Corylus avellana*) spruce (*Picea* sp.), and various ornamental species and fruit trees.

The understorey of the trees comprised largely semi-improved grassland as described above, with areas of bramble (*Rubus fruticosus* agg.) scrub and tall ruderal habitat also present.

3.4.3 Hardstanding

The northern section of the Site comprised an access route of concrete.

A tennis court (Photo 5) comprising asphalt and surrounded by wire fence was present at the south of the Site. The court was disused, with ephemeral plant growth in places and encroachment of the vegetation from the surrounding areas.



Photo 5: Disused tennis court

3.4.4 Dense scrub

Several areas of dense scrub were present across the Site (Photos 6 and 7). An area adjacent to the tennis court comprised bramble. While bramble was present in the other areas of dense scrub noted, these were largely overgrown areas of introduced shrub, with snowberry (*Symphoricarpos albus*) and pyracanthus (*Pyracantha* sp.) noted in the patches in the north west of the Site along with a number of ornamental species.

In addition, an area of elder (*Sambucus nigra*) scrub was present to the west of the tennis court.



Photo 6: Dense scrub at the Site



Photo 7: Elder scrub in the southern section of the Site.

3.4.5 Tall ruderal

Tall ruderal species including common nettle (*Urtica dioica*), cow parsley (*Anthriscus sylvestris*), cleavers (*Galium aparine*) and burdock (*Arctium lappa*) were present on the margins of the Site grassland, in particular around the tennis court of the Site.

3.4.6 Species poor intact hedgerow

The southern boundary of the Site comprised a hedgerow of hawthorn (*Crataegus monogyna*), holly (*Ilex aquifolium*) and ivy (*Hedera helix*).

3.4.7 Fence

A post and wire fence 4m in height surrounded the tennis court at the Site.

In addition, a post and rail fence which was in poor condition formed part of the eastern Site boundary.

3.4.8 Wall

The western boundary of the Site was formed of a stone wall largely overgrown by the adjacent scrub. The wall had a number of gaps between the stones along its length.

3.5 Protected & Priority Species

3.5.1 Badger

There was no evidence of badger recorded at the Site in the form of latrines, foraging signs or setts. A number of mammal trails were noted across the Site, though these could not be attributed directly to badger. The Site was considered to provide connectivity to the surrounding rural habitats, although areas of similar habitats to those found on site were present in the immediate vicinity. The Site was considered to have areas suitable for sett building, though there was no evidence of such activity by badgers at the Site.

3.5.2 Bats

The trees on the Site did not offer suitable rot holes, cracks or peeling bark for roosting bats and were therefore considered to have negligible potential for roosting bats. The Site offered suitable foraging habitat for bats species, with the overgrown grassland and trees considered suitable to support a range of prey species for bats. In addition, the well vegetated areas in the immediate vicinity of the Site provided connectivity, foraging habitat and likely potential roosting features for bat species.

The hedgerows of the Site offered connectivity through the wider landscape for commuting bats and potential foraging habitat for bats; however, the remaining habitats within the Site did not present any suitable habitat for bats.

3.5.3 Otter

There was no suitable habitat for otter within the Site boundary or within 60m of the Site boundary and therefore this species is not considered further within this report as the proposed works were considered to have negligible potential to impact the species.

3.5.4 Notable mammals

No evidence of notable mammals was recorded on Site, however the majority of the Site was considered suitable for foraging and sheltering hedgehog and for species commuting across the Site to the wider landscape. In addition, the wider surroundings of the Site – which comprised larger expanses of similar habitats including a vegetated disused railway- were considered likely to provide ample opportunities for hedgehog and other protected species.

3.5.5 Birds

The potential for ground nesting birds was limited by the poor structural diversity and regular disturbance of the grassland by use of the public footpath that crossed the Site. The trees, scrub and hedgerow were considered to have suitable structure to support nesting birds such as warblers and common garden species.

