HIGHWAYS AGENCY

Safe roads, reliable journeys, informed travellers

A14 Cambridge to Huntingdon improvement scheme

Environmental Statement

Appendices

Appendix 11.6: Birds

Date: December 2014

6.3

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Executive summary

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

Several bird species present are listed as a priority for conservation action under *Section 41* of the *Natural Environment and Rural Communities* (*NERC) Act 2006*, *Cambridgeshire & Peterborough Biodiversity Partnerships Local Biodiversity Action Plan (LBAP)* (2008/09) and in *Highways Agency Biodiversity Action Plan* (Highways Agency, 2014). The ecological value of these populations and assemblages have been assessed as up to county value based on the type of habitat present and their contribution to the conservation of wintering and breeding birds.

A total of 85 breeding bird species and 42 wintering bird species were recorded during the surveys.

Buckden Gravel Pits County Wildlife Site (CWS) is recognised as an important site for birds in Cambridgeshire. These wetland habitats support a diversity of wetland bird species including significant numbers of wintering waterfowl and at least three notable breeding species at population levels of county importance.

In general the bird assemblage of the farmland that makes up the majority of the scheme footprint is typical of the county. There are pockets of arable farmland which provide higher value habitat for farmland birds with established hedgerows, field margins and conservation headlands supporting rarer farmland breeding birds including corn bunting (*Emberiza calandra*), grey partridge (*Perdix perdix*) and yellow wagtail (*Motacilla flava*). The numbers of these bird species found during the surveys were relatively low.

1. Introduction

1.1.1. This report is an appendix of the *A14 Cambridge to Huntingdon improvement scheme Environmental Statement (ES)*. It presents an evaluation of the status of breeding and wintering birds based on a desk-based review of records of birds and field surveys. It also presents the policy and legislative context within which the environmental impact assessment (EIA) has been carried out. Likely significant effects on and mitigation for breeding and wintering birds are considered in *Chapter 11 of the ES*.

1.1.2. This report presents the findings of the breeding and wintering bird study undertaken for the A14 Cambridge to Huntingdon improvement scheme between 2013 and 2014.

1.1.3. The barn owl (*Tyto alba*) was subject to a separate species specific study and the results are reported in *Appendix 11.7 of the ES*. The barn owl is not considered further in this report.

1.1.4. The study included a desktop survey, to search for records of birds, and field surveys to provide more detailed information.

2. Bird ecology

2.1. Breeding bird ecology

2.1.1. Breeding birds are found in a wide variety of habitats in the UK from rural semi-natural habitats to urban habitats. Birds may use natural or artificial features for nesting. Typical features used for nesting include hedgerows, scrub, trees, grassland, woodland, buildings and a number of species prefer to nest on the ground in arable fields, crops, grassland and field margins. Wetland habitats are also used such as reed beds and the margins of standing waters, rivers and canals.

2.1.2. The main bird breeding season is recognised as being between 1 March to 31 July, however many species start nesting before this period, and may continue after. Feral pigeons (*Columba livia*) can breed at any time of year and if the weather is good many species may have further broods with blackbirds (*Turdus merula*) having up to four in a year (RSPB, 2014).

2.1.3. In Britain, a number of summer migrants arrive for the breeding season. Species include swallows (*Hirundo rustica*), house martins (*Delichon urbica*), swifts (*Apus apus*), wheatears (*Oenanthe oenanthe*) and warblers, such as the chiffchaff (*Phylloscopus collybita*), willow warbler (*Phylloscopus trochilus*) and grasshopper warbler (*Locustella naevia*). Most arrive in the UK in April and remain until September or October.

2.1.4. During breeding, certain species can become particularly sensitive to disturbance, manifested in abandoning nests and young, such as Cetti's warbler (*Cettia cetti*) and grasshopper warbler that are known to be found within the study area.

2.2. Wintering bird ecology

2.2.1. As well as resident birds in the UK, migrant birds arrive in autumn from the north to spend winter in the UK as the weather is milder and food is easier to find. Winter visitors include fieldfare (*Turdus pilaris*), redwing (*Turdus iliacus*) and many waterfowl.

2.2.2. Britain holds internationally important populations of wintering waterfowl such as golden plover (*Pluvialis apricaria*), lapwing (*Vanellus vanellus*) and bittern (*Botaurus stellaris*) which are potentially present in the study area.

3. Policy and legislation

3.1. Legislation

3.1.1. Under the *Wildlife and Countryside Act 1981 (as amended)*, all wild birds are protected from being killed, injured and captured at any time of year. There are certain licensable exceptions to this regarding pest species and game-birds.

3.1.2. During the breeding season, the eggs and nest of any wild bird is protected from being damaged, destroyed or taken. Species listed in *Schedule 1* of the above Act are specially protected from intentional or reckless actions that may cause disturbance while they are breeding. Kingfisher (*Alcedo atthis*), Cetti's warbler (*Cettia cetti*) and barn owl are all listed in *Schedule 1* and have been recorded within the study area of the A14.

3.1.3. There is no provision under the *Wildlife & Countryside Act 1981* (as amended) for licensing what would otherwise be an offence for the purpose of development. It is therefore important to ensure that all possible means of avoiding an offence are considered.

3.1.4. Many bird populations within the UK, including those that are resident, overwintering and migratory are protected under European legislation. The *Council Directive 2009/147/EC on the conservation of wild birds (Birds Directive)* (codified version of Directive 79/409/EEC as amended) (European Union, 2009) requires the designation of special protection areas (SPAs) for rare or vulnerable species, as well as for all regularly occurring migratory species, paying particular attention to the protection of wetlands of international importance. *Annex I* of the *Birds Directive* (EU, 2009) lists bird species to be the subject to special conservation measures concerning their habitat, in order to ensure their survival and reproduction in their area of distribution.

3.1.5. *Section 40* of the *Natural Environment and Rural Communities (NERC) Act 2006* places a statutory duty on public bodies, such as the Highways Agency, to have regard to the conservation of habitats and species of principal importance for the conservation of biodiversity in England, when carrying out their normal functions (the biodiversity duty).

3.2. National Planning Policy Framework

3.2.1. The *National Planning Policy Framework (NPPF)* (Department for Communities and Local Government, March 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.

3.2.2. The *NPPF* (Department for Communities and Local Government, 2012) 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)).

3.2.3. The *Draft National Policy Statement (NPS) for National Networks* (Department for Transport, December 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 and the basis of 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.

3.3. Priority species

3.3.1. Species 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 species listed are priorities for nature conservation action and therefore for consideration in impact assessment. Forty-nine species of bird are listed.

3.3.2. The *UK Biodiversity Action Plan (UK BAP)* (1994) was the UK's response to the Global Convention on Biological Diversity (*CBD*) in 1992. It lists priority species and habitats *"that were identified as being the most threatened and requiring 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.

3.3.3. 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 (Natural England, August 2010).

3.3.4. *The Highways Agency Biodiversity Action Plan (HABAP*) (Highways Agency, 2014) lists priority species and habitats of the soft estate of England`s trunk roads and motorways (excluding London.) Buzzard (*Buteo buteo*), hen harrier (*Circus cyaneus*), kestrel (*Falco tinnunculus*) linnet (*Carduelis cannabina*) red kite (*Milvus milvus*) and song thrush (*Turdus philomelos*) are all listed in the HABAP and were recorded within the study area of the A14.

3.3.5. *Local BAP*s (*LBAP*s) 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 proposed scheme.

3.3.6. The *LBAP* lists species action plans for five priority bird species for Cambridgeshire (Cambridgeshire and Peterborough Biodiversity Partnership, 2008/09). Of these, bittern, grey partridge, skylark (*Alauda arvensis*) and song thrush were recorded within the A14 study area.

3.4. Birds of conservation concern (BoCC)

3.4.1. In 1996, the UK's leading non-governmental bird conservation organisations reviewed the status of all bird species regularly found in Britain. On the basis of several criteria relating to population status and relative importance to global conservation, all regular breeding and wintering species were placed on one of three lists - 'red' (highest conservation concern), 'amber' (medium conservation concern) and 'green' (lowest conservation concern). The lists are reviewed every five years and used to inform conservation policy decisions. The most recent review was undertaken in 2009 (*Birds of Conservation Concern* 3*: the population status of birds in the UK* (Eaton et al., 2009)).

4. Methodology

4.1. Desktop survey

4.1.1. Records were requested from the Cambridgeshire and Peterborough Environmental Records Centre (CPERC) for any bird species recorded within 2km of the scheme. These records were examined for information on the presence of bird species at a local level. The search area for the desktop survey was based on the professional judgement of suitably qualified and experienced specialists, in accordance with best practice guidance (CIEEM 2013).

4.1.2. For information on the population status of bird species at a county and national level the *Cambridgeshire Bird Atlas 2007-2011* (Bacon *et al.,* 2013) and the British Trust for Ornithology (BTO) *Bird Atlas 2007-2011* (Balmer et al., 2013) were key references.

4.1.3. A database of incidental records of species of interest recorded by all surveyors for the scheme was reviewed for information of relevance to this report.

4.2. Field survey areas

4.2.1. The surveys were divided into five distinct sections of the scheme as shown on *Figure 11.6 and 11.7 of the ES*. These are:

- section A - Buckden Gravel Pits County Wildlife Site (CWS);
- section B – offline section Huntingdon Southern Bypass, a new road across arable farmland between Offord Cluny and Conington;
- section C – online section of A14 widening between Swavesey and Girton;
- section D – online section of A1 widening between Alconbury junction and Brampton Hut; and
- section BP - the proposed borrow pit areas.

4.3. Breeding bird field surveys

4.3.1. Breeding bird surveys were conducted by the Highways Agency in spring/early summer in 2013 and 2014. In 2013, the surveys covered section A (five visits) and two representative areas of farmland in section B. In 2014 the survey covered section D and, where access allowed, the proposed borrow pits (BP) for the scheme (BP1, BP2, BP3, and BP6). *Figure 11.6 of the ES* shows the transects covered by the survey.

4.3.2. The survey methodology used was adapted from the Breeding Bird Survey (BBS) developed by the BTO, the Royal Society for the Protection of Birds (RSPB) and the JNCC in 1994 (*Bird Census Techniques* (Bibby et al., 2000)).

4.3.3. The adapted survey approach utilised transects which were routed to maximise coverage of the survey area and not limited to 1km transects squares. A maximum distance for detection of birds of 250m either side of the transect route was utilised and bird registrations were not recorded in distance bands.

4.3.4. The BBS methodology was originally designed to provide an accessible means of long term monitoring bird population trends by volunteers, but has also been adapted by ecology consultants for the purposes of impact assessment. The BBS is normally undertaken over a long time period (several seasons) and to compensate for these surveys being undertaken in a single season, the number of visits was at least doubled for these surveys, to increase the probability of detecting scarcer or intermittently occurring species. The exception to this was the borrow pit surveys, where access permission was restricted.

4.3.5. All surveys were conducted between the 1 April and 2 July 2013 and 2014, starting approximately one hour after dawn and finishing before 11am, except one which was undertaken in the late afternoon/early evening. Surveys were only undertaken during favourable weather conditions for bird activity and periods of persistent or heavy rain, high winds or fog were avoided. The dates and weather conditions for each visit are presented in *Annex 2*.

