



Preliminary Ecological Appraisal

Pages Wood Wetland, Upminster, Essex

Client Name: Forestry Commission

Project Number: P3176.1.0

Date: 8 October 2018

Client	The Forestry Commission
Site	Pages Wood Wetland, Upminster, Essex
Report reference	P3141.1.0
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1 Summary

Site	Pages Wood Wetland, Upminster, Essex
Central OS Grid Reference	TQ 555 897
Report Commissioned by	Forestry Commission
Date of Survey	19 th July 2018

Considerations	Description	Comments & Recommendations
Ecological Importance of the Site	The site comprised a range of habitats.	The site was considered to be of local importance due to the presence of broadleaved woodland and riparian habitats, providing foraging opportunities for a range of animals.
Further Surveys / Assessments	Bat roosts	All mature trees on site are covered by Tree Protection Orders, and so will not be impacted by the work. However, should this prove not to be the case, further survey and mitigation may be required, as some trees were noted as having bat roost potential
	Badgers	No badger evidence was found, but the woodland parcel was considered suitable for the species. As badgers can change sett location between seasons, should works not commence before next spring, a further badger survey is recommended.
	Water voles and otters	Avoid wetland scrape works within 4m of the river bank or undertake a further survey in the period Autumn to early Spring, when vegetation is lower.
	Kingfisher	Avoid wetland scrape creation works during the nesting season (March-August) otherwise a kingfisher nesting survey should be undertaken 50m up and downstream prior to works commencing.
Avoidance and General Mitigation	Trees	Replant any trees lost to development with native species of local provenance.
	Birds	Clear vegetation outside the nesting bird season, or after a nesting bird survey by an ecologist if clearance is scheduled between March and August (inclusive).
	Kingfisher	Avoid work within 10m of the river bank during the nesting season (March-August), or first undertake a nesting survey.

Considerations	Description	Comments & Recommendations
	Himalayan balsam	Remove plants prior to works being undertaken and dispose of them at a recognized disposal site. Take care not to clear between late May and late summer when seeds are ripe as this will encourage seed dispersal, or spray and eradicate the plant prior to works commencing (significantly longer process).
	Site measures	Cover trenches or provide planked escape routes to allow any animals that fall in to escape. Store materials off the ground and do not leave temporary standing water.
Enhancements	To increase the ecological value of the site.	The wetland scrape work is planned specifically to enhance the habitats for wildlife. Broadleaved woodland should be coppiced where appropriate (avoiding impacts on protected species) to allow an understory to develop, which will attract more wildlife.

Contents

1	Summary.....	2
2	Introduction	6
2.1	Background.....	6
2.2	Site Location and Description.....	6
2.3	Scope of the Assessment.....	6
2.4	Development Proposal.....	6
2.5	Objective.....	6
3	Methodology.....	8
3.1	Surveyor.....	8
3.2	Desk Study.....	8
3.3	Habitat Survey.....	8
3.4	Protected and Notable Species Assessment.....	8
3.4.1	Amphibians	9
3.4.2	Reptiles	9
3.4.3	Badgers.....	9
3.4.4	Bats.....	9
3.4.5	Hazel Dormouse	10
3.4.6	Other Species	11
3.4.7	Invasive Species	11
3.5	Nature Conservation Evaluation and Impact Assessment	11
3.5.1	Nature Conservation Evaluation	11
3.5.2	Ecological Impact Assessment.....	11
3.6	Limitations and Assumptions.....	11
4	Results and Evaluation.....	13
4.1	Designated Sites	13
4.1.1	Statutory Sites.....	13
4.1.2	Non-Statutory Sites	13
4.2	Habitats and species.....	13
4.2.1	Woodland Parcel.....	13
4.2.2	River Ingrebourne	17
4.2.3	Parcel 1.....	17
4.2.4	Parcel 2.....	19
4.2.5	Parcel 3.....	21
4.2.6	Parcel 4.....	21
4.2.7	Parcel 5.....	22
5	Recommendations	25
5.1	Recommended Further Surveys and Mitigation Work.....	25

5.1.1	Water Voles and Otters	25
5.1.2	Kingfishers	25
5.1.3	Birds.....	25
5.1.4	Reptiles	25
5.1.5	Harvest Mouse	26
5.1.6	Bats.....	26
5.1.7	Himalayan Balsam	26
5.1.8	Badgers.....	26
5.1.9	General Site Measures.....	26
5.2	Enhancements	26
6	Conclusion	27
7	References.....	28

Appendix 1 Legislation and Planning Policy

2 Introduction

2.1 Background

agb Environmental was commissioned by the Forestry Commission to undertake an Ecological Assessment of six small parcels of land within Pages Wood, Upminster, herein referred to as 'the site'.

2.2 Site Location and Description

The site was located to the west of Hall Lane at central Ordnance Survey Grid Reference: TQ 555 897. The six parcels are separate from one another. Five of them are adjacent to the River Ingrebourne, whilst the sixth is woodland to the east of the river.

The site was situated within a relatively rural location and surrounded by plantation broad-leaved woodland with intervening grassy rides to the east, and open rank grassland and amenity grassland within an urban park to the west. The River Ingrebourne flows north to south, through the site. The wider area comprised urban settlement and green space to the west and arable farmland with hedgerows to the east.

The locations and numbers of all these land parcels are shown in **Figure 2.1**. Note that one of these land parcels is not numbered but hatched red.

2.3 Scope of the Assessment

This report presents information obtained during the following:

- A walkover survey undertaken on the 19th July 2018; and
- A desk-based assessment undertaken during September 2018.

2.4 Development Proposal

The plan is to create wetland scrapes as habitat enhancement, within the five land parcels adjacent to the river, numbered 1-5 in **Figure 2.1**. The land parcel hatched red in **Figure 2.1**, which is woodland, requires 'thinning', presumably in connection with avoiding impacts on overhead power lines which are located above this parcel.

2.5 Objective

The objective of this PEA is to make a preliminary assessment of predicted ecological impacts of the proposed work, and identify any further ecological surveys and / or mitigation required, and potential enhancement opportunities in accordance with planning policy, and European and UK wildlife legislation (**Appendix 1**).

