

A47 Wansford to Sutton Dualling

Scheme Number: TR010039

Volume 6

6.3 Environmental Statement Appendices **Appendix 8.10 – Wintering Bird Survey Report**

APFP Regulation 5(2)(a)

Planning Act 2008

Infrastructure Planning (Applications: Prescribed
Forms and Procedure) Regulations 2009

July 2021

Infrastructure Planning

Planning Act 2008

**The Infrastructure Planning
(Applications: Prescribed Forms and
Procedure) Regulations 2009**

A47 Wansford to Sutton
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ENVIRONMENTAL STATEMENT APPENDICES
Appendix 8.10 - Wintering Bird Survey Report

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1. Introduction

1.1. Background

- 1.1.1. In 2020, wintering bird surveys on the A47 between Wansford and Sutton were completed. This is to inform the Environmental Statement (ES) Chapter 8 Biodiversity (TR010039/APP/6.1) at PCF Stage 3 for the A47 Wansford to Sutton Dualling (the Proposed Scheme).
- 1.1.2. The Proposed Scheme is designed to provide a new 2.6km dual carriageway which largely follows the existing A47 at the Wansford end, crossing to the north and running parallel to the existing A47 after Sutton Heath Road. There would also be a dedicated free-flow link road from the A1 southbound to the A47 eastbound to alleviate congestion at the Wansford junctions.
- 1.1.3. The Proposed Scheme is located at Wansford and extends eastwards to Sutton and forms a section of Single carriageway that is part of the main arterial highway route connecting to Peterborough and Norwich to the east.
- 1.1.4. This baseline report provides a summary of the results of the wintering bird surveys undertaken between Wansford and Sutton in January, February, and March 2020. Impacts of the proposed development and proposals for mitigation are addressed in Chapter 8 (Biodiversity) (TR010039/APP/6.1).

1.2. Scheme description and location

- 1.2.1. The Proposed Scheme is designed to provide a new 2.6km dual carriageway which largely follows the existing A47 at the Wansford end, crossing to the north and running parallel to the existing A47 after Sutton Heath Road. There will also be a dedicated free-flow link road from the A1 southbound to the A47 eastbound to alleviate congestion at the Wansford junctions.
- 1.2.2. The Proposed Scheme is located at Wansford and extends eastwards to Sutton and forms a section of Single carriageway that is part of the main arterial highway route connecting to Peterborough and Norwich to the east.

1.3. Aims and objectives

- 1.3.1. The aim of the wintering bird surveys is to determine which species are using the study area during winter and to assess its importance for supporting populations of notable bird species including:
 - species protected under Schedule 1 of the Wildlife and Countryside Act (WCA) 1981

- species of principal importance for the purpose of conserving biodiversity covered under Section 41 (S41) of the Natural Environment and Rural Communities (NERC) Act 2006
- red and amber listed birds of conservation concern (BoCC) (Eaton *et al.*, 2015)

1.3.2. The data gathered will assist in determining the potential significant effects on wintering birds and the potential effects on assemblages through the following impacts:

Construction

- habitat loss (direct impact)
- disturbance from construction, i.e. noise and visual disturbance (indirect impacts)

Operation

- mortality of wintering birds e.g. traffic collisions (direct impact)
- reduced population size & overwintering success due to traffic noise and visual disturbance (indirect impact)

1.4. Relevant bird legislation

1.4.1. This legislation is presented in summary form and is intended for general guidance only. It is recommended the original documentation is referred to for detailed and definitive information. Web addresses can be found in Chapter 7 (Landscape and Visual Effects) (**TR010039/APP/6.1**).

International Conventions

1.4.2. The Bonn Convention (1979) provides protection to migratory species and their habitats. There are a number of legally binding international agreements, including:

- African Eurasian Migratory Waterbird Agreement (AEWA)
- Memorandum of Understanding on the Conservation of Migratory Birds of Prey in Africa and Eurasia
- Convention on the Conservation of Migratory Species (CMS)

1.4.3. The Bern Convention (1982) aims to ensure the protection of wild plant and animal species. The obligations of the Convention are transposed into national law by the Wildlife and Countryside Act 1981 (as amended). At the European level, the obligations are met by means of the Directive 2009/147/EC on the conservation of wild birds (the Birds Directive).

European legislation

1.4.4. The Birds Directive

- The European Union meets its obligations for bird species under the Bern Convention and Bonn Convention by means of Directive 2009/147/EC (Birds Directive) on the conservation of wild birds.
- The Council Directive 2009/147/EC on the conservation of wild birds provides for the conservation and management of all wild bird species naturally occurring in the European Union, their nests, eggs and habitats. The Birds Directive bans activities that directly threaten birds (e.g. deliberate killing and destruction of nests and young), regulates hunting of selected species, bans non-selective and large scale killing of birds, and promotes research for bird conservation and management. Article 4(4) of the Birds Directive requires that member states “should strive to avoid pollution or deterioration of habitats.” Regulation 8 introduces a new Regulation 9A to the Habitats Regulations for duties of appropriate authorities in relation to wild bird habitat. Regulation 9A(3) addresses the transposition of Article 2 of the Birds Directive, while Regulation 9A(8), requiring competent authorities to “use all reasonable endeavours” to “avoid any pollution or deterioration of habitats of wild birds.”
- The Conservation of Habitats and Species Regulations 2017 (as amended) fully transposed the Birds Directive into English law including all Annexes including Annex 1 which also lists rare and vulnerable species of wild birds that are subject to special conservation measures.

UK and English Legislation

Wildlife and Countryside Act (1981)

- 1.4.5. The primary legislation relating to the protection of British birds lies within Part 1 of the Wildlife and Countryside Act (1981).
- 1.4.6. Under current legislation, it is an offence to:
- kill, injure or take any wild bird
 - take, damage or destroy the nest of any wild bird while that nest is in use or being built
 - take or destroy an egg of any wild bird
- 1.4.7. Schedule 1 of the Act lists a number of species that are protected by special penalties at all times. In addition, the Act makes it an offence (subject to exceptions) to:

- intentionally or recklessly kill, injure or take any wild animal listed on Schedule 5
- interfere with places used for shelter or protection by a wild animal
- intentionally disturb animals occupying such places
- the Act also prohibits certain methods of killing, injuring, or taking wild animals

1.4.8. In addition to statutory protection, some bird species have been identified within key documents as species of conservation concern.

Local Biodiversity Action Plan (LBAP)

1.4.1. The Cambridgeshire and Peterborough Biodiversity Partnership lists 26 bird species as priority species requiring conservation action. Local Biodiversity Action Plans identify habitat and species conservation priorities at a local level (typically at the County level) and are usually drawn up by a consortium of local Government organisations and conservation charities.

National Policy Statement for National Networks (NPSNN)

1.4.2. The NPSNN outlines government planning policies to deliver nationally significant infrastructure projects (NSIPs) and provides planning guidance for these projects and the basis for the examination by the Examination Authority and decisions by the Secretary of State. The NPSNN states that development should avoid significant harm to biodiversity and geological conservation interests, including through mitigation and consideration of reasonable alternatives. Where significant harm cannot be avoided or mitigated, as a last resort, appropriate compensation measures should be sought.

1.5. Conservation status and guidance

Birds of Conservation Concern

1.5.1. The Birds of Conservation Concern 4: The Red List for Birds was published in December 2015. The document is commonly referred to as the UK Red List for birds. This is the fourth review of the status of birds in the UK, Channel Islands and the Isle of Man, and is an update of the last assessment in 2009. Using standardised criteria, 244 species with breeding, passage or wintering populations in the UK were assessed by experts from a range of bird non-governmental organisations (NGOs) and assigned to the red, amber or green lists of conservation concern.

- Red list species are those whose breeding population or range is rapidly declining (50% or more in the last 25 years), have declined historically and not recovered, or those of global conservation concern.

- Amber list species are those whose breeding population is in moderate decline (25 – 49% in the last 25 years), breed rarely, are of international importance, are localised species and of unfavourable conservation status in Europe.

The IUCN Red List of Threatened Species

- 1.5.2. The IUCN Red List of Threatened Species is widely recognized as the most comprehensive, objective global approach for evaluating the conservation status of plant and animal species. The introduction in 1994 of a scientifically rigorous approach to determine risks of extinction that is applicable to all species has become a world standard.

2. Desk study

- 2.1.1. In works undertaken to date, wintering bird surveys have been completed and the findings of these reports will be summarised below.
- 2.1.2. Further to this, a data search was carried out using multi-agency geographical information for the countryside (MAGIC) maps for all statutory and non-statutory protected sites and these are summarised in section 2.3.

