

A47/A11 Thickthorn Junction

Scheme Number: TR010037

Volume 6

6.3 Environmental Statement Appendices **Appendix 8.7 – Wintering Bird Survey Report**

APFP Regulation 5(2)(a)

Planning Act 2008

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

December 2021

Infrastructure Planning

Planning Act 2008

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

The A47/A11 Thickthorn Junction
Development Consent Order 202[x]

ENVIRONMENTAL STATEMENT APPENDICES
Appendix 8.7 – Wintering Bird Survey Report

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1. Introduction

1.1. Background

1.1.1. In January 2019, Sweco completed wintering bird surveys on the site known as A47/A11 Thickthorn Junction (the Proposed Scheme). This is to inform the Environmental Statement (ES) Chapter 8, Biodiversity for the Proposed Scheme.

1.1.2. The Proposed Scheme improvements will:

- improve accessibility to and around the region, reducing congestion and delays so encouraging more reliable journey times
- improve safety performance for all transport users, cyclists, horse riders and pedestrians - contributing to a 40% reduction target in accidents across Highways England's roads over the implemented schemes' first five years
- provide alternative access to local roads
- protect the environment by minimising adverse impacts and, where possible, deliver benefits. Improve the environmental impact of traffic along the A47 route, particularly for the communities in the six scheme areas
- support economic growth in the Peterborough, Cambridge, Norwich and Great Yarmouth areas, improving overall road capacity

1.1.3. The report details the results of the wintering bird surveys undertaken at A47/A11 Thickthorn Junction in January, February, November and December 2019.

1.1.4. This baseline report provides a summary of the results of the surveys carried out, the impacts of the proposed development and proposals for mitigation which are addressed in chapter six.

1.2. Scheme description and location

1.2.1. A47/A11 Thickthorn Junction is located on the south-western edge of Norwich, at national grid reference TG 18424 05483, and provides access to the A47 via the A11 for Eaton, Cringleford, Hethersett and Wymondham. The A47 connects Norwich with Great Yarmouth to the east and Peterborough to the west via King's Lynn and Wisbech. The A11 is the main route connecting Norwich with Thetford, Cambridge and London (via the M11 and A14).

1.2.2. It is proposed to create a connector road between the A11 and A47. A one way A11 south to A47 east free-flow link with the provision of a segregated left turn between the A47 east and A11 south in the reciprocal direction is proposed to re-route strategic traffic away from the existing junction. The Scheme is proposed to create a new link road between Cantley Lane south and the B1172

Norwich Road and construct a new Cantley Lane Footbridge (Cringleford), two new overbridges and two new underpasses. A detailed description of the Proposed Scheme is provided in ES Chapter 2, The Proposed Scheme (TR010037/APP/6.1) (APP-039).

1.3. Aims and objectives

1.3.1. The wintering bird surveys aim 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, 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)

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

Construction:

- habitat loss (direct impact)
- disturbance of construction i.e. noise & visual disturbance (indirect impact)

Operation:

- mortality of wintering birds e.g. traffic collisions (direct impact)
- reduced population size & breeding 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 seven.

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 is 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.
- 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 which 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.

UK Biodiversity Action Plan (UKBAP)

1.4.9. The UK Post 2010 Biodiversity Framework (2012) has now succeeded the UK Biodiversity Action Plan (UKBAP) (2007). Much of the work previously carried out by the UKBAP is now focussed at the country level. The UKBAP lists of priority species and habitats remain important and have been used to draw up the statutory lists of species of principal importance for the conservation of biodiversity in England and Scotland under the Natural Environment and Rural Communities Act (2006). The UK Biodiversity Action Plan (UKBAP) (2007) lists 59 bird species as priority species requiring conservation action, and consequently action plans have been developed for the conservation of these species.

Local Biodiversity Action Plan (LBAP)

1.4.10. Norfolk Biodiversity Partnership lists 16 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 (NPS NN)

1.4.11. The NPS NN 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 NPS NN 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. Conservation status and guidance

Birds of Conservation Concern

1.4.12. 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 Isle of Man, and updates 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), rare breeders, internationally important and localised species and those of unfavourable conservation status in Europe.