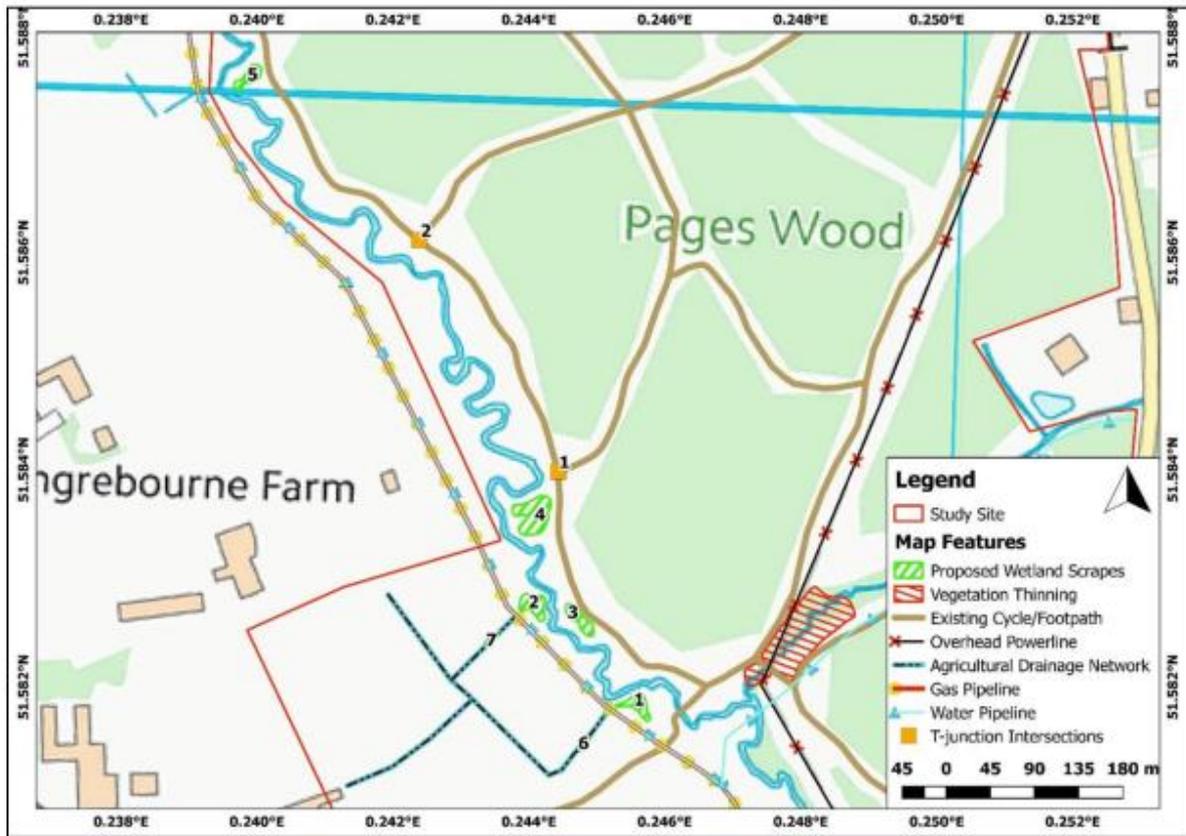


Figure 2.1: Locations of the proposed work, with the proposed vegetation thinning area (referred to as the woodland parcel) hatched in red, and the proposed wetland scrape creation areas hatched in green and numbered 1-5, relating to Parcels 1-5 in the text.

3 Methodology

3.1 Surveyor

The site was surveyed by Dr Matthew Denny BSc (Hons) PhD MCIEEM who is an experienced ecological surveyor and licensed to survey for bats, great crested newts and barn owls. Matthew is also a Full member of the Chartered Institute of Ecology and Environmental Management (CIEEM) and subject to the CIEEM Professional Code of Conduct.

3.2 Desk Study

Natural England's Multi-Agency Geographic Information for the Countryside (MAGIC) database (Natural England, 2018) was accessed on the 23rd September 2018 for information regarding;

- Statutory sites designated for nature conservation within a 2km radius of the study area;
- Natura 2000 sites such as Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and Ramsar sites within 5km of the study area;
- Natural England's Impact Risk Zones (IRZs) for Sites of Special Scientific Interest (SSSI), Special Areas of Conservation, Special Protection Areas and Ramsar sites within which the study area was located; and
- Any European Protected Species Mitigation Licences granted by Natural England within a 2km radius of the study area.

The Essex Field Club (EFC) was also consulted on the 18th September 2018 for the following information for a 2km radius around the application site:

- Legally protected species, such as great crested newts, reptiles, birds and bats; and
- Notable species, such as those listed in the local Biodiversity Action Plan.

The Havering Local Plan (2016-2031) (proposed submission version) was also consulted on the 18th September 2018 for information on non-statutory protected Sites of Metropolitan Importance for Nature Conservation for a 2km radius around the application site.

3.3 Habitat Survey

The survey involved a site visit on the 19th July 2018 to record and map habitat types and ecological features within the site. The survey was undertaken in accordance with *Guidelines for Preliminary Ecological Appraisal* (CIEEM, 2017), and the general principles and methods outlined in the *Handbook for Phase I Habitat Survey* (JNCC, 2010). Features of interest were identified as target notes on the Phase I Habitat Maps for each land parcel.

Weather conditions during the survey: 29°C, still air (Beaufort 0), 0% cloud cover and dry.

Aerial photographs, maps and field observations were used to identify habitats in the wider landscape, which could be impacted by development of the site.

3.4 Protected and Notable Species Assessment

The site was inspected for evidence of, and assessed for potential to support protected and notable species. This included species listed under the *Conservation of Habitats and Species*

Regulations 2017, the *Wildlife and Countryside Act 1981 (as amended) (WCA)*, and those given extra protection under the *Natural Environment and Rural Communities (NERC) Act 2006*, *Countryside and Rights of Way (CRoW) Act 2000*, and the *Protection of Badgers Act 1992*.

MAGIC was also accessed on the 19/09/2018 to identify any European Protected Species Mitigation Licences granted by Natural England within a 2km radius of the site.

The following protected / notable species were considered within the assessment:

3.4.1 Amphibians

The site was assessed for suitability to support amphibians such as the legally protected great crested newt *Triturus cristatus* and the notable common toad *Bufo bufo*. The assessment was undertaken in accordance with the *Herpetofauna Workers' Manual* (Gent & Gibson, 2003) and the *Great Crested Newt Conservation Handbook* (Langton, et al., 2001).

Surveys of land greater than 250m from the nearest water-body are normally appropriate when all of the following conditions are met (Natural England, 2015):

- a) Maps, aerial photos, walkover surveys or other data indicate that the water-body has potential to support a large great crested newt population;
- b) The development footprint contains particularly favourable habitat, especially if it constitutes the majority available locally;
- c) The development would have a substantial negative effect on that habitat; and
- d) There is an absence of dispersal barriers.

All land parcels of proposed works meet the above criteria, particularly as there is superabundant suitable habitat closer to ponds (located more than 250m from any parcel) than the land parcels. There are no water-bodies marked on the OS map within 250m of any of these land parcels. Therefore, no ponds were assessed for their potential to support great crested newts, and the species does not need to be considered further.

3.4.2 Reptiles

The site was assessed for suitability to support reptiles with reference to the *Herpetofauna Workers' Manual* (Gent & Gibson, 2003) and *Froglife Advice Sheet 10 An Introduction to Planning, Conducting and Interpreting Surveys for Snake and Lizard Conservation* (Froglife, 1999).

3.4.3 Badgers

The site and a 30m zone around the site (where accessible), were surveyed for badger *Meles meles* evidence such as setts, latrines, pathways, footprints, snuffle holes and badger hairs. Any setts recorded were classified according to published criteria (Harris, et al., 1989).

3.4.4 Bats

Potential for the site to support roosting, foraging and commuting bats was assessed in line with the Bat Conservation Trust (BCT) *Bat Surveys for Professional Ecologists Good Practice Guidelines* (Collins, 2016).

3.4.4.1 Tree inspection for Potential Roosting Features

Trees were surveyed from the ground for evidence of bats and potential bat roost features (PRFs), and then assigned a level of suitability for roosting bats as outlined in **Table 3.2**. PRFs include woodpecker holes, rot holes, hazard beams, cracks and splits, knot holes, cavities, loose bark, and partially detached ivy (Andrews, 2013).

Table 3.2: Classifying the bat roosting suitability of trees (Collins, 2016).

Negligible roosting suitability	Trees with few, if any, features suitable for roosting.
Low roosting suitability	A tree of sufficient size and age to contain PRFs but with none seen from the ground or features seen with only very limited roosting potential.
Moderate roosting suitability	A tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat. These trees are unlikely to support a roost of high conservation status.
High roosting suitability	A tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.

3.4.4.2 Foraging and Commuting

The site was assessed for its suitability to support foraging and commuting bats according to **Table 3.3**.

Table 3.3: Classifying the suitability of bat foraging and commuting habitat (Collins, 2016).