4.3.6. Transects were walked at a constant, slow pace, by competent bird surveyors using 8x40 binoculars, recording all birds detected either by sight or calls/song. The lead ornithologist has fourteen years' experience and is a full member of the Chartered Institute of Ecology and Environmental Management (CIEEM). In 2014, each bird 'registration' was recorded electronically by marking their location on a mobile mapping device.

4.4. Wintering bird field surveys:

4.4.1. Baseline wintering bird surveys have been conducted by the Highways Agency in winter 2012 to 2013, covering section A and section B. During these surveys, 12 visits to 10 vantage points were made from December through to March inclusive.

4.4.2. Baseline surveys were also undertaken by the Highways Agency in winter 2013 to 2014 to cover parts of the scheme not visited by the survey in 2012 to 2013. This included section C and section D. During these surveys, two visits were made to 16 vantage points from December to February inclusive.

4.4.3. Additional survey visits were undertaken in November 2013 to the same sites covered in the 2012 to 2013 survey to supplement coverage of the early part of the winter season. One vantage point surveyed in 2012-13 was omitted in November 2013 for health and safety reasons (proximity to traffic).

4.4.4. *Figure 11.7 of the ES* shows the areas covered by the surveys.

4.4.5. All wintering bird surveys, excluding section A, were carried out by scanning 360 degrees from specific vantage points selected taking into account extent of view, access permission and safety considerations.

4.4.6. The vantage points were visited during daylight hours to record the bird species present, their number and behaviour. In addition, a number of visits to vantage points were undertaken after dark to provide an indication of any changes in use of the area by birds at night.

4.4.7. Section A was surveyed using a combination of vantage point and walked transect methodology, consistent with the methods used during the 2013 baseline survey. All waterbodies were surveyed from vantage points. Due to the size and layout of waterbodies, several vantage points were used and any observed movement of birds was noted to minimise risk of double-counting. Any additional bird species seen during transit between vantage points were also recorded. Only daytime visits were carried out on this section.

4.4.8. The species, location (including flight paths) and numbers of key species were marked on survey maps using standard BTO Common Bird Census species and behaviour codes.

4.4.9. All survey visits were carried out during weather conditions favourable for bird activity. Periods of persistent or heavy rain, high wind or fog were avoided. The dates, times and weather conditions for each survey are shown in *Annex 2*.

4.4.10. Recording focussed primarily on wading birds, wintering wildfowl and birds of prey (raptors). These groups of species are collectively considered to be of highest conservation concern for the study area. No attempt was made to record all common passerine or corvid species, such as blackbird, blue tit (*Cyanistes caeruleus*) or chaffinch (*Fringilla coelebs*). However, any notable or unusual species if encountered, including mammals, were recorded.

4.4.11. All surveys were carried out by experienced ornithologists using a range of optical equipment, including binoculars, telescope and tripod. Night surveys were carried out using a combination of night vision equipment and a high powered torch together with binoculars, whichever was most effective for the conditions prevalent at the time.

4.5. Evaluation

4.5.1. The population of birds within the study area was valued using *Guidelines for Ecological Impact Assessment in the United Kingdom* (CIEEM, 2006). This method is in line with the most recently published guidance (*Interim Advice Note 130/10 Ecology and Nature Conservation: Criteria for Impact Assessment* (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).

4.5.2. The assessment criteria set out in *Table 4.1* have been used to assess the biodiversity value of bird assemblages recorded during the field surveys.

Table 4.1: Criteria used to evaluate bird assemblages

Habitat value	Criteria
International	Site meets SPA qualifying population criteria: • site used regularly by 1% of the national population of an *Annex 1* species *of the EC Birds Directive* (European Union, 2009); • site used regularly by 1% of the biogeographical (international) population of a regularly occurring migratory species (other than those listed in *Annex I of the EC Birds* Directive (European Union, 2009) in any season; • site used regularly by over 20,000 waterfowl or 20,000 sea birds in any season; and • the regular occurrence of a globally rare species.
National	Site or habitat type used regularly by 1% of the national population of a species (not listed in *Annex 1 of the EC Birds Directive* (European Union, 2009)), and/or the site meets site of special scientific interest (SSSI) or national nature reserve (NNR) designation criteria for birds.
County	Site or habitat type used regularly by greater than 1% of the county population of a species and/or site meets county wildlife site criteria for birds, and/or site used regularly by a species whose status is scarce within the county.
District	Site or habitat type supports a population of a species or an assemblage of birds, notable for their conservation concern status as declining or rare (*Section 41 NERC Act 2006*, *Annex 1 of EC Birds Directive* (European Union, 2009), and/or *red list BoCC (Birds of Conservation Concern* 3*: the population status of birds in the UK* (*Eaton* et al., *2009)*) but population size does not meet county level criteria.
Local	Site or habitat type supports a population of a species or an assemblage of birds, notable for their conservation concern status as declining or rare (L BAP and/or amber list BoCC *(Birds of Conservation Concern* 3*: the population status of birds in the UK* (*Eaton* et al., *2009*)), but population size does not meet county level criteria.
Site	Site or habitat type used regularly by an assemblage of birds or a large number of an individual species, whose status is common within the county.
Negligible	Site or habitat type has no notable species or assemblages of birds.

4.6. Limitations

4.6.1. Further to desktop studies and a review of the scheme, in recognition of the large geographical extent of the scheme, effort was focussed on the following key areas, based upon the professional judgement of suitably qualified and experienced specialists:

- section A, which is recognised as valuable for birds;
- two representative areas of farmland in section B;
- parts of section D; and
- the proposed borrow pit sites, section BP, where access permission was allowed.

4.6.2. The possibility that some areas of habitat supporting good assemblages of breeding birds may have been overlooked, particularly across the large expanse of arable habitat across the survey area, is considered to be low and it is considered that the data gathered is sufficient for the purposes of undertaking ecological impact assessment.

4.6.3. A bird survey can only assess the site as it was found at the time of the survey visit. Species may move in and out of the site at different times of the day, month and year, and habitats are subject to change over time. There is therefore a high chance with a limited number of visits that bird assemblages may be over-estimated or under-estimated. This is especially true for wintering birds noted within arable habitats, since the birds tend to flock and move over large areas of countryside, but it is also the case for breeding birds in response to crop rotation and changes in management of hedgerows, etc. The survey results are therefore interpreted broadly at a landscape scale rather than used to identify specific locations of higher value for birds.

4.6.4. For the reasons above, there is also a chance that individual birds or flocks of birds move between sites at the same time as the observer, resulting in the possibility of counting the same birds twice (double-counting). Whilst some bird movements may occur during the survey, the counts across each section were made in consecutive order and any significant movements between vantage points would have been noted and accounted for. Observers are generally confident that double counting will have been minimal.

4.6.5. The majority of vantage points selected for the wintering bird surveys took advantage of public access including roads and public footpaths. For most of the sites on private land, access was granted. However for two sites, access permission was denied resulting in some gaps in coverage. Issues were also encountered in gaining access for the breeding bird surveys and for this reason some of the borrow pit sites (borrow pits 5 and 7) were not visited. Borrow pit 3 access permission was granted for a single visit.

4.6.6. The weather was unsuitable for undertaking a breeding bird survey during the morning of the 28 May 2014 due to thick fog reducing the visibility to less than 100m. As such the survey was undertaken during the late afternoon/early evening of 29 May 2014, when bird activity increases again after the middle of the day.

4.6.7. Night surveys were limited by the problems in detecting birds over long ranges. Visibility varied with atmospheric conditions at the time of the visit, but under good conditions the maximum is estimated to be 300m, which is a much shorter distance than many of the bird observations taken during daytime surveys (e.g. up to 1.5km, depending on the species).

4.6.8. An absence of a species record within an area does not necessarily reflect an absence of that species from the same area. Similarly an old record does not necessarily mean that a species will still be present. The distribution of species records may reflect survey effort rather than an accurate distribution of that species. As such, historic records should be assessed with caution.

4.6.9. 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.

4.6.10. The limitations to the surveys do not represent a significant constraint to adequately assessing the value of birds for the purposes of undertaking an appropriate ecological impact assessment, with a high degree of confidence in the outcome.

4.6.11. The findings of this report are based upon the professional judgement of suitably qualified and experienced ecologists, as listed in *Appendix 6.1 of the ES*. Likely significant effects on and mitigation for birds are considered in *Chapter 11* of the *ES*.

5. Results

5.1. Desktop data and incidental records

5.1.1. Bird records were provided by CPERC and incidental records were recorded during other surveys. These can be provided on request. Requests for these details should be made to the Highways Agency at the address given in *Chapter 1 of the ES*. The records provided background information on the presence of bird species in the study area, but ad-hoc records are of limited use for evaluation.

5.1.2. The *Cambridgeshire Bird Atlas 2007-2011* (Bacon et al., 2013) and the latest BTO *Bird Atlas 2007-2011* (Balmer et al., 2013) provided information on the population status of birds at county and national levels and were used extensively to evaluate the bird assemblages recorded during the surveys for this scheme.

5.1.3. During spring and summer 2014, the majority of incidental bird records were for common and widespread species and are not considered further. Of particular note, kestrels were reported including individuals hunting along the existing A14 verges and two probable breeding kestrels, one at the extreme north of the scheme to the east of the A1 Alconbury junction, the other on section C.

5.2. Breeding bird field survey results

5.2.1. A total of 85 species were recorded during the surveys. The results of all breeding bird surveys undertaken in 2013 and 2014 are summarised in *Table 5.1*. Details of the surveys can be found in *Table A2.1* in *Annex 2* and in *A14 Cambridge to Huntingdon Improvement Scheme – Breeding Bird Surveys, April 2013* (Highways Agency, 2013a)

5.2.2. In *Table 5.1* the maximum counts over several visits for all species are listed. This is calculated by summing the counts of each species across all vantage points for each section and makes the assumption that birds have not moved between counts. These figures should not be interpreted as absolute numbers for each survey section, as the BBS methodology is not designed to achieve this. However, they can be used as an indication of relative abundance between species comparisons.

5.2.3. Following external reports of birds nesting within the structure at the existing Huntingdon A14 Viaduct, this site was also visited by ecologists on one occasion, because demolition of this structure is proposed as part of the scheme. A visit to this site on 30 June 2014 revealed evidence of breeding swift; adults and juveniles were observed entering drainage holes on the underside of the bridge deck.

Table 5.1: Maximum breeding bird counts of all species.

** indicates species listed under *Section 41 of the NERC Act 2006*. Note that section B was covered by two separate transects B1 and B2.

