

A14 Cambridge to Huntingdon improvement scheme

Environmental Statement

Appendices

Appendix 11.1: Phase 1 habitats

Date: December 2014

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Executive summary

This report is an appendix of the *A14 Cambridge to Huntingdon improvement scheme Environmental Statement*. This report presents an evaluation of Phase 1 habitats based on recent surveys. It also presents the policy and legislative context within which the environmental impact assessment (EIA) has been carried out. Impacts on and mitigation for habitats are considered in *Chapter 11 of the Environmental Statement (ES)*.

Habitats were surveyed using guidance in the *Joint Nature Conservation Committee (JNCC) Handbook for Phase 1 habitat survey* (JNCC, 2010).

The majority of the study area was found to be dominated by arable land. The parcels of land were generally bounded by a mixture of species-poor intact hedges and/or ditches.

Interspersed between the arable fields, were urban areas, small areas of pasture, small blocks of woodland (mostly plantation) and waterbodies such as lakes, rivers, streams and ponds. Portholme Special Area of Conservation (SAC) was found to contain important grassland habitats of international importance.

Habitats within the study area are evaluated as up to international value but habitats outside Portholme SAC, sites of special scientific interest (SSSI) and county wildlife sites (CWS) are of no more than local value.

1 Introduction

- 1.1.1 This report is an appendix of the *A14 Cambridge to Huntingdon improvement scheme Environmental Statement*. It presents the conclusions of the surveys for the scheme during 2013 and 2014.
- 1.1.2 The objective of the study was to describe the baseline status of habitats present and evaluate those potentially affected by the scheme. Impacts on and mitigation for habitats are considered in *Chapter 11 of the Environmental Statement (ES)*.
- 1.1.3 The study included a desktop survey to search for records of habitats, and field survey to provide more detailed information. Study or search areas are given for different elements of the study.

2 Policy and legislation

2.1 Legislation

- 2.1.1 The *Wildlife and Countryside Act 1981 (as amended)* makes it an offence (subject to exceptions) to intentionally pick, uproot or destroy any wild plant listed in *schedule 8* of the Act; or any seed or spore attached to any such wild plant without permission by the landowner. *The Conservation of Habitats and Species Regulations 2010* also makes it an offence deliberately to pick, collect, cut, uproot or destroy any of the European protected wild plant species listed in *Schedule 5* and *Schedule 9* of the *Wildlife and Countryside Act 1981 (as amended)* also contains measures for preventing the establishment of non-native species which may be detrimental to native wildlife.
- 2.1.2 *Section 40* of the *Natural Environment and Rural Communities (NERC) Act 2006* places a duty on all public bodies to have regard to the conservation of biodiversity in England, when carrying out their normal functions (the biodiversity duty).

2.2 National Planning Policy Framework

- 2.2.1 The *National Planning Policy Framework (NPPF)* (Department for Communities and Local Government, 2012) sets out the Government's view on how planners should balance nature conservation with development and helps ensure that the Government meets its biodiversity commitments with regard to the operation of the planning system. The planning system should contribute to and enhance the natural and local environment by minimising impacts on biodiversity and providing net gains in biodiversity where possible. If significant harm resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused.
- 2.2.2 The NPPF states that the wider benefits of an ecosystem should be recognised and the presence of a protected species is a substantial consideration for a development proposal (*Circular 06/2005 (Office of the Deputy Prime Minister, 2005)*). It is therefore considered essential that the presence of protected species and the extent that they may be affected by the proposed development is established in advance of a planning application in order that planning permission can be granted (*Planning Practice Guidance (Department for Communities and Local Government, 2014)*).
- 2.2.3 The *Draft National Policy Statement (NPS) for National Networks* (Department for Transport, 2013) sets out the Government's vision and policy for the future development of nationally significant infrastructure projects on the national road and rail networks. It provides guidance for promoters of nationally significant infrastructure projects, the basis for the examination by the examining authority and for decisions by the Secretary of State. The *Draft NPS* (Department for Transport, 2013) includes general principles for the assessment of national networks, including for EIA.

2.3 Priority Habitats

- 2.3.1 Habitats of principal importance for the conservation of biodiversity in England are listed under *section 41* of the *NERC Act 2006*. This list is used to guide decision-makers in public bodies, in implementing their biodiversity duty. The habitats listed are priorities for nature conservation action and therefore for consideration in impact assessment.
- 2.3.2 The *UK Biodiversity Action Plan (UK BAP)* (1994) was the United Kingdom's response to the *Global Convention on Biological Diversity (CBD)* in 1992. It lists priority species and habitats that are identified as being the most threatened and require conservation action (Joint Nature Conservation Committee (JNCC), 2014). In 2012, the *UK Post-2010 Biodiversity Framework* (JNCC and Department for Environment, Food and Rural Affairs (Defra), 2012) succeeded the *UK BAP* and is the UK Government's response to a new strategic plan of the *CBD* which was published in 2010.
- 2.3.3 Much of the work previously carried out under the *UK BAP* is now focussed at a county level. However, the *UK BAP* lists of priority species and habitats remain important and have been used to draw up the *section 41* statutory list.
- 2.3.4 *The Highways Agency Biodiversity Action Plan (HABAP)* is currently under review. The 2002 version lists priority species and habitats of the soft estate of England's trunk roads and motorways (excluding London) (Highways Agency, 2002). Habitats within the study area which are a priority for conservation action are shown in *Table 4.2*.
- 2.3.5 *Local BAPs (LBAPs)* integrate the conservation measures provided in the *UK BAP* to enhance biodiversity at the local and regional level. *The Cambridgeshire and Peterborough Biodiversity Partnerships LBAP* (2008/09) is pertinent to the scheme.
- 2.3.6 A number of priority habitats are likely to be present in the areas that are listed under *section 41* of the *NERC Act 2006*, the *UK BAP* and the *Cambridgeshire and Peterborough LBAP* (2007).