Negligible	Negligible habitat features on site likely to be used by commuting or foraging bats.
Low	Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or un-vegetated stream, but isolated or poorly connected to habitat in the surrounding landscape.
	Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in parkland) or a patch of scrub.
Moderate	Continuous habitat connected to the wider landscape that bats may use for commuting such as tree-lines and scrub or linked back gardens.
	Habitat that connects to the wider landscape that bats may use for foraging such as trees, scrub grassland and water.
High	Continuous, high quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, tree-lines and woodland edge.
	High quality habitat that is well-connected to the wider landscape that is likely to be used regularly by commuting bats such as broadleaved woodland, tree-lined watercourses and grazed parkland.
	Site is close to and connected to known roosts.

3.4.5 Hazel Dormouse

The site was assessed for potential to support the hazel dormouse *Muscardinus avellanarius*, in accordance with the *Dormouse Conservation Handbook* (Bright, et al., 2006). Dormice typically use connected woodland, hedgerows and scrub that contain suitable food plants. Aerial images were used to assess the connectivity of any suitable habitat on the site to woodland and hedgerows within the wider area.

3.4.6 Other Species

The site was assessed for suitability to support other protected and notable fauna species / assemblages including birds, invertebrates and mammals such as harvest mice.

3.4.7 Invasive Species

The site was searched for invasive plants such as giant hogweed *Heracleum mantegazzianum*, Himalayan Balsam *Impatiens glandulifera*, Japanese knotweed *Fallopia japonica* and rhododendron *Rhododendron ponticum*.

3.5 Nature Conservation Evaluation and Impact Assessment

3.5.1 Nature Conservation Evaluation

Designated sites, habitats and species (where presence has been identified) have been evaluated in accordance with the *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial and Freshwater* (CIEEM, 2016).

These guidelines aim to give consistency in evaluating the importance of the ecological features within and around a site, which help inform any effects or impacts a scheme will have upon them.

A value of the ecological features (designated sites, habitats or species) has been assigned according to their geographic level of importance using the following terms:

- International and European
- National
- Regional
- Local
- Site
- Negligible

3.5.2 Ecological Impact Assessment

The assessment of predicted Ecological Impacts (positive, negative or neutral) was based on the results of the walkover survey, the desk study, relevant literature and professional knowledge of ecological processes and functions.

3.6 Limitations and Assumptions

Access was available to the entire site and the baseline conditions reported represent those identified at the time of the survey. Tall and dense vegetation in some areas; such as the river bank limited capacity to survey for specific species and habitats, in particular water voles, otters and kingfisher nests.

The survey was completed during the optimal time of year for recording vegetation. Although a reasonable assessment of the site can be made during a single survey, seasonal variations are not observed.

This report provides an overview of the likelihood of protected / notable species occurring on the site (negligible, low, moderate, or high). Absence of a species cannot be presumed where no evidence was found. Further surveys have been recommended where there is reasonable likelihood of a protected species being present and impacted by the development proposal. This is based on the suitability of the habitat and any evidence observed.

This report does not constitute a full botanical survey or a Phase 2 pre-construction survey for Japanese knotweed.

The results of this assessment will remain valid for two years i.e. until September 2020, after which the assessment should be updated, if works have not yet commenced.

4 Results and Evaluation

The following section presents the results, evaluation and discussion of the designated sites, habitats and protected / notable species, which may be impacted by the proposed development.

4.1 Designated Sites

4.1.1 Statutory Sites

There were no statutory sites designated for nature conservation within the vicinity of the site including Ramsar sites (international importance) or SPAs and SACs (European importance) within 10km, and no SSSIs (national importance) within 2km.

The site falls within the Ingrebourne Valley and Thorndon Park SSSI IRZs, however the proposed work does not meet criteria for impacts that would likely lead to a significant effect on these SSSIs. Therefore, no consultation with Natural England and no mitigation is required for these SSSIs.

No further action is recommended.

4.1.2 Non-Statutory Sites

There were no non-statutory sites designated for nature conservation of Metropolitan Importance that were located within 2km of the application site.

No further action is recommended.

4.2 Habitats and species

The habitats below were recorded within the site during the survey. These included deciduous woodland and a river, which are Priority Habitats. Habitat types are described in each relevant land parcel description below.

- Semi-improved neutral grassland
- Species-poor semi-improved grassland
- Tall ruderal vegetation
- Deciduous woodland
- Scattered scrub
- Dense scrub
- Running water
- Dry ditch

4.2.1 Woodland Parcel

This is essentially a rectangle on a south-west – north-east long axis, extending to 0.46ha in area. The south-west end was a small block of dense scrub to the south-west of the path, with three semi-mature trees: two ash *Fraxinus excelsior* and one field maple *Acer campestre*. These trees had negligible bat roost potential. The dense scrub was not possible to penetrate and fully inspect, but there were no obvious mammal tracks into it.

To the north-east of the path was a larger block of woodland and scrub surrounded by a narrow (1-2m wide) semi-improved neutral grassland perimeter. This had a similar range of plants to the neutral grassland within the other land parcels, comprising the following species (including DAFOR abundance codes):

- False Oat-Grass *Arrhenatherum elatius* - DAFOR: Dominant
- Cock's-Foot *Dactylis glomerata* - DAFOR: Dominant
- Yorkshire fog *Holcus lanatus* DAFOR: Abundant
- Wild carrot *Daucus carota* - DAFOR: Abundant
- Red clover *Trifolium pratense* - DAFOR: Occasional
- Fleabane *Pulicaria dysenterica* - DAFOR: Frequent
- Meadow thistle *Cirsium arvensis* - DAFOR: Occasional
- Welled thistle *Carduus crispus* - DAFOR: Occasional
- Common Knapweed *Centaurea nigra* - DAFOR: Frequent
- Common Hogweed *Heracleum sphondylium* - DAFOR: Frequent
- Perennial Sow-Thistle *Sonchus arvensis* - DAFOR: Occasional
- Bristly oxtongue *Helminthotheca echioides* - DAFOR: Occasional
- Nipplewort *Lapsana communis* - DAFOR: Occasional
- Lesser burdock *Arctium minus* – DAFOR: Occasional

Around the edge of this section was dense scrub, varying in width between 2m and 10m, and comprising hawthorn *Crataegus monogyna* (abundant), blackthorn *Prunus spinosa*, elder *Sambucus nigra*, oak *Quercus robur*, ash, willow *Salix sp.*, rose *Rosa sp.*, and bramble. Within this dense scrub along the north-east edge of the parcel, was a dry ditch.

The north-east section of the parcel was more mature, closed-canopy woodland, comprising frequent semi-mature and mature trees (see **Photo 4.1**). There was no ground flora or understorey shrub layer due to the heavy shading by trees.

In the centre of this parcel was an area of younger, more open-canopy woodland, comprising hornbeam, ash and field maple (see **Photo 4.2**). Here, the ground flora and shrub layer were more apparent, comprising mostly ivy *Hedera helix*, cow parsley *Anthriscus sylvestris* and false-brome *Brachypodium sylvaticum*.

Individual trees with bat roost potential were identified in this area, however, it is understood that all trees are protected under Tree Protection Orders, and therefore will not be impacted by the proposed work. Hence, no potential bat roost features are likely to be impacted by the works.

A single mammal hole was located near the centre of the site (**Figure 4.1, TN1**), which was considered to be a fox earth. It was not characteristic of a badger sett, the hole being tall and narrow, with very little excavated spoil. However, the habitat was suitable for badgers and further recommendations with respect to badgers are detailed in **Section 5** below.