Species	A	B1	B2	D	BP 1	BP 2	BP 3	BP 6
	2013	2013	2013	2014	2014	2014	2014	2014
Number of visits	5	4	4	4	2	2	1	2
Corn bunting**	-	-	3	-	-	-	-	-
Cuckoo (Cuculus canorus)**	4	-	-	-	-	-	-	-
Grasshopper warbler**	2	-	-	-	-	-	-	-
Grey partridge**	-	-	2	-	-	-	8	2
Hen harrier**	-	1	-	-	-	-	-	-
House sparrow (Passer domesticus)**	1	3	4	-	8	2	-	-
Lapwing**	6	-	-	18	2	-	-	-
Linnet**	-	5	7	20	4	7	-	1
Skylark**	5	12	21	6	13	3	2	9
Song thrush**	8	2	1	2	-	2	1	-
Starling(*Sturnus vulgaris*)**	3	19	145	1	-	150	-	-
Turtle dove (*Streptopelia turtur)***	1	-	-	-	-	-	-	-
Yellow wagtail (*Motacilla flava*)**	1	-	2	2	-	-	-	3
Yellowhammer *(Emberiza citronella)***	1	7	13	9	7	4	-	14
Black-headed gull (*Chroicocephalus ridibundus*)	77	-	15	-	-	-	-	-

Species	A	B1	B2	D	BP 1	BP 2	BP 3	BP 6
	2013	2013	2013	2014	2014	2014	2014	2014
Number of visits	5	4	4	4	2	2	1	2
Bullfinch (*Pyrrhula pyrrhula)***	3	2	-	3	-	-	-	-
Common tern (*Sterna hirundo*)	18	-	-	-	-	-	-	-
Dunnock (*Prunella modularis)***	9	11	6	12	6	4	3	1
Gadwall (*Anas strepera)*	3	-	-	-	-	-	-	-
Green woodpecker (*Picus viridis)*	6	2	1	-	-	-	1	1
Greylag goose (*Anser anser)*	116	2	1	-	17	-	-	-
House martin	-	6	-	-	-	23	-	-
Kestrel	1	2	-	2	-	-	-	-
Kingfisher	1	-	-	1	-	-	-	-
Lesser black-backed gull *(Larus fuscus)*	5	1	-	-	-	-	-	-
Little Egret (*Egretta garzetta*)	-	-	-	1	1	-	-	-
Mallard *(Anas platyrhynchos*)	10	10	3	10	4	-	-	-
Marsh Harrier *(Circus aeruginosus)*	1	-	-	-	-	-	-	-
Meadow Pipit (*Anthus pratensis)*	-	-	-	1	-	-	-	-
Mistle Thrush (*Turdus viscivorus)*	-	4	-	1	-	-	1	-
Oystercatcher *(Haematopus ostralegus)*	4	-	-	-	-	-	-	-

Species	A	B1	B2	D	BP 1	BP 2	BP 3	BP 6
	2013	2013	2013	2014	2014	2014	2014	2014
Number of visits	5	4	4	4	2	2	1	2
Reed bunting *(Emberiza schoeniclus)***	18	4	3	9	2	7	2	4
Sand martin (*Riparia riparia)*	3	-	-	-	-	-	-	-
Stock dove (*Columba oenas)*	2	3	11	3	-	1	1	-
Swallow	3	1	2	3	2	-	-	-
Swift	-	-	-	3	-	6	-	-
Teal (*Anas crecca*)	2	-	-	-	-	-	-	-
Tufted duck (*Aythya fuligula)*	48	-	-	-	-	-	-	-
Wheatear (*Oenanthe oenanthe*)	-	-	-	-	-	-	-	1
Whitethroat (*Sylvia communis)*	10	11	10	9	6	3	6	3
Wigeon (*Anas penelope)*	4	-	-	-	-	-	-	-
Willow warbler	11	-	-	3	-	-	-	-
Blackbird	16	12	10	10	9	6	11	-
Blackcap (*Sylvia atricapilla)*	25	2	5	10	4	3	5	-
Blue tit	17	7	17	24	7	4	6	3
Buzzard	1	1	4	2	1	-	3	-
Coot (*Fulica atra)*	20	-	-	3	-	-	-	-
Carrion crow (*Corvus corone)*	13	5	16	4	3	2	-	5
Cetti's warbler	3	-	-	-	-	-	-	-
Chaffinch	18	-	23	22	7	7	8	2
Chiffchaff	8	-	-	1	-	-	2	-

Species	A	B1	B2	D	BP 1	BP 2	BP 3	BP 6
	2013	2013	2013	2014	2014	2014	2014	2014
Number of visits	5	4	4	4	2	2	1	2
Collard dove *(Streptopelia decaocto*)	1	-	1	2	-	-	-	-
Cormorant *(Phalacrocorax carbo)*	4	-	1	1	-	-	-	-
Feral pigeon	-	-	-	4	-	-	1	-
Garden warbler (*Sylvia borin)*	26	-	1	-	-	-	1	-
Goldcrest *(Regulus regulus)*	2	-	-	2	-	-	1	-
Goldfinch (*Carduelis carduelis)*	11	12	7	16	3	3	1	-
Great crested grebe (*Podiceps cristatus)*	12	-	-	-	-	-	-	-
Great spotted woodpecker (*Dendrocopos major)*	2	-	-	3	1	-	1	-
Great tit (*Parus major)*	22	8	10	7	2	4	6	-
Greenfinch (*Carduelis chloris)*	4	2	2	2	-	3	-	-
Grey heron (*Ardea cinerea)*	4	-	-	1	-	-	-	-
Hobby (*Falco subbuteo)*	1	-	1	-	-	-	-	-
Jackdaw (*Corvus monedula)*	18	3	8	30	-	-	11	1
Jay (*Garrulus glandarius)*	2	-	-	-	-	-	1	-
Lesser whitethroat *(Sylvia curruca)*	6	4	1	3	1	3	-	1
Long-tailed tit *(Aegithalos caudatus)*	13	1	3	8	2	-	2	-

Species	A	B1	B2	D	BP 1	BP 2	BP 3	BP 6
	2013	2013	2013	2014	2014	2014	2014	2014
Number of visits	**5**	**4**	**4**	**4**	**2**	**2**	**1**	**2**
Magpie *(Pica pica)*	5	3	3	2	2	1	4	4
Moorhen *(Gallinula chloropus)*	11	-	1	1	1	-	-	-
Mute swan (*Cygnus olor)*	45	-	1	23	-	1	-	-
Peregrine (*Falco peregrines)*	-	-	-	-	-	-	1	-
Pied wagtail *(Motacilla alba)*	-	-	4	4	3	1	-	-
Reed warbler *(Acrocephalus scirpaceus)*	37	-	-	-	-	-	-	-
Robin (*Erithacus rubecula)*	15	6	9	10	9	2	2	1
Rook (*Corvus frugilegus)*	30	4	116	151	-	-	1	-
Sedge warbler *(Acrocephalus schoenobaenus)*	32	4	1	1	-	-	-	-
Sparrowhawk *(Accipiter nisus)*	-	-	-	1	-	-	-	-
Tawny owl *(Strix aluco)*	-	-	-	-	-	-	1	-
Treecreeper *(Certhia familiaris)*	3	-	-	-	-	-	-	-
Water rail *(Rallus aquaticus)*	1	-	-	-	-	-	-	-
Wood pigeon *(Columba palumbus)*	14	17	27	25	9	9	24	3
Wren *(Troglodytes troglodytes)*	29	8	6	15	6	5	10	1
Canada goose (*Branta Canadensis*)	30	-	-	-	-	1	-	-
Pheasant (*Phasianus colchicus*)	9	-	1	1	3	1	2	2

Species	A	B1	B2	D	BP 1	BP 2	BP 3	BP 6
	2013	2013	2013	2014	2014	2014	2014	2014
Number of visits	**5**	**4**	**4**	**4**	**2**	**2**	**1**	**2**
Red-legged partridge (*Alectoris rufa*)	2	3	2	2	1	-	3	-
Total red list species	10	7	9	7	5	6	3	5
Total amber list species	22	13	9	14	7	6	6	5
Total green list species	35	17	25	30	17	15	22	9
Total not assessed	3	1	2	2	2	2	2	1
Total species	70	38	45	53	31	29	33	20

5.3. Wintering bird field survey results

5.3.1. A total of 42 species were recorded during the surveys. The results of all wintering bird surveys from 2012 to 2014 are summarised in *Tables 5.2* to *5.5*. Detailed results of the 2013 to 2014 surveys can be found in *Table A2.2* in *Annex 2* and *Tables A3.1* to *A3.7 in Annex 3*. Detailed results of the 2012 to 2013 surveys can be found in *A14 Cambridge to Huntingdon Improvement Scheme – Wintering Bird Surveys, April 2013* (Highways Agency, 2013b).

5.3.2. In *Tables 5.2* to *5.5* the maximum monthly counts for red and amber listed species (*Birds of Conservation Concern* 3*: the population status of birds in the UK* (Eaton et al., 2009)) are included. This is calculated by summing the counts of each species across all vantage points for each section (sections A-D). This makes the assumption that birds have not moved between counts and that there has been no double counting.

Table 5.2: Summary of monthly maximum wintering bird counts for section A (Buckden Gravel Pits CWS).

** indicates species listed under *Section 41 of the NERC Act 2006*.

Species	December 2012	January 2013	February 2013	March 2013	November 2013
Bittern**	-	1	-	-	-
Herring g*ull (Larus argentatus)***	-	-	-	-	2
Lapwing **	-	-	-	-	61
Black-headed gull	-	-	-	-	96
Common gull *(Larus canus)*	-	-	-	-	16
Gadwall	48	80	104	81	33
Goldeneye *(Bucephala clangula)*	50	37	51	39	21
Great northern diver (*Gavia immer)*	-	-	-	-	1
Greylag goose	27	209	161	127	250
Kingfisher	-	-	-	-	1
Little egret	-	-	-	-	2
Mallard	17	38	18	12	23
Pintail (*Anas acuta)*	-	-	-	-	2
Pochard *(Aythya farina)*	-	8	65	28	60
Red kite	-	-	-	-	1
Shoveler *(Anas clypeata)*	13	3	6	10	1

Species	December 2012	January 2013	February 2013	March 2013	November 2013
Snipe	-	-	-	-	1
Teal	131	84	88	40	31
Tufted duck	197	304	317	259	154
Wigeon	102	264	526	548	90
Cormorant	-	-	-	-	18
Cetti's warbler	-	-	-	-	1
Coot	-	-	-	-	11
Goosander *(Mergus merganser)*	-	-	3	-	-
Great crested grebe	-	-	-	-	7
Grey heron	-	-	-	-	5
Moorhen	-	-	-	-	5
Mute swan	15	69	51	38	17
Black swan (*Cygnus atratus*)	-	-	-	-	1
Canada goose	-	70	35	26	22
Ruddy duck (*Oxyura jamaicensis*)	-	-	-	-	1
Total red list species	-	1	-	-	2
Total amber list species	8	9	9	9	17
Total green list species	1	1	2	1	7
Total not assessed	-	1	1	1	3
Total number of species	9	12	12	11	27

Table 5.3: Summary of monthly maximum wintering bird counts for section B (offline section Huntingdon Southern Bypass, a new road across arable farmland between Offord Cluny and Connington).