3.5.6 *Amphibians*

The suitability of the Site for amphibians is discussed fully in the Ecolocation Great Crested Newt Assessment report, dated 2019.

The hedgerows and trees of the Site offered potential shelter and commuting routes for amphibians, with additional refuge within the gaps of the wall at the western boundary. The species-poor grassland was likely to support common invertebrates and in turn provide a foraging source for amphibians. Overall, the habitats on the Site were considered to offer suitable terrestrial habitat for great crested newts. Therefore the potential presence of amphibians, including great crested newts, could not be ruled out at this stage.

3.5.7 *Reptiles*

The grassland, scrub and hedgerows of the Site were considered suitable to support reptile foraging and commuting, though there was only a single record of such species within the area. Despite the lack of records, due to the good quality habitat of the Site and the surroundings there was considered to be some low risk of disturbing reptiles during the proposed works.

3.5.8 *Invertebrates*

Due to the limited complexity of habitats present, the Site was not considered suitable to support dependant populations of notable or priority invertebrates and as such the impacts from the proposals were considered to be negligible.

3.5.9 *Invasive Species*

No invasive species were noted at the Site during the survey.

4 Assessment of Ecological Impacts

The Site comprised an area of unmanaged garden, dominated by semi-improved grassland, trees of varying age, with areas of scrub and hardstanding. The proposals involve the construction of two residential properties within the Site which will result in the loss of much of the grassland and a number of the trees- though a number of the trees subject to a tree preservation order will remain.

The proposals are considered to impact on habitats of moderate ecological value. In particular there is a risk of impacts to amphibians, reptiles and the notable plant species snake's head fritillary.

The area of trees and semi-improved grassland presented commuting and sheltering habitat for notable mammals, amphibians and reptiles, as well as foraging and commuting habitat for bats and nesting habitat for birds. These habitats were widely represented in the wider landscape, both within the wider client ownership and in the habitats of the railway cutting to the north of the Site.

4.1 Great crested newts and reptiles

The previous Ecological great crested newt surveys, undertaken in 2018 and including the wider client ownership within the red line boundary, identified a small population of the species within ponds 100m of the Site. This report should be read in conjunction with the dedicated newt report and the recommendations made within that report followed. The status of the Site with respect to newts has not changed in the intervening time period since the great crested newt surveys were undertaken in 2018 and therefore the recommendations made within this report – including seasonal constraints to the removal of materials and phased and directional removal of the grassland – are still considered applicable to the Site.

4.2 Snake's head fritillary

The species is rare in the wild in Oxfordshire. It could not be established if the specimens noted were wild or planted garden varieties, though based on the nature of the Site (an overgrown garden) the latter was considered more likely. Despite this it is recommended that the population of flowers at the Site should be retained. The plans currently show the small bank where the species were noted is to be lost and replaced by the corner of a property and lawn. If retention of the area is not possible, it is recommended that the top soil of the embankment is translocated to an area of similar aspect and microclimate within the Site such that the seed bank of the flower within the soil is retained at the Site. Additional details of this are provided in section 5 below.

4.3 Other species

The removal of vegetation from the Site has the potential to impact upon nesting birds, with potential risks to notable mammals commuting and foraging at the Site from the development. Recommendations relating to these species are made in Section 5.

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

- Tree and hedgerow removal should be minimised where possible, with any retained trees and hedgerows protected during works in accordance with BS5837:2012 'Trees in relation to construction'. This is for the purposes of ensuring that potential bird nesting habitat and sheltering habitat for other notable species such as badger and hedgehog, as well as potentially valuable connective corridors through the landscape, are maintained.
- A sensitive lighting strategy to inform how lighting will be managed through the construction phase and post development should be in place prior to the development commencing, detailing lighting cowed to the ground and directed away from ecologically valuable features such as the retained boundary vegetation in order to maintain these areas as dark-zones suitable for bat and badger foraging.