2.2. Previous studies

- 2.2.1. Previously, a wintering bird survey was undertaken by an ornithologist between October 2017 and March 2018. On each visit, the ornithologist walked a transect route around the 500m buffer survey area of the proposed new A47 road and recorded bird observations, such as birds in flight. The surveys were undertaken during suitable weather conditions and followed standard methods for bird monitoring including the use of British Trust for Ornithology (BTO) species codes and symbols for bird activity (Bibby *et al.*, 2000).
- 2.2.2. The surveys aimed to determine which species were using the study area during winter and to assess its importance for supporting populations of notable species including:
- species protected under Schedule 1 of the Wildlife and Countryside Act (WCA) 1981, as amended
 - species of Principal Importance for the purpose of conserving biodiversity covered under Section 41 (S41) of the Natural Environment and Rural Communities (NERC) Act 2006
 - red and amber listed Birds of Conservation Concern (BoCC) (Eaton *et al.*, 2015)
- 2.2.3. In total 62 species were recorded (Table 2-1). This included five species listed on the Wildlife & Countryside Act (1981) Schedule 1, 12 species on the red-listed species of conservation concern and 15 species on the amber list.

Table 2-1 All species recorded on the wintering bird survey

Common Name	Scientific Name	Designation	Conservation value
Blackbird	<i>Turdus merula</i>	Birds Dir 2.2	N/A
Black-headed Gull	<i>Chroicocephalus ridibundus</i>	Birds Dir 2.2	BoCC Amber
Blue Tit	<i>Cyanistes caeruleus</i>	N/A	N/A
Bullfinch	<i>Pyrrhula pyrrhula</i>	NERC	BoCC Amber
Buzzard	<i>Buteo buteo</i>	Bonn	N/A

Common Name	Scientific Name	Designation	Conservation value
Carrion Crow	<i>Corvus corone</i>	Birds Dir 2.2	N/A
Chaffinch	<i>Fringilla coelebs</i>	N/A	N/A
Chiffchaff	<i>Phylloscopus collybita</i>	N/A	N/A
Coal Tit	<i>Periparus ater</i>	N/A	N/A
Collared Dove	<i>Streptopelia decaocto</i>	Birds Dir 2.2	N/A
Common Gull	<i>Larus canus</i>	Birds Dir 2.2	BoCC Amber
Coot	<i>Fulica atra</i>	Bonn, Birds Dir 2.1	IUCN NT
Cormorant	<i>Phalacrocorax carbo</i>	N/A	N/A
Duncock	<i>Prunella modularis</i>	Bern, NERC	BoCC Amber
Fieldfare	<i>Turdus pilaris</i>	Birds Dir 2.2, WCA 1	BoCC Red, IUCN LC
Gadwall	<i>Mareca strepera</i>	Bonn, Birds Dir 2.1	BoCC Amber
Goldcrest	<i>Regulus regulus</i>	N/A	IUCN LC
Goldfinch	<i>Carduelis carduelis</i>	Bern	N/A
Great Spotted Woodpecker	<i>Dendrocopos major</i>	Bern	N/A
Great Tit	<i>Parus major</i>	N/A	N/A
Green woodpecker	<i>Picus viridis</i>	Bern	N/A
Greenfinch	<i>Chloris chloris</i>	Bern	N/A
Grey Heron	<i>Ardea cinerea</i>	N/A	N/A
Grey Wagtail	<i>Motacilla cinerea</i>	Bern	BoCC Red
House Sparrow	<i>Passer domesticus</i>	NERC	BoCC Red
Jackdaw	<i>Coloeus monedula</i>	Birds Dir 2.2	N/A
Jay	<i>Garrulus glandarius</i>	Birds Dir 2.2	N/A
Kestrel	<i>Falco tinnunculus</i>	N/A	N/A
Kingfisher	<i>Alcedo atthis</i>	Bern, Birds Dir 1, WCA 1	BoCC Amber, IUCN VU
Lapwing	<i>Vanellus vanellus</i>	Birds Dir 2.2, NERC	BoCC Red, IUCN VU
Lesser Redpoll	<i>Acanthis cabaret</i>	NERC	BoCC Red
Linnet	<i>Linaria cannabina</i>	Bern, NERC	BoCC Red
Little Grebe	<i>Tachybaptus ruficollis</i>	Bern	N/A
Long-tailed Tit	<i>Aegithalos caudatus</i>	N/A	N/A

Common Name	Scientific Name	Designation	Conservation value
Magpie	<i>Pica pica</i>	Birds Dir 2.2	N/A
Mallard	<i>Anas platyrhynchos</i>	Bonn, Birds Dir 2.1	BoCC Amber
Meadow Pipit	<i>Anthus pratensis</i>	N/A	BoCC Amber, IUCN NT
Mistle Thrush	<i>Turdus viscivorus</i>	Birds Dir 2.2	BoCC Red
Moorhen	<i>Gallinula chloropus</i>	Birds Dir 2.2	N/A
Mute Swan	<i>Cygnus olor</i>	Bonn, Birds Dir 2.2,	BoCC Amber
Pied Wagtail	<i>Motacilla alba</i>	Bern	N/A
Red Kite	<i>Milvus milvus</i>	Bonn, Birds Dir 1, WCA 1	IUCN NT
Redwing	<i>Turdus iliacus</i>	Birds Dir 2.2, WCA 1	BoCC Red, IUCN NT
Reed Bunting	<i>Emberiza schoeniclus</i>	Bern, NERC	BoCC Amber
Robin	<i>Erithacus rubecula</i>	Bern	N/A
Rook	<i>Corvus frugilegus</i>	Birds Dir 2.2	N/A
Siskin	<i>Spinus spinus</i>	Bern	N/A
Skylark	<i>Alauda arvensis</i>	Birds Dir 2.2, NERC	BoCC Red
Song Thrush	<i>Turdus philomelos</i>	Birds Dir 2.2, NERC	BoCC Red
Sparrowhawk	<i>Accipiter nisus</i>	Bonn, Birds Dir 1	N/A
Starling	<i>Sturnus vulgaris</i>	Birds Dir 2.2, NERC	BoCC Red
Stock Dove	<i>Columba oenas</i>	Birds Dir 2.2	BoCC Amber
Stonechat	<i>Saxicola rubicola</i>	N/A	N/A
Tawny Owl	<i>Strix aluco</i>	Bern	BoCC Amber
Teal	<i>Anas crecca</i>	Bonn, Birds Dir 2.1	BoCC Amber
Treecreeper	<i>Certhia familiaris</i>	N/A	N/A
Tufted duck	<i>Aythya fuligula</i>	Bonn, Birds Dir 2.1	N/A
Water Rail	<i>Rallus aquaticus</i>	Birds Dir 2.2	N/A
Wood lark	<i>Lullula arborea</i>	Birds Dir 1, NERC	N/A
Woodpigeon	<i>Columba palumbus</i>	Birds Dir 2.1	N/A
Wren	<i>Troglodytes troglodytes</i>	Bern	N/A
Yellowhammer	<i>Emberiza citrinella</i>	Bern, NERC	BoCC Red

Bern – Bern Convention (1982)

Bonn – Bonn Convention (1979)

WCA1 – Wildlife and Countryside Act (1981) Schedule One

Birds Dir 1, 2.1 & 2.2 – EC Directive on the Conservation of Wild Birds (791409/EEC) Annex 1, 2.1 and 2.2
NERC – National Environment of Rural Communities Act Section 41
LBAP – Local Action Plan Species
BoCC Red – Birds of Conservation Concern Red List
BoCC Amber - Birds of Conservation Concern Amber List
IUCN NT – IUCN Near Threatened Status (European Status)
IUCN VU – IUCN Vulnerable Status (European Status)

2.3. Designated sites

- 2.3.1. A MAGIC search was undertaken for all statutory and non-statutory protected sites within a 500m buffer of the main A47.
- 2.3.2. Two designated sites were identified within this buffer zone. The closest designated site was Sutton Heath and Bog Site of Special Scientific Interest (SSSI) which is adjacent to the Proposed Scheme and Wansford Pasture SSSI 265m south of the Proposed Scheme boundary at the western extent.
- 2.3.3. There are five County Wildlife Sites (CWS) within the 500m buffer zone for the proposed route of the new A47 road:
- Sutton Meadow North – Grid ref TL086996
 - Stibbington Pits – Grid ref TL086993
 - Sutton Dismantled Railway - TL090994
 - River Nene – Grid ref TL081995
 - Hell Corner and Top Field Spinney – Grid ref TL102995
- 2.3.4. These sites are offered some protection from development and are managed in Cambridgeshire by the Cambridgeshire Wildlife Trust in partnership with Natural England and Cambridgeshire County Council. The local councils have produced guidance on the scope of future development on these sites to help maintain protection on these sites.

2.4. Data search

- 2.4.1. A data search from the National Biodiversity Network (NBN) Atlas returned 3,558 bird records within 1km of the proposed new A47 road. However, due to licence restrictions, not all these records are allowed to be reported for commercial purposes.
- 2.4.2. NBN Atlas record sources under the following licences:
- Open Government Licence (OGL)
 - Creative Commons Licence with Attribution (CC-BY)
 - Creative Commons No rights reserved licence (CC0)

2.4.3. A total of 373 records were identified which could be used for commercial purposes (as above). These have been summarised in Table 2-2.