** indicates species listed under *Section 41 of the NERC Act 2006*.

Species	December 2012	January 2013	February 2013	March 2013	November 2013
Fieldfare	-	-	-	-	27
Herring gull **	-	-	-	-	1
Lapwing **	240	232	253	200	90
Black-headed gull	-	-	-	-	80
Common gull	-	-	-	-	25
Golden plover	-	300	42	-	800
Great black-backed gull *(Larus marinus)*	-	-	-	-	1
Greylag goose	-	162	95	40	70
Kestrel	4	7	4	3	1
Merlin *(Falco columbarius)*	-	-	1	-	-
Snipe *(Gallinago gallinago)*	-	-	-	-	1
Stock dove	-	-	-	-	3
Teal	-	-	7	30	-
Wigeon	-	-	70	-	-
Buzzard	-	-	-	-	1
Moorhen	-	-	-	-	3
Mute swan	3	4	2	4	-
Sparrowhawk	-	-	-	-	1
Total red list species	1	1	1	1	3
Total amber list species	1	3	6	3	8
Total green list species	1	1	1	1	3
Total species	3	5	8	5	14

Table 5.4: Summary of wintering bird counts for section C (online section of A14 widening between Swavesey and Girton) in winter 2013-14.
** indicates species listed under *Section 41 of the NERC Act 2006*.

Species	November 2013	February 2014
Fieldfare	25	180
Lapwing **	18	-
Skylark **	-	10
Starling **	30	100
Black-headed gull	-	43
Kestrel	1	-
Mistle thrush	-	2
Buzzard	1	4
Total red list species	3	3
Total amber list species	1	2
Total species	5	6

Table 5.5: Sum of monthly maximum winter bird counts for section D (online section of A1 widening between Alconbury junction and Brampton Hut) in winter 2013-14.

* recorded on 4 December 2013
** indicates species listed under *Section 41 of the NERC Act 2006*.

Species	November 2013	February 2014
Fieldfare	4	-
Lapwing **	334	-
Redwing	3	-
Black-headed gull	530	50
Common gull	9	-
Mute swan	2	16
Stock dove	15*	18
Total red list species	3	-
Total amber list species	4	3
Total species	7	3

6. Evaluation

6.1. General description of baseline conditions for breeding birds

6.1.1. Buckden Gravel Pits CWS (section A) supported the highest numbers and species richness of breeding birds of all the areas surveyed. The breeding bird surveys at section A recorded 70 species in total, including ten red-listed species and 22 amber-listed species of conservation concern. The grasshopper warbler and lapwing stand out as red list breeding species that are specifically associated with the wetland habitat. The red-listed cuckoo, turtle dove and yellow wagtail also stand out as notable for the area. The amber listed oystercatcher and green listed Cetti's warbler are also highlighted at this site, because they represent greater than 1% of the county population. Conversely, tufted duck and gadwall, while being amber-listed species, both occur in low numbers here relative to the estimated county population (*Cambridgeshire Bird Atlas 2007-2001 (*Bacon et al., 2013)).

6.1.2. Hen harrier, buzzard, kestrel, linnet and song thrush are all listed on the HABAP and were recorded during breeding bird surveys. The hen harrier is unlikely to be breeding within the survey area and was recorded only once. Evidence of breeding kestrel and linnet was found during breeding bird surveys with a concentration of linnets associated with the layby on the southbound A1. Song thrush is likely to breed and is sparsely distributed throughout the scheme, with the highest numbers found at Buckden Gravel Pits CWS.

6.1.3. The arable farmland habitat covering the majority of the scheme corridor is generally typical for Cambridgeshire, being widespread and abundant across the county and neighbouring counties. Most of this habitat supported unremarkable bird assemblages and population densities are generally considered to be relatively low for most species that are common and widespread across the UK. There is a lack of quality hedgerows and boundary features in this landscape to support a rich diversity of farmland birds. However, some areas supported small numbers of notable farmland specific bird species. These are skylark, yellowhammer, corn bunting and yellow wagtail. In addition the amber-listed reed bunting was frequently found associated with ditches and watercourses and also in fields of oil seed rape.

6.2. General description of baseline conditions for wintering birds

6.2.1. A total of 42 species were recorded during the surveys, including six red list species and 21 amber list species of conservation concern.

6.2.2. Buckden Gravel Pits CWS stands out as the best area for wintering birds within the study area. This is perhaps not surprising as its designation is principally based on the bird assemblages found there. The wintering bird survey in November 2013 at section A recorded 29 species in total, including two red list and 17 amber list species of conservation concern.

6.2.3. The section A site consists of a series of gravel pits created in the 1980s. Most of these are deep, steep sided waterbodies supporting large assemblages of wildfowl, particularly diving ducks such as pochard and tufted duck. Great crested grebe was frequent in these waterbodies and during the last winter survey visit a great northern diver was found in waterbody 1 as shown on *Figure 11.7 of the ES*. These waterbodies are predominantly deep open water with a narrow fringe of marginal vegetation and alder trees. The smaller, shallower pools towards the northern end of the site have more substantial marginal reed-swamp vegetation and floating plant communities and this is reflected in bird assemblages of higher species richness, including the dabbling ducks (e.g. gadwall, teal and wigeon), and roosting lapwing. A bittern was flushed from waterbody 5, as shown on *Figure 11.7 of the ES,* during one of the 2012 to 2013 winter survey visits. A Cetti's warbler was recorded calling during survey visits in dense scrub near waterbody 5.

6.2.4. The river Great Ouse passes along the eastern boundary of Buckden Gravel Pits CWS and is bordered by fields of semi-improved grassland. The river itself supported few wintering birds apart from kingfisher and on the adjoining floodplain meadows feeding flocks of lapwing and golden plover and greylag geese were occasionally found.

6.2.5. Other wetland features exist within the scheme corridor, but no bird survey data has been collected for these due to access constraints. These are the Brampton fishing lakes adjacent to the southbound A1 at TL 199 701 and adjacent to the A14 at TL 303 685. These have potential to be important for wintering and breeding birds and should be taken into account during impact assessments for the scheme.

6.2.6. The majority of the scheme passes through intensive arable landscapes with few boundary features such as hedgerows, drainage ditches and watercourses. Wintering bird surveys covering these areas generally revealed few wintering birds. However, on some occasions, large flocks of golden plover, lapwing or gulls were recorded. It is difficult to establish an accurate picture of movement patterns of these birds, given the number of survey visits made. The sporadic occurrence of the flocks suggests that they range over a wide area across the landscape, rather than being dependant on any particular field within the scheme corridor.

6.3. Evaluation of bird assemblages and populations

6.3.1. *Table A1.1 in Annex 1* provides a summary of the conservation status and an evaluation of the study area for all the red and amber-listed species. Cetti's warbler is included in this assessment due to its legal status. This is based on a comparison of the numbers recorded with data from the *Cambridgeshire Bird Atlas 2007-2011* (Bacon et al., 2013) and maps from the national *Bird Atlas 2007-2011* (Balmer et al., 2013), against the criteria set out in *Table 4.1*. While the red and amber lists have been used as the basis for identifying key species, these lists must be treated with caution, since the criteria for selection may not be appropriate to the circumstance of the records. For example redwing and fieldfare are red listed due to declines in breeding population, but are common as a wintering species in Cambridgeshire, and Cetti's warbler, whilst a green-listed species and increasing its range is still relatively scarce in Cambridgeshire.

6.3.2. No species likely to be affected by the scheme fall into the international or nationally valuable categories. There are five species that are considered to be valuable at county level. These are bittern, cuckoo, grasshopper warbler, goldeneye and shoveler. Cetti's warbler is potentially of national significance but this species is currently increasing in Cambridgeshire (Bacon *et al.*, 2013). The corn bunting, kestrel, green woodpecker, oystercatcher, pochard and song thrush are considered to be valuable at the district level. This reflects either their relative scarcity elsewhere in Cambridgeshire (e.g. green woodpecker), or that they are particularly well represented in Cambridgeshire (e.g. corn bunting, yellow wagtail), but scarce elsewhere in the UK. The populations of corn bunting and yellow wagtail within the study area itself do not meet county or national level criteria. The majority of species are considered to be of local value by virtue of their red or amber listing.

6.4. Evaluation of key habitats/sites

6.4.1. The broad habitat types present in the survey area have been evaluated with respect to birds by combining recorded bird assemblages and the evaluation of each species (see *Table 6.1*).

6.4.2. This approach has been taken rather than identify geographic 'hot spots' because of the nomadic nature of most bird species, particularly those wintering on farmland. Breeding farmland birds may also move around in response to shifting crop rotations and management practices, with the exception of the corn bunting which is strongly sedentary, something which is contributing to its decline.

Table 6.1: Evaluation overview based on bird habitats

Habitat type	Habitat value for breeding birds	Justification/key features
Buckden Gravel Pit CWS	County	Designated county wildlife site supporting bittern, cuckoo, Cetti's warbler, grasshopper warbler, goldeneye and shoveler.
Other wetland features adjacent to scheme	District	Potentially supports diverse wetland bird assemblages, including species of conservation concern.
Arable farmland	District	Yellow wagtail, yellowhammer, other red and amber list farmland breeding birds and wintering wader flocks and gulls.
Semi-improved/improved grassland areas	Local	Farmland birds including skylark, yellow wagtail etc.
Watercourses (permanently wet)	District	Reed bunting and kingfisher.
Watercourses (temporary) includes dry ditches with scattered scrub	District	Reed bunting.
Hedgerows and scrub	Local	Yellowhammer, bullfinch, linnet and dunnock.
Scattered trees, woodland copses (e.g. A1 southbound layby)	Local	Linnet and dunnock.

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Annex 1 Evaluation of bird populations recorded during surveys

Table A1.1: Species conservation status at national and county level, and evaluation of populations recorded during surveys.

*See *Birds of Conservation Concern 3: population status of birds in the UK* (Eaton et al., 2009) for explanation and criteria codes.

**indicates species listed under *Section 41 of the NERC Act 2006*.

Species	Criteria for BoCC listing (Eaton et al., 2009) and national population trends (Balmer et al., 2013) *See Eaton et al., 2009 for explanation and criteria codes.	County population status (Bacon et al., 2013)	Distribution and status within study area (CPERC data search results *Annex 2*)	Evaluation
Bittern	Britain has seen a recovery from a low point in 1997 of breeding bittern due to concerted effort to improve and provide new habitat at wetland reserves. Numbers are supplemented in winter by continental migrants (estimated total of 600 birds).	Bittern now breed in Cambridgeshire, at a few key sites in fenland (1-6 booming males) and winters widely at gravel pits along the rivers Great Ouse and Nene (5-30 birds).	A single wintering bird was found in section A during the winter 2012-13 survey. No previous records for this site, but a few recent records at other local sites exist.	Valuable at county level due to scarcity of species and availability of suitable habitat.
Corn bunting**	This species meets all criteria for breeding declines, historical (HD*), severe long term (BDp1*) and severe decline over last 25 years (BDp2*). The current distribution is fragmented to areas of arable on chalk soils between Dorset and Cambridgeshire, the low lying arable Fens and the low lying coastal arable areas of Kent to Suffolk.	Cambridgeshire lies within two of the remaining areas for corn bunting and sightings occur principally in the Fens to the north and east, and in the south of the county. The population is currently estimated to be 1500 pairs.	Corn bunting was only found in one location in the study area in transect 2 of section B. Records data indicate that it is scattered across the farmland area traversed by section C.	Valuable at district level.