Running through this parcel was a stream forming a tributary of the River Ingrebourne, which was dry at the time of survey. However, evidence, such as bank erosion and debris, indicated that this stream holds running water at other times of the year. Due to the heavy shading there was no aquatic vegetation present, and the habitat was not suitable for nesting kingfishers.

The whole of this parcel has moderate to high bat foraging and commuting potential. However, the proposed works will not impact these features as the vegetation will be retained, and the cutting management may even enhance the habitat by opening up the canopy and improving the understorey layer.

The scrub and woodland habitat has high potential to support nesting birds. To avoid damage or destruction to active nests, the work should be undertaken in the period September-February, outside the nesting bird season, as detailed in **Section 5** below.

The woodland is of a type and structure suitable for dormice. However, there are no records for dormice locally, and the woodland has been historically severed from other suitable habitat, such that the species is considered highly unlikely to now occupy this woodland.

There are no other ecological constraints identified.

The woodland is listed on the priority habitat inventory as deciduous woodland. Some of the trees are mature and overall such mature deciduous woodland is an uncommon habitat in the locality. Therefore, it is considered to be of **Local** value.



Photo 4.1: Closed-canopy deciduous woodland with semi-mature and mature trees and dry stream. Note the lack of ground flora and understorey shrub layer. Taken with a panoramic lens.



Photo 4.2: Semi-mature deciduous woodland with semi-mature and mature trees and dry stream. Note the cover of ground flora and more pronounced understorey shrub layer, particularly in the background. Taken with a panoramic lens.

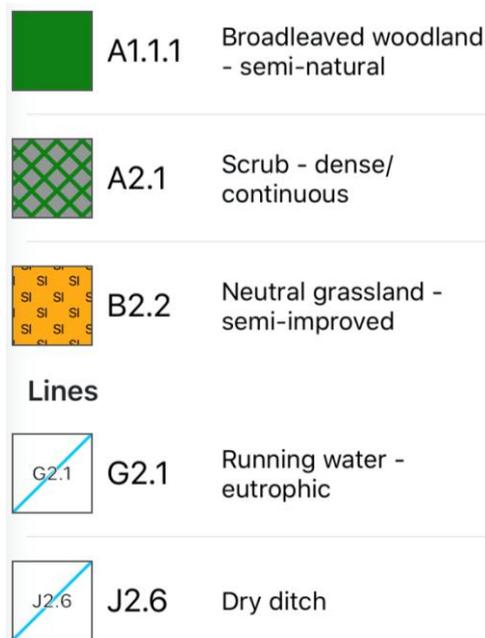
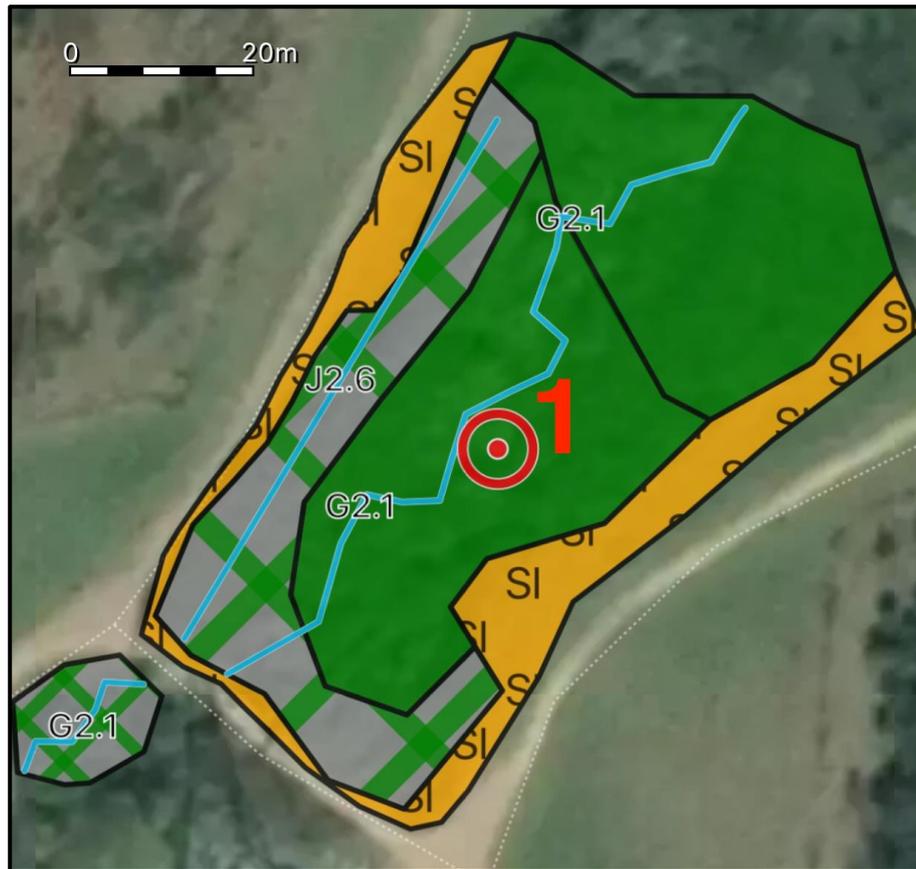


Figure 4.1: Phase 1 habitat plan for woodland parcel. **Target Note 1** shows the location of the fox hole.

4.2.2 River Ingrebourne

All five parcels earmarked for wetland scrape creation are located immediately adjacent to the River Ingrebourne. Depending on how close the work will be to the river banks, there is potential for impacts on this priority habitat and the protected species using it.

The banks themselves are steep in parts and comprise relatively unstable soil under active erosion from meandering flow. Measures should be taken to ensure any heavy plant used during the work is kept far enough from the banks to avoid any erosion or collapse, which also has potential to harm protected species.

No records water vole *Arvicola amphibius* or otter *Lutra lutra* were returned by the EFC data search, and no presence was found during the survey. However, there is highly suitable habitat for both species present, and they are known from the wider Greater London and south Essex area. Also, much of the river bank was inaccessible due to tall and impenetrable vegetation growth and the steep unstable banks, limiting the survey. Water vole and / or otter may therefore be present, and further recommendations are made in **Section 5** below.

Seven records of kingfisher *Alcedo atthis* were returned by the EFC, and suitable river 'cliff' nesting habitat was present along much of the river adjacent to the proposed working areas. Whilst no nesting kingfishers were found during the survey, the survey was limited by tall and impenetrable vegetation, and they can change their nest sites between seasons. They may therefore be present, and further recommendations are made in **Section 5** below.

Rivers are a priority habitat, and such semi-natural stretches of river are uncommon in the locality. Therefore, this habitat is considered to be of **Local** value.

4.2.3 Parcel 1

This was a c.0.35ha kidney-shaped clearing amongst scattered scrub, located immediately south of a meander in the River Ingrebourne, comprising tall ruderal vegetation. Plant species present were:

- Reed sweet-grass *Glyceria maxima* - DAFOR: Dominant
- Common Hogweed - DAFOR: Abundant
- Nettle *Urtica dioica* – DAFOR: Frequent
- Himalayan balsam *Impatiens glandulifera* – DAFOR: Frequent
- Meadow thistle– DAFOR: Abundant

Himalayan balsam was recorded in a discrete patch with the location marked by **TN 1** in **Figure 4.2**. This is an introduced invasive plant, and its careful removal is recommended as detailed in **Section 5** below.

There was a mature pollarded hornbeam on the bank to the west of the parcel. This had some holes and crevices conferring **moderate to high bat roosting potential**. However, this tree is likely to be outside the proposed impact zone. It is recommended it is retained and protected by surrounding heras fencing during the works, along with other trees in the vicinity. There was also a semi-mature hawthorn and field maple on the southwest edge of the parcel. These had **negligible bat roosting potential** and can be removed if necessary. However, we recommend they are retained and protected if possible.