Table 2-2 Records of bird species and their designations and conservational value

Common name	Scientific name	Number of sightings	Latest Sighting	Designation and conservation status
Blackbird	<i>Turdus merula</i>	7	2005	N/A
Black-headed Gull	<i>Chroicocephalus ridibundus</i>	5	2003	BoCC Amber
Blue Tit	<i>Cyanistes caeruleus</i>	3	2001	N/A
Buzzard	<i>Buteo buteo</i>	3	2012	Bonn
Canada Goose	<i>Branta canadensis</i>	11	2005	N/A
Chaffinch	<i>Fringilla coelebs</i>	1	1987	N/A
Coal Tit	<i>Periparus ater</i>	1	1983	N/A
Common Gull	<i>Larus canus</i>	1	2002	BoCC Amber
Common Tern	<i>Sterna hirundo</i>	3	2004	Bern, Bonn, Birds Dir 1, BoCC Amber
Coot	<i>Fulica atra</i>	25	2005	IUCN NT
Cormorant	<i>Phalacrocorax carbo</i>	19	2005	N/A
Corn Bunting	<i>Emberiza calandra</i>	3	2005	NERC, BoCC Red
Gadwall	<i>Mareca strepera</i>	13	2005	Bonn, Birds Dir 2.1, BoCC Amber
Grasshopper Warbler	<i>Locustella naevia</i>	2	2004	NERC, BoCC Red
Great Crested Grebe	<i>Podiceps cristatus</i>	17	2005	N/A
Great Tit	<i>Parus major</i>	3	2001	N/A
Greenfinch	<i>Chloris chloris</i>	11	2012	Bern
Grey Heron	<i>Ardea cinerea</i>	16	2005	N/A
Grey Partridge	<i>Perdix perdix</i>	2	2004	NERC, BoCC Red
Greylag Goose	<i>Anser anser</i>	5	2004	Bonn, Birds Dir 2.1, WCA 1.2, BoCC Amber
Herring Gull	<i>Larus argentatus</i>	1	2003	NERC, BoCC Red, IUCN NT
House Sparrow	<i>Passer domesticus</i>	3	2003	NERC, BoCC Red
Kestrel	<i>Falco tinnunculus</i>	2	2002	N/A

Common name	Scientific name	Number of sightings	Latest Sighting	Designation and conservation status
Kingfisher	<i>Alcedo atthis</i>	12	2004	Bern, Birds Dir 1, WCA 1, BoCC Amber, IUCN VU
Lapwing	<i>Vanellus vanellus</i>	4	2004	NERC, BoCC Red, IUCN VU
Lesser Redpoll	<i>Acanthis cabaret</i>	1	2001	NERC, BoCC Red
Lesser Spotted Woodpecker	<i>Dryobates minor</i>	5	2004	NERC, BoCC Red
Little Grebe	<i>Tachybaptus ruficollis</i>	8	2005	Bern
Long-tailed Tit	<i>Aegithalos caudatus</i>	2	1992	N/A
Mallard	<i>Anas platyrhynchos</i>	25	2005	Bonn, Birds Dir 2.1, BoCC Amber
Mandarin Duck	<i>Aix galericulata</i>	10	2005	N/A
Marsh Tit	<i>Poecile palustris</i>	12	2004	NERC, BoCC Red
Moorhen	<i>Gallinula chloropus</i>	18	2005	N/A
Mute Swan	<i>Cygnus olor</i>	21	2017	Bonn, BoCC Amber
Red-crested Pochard	<i>Netta rufina</i>	4	2005	N/A
Redwing	<i>Turdus iliacus</i>	1	1964	WCA 1, BoCC Red, IUCN NT
Reed Warbler	<i>Acrocephalus scirpaceus</i>	4	2003	N/A
Robin	<i>Erithacus rubecula</i>	1	2001	Bern
Sand Martin	<i>Riparia riparia</i>	7	2001	Bern
Song Thrush	<i>Turdus philomelos</i>	6	1985	NERC, BoCC Red
Sparrowhawk	<i>Accipiter nisus</i>	6	2002	Bonn, Birds Dir 1
Spotted Flycatcher	<i>Muscicapa striata</i>	3	2004	NERC, BoCC Red
Starling	<i>Sturnus vulgaris</i>	13	1996	NERC, BoCC Red
Stock Dove	<i>Columba oenas</i>	2	2001	BoCC Amber
Swallow	<i>Hirundo rustica</i>	10	2001	Bern
Swift	<i>Apus apus</i>	5	2011	Bern, BoCC Amber
Teal	<i>Anas crecca</i>	10	2005	Bonn, Birds Dir 2.1, BoCC Amber
Tufted Duck	<i>Aythya fuligula</i>	20	2005	Bonn, Birds Dir 2.1
Turtle Dove	<i>Streptopelia turtur</i>	4	2005	Bonn, NERC, BoCC Red, IUCN VU

Common name	Scientific name	Number of sightings	Latest Sighting	Designation and conservation status
Water Rail	<i>Rallus aquaticus</i>	1	2002	N/A
Willow Warbler	<i>Phylloscopus trochilus</i>	1	1982	BoCC Amber

Bern – Bern Convention (1982)

WCA 1 – Wildlife and Countryside Act (1981) Schedule One

Birds Dir 1 – EC Directive on the Conservation of Wild Birds (791409/EEC) Annex 1

NERC – National Environment of Rural Communities Act Section 41

LBAP – Local Action Plan Species

BoCC Red – Birds of Conservation Concern Red List

BoCC Amber - Birds of Conservation Concern Amber List

IUCN VU – IUCN Vulnerable Status (European Status)

IUCN NT – IUCN Near Threatened Status (European Status)

3. Methodology

- 3.1.1. The site was visited on three occasions through the wintering bird season (January, February, March 2020). The ‘look-see’ method (*Gilbert et al., 1998*) was used, where all birds observed using the site were counted. The survey method was broadly based on that of territory mapping (*Bibby et al., 2000*) as used for the BTO Common Bird Census (CBC). Standard BTO species codes and symbols for bird activity were used to identify birds and denote activity where appropriate.
- 3.1.2. On each visit, the surveyor, an experienced ornithologist, used binoculars to survey the open habitat whilst walking along a pre-determined transect route (Annex A) at a slow pace so that all birds could be located and recorded.
- 3.1.3. The number of species recorded in the area is a simple measure of diversity that can help indicate the importance at each season of the year. The site's importance in value can be determined by several factors including geographical location, the diversity of habitats present and size of the habitat. Fuller (1980) detailed the diversity criteria, for bird species diversity, as shown in Table 3-1.

Table 3-1 Bird species diversity criteria: The importance of an area based on the number of bird species recorded (Fuller 1980¹)

National Importance	Regional Importance	County Importance	Local Importance
85+	70-84	50-69	25-49

- 3.1.4. Fuller’s criteria and professional judgement have been used to assess the importance of the survey area for wintering birds. In addition to evaluating the area based on the wintering bird assemblages, consideration is given to the value of the area for the populations of individual key species that it supports. This was done by comparing the population present within the survey area with national and country wintering populations for certain species. National population estimates have been referred to as published in Musgrove *et al.* (2013).
- 3.1.5. As Fuller’s criteria was written in 1980, farmland bird species have continued to suffer a large scale decline across the UK. Due to this, consideration of counts that are within the upper limits of each criteria should be carried out using professional judgement to determine whether the count should be upgraded into the lower limits of the next highest criteria.

¹ Although these criteria are principally concerned with breeding populations, they are used here as an indication of the importance of the wintering bird population.

3.1.6. The conservation value of individual species can be measured by two separate approaches: nature conservation value and conservation status. The Chartered Institute of Ecology and Environmental Management (CIEEM) guidance on ecological impact assessment (CIEEM 2018), assesses nature conservation value within a geographical context. To attain each level of value, an ornithological resource or one of the features (species population or assemblage of species) should meet the criteria set out in Table 3-2. In some cases, professional judgement may be required to increase or decrease the allocation of specific value, based upon local knowledge.

Table 3-2 Species value, terms and criteria

Species Value	Selection Criteria
International and European	<p>A species which is part of the cited interest of a SPA and which regularly occurs in internationally or nationally important numbers.</p> <p>A species which is present in internationally important numbers (>1% of the international population).</p>
National	<p>A species which is part of the cited interest of an SSSI and which regularly occurs in nationally or regionally important numbers.</p> <p>A nationally important assemblage of breeding or over-wintering species.</p> <p>A species which is present in nationally important numbers (>1% UK population).</p> <p>Rare breeding species (<300 breeding pairs in the UK).</p>
Regional	<p>Species of principal importance under Section 41 of the National Environment and Rural Communities (NERC) Act (2006), which are not covered above, and which regularly occurs in regionally important numbers.</p> <p>Species present in regionally important numbers (>1% of regional population).</p> <p>Sustainable populations of species that are rare or scarce within a region.</p> <p>Species on the BoCC red list and which regularly occur in regionally important numbers.</p>
County	<p>Species of principal importance under Section 41 of the National Environment and Rural Communities (NERC) Act (2006), which are not covered above and which regularly occur in county important numbers.</p> <p>Species present in county important numbers (>1% of county population).</p> <p>Sustainable populations of species that are rare or scarce within a county, or listed as priority species for nature conservation under the Scottish Biodiversity List.</p> <p>A site designated for its county important assemblage of birds (e.g. a SINC Site).</p> <p>Species on the BoCC Red List and which regularly occur in county important numbers.</p>
District	<p>Species of principal importance under Section 41 of the National Environment and Rural Communities (NERC) Act (2006), which are not covered above, and are rare in the locality or in the relevant natural area profile.</p> <p>Species present in numbers just short of county importance.</p> <p>Sustainable populations of species that are rare or scarce within the locality.</p> <p>A site whose designation falls just short for inclusion in its county important assemblage of birds (e.g. a SINC Site).</p> <p>Other species on the BoCC red list and which are considered to regularly occur in district important numbers.</p>
Local	<p>Other species of conservation interest (e.g. all other species on the BoCC Red and Amber List and listed as of principle importance under Section 41 of the National Environment and Rural</p>

Species Value	Selection Criteria
	Communities (NERC) Act (2006) which are not covered above, regularly occurring in locally sustainable populations.
Site	All other BoCC greenlist, common and widespread species.