5.2 Further Survey Work

No further survey work is required at the Site provided the following mitigation measures and those set out in the accompanying great crested newt assessment report and bat assessment report for the wider Site, both produced by Ecolocation in 2019, are adhered to.

5.3 Mitigation

All recommendations and mitigation measures set out as a result of species-specific surveys on Site to be followed in full. In particular, the great crested newt assessment report and bat assessment report for the wider Site, both produced by Ecolocation in 2019, should be read in conjunction with this report and their recommendations adhered to where applicable.

5.4 Mitigation

5.4.1 *Nesting birds*

- All vegetation 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 young have naturally fledged and permanently left the nest.

5.4.2 *Snake's head fritillary*

- The topsoil of the small bank at the western end of the tennis courts within which the notable floral species was identified should be translocated to an alternative location at the Site which will not be impacted post-construction. It is recommended the plant is translocated to the west of its current location but still close to the southern boundary, where the microclimate and soil would remain similar and the species is likely to re-establish. If possible, the area should be set aside within a 3m buffer from the boundary and fenced with a post and rail fence to discourage management of the area.

5.4.3 Other

- All excavations and foundation trenches which must be left open overnight must be fitted with either earth ramps or sloping boards or be back filled at the end of each working day to ensure that any animals that may pass through the Site and fall in are able to escape.
- Snowberry is considered an invasive species within and therefore should not be allowed to spread in the wild. If removed it should be safely disposed of either by burning at the Site or through careful transportation to an appropriate disposal centre.
- Should notable species such as hedgehog, common toad (*Bufo bufo*), smooth newt (*Lissotriton vulgaris*) or common frog (*Rana temporaria*) be found during works these should be moved carefully by hand to an area to be left undisturbed by works.
- Pollution prevention guidelines must be adhered to during works to ensure there are no adverse impacts which may result in pollution events to the nearby River Cherwell.
- Should evidence of protected species, such as nesting birds, badgers, great crested newts or reptiles, 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.

5.5 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 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. In particular, new hedgerow planting along the northern and southern boundaries of the Site, such as a new species-rich hedgerow, would improve the connectivity on this side of the Site, increasing the value to local wildlife.
- Two 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.
- Additional recommendations of bat boxes to enhance the Site are made within the Ecolocation bat assessment report (2019). In addition, a bat loft will be installed within the proposed bin store building to be constructed at the north western extent of the Site. This bat loft will form part of mitigation associated with the wider client ownership.
- Hedgehogs are a UKBAP Priority Species and have suffered a significant decline in numbers in recent years. In order to preserve the opportunities for hedgehogs to move freely through any proposed development and take advantage of foraging in gardens it is recommended that a hole around 15cm in diameter is left at any point along each garden fence. The access hole can be achieved by digging a hole underneath a fence, leaving a brick or two out of the base of a wall or cutting a small hole in the base of the fence.