3 Methodology

3.1 Desktop Survey

- 3.1.1 Records were requested from the Cambridgeshire and Peterborough Environmental Records Centre (CPERC) for any records of notable species within 1km of the scheme. The search area for the desktop survey was based on the professional judgement of suitably qualified and experienced specialists, as listed in *Appendix 6.1*, in accordance with best practice guidance (CIEEM 2013).
- 3.1.2 Records received from the CPERC were supplemented by a review of the Phase 1 habitat surveys conducted by the Highways Agency in 2013 (Highways Agency, 2013).

3.2 Field surveys

- 3.2.1 A Phase 1 habitat survey of the study area, including all accessible land within the footprint of the scheme and a 250m buffer, was undertaken between 20 June 2013 and 4 December 2013 on foot by experienced ecologists led by an ecologist who is a Chartered Environmentalist with nine years' relevant experience.
- 3.2.2 The methodology was based on the *JNCC Handbook for Phase 1 habitat survey* (JNCC, 2010). Surveyors worked methodically across and around the survey area, including all parcels of land where access was allowed. All linear features such as hedgerows, road verges, ditches, embankments, rivers and streams were surveyed as well as woodlands, scrub and reed beds.
- 3.2.3 Dominant plant species were recorded and habitats classified according to their vegetation types and presented in the standard Phase 1 habitat survey format on survey maps.
- 3.2.4 Target Notes (TN) were taken along with photographs of any species or subject of particular note including protected and invasive species and were sequentially numbered and assigned a grid reference.
- 3.2.5 Weather conditions were recorded daily and updated throughout the survey day.

3.3 Evaluation

- 3.3.1 Habitats within the study area were valued using *Guidelines for Ecological Impact Assessment in the United Kingdom* (Institute of Ecology and Environmental Management (IEEM), 2006). This method is in line with the most recently published guidance (Highways Agency, 2010) and represents best practice guidance. The evaluation uses a framework linked to a geographical scale at which the receptor has been valued (i.e. international, national, regional, county, local or site).
- 3.3.2 The criteria for evaluating habitats are shown in *Table 3.1*.

Table 3.1: Criteria used to evaluate habitats

Habitat Value	Criteria
Site	Widespread and common habitats.
Local	Habitats scarce within the study area (within 250m of the scheme).
District	Habitats relatively well represented within the county but with scarce distribution within the district.
County	Habitats with scarce distribution within the county.
National	Habitats with scarce distribution within the UK.
International	Habitats listed on <i>Annex 1</i> of the <i>Council Directive (92/43/EEC) on the conservation of natural habitats and of wild fauna and flora (Habitats Directive)</i> (European Commission, 1992).

3.4 Limitations

- 3.4.1 Limitations specific to the surveys carried out in the study area include the protracted survey in 2013 which may have resulted in species with an early flowering season being missed later in the season and vice-versa. Common spotted orchid (*Dactylorhiza fuchsii*) is one such example.
- 3.4.2 Access was refused to a small number of areas within the study area and these were not surveyed. It is considered that the habitats within these areas will not have changed significantly from previous baseline surveys undertaken in 2009 as these were established, stable communities and are highly unlikely to contain significantly different habitats than those recorded earlier.
- 3.4.3 The limitations to the surveys do not represent a significant constraint to adequately assessing the value of habitats for the purposes of undertaking an appropriate ecological impact assessment, with a high degree of confidence in the outcome.
- 3.4.4 Phase 1 habitat surveys can only assess the site as found at the time of the survey. Habitats are subject to change. Whilst the results of this survey may no longer be fully representative of the site at the time of construction, nationally recognised standard survey methodologies have been used.
- 3.4.5 Impacts on and mitigation for habitats are considered in *Chapter 11 of the Environmental Statement (ES)*.

4 Results

4.1 Desktop data and incidental records

- 4.1.1 Eleven records for notable, rare or scarce plants were reported by CPREC. Only two species records were reported within the last 11 years as detailed in *Table 4.1*.

Table 4.1: Desktop and incidental records for flora

Common name	Scientific name	Date	Grid reference	Source
Marsh sow thistle	<i>Sonchus palustris</i>	2003	TL 236 702	CPREC
Narrow-leaved dropwort	<i>Oenanthe silaifolia</i>	2003	TL 23 70	CPREC

- 4.1.2 None of the 11 notable, rare or scarce species identified in the biological records were recorded during the Phase 1 habitats surveys in 2013. The majority of the survey was carried out during optimal times for botanical surveys and there is high confidence that these species are no longer present across the site.

4.2 Weather conditions

- 4.2.1 The weather conditions during the surveys were fine and dry. Weather conditions are considered very unlikely to have affected the results of the surveys.

4.3 Field survey results

- 4.3.1 The results of the Phase 1 habitat survey undertaken in 2013 are shown on *Figure 11.1 of the ES*. Target notes relating to the Phase 1 habitat survey are provided in *Annex 1* and photographs at selected locations relating to the target notes are shown on *Figure 11.16 of the ES*.
- 4.3.2 *Table 4.2* summarises habitats recorded during the surveys and indicates the priority status under *section 41* of the *NERC Act 2006* and UK and local *BAPs*.