3.2. Pre-survey constraints

- 3.2.1. The pre-designed survey transects were modified from the wintering bird survey transects undertaken in 2017/18 due to access restrictions and inclusion of habitats not previously surveyed.
- 3.2.2. The transects accessed private property after permission was granted and where possible, access was via public rights of way surrounding the site. The transect route chosen targeted higher value areas, rather than attempting to cover the entirety of the site. This is not considered to represent a significant limitation to the survey.
- 3.2.3. There is potential for species to be missed or go unnoticed due to the nature of wintering bird surveys and possibilities of birds not vocalising or being located in dense vegetation. There is also potential to miss nocturnal species.
- 3.2.4. The details of this report will remain valid for a period of two years from the date of the survey, after which the validity of this assessment should be reviewed to determine whether further updates are necessary. Note that the suggestions within this report should be reviewed (and reassessed if necessary) should there be any changes to the Proposed Scheme boundary or development proposals which this report was based upon.
- 3.2.5. Due to timing limitations, it was not possible to conduct the wintering bird surveys during the months of November and December 2019 as standard. An additional survey was undertaken in March to compensate for these missed months. The species observed remain consistent with those previously recorded and therefore, this is not considered a constraint.

4. Field Survey

4.1. Survey data and conditions

4.1.1. The field surveys was undertaken during the wintering bird season (January February, March 2020) inclusive. All surveys were led by an experienced ornithologist and assisted by fellow members of the ecology team. The date and weather conditions of each survey are detailed in Table 4-1.

Table 4-1 Date and weather conditions of each survey

Survey Number	Date	Weather conditions
Survey One – Jan 2020	27	Bright with scattered cloud. Temperature 4 – 8°C. Wind SW3
	28	Bright with scattered cloud. Temperature 2 – 7°C. Wind SW4
	29	Bright with scattered cloud. Temperature 3 – 8°C. Wind SW4
Survey Two – Feb 2020	24	Light rain. Temperature 4 – 11°C. Wind SW4
	25	Bright with scattered cloud. Temperature 3 – 7°C. Wind SW5
	26	Bright with scattered cloud. Temperature 2 – 7°C. Wind E4
Survey Three – March 2020	16	Bright with passing clouds. Temperature 5 – 11°C. Wind E2
	17	Bright with scattered cloud. Temperature 7 – 14°C. Wind SW4
	18	Light drizzle showers. Temperature 9 – 12°C. Wind SW3

4.2. Bird survey records

4.2.1. In total 71 species were recorded during the wintering bird survey between January, February, March 2020 across the site. Species recorded that are cited in European and UK legislation and are of conservation concern are detailed in Table 4-2. A breakdown of species and total individuals recorded per survey can be found in Annex B.

Table 4-2 Total species recorded which cited on European and UK legislation and of conservation concern.

Designation	Number of species
Wildlife and Countryside Act	6
Birds Directive	5
NERC	12
BoCC Red List	13
BoCC Amber List	15
LBAP	8
IUCN Red List	7

Survey one - January

4.2.2. Table 4-3 summarises the total number of species which are cited under legislation outlined in Chapter 1 (Introduction) (TR010039/APP/6.1). Some species are cited on multiple legislations. A total of 61 species were observed.

Table 4-3 Total species recorded which cited on European and UK legislation and of conservation concern.

Designation	Number of species
Wildlife and Countryside Act	5
Birds Directive	4
NERC	11
BoCC Red List	11
BoCC Amber List	11
LBAP	8
IUCN Red List	5

Survey two – February

4.2.3. Table 4-4 summarises the total number of species which are cited under legislation outlined in Chapter 1 (Introduction) (TR010039/APP/6.1). Some species are cited on multiple legislations. A total of 58 species were observed.

Table 4-4 Total species recorded which cited on European and UK legislation and of conservation concern.

Designation	Number of species
Wildlife and Countryside Act	4
Birds Directive	2
NERC	11
BoCC Red List	12
BoCC Amber List	11
LBAP	8
IUCN Red List	6

Survey three – March

4.2.4. Table 4-5 summarises the total number of species which are cited under legislation outlined in Chapter 1 (Introduction) (TR010039/APP/6.1). Some species are cited on multiple legislation. A total of 59 species were observed.

Table 4-5 Total species recorded which cited on European and UK legislation and of conservation concern.

Designation	Number of species
Wildlife and Countryside Act	3
Birds Directive	1
NERC	9
BoCC Red List	11
BoCC Amber List	12
LBAP	7
IUCN Red List	5

4.3. Disturbance events

4.3.1. Disturbance was recorded at numerous points during the bird survey. The main disturbance events include the following detailed in Table 4-6.

Table 4-6 Disturbance events

Activity	Time	Level of disturbance
Agricultural Operations	Occasional activities from ploughing, herbicide application, fertiliser application, reseeding, etc.	Negligible – mainly game birds moving between field boundaries.
Bird Scaring	Use of gas guns throughout the transect.	High – Large scale flushes of woodpigeons across the site. Passerines in cover crops also flushed.
Dog Walkers	Occasional chasing of flocks of birds, and alarm calls heard by birds on footpaths when dogs were present.	Low – alarm calls and low-level flushing from areas adjacent to footpaths.
Game Keeping	Shooting activities	Moderate – flocks of woodpigeons flushed by gunshots and game birds seen to flush.
Arboriculture Operation	Occasional chainsaw operations in woodland areas.	Low – mainly a reduction in bird activity including vocalising.
Boating	Occasional recreational boating activities on the River Nene	Low – birds in scrub on bankside reduced vocalisation
Fishing	Occasional recreational fishing on the River Nene	Low – in areas where fishing occurred there was a decrease activity of birds noted.

4.4. Survey constraints

4.4.1. There were no notable constraints during any of the three surveys.

5. Results

- 5.1.1. A total of 71 species were recorded within the Proposed Scheme boundary during the surveys. Of the 71 species, 13 are red-listed, 15 are amber-listed, seven on IUCN Red List, five are listed on WCA 1.1, four are listed on the Birds Directive and 11 are cited on the NERC Act.
- 5.1.2. Table 5-1 outlines the key species wintering on-site (cited on the Birds Directive Annex I, WCA Schedule One, the NERC Act, LBAP Birds of Conservation Concern and listed on IUCN). This information is displayed spatially in Appendix C. Full survey results are provided in Appendix B.

Table 5-1 Key species recorded, their designations, conservation status and total count per survey

Common name	Scientific name	Designation	Conservation status	Total individuals		
				Survey one	Survey two	Survey three
Barn Owl	<i>Tyto alba</i>	Bern, WCA 1	N/A	1	0	0
Black-headed Gull	<i>Chroicocephalus ridibundus</i>	Birds Dir 2.2	BoCC Amber	56	125	98
Bullfinch	<i>Pyrrhula pyrrhula</i>	NERC	BoCC Amber	1	4	0
Common Gull	<i>Larus canus</i>	Birds Dir 2.2	BoCC Amber	0	0	2
Coot	<i>Fulica atra</i>	Bonn, Birds Dir 2.1	IUCN NT	13	18	13
Dunnock	<i>Prunella modularis</i>	Bern, NERC	BoCC Amber	6	22	20
Fieldfare	<i>Turdus pilaris</i>	Birds Dir 2.2, WCA 1	BoCC Red	191	55	47
Gadwall	<i>Mareca strepera</i>	Bonn, Birds Dir 2.1	BoCC Amber	6	2	6
Golden Plover	<i>Pluvialis apricaria</i>	Bonn, Birds Dir 1, 2.2	N/A	30	0	80
Greylag Goose	<i>Anser anser</i>	Bonn, Birds Dir 2.1, WCA 1.2	BoCC Amber	0	0	14
Herring Gull	<i>Larus argentatus</i>	Birds Dir 2.2, NERC, LBAP	BoCC Red, IUCN NT	1	9	4
House Sparrow	<i>Passer domesticus</i>	NERC, LBAP	BoCC Red	25	31	25
Kingfisher	<i>Alcedo atthis</i>	Bern, Birds Dir 1, WCA 1	BoCC Amber, IUCN VU	0	1	0
Lapwing	<i>Vanellus vanellus</i>	Birds Dir 2.2, NERC, LBAP	BoCC Red, IUCN VU	2	7	0
Lesser Black-backed Gull	<i>Larus fuscus</i>	Birds Dir 2.2	BoCC Amber	1	5	2