Species	Criteria for BoCC listing (Eaton et al., 2009) and national population trends (Balmer et al., 2013) *See Eaton et al., 2009 for explanation and criteria codes.	County population status (Bacon et al., 2013)	Distribution and status within study area (CPERC data search results *Annex 2*)	Evaluation
Cuckoo**	Severe breeding population decline over last 25 years and long term (BDp1* and BDp2*). This decline has been most severe in the south and east.	Population estimate for the county is 50-100 calling males, centred on key wetland sites in the fens (e.g. Wicken Fen).	4 singing males in section A and another in non-designated wetland site adjacent to BP 3. This is backed up by records data showing one or two birds present in previous years.	Valuable at county level: Cambridge-shire is not a stronghold for this species and it is more frequent outside the county. However, the numbers found are significant for the county.
Fieldfare	Severe long term breeding population decline (BDp1*). However, these are very scarce breeders in the UK and the wintering population is large and widespread.	Fieldfare has not bred in Cambridgeshire, but is a very common and widespread winter visitor.	Occasional flocks were recorded during wintering bird surveys. Records data indicate it is common locally, sometimes aggregating into large flocks.	Valuable at site level only as a wintering bird, but a breeding bird would be of county value if recorded in Cambridgeshire
Grasshopper warbler**	Severe breeding decline of more than 50% over last 25 years and longer term (BDp1* and BDp2*). This trend has been predominantly true for the lowland England, but the species has increased in the north-west and Ireland.	Scattered distribution in Cambridgeshire Is difficult to assess due to detectability and irregular breeder in transient habitat such as young conifer plantations, but current estimate 50-100 pairs.	Singletons recorded recently at Fen Drayton Gravel Pits, section A and the adjacent landfill site. Current survey consistent with this with two singing males recorded.	Valuable at district level.

Species	Criteria for BoCC listing (Eaton et al., 2009) and national population trends (Balmer et al., 2013) *See Eaton et al., 2009 for explanation and criteria codes.	County population status (Bacon et al., 2013)	Distribution and status within study area (CPERC data search results *Annex 2*)	Evaluation
Grey partridge**	Fits criteria for severe long term (BDp1*) and severe declines over last 25 years (BDp2*) and Species of European Conservation Concern (SPEC*). The species range has contracted and abundance has fallen. This is repeated across its range in Europe. Local extinctions are masked by captive breeding and release for shooting.	Grey partridge has declined in Cambridgeshire due to agricultural intensification, but remains a widespread but scarce species in the county estimated at 500-2000 pairs.	Records data indicate that it is scattered, but very scarce across the study area. Only found at borrow pits 3 and 2 during current survey.	Valuable at local level.
Herring gull	This is a common and widely distributed coastal gull that has increased over the post-war period, yet recent severe breeding and wintering declines have put this species on the red list. However, this is counter balanced to some degree by increases inland and urban sites are now exploited for breeding and feeding.	Small numbers winter in arable farmland alongside other gulls. Larger aggregations wintering at landfill sites and gravel pits have been reported. Breeding has recently been confirmed on buildings at Godmanchester and Wisbech, but the majority of records in summer are non-breeding birds.	A single bird recorded in section B and two at section A indicates a similar situation to other large gulls. No breeding birds recorded. Large aggregations recorded at landfill sites locally.	Valuable at site level only.

Species	Criteria for BoCC listing (Eaton et al., 2009) and national population trends (Balmer et al., 2013) *See Eaton et al., 2009 for explanation and criteria codes.	County population status (Bacon et al., 2013)	Distribution and status within study area (CPERC data search results *Annex 2*)	Evaluation
	Suffered significant long term declines in breeding population in Scotland and this decline continues. Wintering population ranges widely across the UK. This is considered to be largely composed of the British breeding birds that disperse across the country.	Most records of wintering birds are on the main river systems to the north and east of Cambridgeshire. Total number of wintering birds estimated to be 20 on average.	A single bird recorded on section B during breeding bird surveys. Most likely a non-breeding bird that has lingered after wintering.	Valuable at site level only, as only recorded once and likely to be a sporadic visit.
House sparrow**	The most widespread species in the UK has suffered dramatic declines in abundance in recent decades, particularly in urban areas. Fits criteria for severe long term (BDp1*) and severe declines over last 25 years (BDp2*) and SPEC*.	Species remains widespread across Cambridgeshire.	Small localised flocks of birds found at section A, farmland buildings in section B and at BP 1 and BP 2.	Valuable at site level only, as recorded only in very small numbers.

Species	Criteria for BoCC listing (Eaton et al., 2009) and national population trends (Balmer et al., 2013) *See Eaton et al., 2009 for explanation and criteria codes.	County population status (Bacon et al., 2013)	Distribution and status within study area (CPERC data search results *Annex 2*)	Evaluation
Lapwing**	Long term breeding decline of more than 50% (BDp2*) and species of (SPEC*. Lapwings move from continental Europe to winter in lowland Britain. Numbers and the distribution vary in response to severity of winter weather but numbers appear to be consistently higher in the East Anglian fenland regions.	Trends in Cambridgeshire are consistent with national trends across fenland away from the Washes reserves where there are strongholds for the county. Current breeding population is estimated at 500-2000 pairs. It is still widespread in winter with nationally important numbers at the Nene and Ouse Washes reserves.	Lapwing was recorded in spring in section A, section D to the east of the A1 and in smaller numbers at BP 1. Breeding possible, but was not confirmed. Large flocks were recorded sporadically in section D, BP 1 and section B near the river Great Ouse. In common with golden plover, there is no evidence of reliance on particular fields within the study area.	Valuable at local level.
Linnet**	Long term breeding decline of more than 50% (BDp2*). Linnets are still widespread across the UK, but abundance declined rapidly between the 1970s and 1980s.	Still widespread across Cambridgeshire, but with small gaps in Fenland districts to the north. It is scarcer than other finches.	Probable breeding at the A1 layby with a peak count of 10 individuals (section D). Also recorded at BP 1, BP 2 and BP 6. There are scattered records locally, including section A and other sites.	Valuable at district level. Survey at A1 southbound layby recorded linnet consistently through four visits and not elsewhere suggesting this is a key site.

Species	Criteria for BoCC listing (Eaton et al., 2009) and national population trends (Balmer et al., 2013) *See Eaton et al., 2009 for explanation and criteria codes.	County population status (Bacon et al., 2013)	Distribution and status within study area (CPERC data search results *Annex 2*)	Evaluation
Redwing	Severe long term breeding population decline (BDp1*). However, these are very scarce breeders in the UK and the wintering population is large and widespread.	Redwing has not bred in Cambridgeshire, but is a very common and widespread winter visitor.	Occasional flocks were recorded during wintering bird surveys. Records data indicate it is common locally, sometimes aggregating into large flocks.	Valuable at site level only as a wintering bird, but a breeding bird would be of county value if recorded in Cambridgeshire
Skylark**	A severe long term decline in breeding birds (BDMp2*) has been widely publicised. The species continues to be widespread across the UK apart from upland and urban areas, but now occurs at a reduced density.	Breeding skylark is still widespread across the county.	Density of singing males lower than expected for the habitat type. This reflects the degree of intensification of arable farming in the study area.	Valuable at local level.
Song thrush**	Long term breeding decline of more than 50% (BDp2*). This species is still common and widespread throughout the UK but breeding numbers have declined particularly in the east in the 1970s and 1980s. More recently it has increased slightly.	Widespread, but lower density than other thrush species.	A peak of eight singing males at section A represents a higher density than that recorded at other sites. Low numbers in farmland landscapes elsewhere within the areas surveyed.	Valuable at district level for Buckden Gravel Pits CWS, but only valuable at local level elsewhere.

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Starling**	Severe breeding decline of more than 50% over last 25 years and longer term (BDp1* and BDp2*). Still common and widespread but numbers have dropped rapidly in recent decades in Britain, yet increased in Ireland.	Widespread and numerous across Cambridgeshire with a good breeding population particularly in urban areas. Wintering population increased by migrants, but probably less so than other counties.	Few starlings were recorded as breeding birds during the surveys but occasional post breeding (including juvenile birds) flocks of 100+ birds were recorded.	Valuable at site level due to low numbers recorded and no breeding evidence.
Turtle dove	Severe breeding decline of more than 50% over last 25 years and longer term (BDp1* and BDp2*). Turtle doves have seen one of the most striking changes of any species in the UK with a contraction of range into eastern England where they are largely confined to East Anglia, east Midlands and Kent, Sussex and Surrey. They have also suffered severe declines in abundance within their current range.	The species' status in Cambridgeshire reflects national trends – current breeding population is estimated at only 150 - 300 pairs.	Several recent records at section A and Fen Drayton Gravel Pits. Records for other areas locally are generally older (before 2008).	Valuable at local level.
Yellowhammer**	Moderate breeding population decline between 25% and 50% over last 25 years and longer term (BDMp1* and BDMp2*). Yellowhammers have contracted their range from the Pennines, west Scotland and Ireland. Significant declines in density have occurred across their whole UK range. Despite this they remain widespread farmland birds.	The species status in Cambridgeshire reflects national trends in density, but breeding populations are currently estimated at 5,000 – 10,000 pairs.	Quite frequent in all arable farmland areas, apart from BP 3.	Valuable at district level.

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Yellow wagtail**	The race *flavissima* is largely restricted to the UK when breeding and there has been a steep decline since the 1970s. It was moved up to the red list in 2009 (BDp1*). It is absent from Ireland, most of Scotland, Wales and the south-west.	Cambridgeshire may hold 10% of the national population with concentrations in the fens, the Ouse and Nene Washes and more scattered in arable landscapes to the south. Current estimate at 1,000-1,500 pairs.	Recorded as likely breeding in section D, east of the A1, and in BP 6 (3 singing males) and one in section B2.	Valuable at district level due to contribution to national population
Black-headed gull	Near ubiquitous wintering bird in lowland Britain, which supports internationally important numbers (>20% total population). Numbers are not closely monitored but, where monitoring exists, wintering counts have declined moderately over recent decades (WDMp*). Breeding trends show a north/south divide with numbers decreasing in the north and increasing in the south.	The most numerous gull in the county and widespread in winter particularly following the plough on arable fields. Breeding is more localised in the fens and wetlands on river corridors.	Winters throughout study area, sometimes in large flocks on arable landscape. No known breeding in study area.	Fits criteria for local level value, but probably can be considered to be valuable at site level.
Bullfinch**	Moderate breeding population decline over last 25 years and longer term (BDMp1* and BDMp2*). A species with a wide breeding distribution across the UK, but numbers fell steeply in the 1970s and 1980s, and more recently in the south-east.	Relatively widespread across the western side of Cambridgeshire, but scarce across this range. Reflects national status.	Most local records for Milton Country Park. Surveys suggest it is a scarce breeding and wintering bird in section A, B and D, using hedgerows, scrub and woodland.	Valuable at local level.