There is high potential for nesting birds, and it is recommended that the works are undertaken outside the nesting bird season of March to August inclusive, as detailed in **Section 5** below.

The tall, thick vegetation, and relatively shaded area, was considered unsuitable for most reptile species, however, the habitat was considered suitable for grass snake for which there was one record returned by the EFC. The habitat enhancement work will improve the habitat for grass snake in the longer term, but the works should avoid harm to any animals present. As the area is within the regular floodplain of the river and did not contain any suitable hibernation features, it is considered unlikely that reptiles will be present during the hibernation period of November to February. Mitigation recommendations are detailed in **Section 5** below.

There are three records of harvest mouse *Micromys minutus* returned by the EFC, all from the same location 1.5km to the north, dating from 1997. The tall ruderal vegetation has potential to support harvest mice, and mitigation to avoid impacts on this species are detailed in **Section 5** below.

Tall ruderal vegetation and scrub is common in the locality, but is of wildlife value. Therefore, this habitat is considered to be of **Site** value.

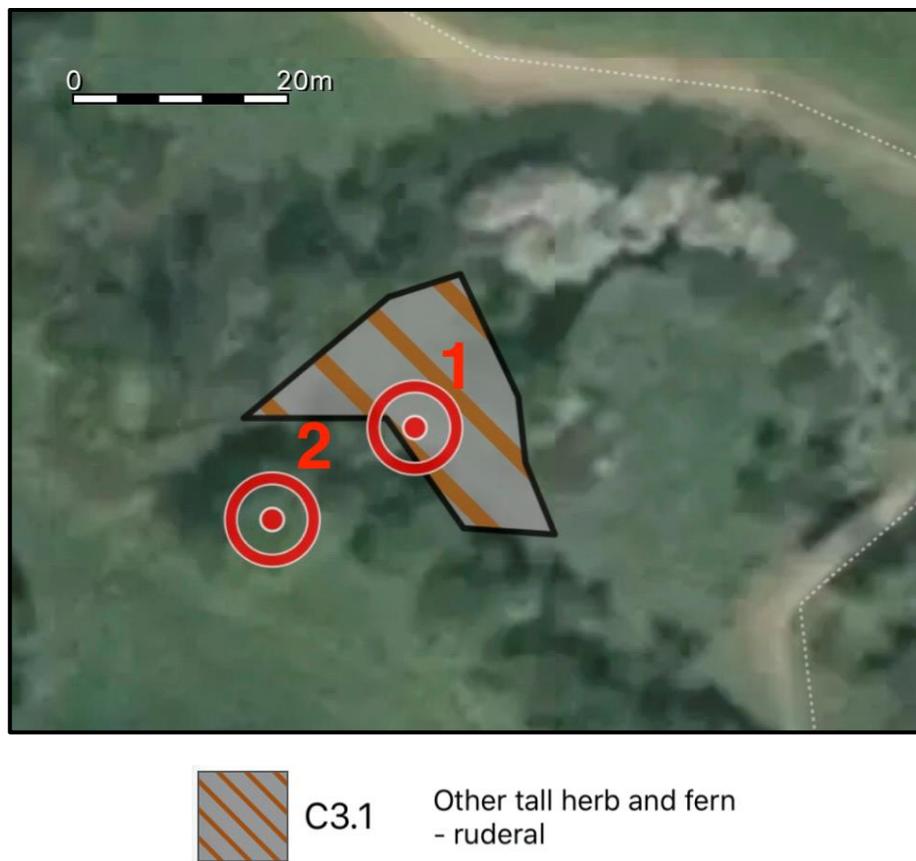


Figure 4.2: Phase 1 habitat plan for Parcel 1. Target Note 1 shows the location of patch of Himalayan balsam, and Target Note 2 shows the location of the mature hornbeam with bat roost potential.



Photo 4.3: Parcel 1, showing Himalayan balsam in front of the scrub in the top right.

4.2.4 Parcel 2

A c.0.35 ha area of rank species-poor semi-improved grassland to the west of the river. Species present were:

- False Oat-Grass - DAFOR: Dominant
- Cock's-Foot - DAFOR: Dominant
- Common Hogweed - DAFOR: Abundant
- Meadow thistle– DAFOR: Abundant
- Nettle – DAFOR: Frequent

To the north and south are patches of dense blackthorn scrub, which have high potential for nesting birds, and should be avoided if possible through protective fencing during the works. The grassland also had some potential for nesting birds and for grass snake and lizards, for which the EFC returned local records. The tall grassland present also has potential to support harvest mice.

Appropriate mitigation for harvest mice, nesting birds and reptiles is recommended in **Section 5** below.

Species-poor semi-improved grassland is common in the locality, but is of value to wildlife. Therefore, this habitat is considered to be of **Site** value.

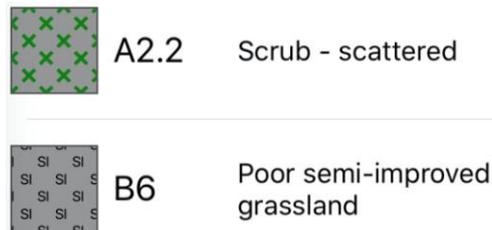
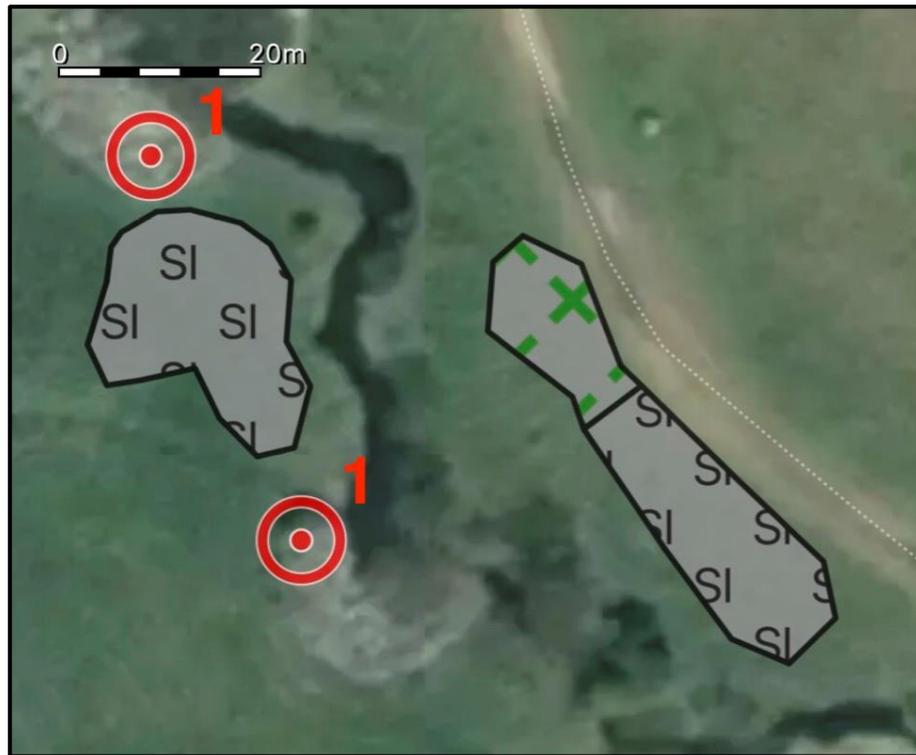


Figure 4.3: Phase 1 habitat plan for Parcels 2 (west of river) and 3 (east of river). Target Note 1 shows the location of patches of dense blackthorn scrub with high bird nesting potential



Photo 4.4: Parcel 2.