Linnet	<i>Linaria cannabina</i>	Bern, NERC, LBAP	BoCC Red	27	6	3
Mallard	<i>Anas platyrhynchos</i>	Bonn, Birds Dir 2.1	BoCC Amber	36	34	36
Marsh Tit	<i>Poecile palustris</i>	NERC	BoCC Red	0	0	1
Meadow Pipit	<i>Anthus pratensis</i>	N/A	BoCC Amber, IUCN NT	16	6	1
Mistle Thrush	<i>Turdus viscivorus</i>	Birds Dir 2.2	BoCC Red	1	8	1
Mute Swan	<i>Cygnus olor</i>	Bonn, Birds Dir 2.2,	BoCC Amber	3	2	4
Oystercatcher	<i>Haematopus ostralegus</i>	Birds Dir 2.2	BoCC Amber, IUCN VU	0	0	2
Peregrine	<i>Falco peregrinus</i>	Bern, Bonn, Birds Dir 1, WCA 1	N/A	1	0	0
Red Kite	<i>Milvus milvus</i>	Bonn, Birds Dir 1, WCA 1	IUCN NT	11	13	15
Redwing	<i>Turdus iliacus</i>	Birds Dir 2.2, WCA 1	BoCC Red, IUCN NT	21	65	20
Reed Bunting	<i>Emberiza schoeniclus</i>	Bern, NERC, LBAP	BoCC Amber	5	7	2
Skylark	<i>Alauda arvensis</i>	Birds Dir 2.2, NERC, LBAP	BoCC Red	5	18	41
Song Thrush	<i>Turdus philomelos</i>	Birds Dir 2.2, NERC, LBAP	BoCC Red	21	27	20
Sparrowhawk	<i>Accipiter nisus</i>	Bonn, Birds Dir 1	N/A	3	0	0
Starling	<i>Sturnus vulgaris</i>	Birds Dir 2.2, NERC	BoCC Red	135	85	20
Stock Dove	<i>Columba oenas</i>	Birds Dir 2.2	BoCC Amber	6	3	30
Teal	<i>Anas crecca</i>	Bonn, Birds Dir 2.1	BoCC Amber	2	0	0
Woodcock	<i>Scolopax rusticola</i>	Birds Dir 2.1,	BoCC Red	0	1	0
Yellowhammer	<i>Emberiza citrinella</i>	Bern, NERC, LBAP	BoCC Red	1	8	1

Designation

Bern – Bern Convention (1982)

Bonn – Bonn Convention (1979)

WCA 1 – Wildlife and Countryside Act (1981) Schedule One

Birds Dir 1 – EC Directive on the Conservation of Wild Birds (791409/EEC) Annex I

NERC – Environment and Rural Communities Act (2006)

LBAP – Local Biodiversity Action Plan Species

Conservation Status

BoCC Red – Birds of Conservation Concern Red List

BoCC Amber - Birds of Conservation Concern Amber List

IUCN VU – IUCN Vulnerable Status (EU 27 Status)

IUCN NT – IUCN Near Threatened Status (EU 27 Status)

6. Assessment and mitigation

6.1. Bird assemblages

- 6.1.1. The overall assemblage of bird species recorded on-site was typical of the range of habitat which dominates the site including hedgerow, woodland, scrub habitat and agricultural habitat.
- 6.1.2. Fuller (1980) devised a standard where the importance of an area can be assessed by the number of bird species recorded (Table 3-1). The species list for the whole site was 71. This places the site within the range of regional importance.

6.2. Species value level

- 6.2.1. On comparing the wintering bird data obtained with national and county populations outlined by Musgrove *et al.* (2013) and in the Cambridgeshire Bird Report 2017 (Cambridgeshire Bird Club 2018) with the guidance on ecological impact assessment (Table 3-2), most of the species recorded are resident and regular wintering species within the region. At the species value level the site is considered to be of local conservation value.

6.3. Impact of habitat change or loss

- 6.3.1. The impact on wintering bird species across the site arising from the effects of the proposed works is based upon an understanding of each species individual requirements for winter foraging and roosting.
- 6.3.2. The species recorded on-site that are considered most sensitive to impacts from habitat change are species which are listed under Annex I of the Bird Directive, birds which are cited on the Birds of Conservation Concern Red and Amber list, those listed on IUCN Red List and those on the Local Biodiversity Action Plan. The habitat requirements, species status during the surveys nature conservation value and unmitigated impacts are summarised in Table 6-1.
- 6.3.3. It is considered that impacts to other species that are wintering on the site are expected to be no greater than those listed in Table 6-1.

Table 6-1 Habitat requirement and nature conservation value of important species cited on Birds Directive Annex I, WCA 1, NERC, LBAP, BoCC Red/Amber and IUCN species of wintering birds.

Species	Habitat requirement	Survey account	Nature conservation value	Unmitigated impacts
Barn Owl	Feeds along field edges, within rough grassland edges of watercourses and road verges. Feed mainly on small mammals	A single bird was flushed out small woodland at the east of the Proposed Scheme at TL100994	Local	Loss of foraging habitat and roosting habitat. Increase in potential road casualties.
Black-headed Gull	Highly gregarious in winter both when feeding and roosting. Commonly feeds on worms, insects, fish and carrion both on agricultural land and wetland habitats during the winter months.	Birds were recorded in open habitat across the site during all three surveys.	Local	Loss or arable land and wetland habitat across site would reduce foraging habitat.
Bullfinch	Winters mainly in broad-leaved woodland, but also common in dense hedgerow and thickets. Adult birds are herbivores although invertebrates are important for fledglings.	Bird were recorded on survey one and two in suitable foraging habitat	Local	Loss of hedgerow sections and scrub habitat within the site which currently offers foraging habitat.
Common Gull	Widespread across agriculture, urban parkland and wetland habitats during winter months. Main food source is invertebrates with some fish.	Two bird were recorded during survey three.	Local	Loss or arable land and wetland habitat across site would reduce foraging habitat.
Dunnock	Commonly occupies a wide variety of scrub grown situations. Has adapted to field hedgerows, farms, railway embankments, parks, gardens and vacant urban land. Feeds mainly on insects but small seeds are an important winter food.	Birds were recorded throughout the site during all three surveys	Local	Loss of hedgerow and scrub areas within the site which currently offers foraging and roosting habitat. Loss of arable land would reduce suitable foraging habitat.

Species	Habitat requirement	Survey account	Nature conservation value	Unmitigated impacts
Fieldfare	Found in both arable and grassland agricultural land, hedges and trees. Can also utilise urban areas feeding on ornamental berry trees. Feeds mainly on insects, worms and berries.	Large flocks were present feeding in agricultural fields during survey one and two. Numbers decreased by 50% during surveys three and four.	Local	Loss of hedgerow and scrub areas within the site which currently offers foraging and roosting habitat. Loss of arable land would reduce suitable foraging habitat
Gadwall	Found in marshy habitats or ponds feeding mainly on aquatic vegetation.	Birds were seen on each survey on the pond within sacrewell farm		
Golden Plover	In winter months feeds in lowland fields eating worms, beetles and insects.	Flocks were seen in survey one and survey three.	Local	Loss of arable land and wetland habitat across site would reduce foraging habitat.
Greylag Goose	Commonly found in lowland areas, in agricultural grass fields, wetland habitats and suburban parks and lakes. Feeds mainly on plant material, incl. roots, tubers, shoots, leaves.	14 birds were recorded during survey three	Local	Removal of wetland area and short grassland would reduce wintering and foraging habitat.
Herring Gull	Commonly found across countryside and urban areas, feeding on open fields, wetlands, lakes and parkland. Varied diet of carrion, seeds, fruits, birds, small mammals, insects and fish.	Small numbers were recorded on each survey.	Local	Loss of arable land and wetland habitat across site would reduce foraging habitat.
House Sparrow	Often associated with humans and will typically avoid dense vegetation. Usually, avoid arable crops and areas lacking in shrubs and trees other than during feeding.	Birds were recorded in good numbers across the site on all four surveys.	Local	Loss of scrub and hedgerow habitat across the site which currently offers roosting habitat.
Kingfisher	Often inhabit slow-moving, shallow rivers or streams	A single bird was recorded on the River Nene on survey two	Local	Pollution of water course would result in reduction in fish.