Table 4.2: Habitats recorded

Y = yes

Habitat	Section 41	UK BAP	Highways Agency BAP	Cambridgeshire and Peterborough LBAP
Broadleaved woodland-semi-natural	Y	Y	Y	Y
Broadleaved woodland-plantation	-	-	Y	-
Coniferous woodland-plantation	-	-	-	-
Mixed woodland-plantation	-	-	Y	-
Trees	-	-	Y	Y
Scrub	-	-	Y	-
Hedgerows-species-poor intact	Y	Y	Y	Y
Hedgerows-species poor defunct	Y	Y	Y	Y
Hedge with trees	Y	Y	Y	Y
Running water-rivers and streams/brooks	Y	-	-	Y
Standing water-lakes, ponds and reservoirs	Y	Y	Y	Y
Dry ditches	-	-	Y	Y
Wet ditches	-	-	Y	Y
Swamp, marginal and inundation	-	-	-	-
Arable	Y (field margins)	Y (field margins)	-	Y
Poor semi-improved grassland	-	-	Y	-
Semi-improved grassland-neutral	-	-	Y	-
Amenity grassland	-	-	-	Y
Improved grassland	-	-	-	-
Tall ruderal	-	-	-	-

General habitat descriptions

- 4.3.3 The majority of the study area was dominated by arable land. The parcels of land were generally bounded by a mixture of species-poor intact hedgerows and/or ditches.
- 4.3.4 Areas around Huntingdon and other conurbations such as Brampton, Bar Hill, Girton and Cambridge become more urban in character.
- 4.3.5 Small villages are interspersed throughout the study area.

- 4.3.6 Cattle grazed pasture was prevalent towards the western end of the scheme between the river Great Ouse and the East Coast mainline railway east of Buckden Marina. Further small areas of grassland (some grazed by sheep, cattle and horses) were scattered throughout the study area including the equestrian centre near Wood Green Animal Shelter, Fenstanton, Swavesey, Conington, Girton and Milton.
- 4.3.7 Most of the grassland recorded in the study area, outside the designated sites, was species-poor and/or improved with only small areas of semi-improved neutral grassland present.
- 4.3.8 The largest area of species-rich BAP priority habitat grassland was associated with Portholme SAC/SSSI south of Huntingdon. The meadows here are a good example of National Vegetation Classification (NVC) MG4 grassland according to the SSSI citation. The grassland communities at this site are characterised by the presence of such grasses as Yorkshire fog (*Holcus lanatus*), yellow oat-grass (*Trisetum flavescens*), meadow foxtail (*Alopecurus pratensis*) and meadow fescue (*Festuca pratensis*). The range of herbs present, typical of such meadows, includes lady's bedstraw (*Galium verum*), pepper-saxifrage (*Silaum silaus*) and great burnet (*Sanguisorba officinalis*).
- 4.3.9 There were numerous small blocks of woodland, mostly broadleaved plantation woodland, although there were small blocks of semi-natural broadleaved woodland within the study area. None of this woodland was considered to be of ancient origin. Brampton Wood SSSI is of ancient origin but was located almost 700m west of the scheme footprint and outside of the study area.
- 4.3.10 Scattered throughout the study area were numerous waterbodies including lakes, rivers, streams, ponds and ditches.

Habitat Descriptions

Woodland

- 4.3.11 The majority of woodland within the study area comprised small blocks of plantation broadleaved woodland. There were also areas of mixed woodland and semi-natural broadleaved woodland. None of the woodland blocks were considered to be of ancient origin and most were less than two hectares in size.
- 4.3.12 The dominant canopy species in the broadleaved woodland blocks included pedunculate oak (*Quercus robur*), ash (*Fraxinus excelsior*) and field maple (*Acer campestre*) with occasional other species including sycamore (*Acer pseudoplatanus*), white poplar (*Populus alba*), English elm (*Ulmus procera*), wych elm (*Ulmus glabra*) and alder (*Alnus glutinosa*). More rarely found species included horse chestnut (*Aesculus hippocastanum*), beech (*Fagus sylvatica*), wild cherry (*Prunus avium*), silver birch (*Betula pendula*) and Norway maple (*Acer platanoides*).
- 4.3.13 In some areas particularly in woodlands around conurbations ornamental species were also recorded.

- 4.3.14 The shrub layer typically comprised hawthorn (*Crataegus monogyna*), blackthorn (*Prunus spinosa*), elder (*Sambucus nigra*) and goat willow (*Salix caprea*) with occasional hazel (*Corylus avellana*), dogwood (*Cornus sanguineus*) and wayfaring tree (*Viburnum opulus*) particularly where landscaping schemes had been planted. Bramble (*Rubus fruticosus agg.*) scrub was also present in many of the woodland blocks.
- 4.3.15 Ground flora in all the woodland blocks was sparse and generally species-poor, comprising common grasses, common nettle (*Urtica dioica*), ivy (*Hedera helix*), wood dock (*Rumex sanguineus*), ground ivy (*Glechoma hederacea*) and lesser celandine (*Ranunculus ficaria*). Ancient woodland indicator species were uncommon generally, with the exception of occasional records of ubiquitous species such as lords and ladies (*Arum maculatum*), wood avens (*Geum urbanum*) and wood brome (*Bromus sylvaticus*). Violet (*Viola sp*) and primrose (*Primula vulgaris*) were recorded along the edge of one woodland block.
- 4.3.16 Game cover ornamental species such as Wilson's honeysuckle (*Lonicera nitida*) were noted in one or two woodland areas.

Trees and scrub

- 4.3.17 Numerous trees were recorded within the study area scattered within hedgerows, landscape planting schemes and around conurbations or leisure facilities and other amenities, including Bar Hill Golf Course, Cambridge Crematorium, Hinchingsbrooke School, Hinchingsbrooke Hospital, Girton College, and Cambridge Science Park. A number of ornamental species were encountered in these areas including weeping willow (*Salix babylonica*), yellow and Louisiana oak (*Quercus x ludoviciana* and *Quercus muehlenbergii*) and purple crab apple (*Malus x purpurea*).
- 4.3.18 There were numerous mature and semi-mature oak trees and occasional records of very old oak trees, especially at Hinchingsbrooke Hospital, although none were identified as *veteran* (defined as having a large girth for the species, a hollow/hollowing trunk/significant amounts of deadwood within the canopy) (Rural Development Service, 2006).
- 4.3.19 A line of mature willow trees was a feature along the banks of a brook at Slate Hall Farm.
- 4.3.20 Scrub was prevalent along roadside embankments and verges, within woodland blocks, in ditches and surrounding waterbodies of all sizes and on most road interchanges. This comprised largely of bramble, willow, hawthorn and blackthorn.