Species	Criteria for BoCC listing (Eaton et al., 2009) and national population trends (Balmer et al., 2013) *See Eaton et al., 2009 for explanation and criteria codes.	County population status (Bacon et al., 2013)	Distribution and status within study area (CPERC data search results *Annex 2*)	Evaluation
Common gull	Common gulls winter in the UK in internationally important numbers (WI*) and are a SPEC*. They are common throughout the eastern half of England and Scotland. There is a breeding population in Scotland.	Occurs in small numbers with Black headed gull flocks on arable land in winter, with higher numbers at roosts on the Washes, gravel pits and Grafham Water.	Small numbers in section A and section B in winter.	Valuable at local level.
Common tern	Fits criteria for amber listing: Breeding localised (BL* - >50% found at less than 10 sites). However, the breeding range has significantly increased inland due to the creation of gravel pits and considerable effort to provide artificial 'tern rafts'. This increase is balanced against losses in the northern breeding sites.	The national picture is exemplified in Cambridgeshire with only 8 pairs in three sites in 1969 to around a 100 pairs at gravel pits along the Ouse valley.	A peak count of in section A during spring 2013 and records data show it is present most years and at other sites locally, but breeding was not confirmed.	Valuable at local level only as breeding was not confirmed.
Dunnock**	Moderate breeding population long term decline between 25% and 50% (BDMp2*). Suffered declines in the 1970s to 1980's with only a slight recovery since the 1990s.	Still widely recorded in Cambridgeshire	Frequent in nearly all sections but there are no records supplied by the records centre.	Whilst this is an amber-listed species, it is still abundant in Cambridgeshire and therefore assessed as only of site value.

Species	Criteria for BoCC listing (Eaton et al., 2009) and national population trends (Balmer et al., 2013) *See Eaton et al., 2009 for explanation and criteria codes.	County population status (Bacon et al., 2013)	Distribution and status within study area (CPERC data search results *Annex 2*)	Evaluation
Green woodpecker	SPEC*. This is a common and widespread species that has shown a curious east/west divide in breeding abundance – declining in the north and west, but increasing in the east, most notably East Anglia.	Common and widespread across Cambridgeshire apart from the Fens, this species is estimated at 1,500 pairs.	There are recent records for Bar Hill and Brampton Woods and section A. This survey indicates this site has a higher density than other sites locally.	Valuable at district level.
Gadwall	SPEC* and internationally important numbers wintering in the UK. The breeding population has expanded dramatically since the 1960s and it now occupies most wetland sites across lowland Britain. Wintering bird population has also increased three-fold in the same period.	Gadwall does breed in the Ouse and Nene Washes and main rivers, but it is scarce outside of these areas. Gravel pit systems upstream are often used in winter.	Numerous records in section A, with a peak count of 167 in 2011, and the highest count of all, 187 birds in 2008. These compare favourably with numbers generally lower at most other sites locally, apart from Fen Drayton Gravel Pits CWS, which peaks at 364 in 2008.	Valuable at local level.
Great northern diver	Winters in internationally important numbers (WI*). These are predominantly coastal and observed predominantly in Ireland and the north-west Scotland. Occasional records inland are normally associated with severe weather.	Only two records reported in Bacon *et al. (*2013).	A single bird was seen in section A. This is highly unusual this far inland and likely to be a one-off event.	Not applicable.

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Greater black-backed gull	Fits criteria for moderate wintering bird decline (WDMp1*), but situation is complex with Scottish breeding population declining and numbers increasing on the south coast of England. Predominantly a coastal bird with sporadic inland wanderers.	Less numerous than other large gulls but increasing in numbers. Opportunistic following plough on arable and at landfill sites, roosting at gravel pits and the Ouse and Nene Washes. Current estimate 500-1,000 birds.	A single bird recorded in section B during wintering bird surveys indicates that single roving birds may pass through the area, but this is unremarkable.	Valuable at site level only.
Greylag goose	The amber listing of this species refers to the locally wintering Icelandic breeding population that winter in Ireland and western Scotland. The resident breeding population has expanded significantly. This population has originated from released/escaped stock but is not genetically different.	The commonest goose in Cambridgeshire concentrated along main rivers and gravel pit complexes. Breeding population 50-250 pairs, wintering 2,500-7,500.	Counts of up to 250 on pasture beside the river Great Ouse near section A. Flocks of up to 162 birds were seen on section B during winter surveys. It is unclear whether these are resident or migratory.	Valuable at site level only.
Goldeneye	A scarce breeding species in the Scottish highlands is the reason for amber listing (BR*). However, large numbers winter across the UK from Fennoscandian and Russian breeding grounds. Densities are highest towards northern England and Scotland, but they regularly reach sites as far as the south coast.	A winter visitor to deep waterbodies particularly Grafham Water and gravel pits on the river Great Ouse. Estimated county population 200-400 birds.	Up to approximately 50 birds have been recorded at section A during winter surveys.	Valuable at county level. Numbers constitute one eighth to one fifth of the county population.

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Golden plover	Winters in internationally important numbers (WI*) with highest densities in East Anglia, the Wash, Humber and the east of England. Breeding population in the uplands of England and Scotland. There is some evidence that wintering numbers are increasing.	Very common winter farmland bird across Cambridgeshire Often mixed with Lapwing on arable fields, but also at the major wetland sites, the Washes and main river valleys. Less frequent in the south and Huntingdonshire. Population estimate at 10,000-30,000.	Numerous records of small to medium sized flocks are provided over the last decade by the record centre. The largest flocks exceeding 1,000 birds are centred on arable fields in the Fen Ditton, Fenstanton and Conington areas. Survey results are consistent with this with a flock of 800 birds recorded only once in section C. The data suggests that birds are nomadic, ranging over a wide area of farmland and not reliant on any particular site for long periods.	Valuable at local level.
House martin	Moderate breeding population decline between 25% and 50% over last 25 years and longer term (BDMp1* and BDMp2*).	Widespread and common across Cambridgeshire, but less numerous in the fenland districts.	Recorded at BP 2 during current survey. Records data indicate it is common locally to the study area.	Valuable at local level.

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Kestrel	Declines in abundance across the large range in this species has been detected, but being a SPEC* is the only reason for the amber listing	Still widespread in Cambridgeshire with an estimated breeding population of 300-500 pairs and higher numbers in winter when birds from higher ground move to the lowlands.	Recorded occasionally during wintering and breeding bird surveys. Kestrel appears to frequent the verges of the existing A14 and A1. Records data indicate that it is still quite common locally.	Valuable at district level.
Kingfisher	Listed as SPEC* which is the only reason for the amber listing. Numbers have fluctuated in response to severe winters.	Found on all the main watercourses and current breeding population estimated to be 50-200 pairs in Cambridgeshire.	Evidence of probable breeding in section D Alconbury Brook.	Valuable at local level.
Lesser black-backed gull	Listed because it breeds in internationally important numbers (BI*) concentrated at few locations in the UK (BL*). However, the status of this species has changed markedly in recent years with increased breeding success, colonisation and expansion of range inland.	Breeding of the British race has recently been confirmed at a few sites and is increasing. This species is also widespread as a passage and wintering bird from Scandinavia.	A peak of five recorded at section A in summer and not recorded during winter surveys. Records data suggest that it can be found all year round at this site and locally with large numbers attracted to landfill sites.	Valuable at site level only.

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Little egret	Placed on the amber list because breeding occurs at only a few sites (BL*) in the south and east, this is a recent colonist to the UK and increasing in abundance and range.	Breeding was first confirmed in 2004 at the Ouse and Nene Washes, and it is widely distributed in winter along all major river systems.	Non breeding singletons on section D and BP 1 during spring surveys, plus singletons in section A during winter surveys.	Valuable at site level only.
Mallard	Very common and widespread breeding resident population, but this masks a moderate decline in wintering migratory population (WDMp1* and WDMp2*) that breeds in Europe.	Widespread and abundant in all wetlands across Cambridgeshire. Large numbers winter in the Ouse and Nene Washes.	Breeding pairs found in section D. Wintering in low numbers at section A.	Valuable at site level only, as listing refers to wintering migratory population.
Marsh Harrier	Fits categories as a wintering rarity (WR*) and localised breeding bird (BL*) but has shown remarkable recovery in population in recent decades with strongholds in East Anglia and Kent and outposts in Lancashire and Somerset.	40-80 Breeding females currently estimated with records all within the Fenland basin, but birds may wander away from these areas in winter. As a partial migrant, numbers tend to be lower in winter.	A single record at section A, likely to be a non-breeding or juvenile bird dispersing away from breeding areas.	Valuable at site level only unless more evidence comes to light that this is a breeding bird.

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Meadow pipit	Moderate breeding population decline between 25% and 50% over last 25 years and longer term (BDMp1* and BDMp2*). Predominantly breeds in upland habitats and winters at lower altitudes, but can occur anywhere.	Breeding populations in the Ouse and Nene catchments in moderate numbers (400-1,000 pairs). Common wintering bird almost anywhere there is rough ground or stubble.	A single individual recorded in section D in spring 2014.	Not applicable.
Merlin	Merlins breed in the uplands and winter in lowlands. Wintering numbers are supplemented by migration from Iceland. Numbers have recovered recently from a historical decline (HDrec*)	Uncommon winter visitor to the Fens and arable land to the south.	A single individual recorded in winter in section B.	Not applicable.
Mistle thrush	Moderate breeding population decline between 25% and 50% over last 25 years and longer term (BDMp1* and BDMp2*). This is still a widespread species across the UK, but continues to decline in abundance throughout its range.	Common and widespread throughout Cambridgeshire although evidence of decline in some areas including Huntingdonshire.	Single bird recorded during breeding bird season in section B and at BP 3. No evidence of breeding.	Not applicable.

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Oystercatcher	Oystercatchers breed and winter in internationally important numbers (BI, WI*) with largest concentrations at a few estuarine sites (WL*). There has been some expansion in breeding and wintering range inland into the midlands and eastern England.	Oystercatchers are rare in Cambridgeshire, but now breed inland in arable fields and along the major river systems (estimated 50-100 pairs).	A peak of 4 birds recorded at section A in spring 2013 with evidence of probable breeding. No other records locally.	Valuable at district level.
Pochard	Pochard winter in internationally important numbers in the UK, are a SPEC* and have suffered moderate declines in wintering numbers.	Pochard are found in significant numbers at the Ouse and Nene Washes, and the Ouse valley gravel pits. Elsewhere they are scarce. Wintering population is 2,500-3,000 birds.	Survey results and records data indicate that section A support wintering pochard in relatively high numbers and frequently over 50. Numbers do appear to fluctuate and small numbers persist through summer.	Valuable at district level since peak counts do not reach threshold of 250 birds for county level, but are frequently high compared to other local sites.
Pintail	Pintail winter in internationally important numbers (WI*), predominantly in estuaries (WL*), but occasionally inland. They are a rare breeding species (BR) and SPEC*.	Cambridgeshire is particularly important and unusual for inland wintering Pintail. Estimated population 2,500-5,000 birds concentrated on the Washes and associated river systems. It is a sporadic and scarce breeder.	Recorded once (two birds) at waterbody 6 at section A during winter bird surveys. No other records exist for this species.	Valuable at site level only.