Species	Habitat requirement	Survey account	Nature conservation value	Unmitigated impacts
	which are clean enough to support abundant small fish.			
Lapwing	Often found on moist open lowland ground. Often associates with farmland preferring spring-sown crops. Feeds on worms and invertebrates	Bird were recorded in grassland fields and the quarry to the west of the Proposed Scheme during survey one and two.	Local	Loss of arable land and wetland habitat across the site would reduce foraging habitat.
Lesser Black-backed Gull	Increasingly common in urban habitats and also found in open countryside feeding in fields and wetland habitats. They are omnivorous and have a varied diet.	Small numbers recorded on all four surveys	Local	Loss of arable land and wetland habitat across site would reduce foraging habitat.
Linnet	Found in various habitats such as open countryside, heathland, rough ground, farmland hedge, saltmarshes and parks and gardens. Feeding mainly on seeds and insects.	A large flock was recorded during survey one, with numbers dropping during survey two and three.	Local	Removal of scrub & hedgerows would reduce roosting habitat across the site. The loss of arable land would reduce foraging habitat.
Mallard	Commonly found in suitable wetland habitats and urban areas such as parks.	Birds were recorded on all three surveys. Common present on the pond at Sacrewell Farm and Stibbington Pits and fishing lakes.	Local	Loss of wetland areas across the site would reduce foraging habitat.
Marsh Tit	Found mainly in broadleaved woodland also copses, parks and gardens. Feeds mainly on insects and seeds	A single bird was heard calling during survey three.	Local	Removal of woodland and scrub would reduce foraging habitat.
Meadow Pipit	Feeds in open habitats, either uncultivated or low-intensity agriculture and moorland, but also occurs in low numbers in arable croplands. Feeds mostly on	Number peaked at 16 on survey one and dropped to six at survey two and a single bird during survey three.	Local	Removal of grassland and agricultural areas would reduce suitable roosting and foraging habitat.

Species	Habitat requirement	Survey account	Nature conservation value	Unmitigated impacts
	insects with some seeds in the winter months.			
Mistle Thrush	Commonly found in woodland and woodland edge, farmland, parkland and gardens. Diet consists mainly of invertebrates, with berries in autumn and winter.	Birds were recorded in suitable habitat on all three surveys	Local	Loss of woodland edge and parkland would reduce roosting and foraging habitat.
Mute Swan	Can be found in a wide range of wetland habitats ranging from urban parks to rivers, lakes and reservoirs. Feeds mainly on aquatic vegetation, amphibians, invertebrates and molluscs.	Birds were recorded on all three surveys on both Sacrewell Farm pond, Stibbingtons Pits and the fishing lakes.	Local	Loss of wetland areas across the site would reduce foraging habitat.
Oystercatcher	Can be found in wetland habitats, open grassland areas and occasionally in arable fields. Feeds mainly on worms when in inland habitats.	Two birds were recorded during survey three. These could be breeding birds returning inland after spending the winter of the coast.		
Peregrine	In winter birds often move from the coastal areas to open grassland and marshland. They also are becoming more regular to suburban areas. They mainly eat Medium-sized birds, such as wading birds, pigeons and small ducks.	A single bird was recorded flying north over Sacrewell Farm during survey one.	Local	Loss of foraging habitat across the site and removal of hedgerows which contain prey.
Red Kite	Found near woodlands and in open rural areas. Feeds mainly on carrion and worms but can take small mammals.	Present in good number on all three surveys.	Local/national	Loss of woodland habitats would reduce roosting habitats. Loss of open agricultural habitat would reduce foraging.

Species	Habitat requirement	Survey account	Nature conservation value	Unmitigated impacts
Redwing	Found in both arable and grassland agricultural land, hedges and trees. Can also utilise urban areas feeding on ornamental berry trees. Feeds mainly on insects, worms and berries.	Flocks of redwing were present during survey one and two and three, often associating with flocks of fieldfare feeding on open agricultural habitat.	Local	Loss of hedgerow and scrub areas within the site which currently offers foraging and roosting habitat. Loss of arable land would reduce suitable foraging habitat
Reed Bunting	Found mainly in farmland and wetland habitats including ditch edges, and crops set aside. Young are fed solely on invertebrates until they fledge. During winter birds feed mainly on seed.	Bird were recorded in suitable habitat on all three surveys	Local	Loss of hedgerow habitat would reduce roosting habitat and the loss of arable land would remove foraging habitat.
Skylark	Species that prefer open farmland habitats where short, sparse vegetation provides cover and foraging habitat. Feeds on plant and animal products with insects being especially important in the summer.	Birds were recorded during all three surveys feeding in the open agricultural grass fields.	Local	Loss of arable areas where species are currently feeding over winter.
Song Thrush	Often associated with thick hedgerows, native woodland and damp ground, including grazed pasture. Main food source is worms and snails when insect larvae and berry crops are not available.	Birds were recorded across the site during both survey one two and three.	Local	Loss of hedgerows across site which currently offers roosting and foraging habitat.
Sparrowhawk	Found in woodland habitats near open fields and can also be seen in suburban areas hunting around gardens. Mainly feed on birds.	Three birds were recorded during survey one. Based on the distribution of the sighting, it is presumed three separate birds.	Local	Loss of woodland habitat, hedgerows and farmland would reduce the feeding availability for this species.

Species	Habitat requirement	Survey account	Nature conservation value	Unmitigated impacts
Starling	Found in wide ranging habitats from open countryside, suburban areas such as gardens and parkland and saltmarsh. Feeds mainly on invertebrates and fruit.	Flocks of birds were recorded on all three surveys.	Local	Loss of foraging habitat across the site and removal of trees with suitable roosting cavities.
Stock Dove	In winter small flocks form to feed in agricultural areas, mainly where arable stubble and cover crops remain where they feed mainly on seeds.	Birds were recorded feeding on agricultural fields on all three surveys.	Local	Loss of foraging habitat across the site.
Teal	In winter birds congregate in low-lying wetlands habitats including ponds, marshland and saltmarsh habitats.	Two birds were recorded during survey one.	Local	Loss of wetland areas across the site would reduce foraging habitat.
Woodcock	Found mainly in deciduous and mixed woodland and young conifer plantations where it feeds and rests amongst the leaf litter or bracken. Feeds mainly on worms, beetles, spiders, caterpillars, fly larvae and small snails.	A single bird was flushed during survey two	Local	The loss of woodland habitat would reduce suitable wintering habitat for this species.
Yellowhammer	Traditionally based on edges of open areas or forest and scrub. Found wintering extensively across cultivated land with hedges and plantations. Feeds mainly on seeds, with an increase in invertebrates during the summer.	Present on all three surveys in small numbers.	Local	The loss of arable fields would greatly reduce the foraging opportunities. Removal of hedgerows would also reduce the roosting habitat.

6.4. Construction impacts

- 6.4.1. Construction operations are likely to disturb bird species of nature conservation interest using the site for roosting and foraging. The construction of the new road would result in land-take, fragmentation and general habitat loss.
- 6.4.2. The loss of some habitats during the construction phase cannot be mitigated and therefore, it is highly likely that birds currently using the site would move away to find alternative suitable winter feeding grounds.
- 6.4.3. Hedgerows are also likely to be removed, increasing the fragmentation of corridors across the site. This would be unfavourable to many bird species recorded and would likely see a reduction in hedgerow species during the construction phase of the project.
- 6.4.4. Visual and noise disturbance from machinery required during the construction phase would likely lead to desertion or avoidance of the area by wintering bird species.

6.5. Operational impacts

- 6.5.1. Birds are generally considered likely to be affected by an increase in traffic and can be particularly susceptible to noise from a new road.
- 6.5.2. Post-construction monitoring of the site should be undertaken to establish if there has been any increase in road casualties as a result of the proposed works. A wintering bird survey replicating this survey methodology is recommended to establish whether there has been a reduction in population size from the works. If a reduction is observed, further mitigation would be required.

6.6. Mitigation measures

- 6.6.1. The following mitigation measures are suggested.
 - Areas across the site that require vegetation clearance during the winter months should be staggered to allow the natural food resources to be consumed by the birds remaining on-site.
 - To prevent disturbance to off-site habitats, areas around the Proposed Scheme boundary should be buffered where possible using retained hedgerows or artificial screening to reduce visual disturbance.
 - Where fragmentation of hedgerows occurs, movable screens should be placed across the gaps created where possible to allow birds to continue using the hedgerow as a corridor without disturbance.
 - Site compounds should be screened off from the surrounding habitat to reduce visual disturbance.

6.6.2. It is important that the hedgerows, scrub and standard trees are retained and managed for their value to birds and other wildlife.

6.7. Mitigation and conservation compensation

6.7.1. To ensure biodiversity is retained, protected and enhanced within the development, resulting in a net gain for wintering birds, the following is suggested:

- Hedgerow gaps are to be infilled with at least double hedge planting, ideally triple.
- Ensure all trees around the site are protected and retained where possible and any trees are afforded a root protection zone.
- Native planting should be encouraged to attract invertebrates and berry-rich species should be planted away from the new road in the hedgerow and scrub replanting plans.
- Wetlands should be suitably replanted with reeds to help increase populations of invertebrates.
- Areas of grassland should be allowed to be unmanaged, to enable the establishment of rough grassland habitats which will increase both invertebrate and small mammal populations.
- Areas of set aside should be allowed along the Proposed Scheme boundary hedgerows and sown with seed rich plant species to provide suitable foraging for wintering birds to promote species moving back into the site after works have completed.