4.2.5 Parcel 3

This is a c.0.42 ha area of which the northern section was bramble scrub with intervening tall ruderal vegetation and rank species-poor semi-improved grassland. The southern section comprised species-poor semi-improved grassland and sparsely scattered woody scrub, including blackthorn and ash saplings. Non-woody species present are the same as in Parcel 2.

The grassland and scrub has potential for nesting birds. Vegetation across most of the area was too tall and shaded for reptiles other than grass snake. However, the shorter grass margins along the edge of the path had some potential for other reptile species. The tall ruderal and grassland present also has potential to support harvest mice.

Appropriate mitigation for harvest mice, nesting birds and reptiles is recommended in **Section 5** below.

Species-poor semi-improved grassland, tall ruderal vegetation and scattered scrub are common in the locality, but are of value for wildlife. Therefore, these habitats are considered to be of **Site** value.



Photo 4.5: Parcel 3.

4.2.6 Parcel 4

This was a c.1.15ha area comprising species-poor semi-improved grassland and sparsely scattered woody scrub, including blackthorn and ash saplings, very similar to Parcel 3. Plant species present were the same as in Parcel 2, although oxeye daisy *Leucanthemum vulgare* and yarrow *Achillea millefolium* were also present along the regularly mown edge near the path.

The grassland scrub had potential for nesting birds. Vegetation across most of the area was too tall and shaded for reptiles other than grass snake. However, the shorter grass margins along the edge of the path had some potential for other reptile species. The tall grassland present also has potential to support harvest mice.

Appropriate mitigation for harvest mice, nesting birds and reptiles is recommended in **Section 5** below.

Species-poor semi-improved grassland, tall ruderal vegetation and scattered scrub are common in the locality, but are of wildlife value. Therefore, these habitats are considered to be of **Site** value.

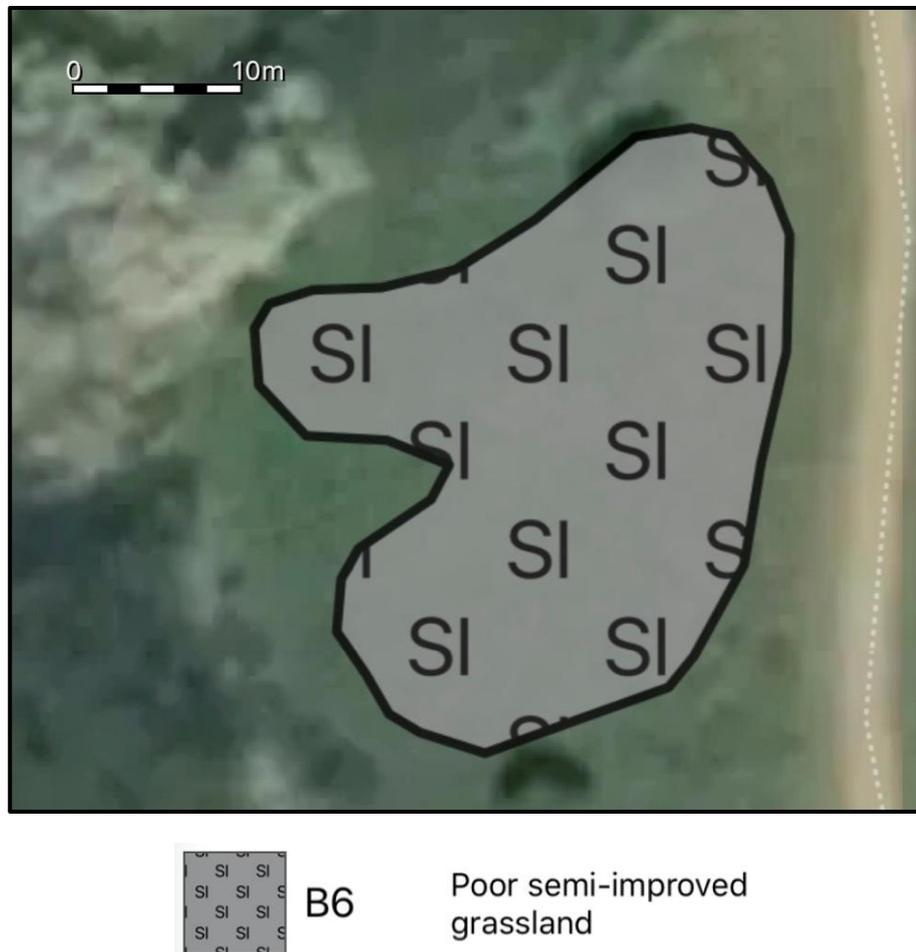


Figure 4.4: Phase 1 habitat plan for Parcel 4.

4.2.7 Parcel 5

This was a c.0.4 ha area comprising mostly tall ruderal vegetation dominated by nettles. Species present were:

- Nettle – DAFOR: Dominant
- Meadow thistle – DAFOR: Abundant
- Common Hogweed - DAFOR: Abundant
- False Oat-Grass - DAFOR: Abundant
- Cock's-Foot – DAFOR: Occasional
- Lesser burdock – DAFOR: Occasional

On the western edge of the Parcel, at location marked by **TN 1** in **Figure 4.5**, were two semi-mature trees, a willow (considered likely to be a crack willow *Salix fragilis*) and an ash.

The tall vegetation and trees had potential for nesting birds. Vegetation across most of the area was too tall and shaded for reptiles other than grass snake. The tall ruderal vegetation present has potential to support harvest mice.

Appropriate mitigation for harvest mice, nesting birds and reptiles is recommended in **Section 5** below.

Tall ruderal vegetation is common in the locality, but is of value to wildlife and considered to be of **Site** value.