Hedgerows

- 4.3.21 There were numerous hedgerows bounding the arable and pasture fields throughout the study area. Most of these were species-poor and typical of enclosure hedgerows and most were intact.
- 4.3.22 These were mainly dominated by hawthorn and blackthorn with occasional elder, field maple, goat willow, and dog-rose (*Rosa canina*) and more rarely hazel, dogwood, wayfaring tree and buckthorn (*Rhamnus cathartica*).

- 4.3.23 Trees were present in many of the hedgerows and typically these included English oak and ash with occasional English elm, wych elm and sycamore.
- 4.3.24 Most of the hedgerows were intensively managed although most were relatively tall with some almost becoming lines of overgrown shrubs/trees. The hedgerows were less intensively managed at the eastern end of the scheme especially around Madingley and Girton. Defunct hedgerows were also recorded.
- 4.3.25 Two hedgerows are designated county wildlife sites (CWS) and are located within the curtilage of Cambridge city, namely King's Hedges Hedgerow CWS and Milton Road Hedgerows CWS.

Waterbodies

- 4.3.26 Across the study area numerous waterbodies were present and included lakes, rivers, streams ditches and ponds.
- 4.3.27 The two rivers within the study area, namely the river Great Ouse and the river Cam are both designated CWS.
- 4.3.28 The river Great Ouse is approximately 35-40m wide with a moderate to fast flow and mostly vertical sided earth banks with associated trees and marginal vegetation in the riparian zone.
- 4.3.29 The study area comprised a number of large standing water bodies including gravel pits at Brampton Racecourse, Lenton Fishing Lakes, Fenstanston Gravel Pits, Buckden Gravel Pits CWS, the Holiday Inn lake at Histon and lakes at Milton Country Park. The majority of these lakes were surrounded by either semi-improved neutral grassland and/or willow carr with some mature trees such as crack willow (*Salix fragilis*). There was minimal aquatic vegetation present although common reed (*Phragmites australis*) was a feature in some of these, forming dense areas of reed bed. Some of the lakes had tree-covered islands associated with them.
- 4.3.30 Other emergent species recorded in these habitats included reedmace (*Typha latifolia*), purple loosestrife (*Lythrum salicaria*), various pond sedges (*Carex sp*), common club-rush (*Schoenoplectus lacustris*), water mint (*Mentha aquatica*), water plantain (*Alisma plantago lanceolata*) and Gypsywort (*Lycopus europaeus*).
- 4.3.31 Submerged species included Canadian waterweed (*Elodea canadensis*), curled pondweed (*Potamogeton crispus*) and horned pondweed (*Zannichellia palustris*).
- 4.3.32 There were more than 150 ponds within the study area. Most of these were typical farm ponds, and at least 100m² in size, although some were smaller with a tendency to dry out. There were also a number of these ponds which were typical balancing ponds constructed as part of highways schemes in the past. These tended to be dominated by emergent vegetation such as common reed and reedmace and many had little open water.

4.3.33 Aquatic and submerged vegetation was poorly represented in these ponds with the exception of common duckweed (*Lemna minor*), ivy-leaved duckweed (*Lemna trisulca*), fat duckweed (*Lemna gibba*) and occasionally broad-leaved pondweed (*Potamogeton natans*). Many ponds had algae associated with them. There was a range of emergent species recorded including reedmace, common reed, water plantain, various pond sedges (*Carex* sp), reed sweet-grass (*Glyceria maxima*), floating sweet-grass (*Glyceria fluitans*), water mint, water forget-me-not (*Myosotis scorpioides*) and occasionally spiked rush (*Eleocharis palustris*).

4.3.34 There were over 200 ditches within the study area. The majority of these were typical arable field drains with steep banks (45° or in some cases steeper) and narrow watercourses (250mm or less). Most were dry in 2013. A significant number of the ditches surveyed were dry in April and May 2014 or were rapidly drying out.

Swamp, marginal and inundation vegetation

4.3.35 A mosaic of swamp vegetation and poor semi-improved grassland were recorded adjacent to large water bodies at Buckden Gravel Pits CWS. This was dominated by tall pond sedge in places.

4.3.36 An area of swamp and marginal vegetation was recorded around a balancing pond adjacent to Huntingdon Road (A1307), which was dominated by reedmace and adjacent to the river Great Ouse.

Arable

4.3.37 The study area comprised large expanses of regularly cultivated land growing a range of arable crops mainly cereals and oilseed rape. Many of these arable fields also had 6m sown grass margins (mostly species-poor semi-improved grassland dominated by grasses) around the field edges.

Grassland

4.3.38 The majority of the larger blocks of grassland grazed by cattle, sheep or horses comprised improved grassland or species-poor semi-improved grassland dominated by common grass species with few broadleaved herbs.

4.3.39 Species-rich semi-improved grassland was poorly represented within the study area with the exception of grasslands around Huntingdon and in particular Portholme SAC/SSSI, which is already well documented. Many of the designated sites within the study area comprised species-rich neutral grassland, particularly NVC MG5 and MG4 community BAP priority grassland habitats.

4.3.40 Small areas of semi-improved grassland were also recorded outside of the designated sites in landscaping schemes around development sites and were obviously sown.