6.8. Further surveys

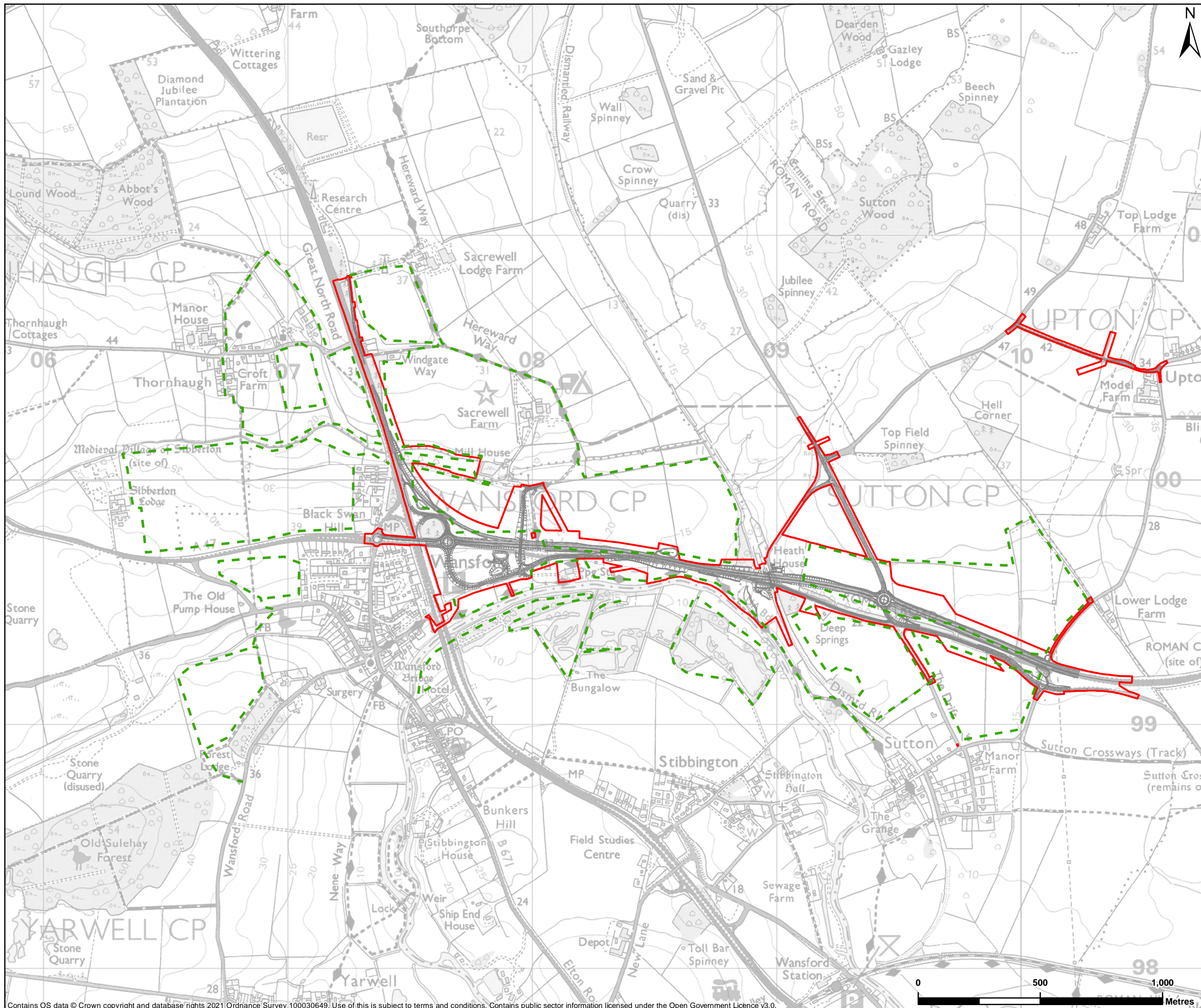
6.8.1. As there were records of active barn owl roosts and potential nest sites, a comprehensive barn owl survey should be undertaken to gather information on the location of wintering roosts.

7. References

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Annex A. Transect Route



LEGEND	
	Proposed Scheme Boundary
	Proposed Scheme Design
	Survey transect



REV	DATE	REVISION NOTE	AC	RMC	IC
P01	18/05/2021	FIRST EDITION			

DESIGNER

CONTRACTOR

CLIENT

PROJECT TITLE
A47 WANSFORD TO SUTTON

PROJECT STAGE
PCF STAGE 3

DRAWING TITLE
ANNEX A: TRANSECT ROUTE
 TR010039/APP/6.2

SUITABILITY
FOR INFORMATION

SHEET SIZE	SCALE	STATUS
A3	1:15,000	S2

DRAWING NUMBER
HE551494-GTY-EGN-000-DR-GI-30097

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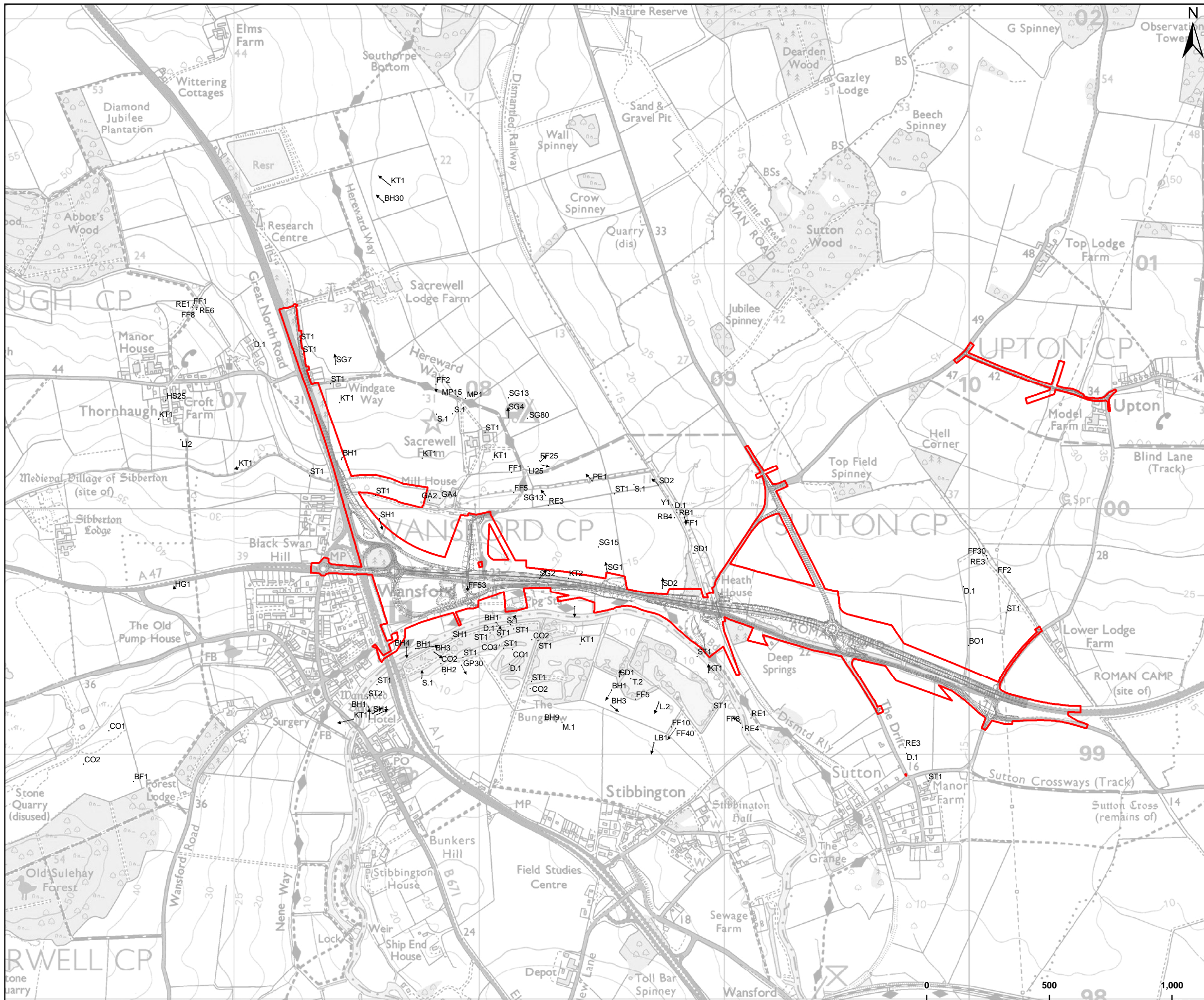
Annex B. Full wintering bird data