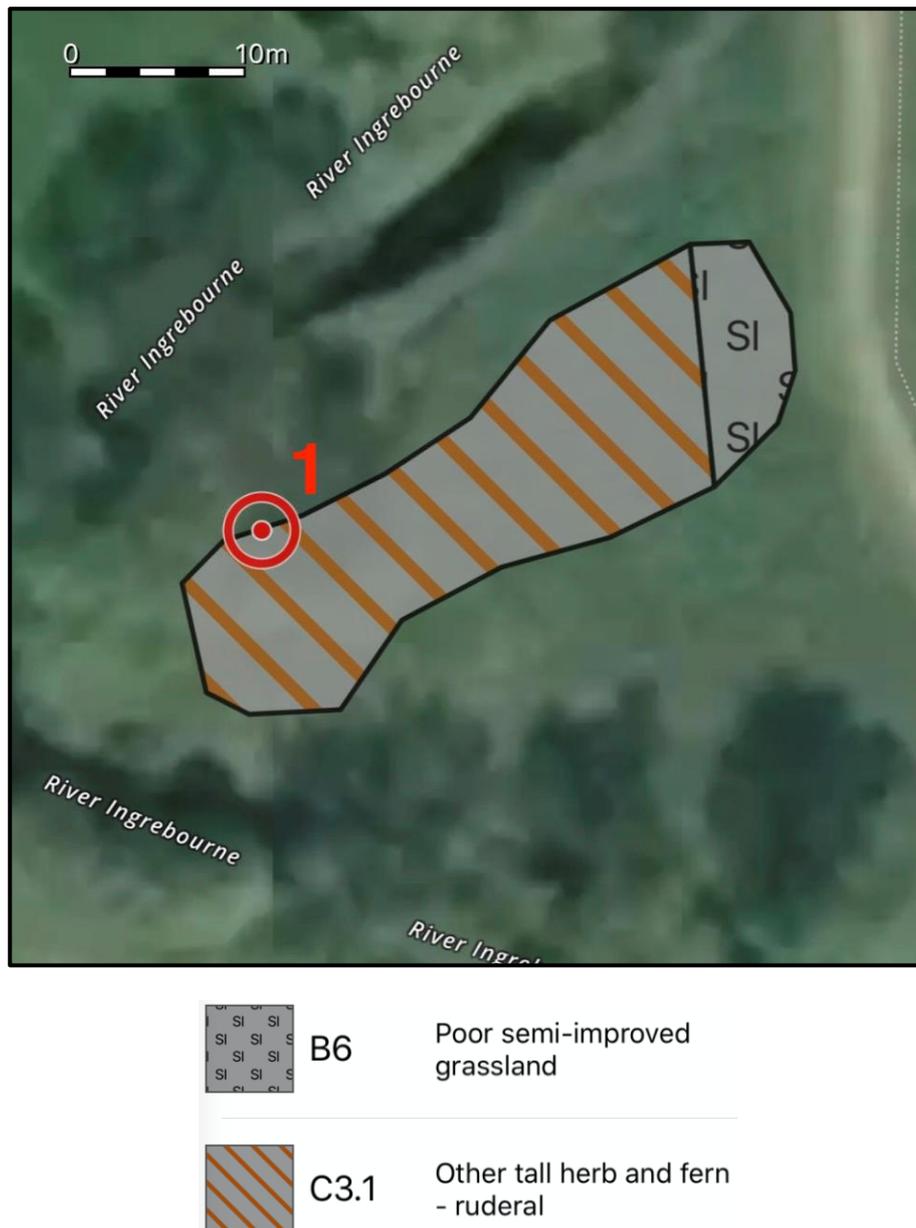


Figure 4.5: Phase 1 habitat plan for Parcel 5. Target Note 1 shows the location of the semi-mature willow and ash trees on the western edge of the parcel.



Photo 4.6: Parcel 5, with the ash and willow trees centre back.

5 Recommendations

This section discusses recommendations for further surveys, general mitigation, and possible enhancements in line with relevant wildlife legislation and planning policy (see **Appendix 1**).

5.1 Recommended Further Surveys and Mitigation Work

5.1.1 Water Voles and Otters

The standard recommendation for avoiding impacts on water voles and otters is to work no closer than 2m from any occupied banks. In this case the banks appear steep and unstable, and it is considered prudent to extend this exclusion zone to 4m. Currently, detailed plans for the works are not known. It is recommended that work be restricted to areas at least 4m away from the river bank.

Should work be planned any closer, a dedicated water vole and otter survey of the adjacent bank should be undertaken, preferably during spring or autumn, when these species are most active and when access and visibility will not be limited. Should they prove to be present, appropriate avoidance measures should be implemented. Avoidance measures include working away from water vole burrow or otter holt locations or, as a last resort, excluding animals from the working area, which may require a licence.

5.1.2 Kingfishers

Kingfishers are specifically protected from disturbance whilst nesting, being listed on Schedule 1 of the Wildlife and Countryside Act. It is recommended that work within 10m of the river bank be avoided during the nesting period, which is March to August inclusive. Should this not be possible, a dedicated kingfisher nesting survey is recommended for 50m up and downstream of the proposed working area immediately prior to work commencing. Should nesting kingfishers be located, work within 50m should be postponed until kingfishers have stopped nesting in this location.

5.1.3 Birds

Clear any tall vegetation between September and February (inclusive) to avoid the breeding bird season. Alternatively, an ecologist should check potential nesting habitat immediately before clearance that is scheduled during the breeding season (March to August inclusive). Any active nests identified must be retained *in situ* with a suitable buffer until the ecologist has confirmed that the chicks have fledged and the nest is no longer active.

5.1.4 Reptiles

All widespread species of reptile are protected in the UK from killing and injury. Should they be present on the site, there is a risk reptiles will be harmed during clearance work. Vegetation thinning work within the woodland parcel should all be above ground and not impact reptiles. All wetland creation parcels are within the general floodplain and subject to occasional flooding, such that reptiles are unlikely to be hibernating in these areas.

To avoid impacts, tall grassland and ruderal vegetation should be cut and cleared during the winter (November to February) when reptiles will be hibernating. If clearance takes place outside this period, vegetation should be strimmed to a height of approximately 10-20cm. This strimming should be directional, starting from one side of the working zone and progressive in such a manner to allow any reptiles to escape from the area ahead of the strimmer. Grassland impacted by the development should then be kept short to avoid recolonisation before works commence.

5.1.5 Harvest Mouse

If present, harvest mice will most likely be using the established tall grassland. To avoid impacts, this grassland should be cut and cleared during the winter, when active nests will not be present. Grass should be directionally cut to allow harvest mice, and other mammals, to escape. Grassland impacted by the development should then be kept short to avoid recolonisation before works commence.

5.1.6 Bats

Assuming no trees will be impacted, further bat roost surveys or mitigation will not be required. However, should this position change and trees be impacted, further tree climbing surveys to search for evidence of roosting bats or presence of suitable features for them, may be required prior to work commencing.

5.1.7 Himalayan Balsam

Any Himalayan balsam plants should be removed from the site, taking care not to disturb them late in the flowering season when there is a risk of seed dispersal. When mature and dry, the fruits split open explosively if touched, flinging the seeds a considerable distance from the parent plant. Each plant produces about 2,500 seeds, which fall to the ground, and they can float, making watercourses a prime route for dispersal of the species. Therefore, preventing seed dispersal is important.

Seeds are usually mature by late May, and naturally cast by autumn. Therefore, clearance between late autumn and early-May is appropriate. This can most easily be done by either hand-pulling (they are shallow-rooted and easily hand-pulled), or by mechanical digging. They can be sprayed, but this approach is not recommended as it takes longer to take effect and chemicals may drift or leach into the adjacent watercourse.

5.1.8 Badgers

Whilst no evidence of the presence of badgers on the site were found during the survey, this species is highly mobile and adaptable, and can change its distribution between seasons. Parcels 1-5 are likely to be subject to regular flooding and are unlikely to support setts. However, the woodland parcel supports habitat suitable for badger setts, and should work on this area not be undertaken before next spring, a further pre-clearance badger survey is recommended.

5.1.9 General Site Measures

Use these precautionary measures to avoid / reduce impacts to wildlife:

- Cover any trenches, holes or deep pits overnight, or use secured planks to allow any animals that fall in to escape during construction. A member of staff should check the site at the end of each working day to ensure that these provisions to protect nocturnal species have been made;

5.2 Enhancements

The wetland scrape creation work is specifically designed to enhance habitats and associated wildlife on the site. In the woodland parcel, it is recommended that there is judicious coppicing of some areas to allow more light to penetrate to the ground level. This will promote growth of the understorey shrub layer and ground flora, in turn increasing habitat and species diversity. This should take account of the fact that trees in this area are protected under Tree Protection Orders.

6 Conclusion

The development can proceed with minimal impact to habitats and protected / notable species if the mitigation measures outlined within **Section 5** are implemented, and assuming no trees with potential to support roosting bats will be impacted.

The works are likely to enhance the site for local wildlife. This report also recommends coppicing of the woodland parcel where appropriate to improve the habitat and species diversity of this section.