- 4.3.41 In general the semi-improved grassland areas comprised a good mixture of grasses and herbs including cock's-foot (*Dactylis glomerata*), bents (*Agrostis capillaris* and *A. stolonifera*), rough meadow-grass (*Poa trivialis*), Yorkshire fog (*Holcus lanatus*), meadow foxtail (*Alopecurus pratensis*), red fescue (*Festuca rubra*), sweet vernal grass (*Anthoxanthum odoratum*), ox-eye daisy (*Leucanthemum vulgare*), lady's bedstraw (*Galium verum*), bird's-foot-trefoil (*Lotus corniculatus*), common knapweed (*Centaurea nigra*), self-heal (*Prunella vulgaris*), common mouse-ear (*Cerastium fontanum*), red clover (*Trifolium pratense*), red bartsia (*Odontites verna*), smooth and beaked hawk-beard's (*Crepis capillaris* and *C. vesicaria*), and smooth cat's-ear (*Hypochaeris radicata*).
- 4.3.42 Species recorded rarely within the study area included common gromwell (*Lithospermum officinale*), pyramidal orchid (*Anacamptis pyramidalis*), common spotted orchid (*Dactylorhiza fuchsia*), primrose (*Primula vulgaris*), pignut (*Conopodium majus*) and salad burnet (*Sanguisorba minor*).
- 4.3.43 Some sections of the roadside embankments supported semi-improved neutral grassland although direct access was not possible along much of the road network due to their proximity to constant live traffic.
- 4.3.44 Amenity grassland was also a feature within the study area particularly in and around conurbations, leisure and amenity facilities such as those at Hinchingsbrooke Hospital, Hinchingsbrooke School, Brampton Racecourse, Alconbury, Bar Hill golf course, Girton College, Cambridge Science Park and A14 /A1 service areas and existing road interchanges.

Tall ruderal

- 4.3.45 Small areas of tall ruderal vegetation were recorded throughout the study area. This generally comprised species such as common nettle (*Urtica dioica*), stands of hemlock (*Conium maculatum*) and a small stand of Japanese knotweed (*Fallopia japonica*)

Invasive species

- 4.3.46 Three invasive species listed on *Schedule 9* of the *Wildlife and Countryside Act 1981* (as amended) were recorded in the study area.
- 4.3.47 New Zealand pygmyweed (*Crassula helmsii*) was found in three ponds at Cambridge Business Park, in a pond on the Dry Drayton interchange and at Buckden Gravel Pits CWS.
- 4.3.48 Stands of Japanese knotweed (*Fallopia japonica*) were recorded beside a farm track on land south of the Histon interchange (NGR: TL 44218 61604) and on the island in the southbound layby on the A1 section of the scheme.
- 4.3.49 There were various records of Canadian waterweed (*Elodea canadensis*) within the survey area.

5 Evaluation

- 5.1.1 The key habitats present are broadleaved woodland, trees, hedges, watercourses, ditches and waterbodies, which provide relatively diverse habitat for wildlife within a predominately arable farmland landscape.
- 5.1.2 IEEM guidance on Ecological Impact Assessment (IEEM, 2006) has been used to evaluate the habitats in the study area. The value is described in a geographical context in relation to the study area, as described in *Table 5.1*.

Table 5.1: Habitats Evaluation

Habitat Type	Habitat Value
Broadleaved woodland-semi-natural	Local
Broadleaved woodland-plantation	Local
Coniferous woodland-plantation	Site
Mixed woodland-plantation	Site
Trees	Local
Scrub	Site
Hedgerows-species-poor intact	Local
Hedgerows-species-poor defunct	Site
Hedges with trees	Local
Running water-rivers and streams/brooks	Local
Standing water-lakes, ponds and reservoirs	Local
Dry ditches	Site
Wet ditches	Local
Swamp, marginal and inundation	Local
Arable	Site
Poor semi-improved grassland	Site
Semi-improved grassland-neutral	Site
Amenity grassland	Site
Improved grassland	Site
Tall ruderal	Site

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Annex 1: Survey target notes

Table A1.1: Target notes for survey June – October 2013

Target note	Notes
1	Alconbury Brook, north of A14. Brook length with good aquatic vegetation and stony substrate. Banks well vegetated and un-cut. Semi-improved strip along top of bank to farm track. Area of trees and scrub on southern side of brook adjacent to A14.
2	Service site.
3	Dry attenuation ponds.
4	Recycling plant.
5	Pond margins and woodland.
6	Ditch.
7	Semi-improved area surrounded by wet ditch.
8	Metal barn.
9	Barns.
10	Dry pond.
11	Poor semi-improved grassland with pond.
12	Wet uncut semi-improved grassland.
13	Pond - newly excavated.
14	Pond and game pond.
15	Gravel pits and surrounding willow carr developing. Some associated ruderal and scrub areas.
16	Wet poor semi-improved - between river and lake complex.
17	Shaded pond.
18	Arable and set aside.
19	Pond in field.
20	Mixed plantation woodland.
21	Wet ditch.
22	Fox den.
23	Dry pond and dry ditch.
24	Pond.
25	Pond and dry ditch, marginal vegetation.
26	Building.
27	Woodland and dry ditch.
28	Wet ditch.
29	Two ponds, intact hedges.
30	Small brook.