6 References

- ARG UK, 2010. ARG UK Advice Note 5: Great Crested Newt Habitat Suitability Index. Amphibians and Reptile Groups of the United Kingdom.
- Birds of Conservation Concern 4: The Red for Birds (Various, 2015).
- Birds of Northern Europe, 2010. Birdguides iPhone App.
- BSI, 2013. Biodiversity- Code of Practice for Planning and Development. BS 42020:2013.
- BSI, 2012. Trees in Relation to Construction. BS 5837:2012.
- CIEEM, 2018. Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Chartered Institute of Ecology and Environmental Management, Winchester.
- CIEEM, 2017. Guidelines on Ecological Report Writing. Chartered Institute of Ecology and Environmental Management, Winchester, [2nd edition].
- Circular 06/2005 Biodiversity and Geological Conservation – Statutory Obligations and Their Impact Within the Planning System
- Cresswell WJ, Birks J, Dean M, Pacheco M, Trehwella WJ, Wells D and Wray S (2012) *UK BAP Mammals: Interim Guidelines for Survey Methodologies, Impact Assessment and Mitigation*. The Mammal Society, Southampton.
- Ecolocation, 2019. *Bat Assessment: Preliminary Roost Assessment and Roost Characterisation Surveys: Barn at The Leys, Adderbury*.
- Ecolocation, 2019. *Great Crested Newt Survey Assessment: Presence/ Absence & Population Surveys: The Leys, Adderbury*.
- Harris S, Cresswell P and Jefferies D, 1989. Surveying Badgers. Mammal Society.
- Institute of Environmental Assessment, 1995. Guidelines for Baseline Ecological Assessment. London: E & FN Spon.
- JNCC, 2004. Bat Workers Manual. 3rd edition.
- JNCC, 1993. Handbook for Phase 1 Habitat Survey: A technique for environmental audit. Peterborough: Joint Nature Conservation Committee.
- MAGIC, 2013. Available from: <http://www.magic.gov.uk/>.
- National Planning Policy Framework, February 2019.
- Online Atlas of British and Irish Flora. Available from: <https://www.brc.ac.uk/plantatlas/>.
- Rose, F., 2006. The Wildflower Key – How to identify wild flowers trees and shrubs in Britain and Ireland. 2nd edition. London: Warne.
- RSPB. Available from: www.rspb.org.uk.
- Stace, C., 1997. New flora of the British Isles. Cambridge: Cambridge University Press.
- Thames Valley Ecological Records Centre.
- The Conservation of Habitats and Species Regulations, 2012.

UK BAP Priority Species and Habitats, available at:

<http://www.naturalengland.org.uk/ourwork/conservation/biodiversity/protectandmanage/prioritylist.aspx>.

Wildlife & Countryside Act, 1981. HMSO (as amended).

Appendix 1- Species List 10/04/2020

Common Name	Scientific Name	Abundance
Trees/Shrubs		
Silver birch	<i>Betula pendula</i>	O
Hazel	<i>Corylus avellana</i>	O
Common hawthorn	<i>Crataegus monogyna</i>	O
Ash	<i>Fraxinus excelsior</i>	O
Holly	<i>Ilex aquifolium</i>	O
Spruce	<i>Picea</i> sp.	O
Wild cherry	<i>Prunus avium</i>	O
Pyracantha	<i>Pyracantha coccinea</i>	O
Goat/grey willow	<i>Salix</i> sp.	O
Elder	<i>Sambucus nigra</i>	O
Snowberry	<i>Symphoricarpos albus</i>	O
Herbs		
Cow parsley	<i>Anthriscus sylvestris</i>	O
Greater burdock	<i>Arctium lappa</i>	O
Daisy	<i>Bellis perennis</i>	O
Spear thistle	<i>Cirsium vulgare</i>	O
Cyclamen	<i>Cyclamen</i> sp.	O
Snake's head fritillary	<i>Fritillaria meleagris</i>	R
Cleavers	<i>Galium aparine</i>	O
Ivy	<i>Hedera helix</i>	O
Bristly oxtongue	<i>Helminthotheca echioides</i>	O
Forget-me-not species	<i>Myosotis</i> sp.	O
Daffodil	<i>Narcissus</i> sp.	O
Creeping buttercup	<i>Ranunculus repens</i>	O
Bramble	<i>Rubus fruticosus</i> agg.	O
Dandelion	<i>Taraxacum</i> sp.	O
White clover	<i>Trifolium repens</i>	O
Common nettle	<i>Urtica dioica</i>	O
Field pansy	<i>Viola arvensis</i>	O
Common dog-violet	<i>Viola riviniana</i>	O
Grasses, sedges and rushes		
Cock's foot	<i>Dactylis glomerata</i>	O
Tufted hair grass	<i>Deschampsia cespitosa</i>	O
Perennial rye grass	<i>Lolium perenne</i>	O