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Appendix 1 Legislation & Planning Policy

Legislation

Conservation of Habitat and Species Regulations (CHSR)

The *CHSR 2017* transpose Council Directive 92/43/EEC on the Conservation of Natural Habitats and Wild Flora and Fauna (Habitats Directive) into English law, making it an offence to deliberately capture, kill or disturb wild animals listed under Schedule 2 of the Regulations. It is also an offence to damage or destroy a breeding site or resting place of such an animal (even if the animal is not present at the time).

Wildlife & Countryside Act (WCA)

The *WCA 1981*, as amended by the *Countryside and Rights of Way Act (CRoW) 2000* and the *Natural Environment and Rural Communities Act (NERC) 2006*, consolidates and amends existing national legislation to implement the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) and Council Directive 79/409/EEC on the Conservation of Wild Birds (Birds Directive), making it an offence to:

- Intentionally kill, injure or take any wild bird or their eggs or nests (with certain exceptions) and disturb any bird species listed under Schedule 1 to the Act, or its dependent young while it is nesting;
- Intentionally kill, injure or take any wild animal listed under Schedule 5 to the Act; intentionally or recklessly damage, destroy or obstruct any place used for shelter or protection by any wild animal listed under Schedule 5 to the Act; intentionally or recklessly disturb certain Schedule 5 animal species while they occupy a place used for shelter or protection;
- Pick or uproot any wild plant listed under Schedule 8 of the Act.

Sites of Special Scientific Interest (SSSI) are designated under this Act.

Special Protection Areas (SPA) are strictly protected sites, designated under the Birds Directive, for rare and vulnerable birds and for regularly occurring migratory species.

Natural Environment & Rural Communities (NERC) Act

The *NERC Act 2006* amends the *CRoW Act*, by further extending the requirement to have regard for biodiversity to all public authorities, which includes local authorities and local planning authorities and requires that the Secretary of State consults Natural England (NE) in the publication of the list of living organisms and habitat types deemed to be of principal importance in conserving biodiversity.

Relevant Protected Species Legislation

Species	Relevant Legislation	Level of Protection
Great Crested Newt	<p>European protected species under the <i>Conservation of Habitats and Species Regulations 2017</i>.</p> <p>Full protection under <i>Schedule 5 of the Wildlife and Countryside Act, 1981 (as amended)</i>.</p>	<p>It is an offence to:</p> <ul style="list-style-type: none"> intentionally kill, injure, or take great crested newts intentionally or recklessly disturb great crested newts. intentionally or recklessly disturb great crested newts. intentionally or recklessly damage destroy or obstruct access to any place used by the animal for shelter or protection.
Reptiles (adder, grass snake, common lizard & slow-worm)	<p>Partially protected under <i>Schedule 5 of the Wildlife and Countryside Act, 1981 (as amended)</i>.</p>	<p>It is an offence to:</p> <ul style="list-style-type: none"> intentionally kill or injure these animals. sell, offer for sale, advertise for sale, possess or transport for the purposes of selling any live or dead animals or part of these animals.
Birds	<p>Protection under the <i>Wildlife and Countryside Act, 1981 (as amended)</i>.</p>	<p>It is an offence to:</p> <ul style="list-style-type: none"> intentionally kill, injure or take any wild bird. intentionally take, damage or destroy nests in use or being built (including ground nesting birds). intentionally take, damage or destroy eggs. Species listed on Schedule 1 of the WCA or their dependant young are afforded additional protection from disturbance whilst they are at their nests.
Badger	<p><i>Protection of Badgers Act, 1992</i>.</p>	<p>It is an offence to:</p> <ul style="list-style-type: none"> wilfully kill, injure, take, possess, or cruelly ill-treat a badger, or to attempt to do so. intentionally or recklessly interfere with a sett.
Bats	<p>European protected species under the <i>Conservation of Habitats and Species Regulations 2017</i>.</p> <p>Full protection under <i>Schedule 5 of the Wildlife and Countryside Act, 1981 (as amended)</i>.</p> <p>Protected by the <i>Wild Mammals (Protection) Act 1996</i>.</p>	<p>It is an offence to:</p> <ul style="list-style-type: none"> intentionally kill, injure, or take any species of bat. intentionally or recklessly disturb bats. intentionally or recklessly damage destroy or obstruct access to bat roosts.

Species	Relevant Legislation	Level of Protection
Hazel Dormouse	<p>European protected species under the <i>Conservation of Habitats and Species Regulations 2017</i>.</p> <p>Full protection under <i>Schedule 5 of the Wildlife and Countryside Act, 1981 (as amended)</i>.</p>	<p>It is an offence to:</p> <ul style="list-style-type: none"> deliberately capture, injure or kill hazel dormice. damage or destroy a dormouse resting place or breeding site. deliberately or recklessly disturb a hazel dormouse while it's in a structure or place of shelter or protection. block access to structures or places of shelter or protection. possess, sell, control or transport live or dead hazel dormice, or parts of hazel dormice.
Wild Mammals	<p>The <i>Wild Mammals (Protection) Act 1996</i>.</p>	<p>This makes it an offence to:</p> <ul style="list-style-type: none"> crush or asphyxiate any wild mammal with intent to inflict unnecessary suffering. <p>This may apply during site clearance for development, particularly where burrowing animals such as foxes and rabbits are present, since such animals could be crushed or asphyxiated in their burrows by heavy machinery.</p>

National Planning Policy

National Planning Policy Framework (NPPF)

The NPPF sets out current government policy on biodiversity and nature conservation and places a duty on planners to make material consideration to the effect of a development on legally protected species when considering planning applications (MHC&LG, 2018). The NPPF also promotes sustainable development by ensuring that developments take account of the role and value of biodiversity and that it is conserved and enhanced within a development.

The NPPF works in conjunction with Government Circular *06/2005 'Biodiversity and Geological Conservation - Statutory Obligations and Their Impact within the Planning System.'*

Regional and Local Planning Policy and Guidance

Local Structure Plans

County, District and Local Councils have Structure Plans and other policy documents that include targets and policies which aim to maintain and enhance biodiversity. These are used by Planning Authorities to inform planning decisions.

Biodiversity Action Plans

The UK Biodiversity Action Plan (UKBAP) was organised to fulfil the Rio Convention on Biological Diversity in 1992, to which the UK is a signatory. A 'UK Post-2010 Biodiversity Framework' was published in July 2012, and succeeded the UKBAP. Much of the work for the UK BAP is now focussed at a country level due to devolution and the creation of country-level biodiversity strategies.

The UKBAP lists of priority species and habitats are still valuable reference sources. Notably, they have been used to help draw up statutory lists of priority species and habitats as required under Section 41 of the NERC act.

Essex Biodiversity Action Plan

The Local Habitat and Species Action Plans were first produced in 1999, with subsequent revisions. A list of all species for Essex is listed online at <http://www.essexfieldclub.org.uk/portal> (accessed 19/09/18).

UK Post-2010 Biodiversity Framework

The UK Post-2010 Biodiversity Framework (2012) was produced in response to a change in strategic thinking following the publication of the Convention of Biological Diversity's Strategic Plan for Biodiversity 2011–2020. The Strategic Plan consists of 20 new biodiversity targets for 2020, termed the 'Aichi biodiversity targets' and the launch of the new EU Biodiversity Strategy in May 2011.

The framework sets a structure for action across the UK between now and 2020, including a shared vision and priorities for UK-scale activities to help deliver the Aichi targets and the EU Biodiversity Strategy. A major commitment by Parties to the Convention of Biological Diversity is to produce a National Biodiversity Strategy and/or Action Plan (NBSAP).

Natural England Standing Advice

Natural England has adopted national standing advice for protected species. It provides a consistent level of basic advice which can be applied to any planning application that could affect protected species. It replaces some of the individual comments that Natural England has provided in the past to local authorities.