Target note	Notes
31	Buildings.
32	Scattered scrub and tall ruderal - reptile potential.
33	Small brook - water vole potential.
34	Semi-improved.
35	Pill box.
36	Wet ditch.
37	Large willow - low bat potential.
38	Rubble pile, reptile potential.
39	Wet ditch.
40	Pond (attenuation) and ditch.
41	Semi-improved including track.
42	Hedgerow.
43	Pond with scrub fringe.
44	Semi-improved set aside.
45	Mostly ash trees - low bat potential.
46	Semi-improved mown land.
47	Scrub.
48	Old badger (<i>Meles meles</i>) sett.
49	Dry pond.
50	Deciduous woodland - badger hole and medium bat potential tree.
51	Dry ditch and vegetation.
52	Dry pond.
53	Probable buzzard nest.
54	Unmanaged semi-improved.
55	Scrub.
56	Mature trees with medium bat potential.
57	Potential bat roost potential.
58	Possible badger dropping (old).
59	Evidence of rabbits (<i>Oryctolagus cuniculus</i>).
60	Bat roost potential - cracked limbs and woodpecker hole.
61	Line of trees along wet ditch - mature willows present with bat roost potential. Cracked/loose bark and broken limbs.
62	Wet ditch with steep banks - suitable habitat for water vole, feeding station found.
63	Pond present within the roundabout - GCN potential.
64	Pond present within the roundabout - GCN potential, New Zealand pygmyweed present.

Target note	Notes
65	Farmstead - buildings with bat potential, metal roofed buildings have less potential.
66	Badger sett - no evidence of current use.
67	Pond with swamp vegetation - water present in July, dry in October.
68	Four concrete ornamental ponds in amenity grassland and gardens at Cambridge crematorium.
69	Pond in broadleaved woodland at crematorium.
70	Pond within broadleaved woodland, pond surrounded by earth banks.
71	Area of derelict farm buildings with old machinery surrounded by tall ruderal and species-poor semi-improved grassland.
72	Small area of orchard trees - apple and plum.
73	Line of trees along access to farm.
74	Balancing pond - swamp vegetation.
75	Semi-improved neutral grassland on ridge and furrow field. Dense scrub with a small pond.
76	Badger latrine and scratch marks on edge of plantation broadleaved woodland near active sett.
77	Embankment of semi-improved neutral grassland, including common spotted orchid.
78	Broadleaved plantation woodland - understorey is patchy but developing dense hawthorn, bramble and young elm. Badger scratch marks on tree.
79	Pond overgrown. Surrounded by dense scrub.
80	Common spotted orchid in woodland.
81	Balancing pond - swamp vegetation, water present with stream adjacent. Dominated by common reed.
82	Small corner of arable field with diverse arable flora adjacent to dry ditch and motorway hedge - cultivated in September.
83	Woodland and track.
84	Broadleaved woodland with dry ditch and plantation broadleaved woodland.
85	Opening between roadside hedgerow (A428) and young plantation broadleaved woodland. Ant hills present.
86	Roadside steep embankment with open grassland between areas of plantation woodland trees and scrub.
87	Wet ditch with greater reed species.
88	Balancing pond with steep banks dominated by thistles. Turbid water with dragonflies present.
89	Small area of semi-improved neutral grassland at underbridge with crested dog-tail (<i>Cynosaurus cristatus</i>), pyramidal orchids (<i>Anacamptis pyramidalis</i>).
90	Species-poor semi-improved grassland - neglected pasture.

Target note	Notes
91	Badger sett along green track. Active and inactive sett entrances. Two active and one inactive holes, hair and bedding present.
92	Small area of tall ruderal species fenced off from field and road with common nettle.
93	Small area of rough grassland dock.
94	Plantation broadleaved woodland/patchy understorey. Some trees have bat potential.
95	Semi-improved neutral grassland- pasture - grazed with docks and thistles.
96	Old traditional orchard at Girton College. Semi-improved species-poor neutral grassland underneath.
97	Area of new woodland planting with species-poor semi-improved grassland - ex playing fields.
98	Area of semi-improved neutral grassland.
99	Pond within grassland. Toads, frogs and smooth newts present.
100	Semi-improved neutral grassland and scattered scrub.
101	Oak trees - one dead tree, ideal potential for bats.
102	Badger pathway across ditch.
103	Dead tree with owl box on ditch bank.
104	Badger latrine, pathway across ditch. Fresh dung.
105	Badger pathway up over gabion. Latrines along bridge road.
106	Badger latrine with fresh dung and pathway up over gabion.
107	Badger latrine, fresh dung and foraging signs on grass margin.
108	Small area of allotments and amenity grassland- surrounded by tall coniferous hedges, poly tunnels present.
109	Possibly an old abandoned orchard surrounded by tall overgrown hedgerows. Dry ditch and dense scrub. No access available due to dense scrub. Badger pathways lead into woodland area.
110	Badger pathways leading from grass margin into hedge adjacent to A14. Foraging along margin.
111	Reservoir at National Institute of Agricultural Botany (NIAB). Steep sided grass dominated banks with occasional scrub.
112	Possible badger sett under NIAB roadside. Access couldn't be gained - possible rabbit activity but significant badger activity in close proximity.
113	Broadleaved plantation woodland along road embankment. Bat boxes and bird boxes have been installed on posts along the southern edge.
114	Small balancing pond.
115	Area of poor semi-improved grassland with tall ruderal and scattered scrub, potential reptile habitat. Common lizard recorded.
116	Housing estate.