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Reed bunting**	A moderate long term decline in breeding birds (BDMp2*) particularly marked in the south-east. They are widespread across central England and highest relative abundance in the East Anglian Fens.	Cambridgeshire retains some of the highest densities of this species in the UK although they suffered from the same national decline in the 1970s from agricultural intensification.	Frequently recorded during breeding bird surveys in all areas – one of the commonest breeding birds in the study area.	Valuable at district level due to contribution to national population.
Red kite	Breeding Red Kite has spread from the original reintroduction site in the Chilterns and other reintroduction sites. The species is more widespread in winter. They are amber listed because they are a species of European concern (SPEC*).	Cambridgeshire holds a small breeding population in the north-west originating from the gradual spread of birds from the reintroduction sites.	A single bird was recorded in section A during winter bird surveys.	Valuable at site level only.
Sand martin	Widespread and common towards the north and west, becoming more localised in the lowlands of the Midlands, East Anglia, south and south-east. They are amber listed only because they are SPEC*.	Common passage migrant to wetland sites in Cambridgeshire. They breed exclusively in man-made gravel pits.	Three in section A. Breeding in small numbers at this site.	Valuable at site level only.

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Shoveler	Shoveler in winter internationally important numbers (WI*) and SPEC*. They winter in lowland areas and are scarce local breeders.	The Ouse Washes are the most important site in the UK for this species and they are also found in gravel pits along the same river upstream in smaller numbers.	A peak count of 13 at the waterbody 6 in section A. This represents only just above 1% of the estimated wintering population.	Valuable at district level.
Snipe	Snipe are SPEC*. They are widely distributed as a wintering bird across the UK, but have declined as a breeding species in the lowlands.	Snipe are widely distributed in winter and breed in the Washes.	A single bird flushed during wintering bird surveys in section B in 2013 probably is an under-representation of this rather cryptic bird.	Valuable at site level only due to small numbers recorded.
Stock dove	The UK holds internationally important numbers of this species (greater than 20% of the European breeding population, BI*). This species is associated with arable farmland and suffered from the effects of organochloride seed dressings in the 1950s. It is now steadily increasing in abundance across its range, centred in lowland England.	Widely distributed, but the Fens are a stronghold in terms of abundance, the stock dove has increased dramatically over the last 30 years. Wintering birds are even more polarised towards the Fens.	Small numbers were recorded in winter on section B and in summer very low numbers scattered over section D and borrow pits.	Valuable at local level only.
Swallow	Widely distributed across the UK, but lower abundance in upland and arable eastern England. Swallows are amber listed only because they are SPEC*. There is some evidence of recent increases in swallows.	Widespread and common, but lower density in areas of exclusively arable farmland.	Low numbers recorded through the survey area.	Valuable at site level only.

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Swift	Swift have declined across their range in England (BDMp1*) placing them on the amber list for the first time. They are widespread apart from the Highlands and upland areas.	Common and widespread across Cambridgeshire with a breeding population estimated at 2,000-5,000 pairs.	Breeding probable at Huntingdon A14 Viaduct. Otherwise very sparsely distributed feeding flocks recorded.	Valuable at site level only.
Teal	Teal winter in internationally important numbers in the UK. They are widespread in winter as migrants arrive. They are patchy breeders in England with highest breeding densities in the far north of Scotland.	Widespread as a wintering bird with highest counts at the larger wetland sites and the Ouse and Nene Washes. Teal may be easily overlooked in smaller wetlands.	A few birds recorded in section A in the northern waterbody.	Valuable at local level.
Tufted duck	Amber listed only because it is a SPEC*. It is widespread as both wintering and breeding species.	Distribution tends to follow main river systems, particularly the river Great Ouse where there are many gravel pits as this species prefers deep waterbodies. Wintering population is estimated at 2,500-6,000 birds.	A flock of 48 birds in section A in April and up to 300 birds in winter were recorded.	Valuable at local level.

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Wheatear	A summer visitor to the uplands and Scottish Highlands. It is a frequent passage migrant in spring and autumn to traditional sites on the coast. It is amber listed only because it is a (SPEC*.	Very scarce in Cambridgeshire as a passage migrant.	One record at BP 6 passing through.	Not applicable.
Whitethroat	Moderate breeding population long term decline between 25% and 50% (BDMp2*). This species' abundance is closely linked to survival in the wintering grounds south of the Sahara desert in Africa. It suffered a crash in 1969 and has only partially recovered. Numbers have been steadily increasing in recent years.	Whitethroats are found in almost every site where suitable hedgerows and scrub habitat exists.	Frequent in scrub and hedgerows throughout the study area.	Valuable at site level only.
Wigeon	Wigeon are amber listed because they winter in internationally important numbers (WI*) at a limited number of sites (WL*). These numbers have increased significantly in recent years.	Large numbers (50,000-75,000) winter at the Ouse and Nene Washes, and gravel pits along the main river systems. Flocks are highly mobile, responding to disturbance and weather.	Over 500 birds at the section A in winter 2013. A flock of 70 was found in farmland on section B.	Valuable at local level.

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Willow warbler	Moderate breeding population decline between 25% and 50% over last 25 years and longer term (BDMp1* and BDMp2*). The willow warbler continues to decline gradually across England, in common with several other long-distance migrants. It is nevertheless a widespread species with a north and west bias in breeding abundance.	Patchily distributed where suitable habitat exists throughout Cambridgeshire, but largely absent from the intensive arable Prairie-land to the north.	Frequently recorded during the surveys in section A in small numbers but not elsewhere in the survey area. Records for this species are frequent at other gravel pit sites.	Valuable at local level.
Buzzard	This species has seen a dramatic recovery in recent years and has expanded into the south and east of England. It has increased in abundance in the former strongholds of the west and Wales. This is largely a result of recovery from earlier declines caused by persecution and the effects of myxomatosis on rabbit populations. Listed on HABAP.	Although largely absent in the fens and despite Cambridgeshire being the least wooded county in England, there are still sufficient copses and scattered trees in the landscape to allow buzzard to colonise in the arable farmland of the south and west.	Buzzards were recorded on all sections apart from borrow pit 2 and 6 and are most likely to be breeding within the survey area. Buzzards were also recorded during wintering bird surveys on sections B and C.	Valuable at local level since they are now widespread across the UK.

Species	Criteria for BoCC listing (Eaton et al., 2009) and national population trends (Balmer et al., 2013) *See Eaton et al., 2009 for explanation and criteria codes.	County population status (Bacon et al., 2013)	Distribution and status within study area (CPERC data search results *Annex 2*)	Evaluation
Cetti's warbler (Schedule 1 species)	Over the last 20 years there has been a large expansion of range in this species from a first breeding record in Kent in 1973. Cetti's warbler now occupy most lowland wetlands with suitable habitat in a broad band across southern England, the river basins of the Thames and the river Great Ouse and East Anglian coast.	This remarkable expansion in range appears not to have reached Cambridgeshire to date and the species remains scarce with current estimates of only 30-70 singing males.	Three singing males recorded in section A in 2013 and one in the wintering surveys as well. Records data indicate the first record at this site was in 2007 (peak count 4) and it is also found at Fen Drayton Gravel Pits (peak count 7).	Valuable at county level, but the population is expected to expand in the near future. The site could act as an important 'stepping stone' as part of this process, but would fall to district value.

Annex 2 Dates, times and survey conditions

Table A2.1: Breeding bird survey dates, times and weather conditions for all surveys during 2013 and 2014

Section/visit	Date	Times	Survey type	Weather conditions
A visit 1	23 April 2013	05:45 – 09:35	Transect (BBS)	Temperature: 10°C, Sunny with 40% cloud. Wind light, west. Visibility very good.
A visit 2	5 May 2013	06:30 – 10:50	Transect (BBS)	Temperature 6 °C - 17 °C. Sunny. Clear. Wind light 0-1 west south-west.
A visit 3	21 May 2013	05:00 – 09:00	Transect (BBS)	Temperature 11 °C. Overcast, light drizzle shower. Wind light 0-1 north.
A visit 4	3 June 2013	04:45 - 09:15	Transect (BBS)	Temperature 11 °C. Sunny with 20% cloud. Light wind 2 north-east.
A visit 5	2 July 2013	04:45 – 08:15	Transect (BBS)	Temperature 11 °C. 80% cloud. Light variable wind 0-1.
B visit 1	14 May 2013	06:20 – 10:45	Transect (BBS)	Temperature 7 °C -10°C. Sunny – cloud cover. increasing during survey to 40%. Wind light 2 west. Visibility Good >2km.
B visit 2	23 May 2013	04:50 - 09:15	Transect (BBS)	Temperature: 6 °C – 9 °C. Light rain shower with sunny spells. Cloud 70% Wind: Light 3 north-west. Visibility >2km.
B visit 3	7 June 2013	04:45 – 09:15	Transect (BBS)	Temperature: 9 °C -10 °C. Sunny/Clear, cloud 10%. Wind: Light 1-2 north-east Visibility >2km.
B visit 4	1 July 2013	05:00 – 09:45	Transect (BBS)	Temperature: 15 °C. Overcast clearing during survey. Wind: 1-2 south-west. Visibility >2km.
D visit 1	8 April 2014 (east)	07:00 – 11:00	Transect (BBS)	Temperature: 7 °C. Clear. Wind 2-3 west.
	9 April 2014 (west)	07:15 – 09:30	Transect (BBS)	Temperature: 5 °C. Clear. Light wind.

Section/visit	Date	Times	Survey type	Weather conditions
D visit 2	24 April 2014 (east)		Transect (BBS)	Temperature: 10 °C. Sunny light wind mist burning off
	25 April 2014 (west)		Transect (BBS)	Temperature: 8°C. Overcast light wind.
D visit 3	29 May 2014 (west)	06:45 – 08:15	Transect (BBS)	Temperature: 13 °C. Overcast. Light wind.
	29 May 2014 (east)	17:15 - 20:00	Transect (BBS)	Temperature: 15 °C. Sunny spells. Light wind.
D visit 4	26 June 2014 (east)	06:30 – 10:30	Transect (BBS)	Not recorded.
	27 June 2014 (west)	06:30 – 10:30	Transect (BBS)	Not recorded.
BP 1 visit 1	29 April 2014	06:30 – 10:30	Transect (BBS)	Temperature: 9 °C. Misty overcast previous rain.
BP 1 visit 2	30 May 2014	06:45 – 10:00	Transect (BBS)	Temperature: 12 °C. Overcast (8 okta). Light wind.
BP 2 visit 1	30 April 2014	09:15 – 10:45	Transect (BBS)	Temperature: 12 °C. Overcast dry light breeze.
BP 2 visit 2	5 June 2014	06:30 – 10:00	Transect (BBS)	Not recorded.
BP 3 visit 1	13 June 2014	07:10 – 09:45	Transect (BBS)	Temperature 16^{o}C Cloud cover 0%
BP 6 visit 1	30 April 2014	07:00 – 09:00	Transect (BBS)	Temperature: 10°C. Overcast Wind: 1-2 south-west. Visibility >2km.
BP 6 visit 2	6 June 2014	07:00 – 10:30	Transect (BBS)	Temperature 20^{o}C. Cloud cover 0%. Light wind.