Common Name	Scientific Name	Designation	Conservation Status	Total individuals		
				Survey one	Survey two	Survey three
Barn Owl	<i>Tyto alba</i>	Bern, WCA 1	N/A	1	0	0
Blackbird	<i>Turdus merula</i>	Birds Dir 2.2	N/A	55	66	61
Black-headed Gull	<i>Chroicocephalus ridibundus</i>	Birds Dir 2.2	BoCC Amber	56	125	98
Blue Tit	<i>Cyanistes caeruleus</i>	N/A	N/A	58	82	135
Bullfinch	<i>Pyrrhula pyrrhula</i>	NERC, UKBAP	BoCC Amber	1	4	0
Buzzard	<i>Buteo buteo</i>	Bonn	N/A	6	12	14
Canada Goose	<i>Branta canadensis</i>	Birds Dir 2.1	N/A	4	0	11
Carrion Crow	<i>Corvus corone</i>	Birds Dir 2.2	N/A	193	92	92
Cetti's Warbler	<i>Cettia cetti</i>	UKBAP	N/A	0	0	2
Chaffinch	<i>Fringilla coelebs</i>	N/A	N/A	24	20	20
Chiffchaff	<i>Phylloscopus collybita</i>	N/A	N/A	2	1	14
Coal Tit	<i>Parus ater</i>	N/A	N/A	1	2	1
Collared Dove	<i>Streptopelia decaocto</i>	Birds Dir 2.2	N/A	4	12	0
Common Gull	<i>Larus canus</i>	Birds Dir 2.2	BoCC Amber	0	0	2
Coot	<i>Fulica atra</i>	Bonn, Birds Dir 2.1	IUCN NT	13	18	13
Cormorant	<i>Phalacrocorax carbo</i>	N/A	N/A	1	8	5
Duncock	<i>Prunella modularis</i>	Bern, NERC, UKBAP	BoCC Amber	6	22	20
Fieldfare	<i>Turdus pilaris</i>	Birds Dir 2.2, WCA 1	BoCC Red, IUCN LC	191	55	47
Gadwall	<i>Mareca strepera</i>	Bonn, Birds Dir 2.1	BoCC Amber	6	2	6
Goldcrest	<i>Regulus regulus</i>	N/A	IUCN LC	6	5	10
Golden Plover	<i>Pluvialis apricaria</i>	Bonn, Birds Dir 1, 2.2	N/A	30	0	80
Goldfinch	<i>Carduelis carduelis</i>	Bern	N/A	85	37	36
Great Spotted Woodpecker	<i>Dendrocopos major</i>	Bern	N/A	2	3	2
Great Tit	<i>Parus major</i>	N/A	N/A	52	56	25
Green Woodpecker	<i>Picus viridis</i>	Bern	N/A	4	10	7
Greenfinch	<i>Chloris chloris</i>	Bern	N/A	2	2	5
Grey Heron	<i>Ardea cinerea</i>	N/A	N/A	1	3	3

Common Name	Scientific Name	Designation	Conservation Status	Total individuals		
				Survey one	Survey two	Survey three
Greylag Goose	<i>Anser anser</i>	Bonn, Birds Dir 2.1, WCA 1.2	BoCC Amber	0	0	14
Herring Gull	<i>Larus argentatus</i>	Birds Dir 2.2, NERC, UKBAP	BoCC Red, IUCN NT	1	9	4
House Sparrow	<i>Passer domesticus</i>	NERC, UKBAP	BoCC Red	25	31	25
Jackdaw	<i>Coloeus monedula</i>	Birds Dir 2.2	N/A	76	171	87
Jay	<i>Garrulus glandarius</i>	Birds Dir 2.2	N/A	0	0	2
Kestrel	<i>Falco tinnunculus</i>	N/A	N/A	4	4	5
Kingfisher	<i>Alcedo atthis</i>	Bern, Birds Dir 1, WCA 1	BoCC Amber, IUCN VU	0	1	0
Lapwing	<i>Vanellus vanellus</i>	Birds Dir 2.2, NERC, UKBAP	BoCC Red, IUCN VU	2	7	0
Lesser Black-backed Gull	<i>Larus fuscus</i>	Birds Dir 2.2	BoCC Amber	1	5	2
Linnet	<i>Linaria cannabina</i>	Bern, NERC, UKBAP	BoCC Red	27	6	3
Little Grebe	<i>Tachybaptus ruficollis</i>	Bern	N/A	2	0	2
Long-tailed Tit	<i>Aegithalos caudatus</i>	N/A	N/A	34	26	33
Magpie	<i>Pica pica</i>	Birds Dir 2.2	N/A	17	23	21
Mallard	<i>Anas platyrhynchos</i>	Bonn, Birds Dir 2.1	BoCC Amber	36	34	36
Mandarin Duck	<i>Aix galericulata</i>	N/A	N/A	0	2	2
Marsh Tit	<i>Poecile palustris</i>	NERC, UKBAP	BoCC Red	0	0	1
Meadow Pipit	<i>Anthus pratensis</i>	N/A	BoCC Amber, IUCN NT	16	6	1
Mistle Thrush	<i>Turdus viscivorus</i>	Birds Dir 2.2	BoCC Red	1	8	1
Moorhen	<i>Gallinula chloropus</i>	Birds Dir 2.2	N/A	5	4	6
Mute Swan	<i>Cygnus olor</i>	Bonn, Birds Dir 2.2,	BoCC Amber	3	2	4
Nuthatch	<i>Sitta europaea</i>	N/A	N/A	1	2	0
Oystercatcher	<i>Haematopus ostralegus</i>	Birds Dir 2.2	BoCC Amber	0	0	2
Peregrine	<i>Falco peregrinus</i>	Bern, Bonn, Birds Dir 1, WCA 1	N/A	1	0	0

Common Name	Scientific Name	Designation	Conservation Status	Total individuals		
				Survey one	Survey two	Survey three
Pheasant	<i>Phasianus colchicus</i>	Birds Dir 2.1	N/A	17	13	6
Pied Wagtail	<i>Motacilla alba</i>	Bern	N/A	34	1	11
Red Kite	<i>Milvus milvus</i>	Bonn, Birds Dir 1, WCA 1	IUCN NT	11	13	15
Red-legged Partridge	<i>Alectoris rufa</i>	Birds Dir 2.1	N/A	3	1	8
Redwing	<i>Turdus iliacus</i>	Birds Dir 2.2, WCA 1	BoCC Red, IUCN NT	21	65	20
Reed Bunting	<i>Emberiza schoeniclus</i>	Bern, NERC, UKBAP	BoCC Amber	5	7	2
Robin	<i>Erithacus rubecula</i>	Bern	N/A	47	42	66
Rook	<i>Corvus frugilegus</i>	Birds Dir 2.2	N/A	178	306	218
Siskin	<i>Spinus spinus</i>	Bern	N/A	0	1	0
Skylark	<i>Alauda arvensis</i>	Birds Dir 2.2, NERC, UKBAP	BoCC Red	5	18	41
Song Thrush	<i>Turdus philomelos</i>	Birds Dir 2.2, NERC, UKBAP	BoCC Red	21	27	20
Sparrowhawk	<i>Accipiter nisus</i>	Bonn, Birds Dir 1	N/A	3	0	0
Starling	<i>Sturnus vulgaris</i>	Birds Dir 2.2, NERC, UKBAP	BoCC Red	135	85	20
Stock Dove	<i>Columba oenas</i>	Birds Dir 2.2	BoCC Amber	6	3	30
Teal	<i>Anas crecca</i>	Bonn, Birds Dir 2.1	BoCC Amber	2	0	0
Treecreeper	<i>Certhia familiaris</i>	N/A	N/A	5	3	4
Tufted Duck	<i>Aythya fuligula</i>	Bonn, Birds Dir 2.1	N/A	15	1	0
Woodcock	<i>Scolopax rusticola</i>	Birds Dir 2.1,	BoCC Red	0	1	0
Woodpigeon	<i>Columba palumbus</i>	Birds Dir 2.1	N/A	440	402	604
Wren	<i>Troglodytes troglodytes</i>	Bern	N/A	16	13	30
Yellowhammer	<i>Emberiza citrinella</i>	Bern, NERC, UKBAP	BoCC Red	1	8	1

Annex C. Distribution map of key species



LEGEND

Proposed Scheme Boundary

— Proposed Scheme Design

Bird Activity

- on Adult Sitting
- * Aggressive Encounter
- ≡ Alarm Calls
- Calling
- food Carrying Food
- mat Carrying Nest Mat
- In Song
- * Occupied Nest
- Occupied Nest -Provided
- ➔ Flight Path

Sex

- ♀ Female
- ♂ Male



P01	14/05/2021	FIRST EDITION	AC	RMC	IC
REV	DATE	REVISION NOTE	ORG	CHKD	APPD

DESIGNER

SWECO

CONTRACTOR

GallifordTry

CLIENT

**highways
england**

PROJECT TITLE

A47 WANSFORD TO SUTTON

PROJECT STAGE

PCF STAGE 3

DRAWING TITLE

ANNEX C: DISTRIBUTION MAP OF KEY SPECIES
- JANUARY
TR010039/APP/6.2

SUITABILITY

FOR INFORMATION

SHEET SIZE	SCALE	STATUS
A3	1:15,000	S2

DRAWING NUMBER

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