Target note	Notes
117	Hotel and car park. Buildings have bat potential.
118	Water sports lake - limited emergent vegetation, surrounded by mature willow.
119	Area of species-poor semi-improved grassland. Potential reptile habitat.
120	Line of mature trees and scrub adjacent to the road. Some larger trees have bat potential.
121	Area of mixed grassland.
122	Badger pathways through woodland and across deep dry ditch into roadside embankment.
123	Single hole badger sett, hairs under fence, bedding and foraging in adjacent grassland. Badger latrine and pathways.
124	Badger sett, several sett entrances, mostly active. Pathways and latrines/some interference at sett - blocked by sticks.
125	Badger latrine and pathways from woodland into adjacent footpath.
126	Badger pathway across track and into ditch.
127	Japanese knotweed stand.
128	Cambridge business park, two ornamental ponds found with great crested newt (GCN) (<i>Triturus cristatus</i>) potential.
129	Semi-improved neutral grassland grazed by ponies. Clay soil.
130	Badger sett - several holes, currently used by rabbits - interference at sett entrance.
131	Patch of sea buckthorn.
132	Part of landfill site has been overplanted with elephant grass (<i>Miscanthus sp.</i>) species.
133	Semi-improved neutral grassland with calcareous influence between areas of young plantation.
134	Area of disturbed grassland now colonised by species-poor, semi-improved grassland and ephemerals.
135	Abandoned area of land adjacent to A14/Milton. Species-poor, semi improved grassland and ephemeral short perennial vegetation embankments. Rabbit activity in the area.
136	Shallow pond surrounded by amenity grassland with semi-mature willow. Emergent vegetation. Aquatic plants distributed by water.
137	Shallow balancing pond with scrub, amenity grassland and semi-mature trees. Generally isolated by roads and footpaths. Water is clear but with layer of algae on the bottom.
138	Rail line.
139	Pond.
140	Trees.
141	Semi-improved.

Target note	Notes
142	Mature trees with medium bat potential.
143	Dry pond (depression) in woodland.
144	Scrub.
145	Water/pond.
146	Deciduous woodland.
147	BP3 (1) Fenstanton pits – carp (<i>Cyprinus carpio</i>), mink (<i>Neovison vison</i>), otter (<i>Lutra lutra</i>), great crested grebe (<i>Podiceps cristatus</i>), mute swans (<i>Cygnus olor</i>), greylag goose (<i>Anser anser</i>), carrion crow (<i>Corvus corone</i>), Canada geese (<i>Branta canadensis</i>), hobby (<i>Falco subbuteo</i>), buzzard (<i>Buteo buteo</i>), osprey (<i>Pandion haliaetus</i>), bittern (<i>Botaurus lentiginosus</i>), grass snake (<i>Natrix natrix</i>), adder (<i>Vipera berus</i>), common lizard (<i>Zootoca vivipara</i>), toad (<i>Bufo bufo</i>), green/lesser spotted/greater spotted woodpecker (<i>Picus, viridis, Picoides minor, Dendrocopos major</i>), cuckoo (<i>Cuculus canorus</i>), duck species.
148	BP3 (2) Stream. Water levels low, lacks riparian vegetation. Shaded banks, dominated by bramble. Hawthorn and stinging nettles present. Low potential for water voles. Kingfisher observed by landowner in the past.
149	BP3 (3) Barn owl (<i>Tyto alba</i>) box in field.
150	BP3 (4) Approximate location of buzzards nest reported by landowner.
151	BP3 (5) Hawthorn hedgerow with ash, crack willow, dog rose (<i>Rosa canina</i>), field maple, ivy, bramble, cherry, oak, stinging nettle, cocksfoot (<i>Dactylis glomerata</i>), white campion (<i>Silene latifolia</i>). Occasional mature trees covered in ivy but no visible bat roost features.
152	BP3 (6) Elder, nettles, oak, hawthorn, ash, field maple, blackthorn, alder buckthorn.
153	BP3 (7) wet ditch. Ash and oak within hedgerow.
154	BP3 (8) blackthorn, hawthorn, elder, poplars, dense scrub (fenced).
155	BP3 (9) copse of mature trees - includes mature elm.

Table A1.2: Target notes for survey in December 2013

Target note	Description
156	Dense scrub. Roadside landscape planting consisting of hawthorn (dominant (D)); blackthorn (abundant (A)); field maple (frequent (F)) with occasional oak. Sparse ground cover. <i>Figure 11.16 of the ES includes a photograph at this location.</i>
157	Routinely managed and recently cut improved grassland with scattered trees (oak and ash). A non-managed strip of adjacent grassland to the east of the highway boundary has grown rank with increased species diversity includes common knapweed, bramble, teasel (<i>Dipsacus sp.</i>), cocksfoot, yarrow (<i>Achillea millefolium</i>), cow parsley (<i>Anthriscus sylvestris</i>), perennial sow thistle (<i>Sonchus arvensis</i>), fescue grasses, creeping cinquefoil (<i>Potentilla reptans</i>) and nettle. <i>Figure 11.16 of the ES includes a photograph at this location.</i>
158	Area of retained cropped arable stubble with an establishing vegetation cover; bristly ox-tongue; scentless mayweed; <i>Galium</i> species; chickweed (<i>Stellaria sp.</i>); broad-leaved plantain (<i>Plantago major</i>); perennial sow thistle; willowherb (<i>Epilobium sp.</i>) species; spear thistle (<i>Cirsium vulgare</i>); common sedge (<i>Carex nigra</i>) and Yorkshire fog.
159	Mature ash tree with split limbs and trunk rot hole. <i>Figure 11.16 of the ES includes a photograph at this location.</i> Bat roosting potential.
160	Attenuation pond (pollution control device) with dominant <i>Typha latifolia</i> cover. Minimal great crested newt potential. Grassy pond banks were recently cut. Enclosed by dense scrub planting consisting hazel, hawthorn, blackthorn and an occasional oak. Breeding bird potential.
161	Semi-improved neutral grassland on highway verge; regularly cut on margins but left between the highway boundary fence and the farmland track. Yorkshire fog, cocksfoot, prickly sow thistle, teasel, thistle species, bramble and ribwort plantain (<i>Plantago lanceolata</i>). A dry ditch running along the highway verge was dry with well-established <i>Typha</i> and willowherb species. Scattered trees (self-seeded ash, hawthorn and willow) also present. Breeding bird potential.
162	Semi-natural broadleaved woodland. Approximately 30 mature willow trees. <i>Figure 11.16 of the ES includes a photograph at this location.</i> Breeding bird potential. Minimal bat roosting potential.
163	Watercourse crosses under the dual carriageway, approximately 2m wide with a leaf litter substrate and grassy banks. Some emergent vegetation consisting of <i>Typha</i> , <i>Glyceria fluitans</i> , and willowherb species. Culvert approximately 3m x 7m with no ledges or dry areas. <i>Figure 11.16 of the ES includes a photograph at this location.</i> No mammal evidence identified. Potential otter/water vole and bat commuting route.
164	Over mature oak tree. Split limbs and loose bark with a broken and rotting trunk. Good bat roosting potential. <i>Figure 11.16 of the ES includes a photograph at this location.</i>
165	Mature willow tree with rot hole in main trunk. Some bat roosting potential.
166	Mature ash tree with rot holes and large split in the trunk. Good bat roosting potential. <i>Figure 11.16 of the ES includes a photograph at this location.</i>