Table A2.2: Wintering bird survey dates times, and weather conditions for surveys between December 2012 and February 2014

Section/visit	Date	Times	Survey type	Weather conditions
A+B. visit 1.	21 December 2012	09;00 – 16;00	Daytime	Temperature 8°C. Occasional light drizzle. Wind light 1-2 south-west. Visibility 1-2km.
A+B. visit 2.	27 December 2012	08;30 – 15;45	Daytime	Temperature: 8°C. Rainshowers. Wind: Light 1-2 south/south-east. Visibility >2km.
A+B. visit 3.	8 January 2013	08;30 – 15;30	Daytime	Temperature: 5°C. Overcast. Wind: Light 1-2 south-west Visibility >2km.
A+B. visit 4.	17 January 2013	09;30 – 16;30	Daytime	Temperature: -6°C to -3°C. Clear sunny, very icy. Wind: 0-1 north-east. Visibility >2km.
A+B. visit 5.	29 January 2013	10;30 – 16;45	Daytime	Temperature 10-12°C. Overcast. Wind: Moderate 4-5 south-west. Visibility >2km. Thawing of snow.
A+B. visit 1.	29 January 2013	18;00 – 21;00	Night	Temperature 11°C. Fairly clear. Wind moderate 5-6 south-west.
A+B. visit 6.	1 February 2013	08;30 – 15;00	Daytime	Temperature 3°C. Light rain. Wind: Light 2-3 north-east Visibility: 1-2km.
A+B. visit 7.	7 February 2013	08;30 – 15;30	Day	Temperature 4°C. Overcast/sunny spells. Wind: Light 1-2 west. Visibility >2km.
A+B. visit 8.	18 February 2013	10;00 – 16;00	Daytime	Temperature 6°C. Dry/Clear. Wind: light 0-1 south-west. Visibility >2km.
A+B. visit 9.	22 February 2013	11;00- 17;00	Daytime	Temperature 2°C. Overcast/Dry Wind: Light 2-3 north-east. Visibility >2km
A+B. visit 2.	22 February 2013	18;00 – 21;00	Night	Temperature 1°C. Overcast. Wind: 1-2 north-east.
A+B. visit 11.	1 March 2013	08;00 – 15;30	Daytime	Temperature 6°C. Overcast/Occasional light shower. Wind: 2-3 west. Visibility >2km.
A+B. visit 12.	8 March 2013	08;45 – 14;30	Daytime	Temperature 4°C. Foggy. Wind: 1-2 south-east Visibility 200m (up to 400m during Area B survey).
A+B. visit 13.	22 March 2013	08;15 – 15;00	Daytime	Temperature 4°C. Overcast. Wind: moderate 3-4 east. Visibility 1-2km
A+B. visit 14	22 March 2013	18;45 – 21;15	Night	Temperature 2°C. Overcast. Wind 3-4 east.
A visit 1	14 November 2013	08:00 – 12:00	Day	Temperature: 5°C, light breeze, dry/clear.

Section/visit	Date	Times	Survey type	Weather conditions
A visit 2	28 November 2013	08:00 – 12:00	Day	Temperature: 10°C, still, dry/overcast.
B visit 1	15 November 2013	09:00 – 14:30	Day	Temperature: 5°C, light breeze, dry/clear.
B visit 1	14 November 2013	19:30 – 21:15	Night	Temperature: 5°C, light breeze, dry/clear.
B visit 2	27 November 2013	13:00 – 15:00	Day	Temperature: 10°C, light breeze, dry/clear.
B visit 2	27 November 2013	19:30 – 22:30	Night	Temperature: 10°C, light breeze, patchy light mist.
C visit 1	29 November 2013	09:00 – 16:30	Day	Temperature: 10°C, still, dry/overcast.
C visit 1	4 December 2013	17:00 – 21:00	Night	Temperature: 6°C, still, dry/overcast.
C visit 2	4 February 2014	09:30 – 14:00	Day	Temperature: 7°C, moderate breeze, dry/10% cloud cover.
C visit 2	3 February 2014	18:30 – 21:00	Night	Temperature: 5°C, light breeze, dry/overcast.
D visit 1	29 November 2013	09:00 – 16:30	Day	Temperature: 10°C, still, dry/overcast.
D visit 1	4 December 2013	17:00 – 21:00	Night	Temperature: 6°C, still, dry/overcast.
D visit 2	4 February 2014	14:30 -16:00	Day	Temperature: 10°C, moderate breeze, dry/10% cloud cover.
D visit 2	3 February 2014	21:00 – 22:00	Night	Temperature: 5°C, light breeze, dry/overcast.

Annex 3 Full survey data for wintering bird surveys between November 2013 and February 2014

Table A3.1: Wintering bird surveys: All birds recorded during daytime survey visits in section A (Buckden Gravel Pits County Wildlife site) as shown on *Figure 11.7 of the ES*.

No night time visits undertaken for this section. Note that WB4 was inaccessible for surveys.

	Visit 1 at waterbodies (WB) 1 to 7							Visit 2 at waterbodies (WB) 1 to 7						
Species	**WB1**	**WB2**	**WB3**	**WB4**	**WB5**	**WB6**	**WB7**	**WB1**	**WB2**	**WB3**	**WB4**	**WB5**	**WB6**	**WB7**
Black-headed gull	10	5	1		80			9	10	1		55		
Black swan													1	
Canada goose							22							
Cetti's warbler												1		
Common gull			2		1			2				14		
Coot					3			1		2		8		
Cormorant		2	1			2		3	10	2		1	2	
Gadwall					15				2	9		22		
Goldeneye			2		2			11	3	7				
Great-crested grebe	6				1			2		1				
Grey heron	1	1	1		1		1		1	1				
Greylag goose							250							
Great northern diver									1					
Herring gull												2		
Kingfisher							1							
Lapwing												61		

	Visit 1 at waterbodies (WB) 1 to 7							Visit 2 at waterbodies (WB) 1 to 7						
Species	**WB1**	**WB2**	**WB3**	**WB4**	**WB5**	**WB6**	**WB7**	**WB1**	**WB2**	**WB3**	**WB4**	**WB5**	**WB6**	**WB7**
Little egret		1							2					
Mallard		7	2			2		4	4	7			8	
Moorhen		3	1				1		1	1		2		
Mute swan	9	2	2		3		1	2	2	2		2	2	
Pintail					2									
Pochard		60							50					
Red kite	1													
Ruddy duck									1					
Shoveler					1									
Snipe							1							
Teal		8			22		1		7			4		
Tufted duck	25	13	50		2			33	29	87		5		
Wigeon			1		5			2	4	2		75	7	
Total number of species	6	10	10		13	2	8	10	15	12		13	5	0

Table A3.2: Wintering bird surveys: All birds recorded during daytime survey visits in section B (offline section Huntingdon Southern Bypass, a new road across arable farmland between Offord Cluny and Connington) as shown on *Figure 11.7 of the ES*.

* Birds recorded on 4 Dec 2013 only.

	Visit 1 at vantage points B1 to B9									Visit 2 at vantage points B1 to B9								
Species	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**B8**	**B9**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**B8**	**B9**
Black-headed gull								7					70		4		6	
Buzzard									1									
Common gull										1			2		22			
Common snipe										1								
Fieldfare																3		27
Golden plover					800													
Greylag goose															70			
Greater black-backed gull										1								
Herring gull															1			
Kestrel									1							1		
Lapwing	14																90*	
Moorhen												3						
Sparrowhawk																1		
Stock dove								2	1									
Total number of species	1	0	0	0	1	0	0	2	3	3	0	1	2	0	4	3	2	1

Table A3.3: Wintering bird surveys: All birds recorded during night time survey visits in section B (offline section Huntingdon Southern Bypass, a new road across arable farmland between Offord Cluny and Conington) as shown on *Figure 11.7 of the ES*.

	Visit 1 at vantage points B1 to B9									Visit 2 at vantage points B1 to B9								
Species	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**B8**	**B9**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**B8**	**B9**
Lapwing	2																	
Total number of species	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table A3.4: Wintering bird surveys: All birds recorded during daytime survey visits in section C (online section of A14 widening between Swavesey and Girton) as shown on *Figure 11.7 of the ES*.

* Birds recorded on 4th Dec 2013 only.

	Visit 1 at vantage points C1 to C9									Visit 2 at vantage points C1 to C9								
Species	**C1**	**C2**	**C3**	**C4**	**C5**	**C6**	**C7**	**C8**	**C9**	**C1**	**C2**	**C3**	**C4**	**C5**	**C6**	**C7**	**C8**	**C9**
Black-headed gull											3				40			
Buzzard						1					1	2				1		
Fieldfare					25*											100		80
Kestrel						1												
Lapwing						18												
Mistle thrush																	2	
Skylark														3	2			5
Starling						30										100		
Total number of species	0	0	0	0	1	4	0	0	0	0	2	1	0	1	2	3	1	2

Table A3.5: Wintering bird surveys: All birds recorded during night-time survey visits in section C (online section of A14 widening between Swavesey and Girton) as shown on *Figure 11.7 of the ES*.

	Visit 1 at vantage points C1 to C9									Visit 2 at vantage points C1 to C9								
Species	**C1**	**C2**	**C3**	**C4**	**C5**	**C6**	**C7**	**C8**	**C9**	**C1**	**C2**	**C3**	**C4**	**C5**	**C6**	**C7**	**C8**	**C9**
Golden plover	calls heard only				calls heard only													
Total number of species	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0

Table A3.6: Wintering bird surveys: All birds recorded during daytime survey visits in section D (online widening of A1) as shown on *Figure 11.7 of the ES*.

* Birds recorded on 4th Dec 2013 only.

	Visit 1 at vantage points D1 to D7							Visit 2 at vantage points D1 to D7						
Species	**D1**	**D2**	**D3**	**D4**	**D5**	**D6**	**D7**	**D1**	**D2**	**D3**	**D4**	**D5**	**D6**	**D7**
Black-headed gull	30	180	300	20						50				
Common gull		4		5										
Fieldfare				4										
Lapwing			300	34										
Mute swan				2							14			2
Redwing				3										
Stock dove	15									18				
Total bird species	2	2	2	6	0	0	0	0	0	2	1	0	0	1

Table A3.7: Wintering bird surveys: All birds recorded during night time survey visits in section D (online widening of A1) as shown on *Figure 11.7 of the ES*.

ns: not surveyed.	Visit 1 at vantage points D1 to D7							Visit 2 at vantage points D1 to D7						
Species	**D1**	**D2**	**D3**	**D4**	**D5**	**D6**	**D7**	**D1**	**D2**	**D3**	**D4**	**D5**	**D6**	**D7**
Total bird species	0	0	0	0	0	0	0	0	0	0	0	0	0	0