Target note	Description
167	Watercourse containing clear water with a pebbly substrate, no emergent vegetation but dense marginal common reed cover with occasional willow and elder. Small mammal runs identified to river banks. No additional mammal evidence identified. <i>Figure 11.16 of the ES</i> includes a photograph at this location. Potential otter/water vole and bat commuting route.
168	Riverside remnant willow tree trunk – standing dead wood. Limited bat roost potential. <i>Figure 11.16 of the ES</i> includes a photograph at this location.
169	Mature willow tree with rot holes, loose bark giving some bat roosting potential. <i>Figure 11.16 of the ES</i> includes a photograph at this location.
170	Mature oak tree in layby area with loose bark and split limb. <i>Figure 11.16 of the ES</i> includes a photograph at this location.
171	Semi-mature broadleaved plantation woodland consisting of oak, sycamore, ash and birch. Some shrub layer consisting of occasional hazel, field maple, willow, elder and bramble. Ground layer consists of Yorkshire fog, false oat grass (<i>Arrhenatherum elatius</i>), perennial rye grass (<i>Lolium perenne</i>), teasel, nettle, creeping buttercup (<i>Ranunculus repens</i>), wild carrot, burdock (<i>Arctium sp.</i>), dock species and white campion. <i>Figure 11.16 of the ES</i> includes a photograph at this location. No obvious bat roosting potential. Breeding bird potential – tree tops with corvid nests.
172	Standing dead wood. Limited bat roosting potential.
173	Tree line comprising mature, ivy covered, ash, hawthorn, blackthorn and bramble following a watercourse of approximately 2m width (20cm deep). Some emergent vegetation; water buttercup (<i>Ranunculus sp.</i>), flote grass and frogbit (<i>Hydrocharis morsus-ranae</i>) and marginal vegetation sparse but dominated by common reed. <i>Figure 11.16 of the ES</i> includes a photograph at this location.
174	Broadleaved plantation woodland. Dense canopy cover landscape planting consisting oak, ash, field maple, birch, blackthorn with a <i>laylandii</i> conifer edge. Breeding bird potential.
175	Single brick barn with corrugated tin roof. Open sided with heavy localised ivy cover. <i>Figure 11.16 of the ES</i> includes a photograph at this location. No evidence identified but potential for breeding birds and roosting/feeding perch for bats.
176	Improved grassland grazed by sheep. Perennial rye grass, Yorkshire fog, fescue grass species, creeping buttercup and nettle.
177	Broadleaved plantation woodland. Layby landscape planting. Elm dominated with occasional ash. Nesting corvids in tree canopy. Ground layer was sparse with occasional herb Robert (<i>Geranium robertianum</i>), black horehound (<i>Ballota nigra</i>), cow parsley, burdock and elder. A watercourse ran along the western boundary of the highway with minimal emergent vegetation (sparse starwort species cover) and no marginal vegetation. Breeding bird potential. Limited roosting bat potential.
178	Watercourse approximately 2.5m wide with silty water. Minimal emergent vegetation (as per other TNs) and no marginal vegetation. Numerous mallards (<i>Anas platyrhynchos</i>). <i>Figure 11.16 of the ES</i> includes a photograph at this location. The road bridge that clear spans the watercourse has no expansion joints for roosting bat potential.

Target note	Description
179	Two over mature ash trees; one either side of the bridge. Rot holes in the trunk and at the end of some limbs and loose bark. Roosting bat potential. Breeding bird potential.
180	Pond approximately 5m wide and 30m long. Collection of water collected from rain water and a culvert to the south. Sediment substrate with scrub shading on both sides with open centre. Emergent vegetation consists of frog-bit, watercress (<i>Nasturtium officinale</i>), common reed and <i>Lemna minor</i> . Minimal great crested newt potential. <i>Figure 11.16 of the ES</i> includes a photograph at this location.
181	Cylindrical culvert approximately 1.5m diameter carrying water under the carriageway. <i>Figure 11.16 of the ES</i> includes a photograph at this location. Potential otter/water vole and bat commuting route.
182	Box culvert approximately 5m x 5m with (appears) permanent water presence flowing under the carriageway. Collection of still water either side of the culvert with <i>Typha</i> , <i>Lemna minor</i> , watercress and floating water plantain (<i>Luronium natans</i>). A mink scat was identified on the east side. <i>Figure 11.16 of the ES</i> includes a photograph at this location. Potential otter/water vole and bat commuting route.
183	Small, dry watercourse, heavily vegetated banks with mature scrub.
184	Fast flowing stream with brickwork bed and reinforced bank sides. Semi-improved neutral grassland to the north bank and dense scrub to the south. <i>Figure 11.16 of the ES</i> includes a photograph at this location. Potential otter/water vole and bat commuting route.
185	Three enclosed ponds with dominant <i>Typha</i> cover. Mature oaks and scrub line the boundary which have limited bat and good breeding bird potential. <i>Figure 11.16 of the ES</i> includes a photograph at this location.