The IUCN Red List of Threatened Species

1.4.13. 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. Previous wintering bird surveys have been completed and the findings of these reports are summarised below. 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. Wintering bird surveys were undertaken twice a month between January and March 2017. On each visit, the ornithologist walked a fixed transect route, recording their observations following standard methods of 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. The surveys recorded 46 species in total across the survey area at A47/A11 Thickthorn Junction (Table 2-1). Of these, one was cited on the Wildlife and Countryside Act (1981), Schedule 1, five species cited on NERC schedule 41, nine were BoCC red list and eight were BoCC amber list.

Table 2-1 All species recorded on the 2017 wintering bird survey

BTO Code	Common Name	Scientific Name	Designation and Conservation Status
B	Blackbird	<i>Turdus merula</i>	Birds Dir 2.2
BH	Black-headed Gull	<i>Chroicocephalus ridibundus</i>	Birds Dir 2.2, BoCC Amber
BT	Blue Tit	<i>Cyanistes caeruleus</i>	N/A
BF	Bullfinch	<i>Pyrrhula pyrrhula</i>	NERC, BoCC Amber
BZ	Buzzard	<i>Buteo buteo</i>	Bonn
GR	Greenfinch	<i>Chloris chloris</i>	Bern
C	Carrion Crow	<i>Corvus corone</i>	Birds Dir 2.2
CH	Chaffinch	<i>Fringilla coelebs</i>	N/A

BTO Code	Common Name	Scientific Name	Designation and Conservation Status
CT	Coal Tit	<i>Parus ater</i>	N/A
CD	Collared Dove	<i>Streptopelia decaocto</i>	Birds Dir 2.2
CM	Common Gull	<i>Larus canus</i>	Birds Dir 2.2, BoCC Amber
T	Teal	<i>Anas crecca</i>	Bonn, Birds Dir 2.1, BoCC Amber
FF	Fieldfare	<i>Turdus pilaris</i>	Birds Dir 2.2, WCA 1, BoCC Red, IUCN LC
GT	Great Tit	<i>Parus major</i>	N/A
D	Dunnock	<i>Prunella modularis</i>	Bern, NERC, BoCC Amber
G	Green Woodpecker	<i>Picus viridis</i>	Bern
GC	Goldcrest	<i>Regulus regulus</i>	IUCN NT
GO	Goldfinch	<i>Carduelis carduelis</i>	Bern
GT	Great Tit	<i>Parus major</i>	N/A
GR	Greenfinch	<i>Chloris chloris</i>	Bern
GL	Grey Wagtail	<i>Motacilla cinerea</i>	Bern, BoCC Red
HG	Herring Gull	<i>Larus argentatus</i>	Birds Dir 2.2, NERC, BoCC Red, IUCN NT
HS	House Sparrow	<i>Passer domesticus</i>	NERC, BoCC Red
J	Jay	<i>Garrulus glandarius</i>	Birds Dir 2.2
JD	Jackdaw	<i>Coloeus monedula</i>	Birds Dir 2.2
K	Kestrel	<i>Falco tinnunculus</i>	N/A
LT	Long-tailed Tit	<i>Aegithalos caudatus</i>	N/A
ET	Little Egret	<i>Egretta garzetta</i>	Bern, Birds Dir 1
MG	Magpie	<i>Pica pica</i>	Birds Dir 2.2
MA	Mallard	<i>Anas platyrhynchos</i>	Bonn, Birds Dir 2.1, BoCC Amber
MP	Meadow Pipit	<i>Anthus pratensis</i>	BoCC Amber, IUCN NT
M	Mistle Thrush	<i>Turdus viscivorus</i>	Birds Dir 2.2, BoCC Red
MH	Moorhen	<i>Gallinula chloropus</i>	Birds Dir 2.2
NH	Nuthatch	<i>Sitta europaea</i>	N/A
PH	Pheasant	<i>Phasianus colchicus</i>	Birds Dir 2.1
PW	Pied Wagtail	<i>Motacilla alba</i>	Bern
R	Robin	<i>Erithacus rubecula</i>	Bern
RE	Redwing	<i>Turdus iliacus</i>	Birds Dir 2.2, WCA 1, BoCC Red, IUCN NT
RO	Rook	<i>Corvus frugilegus</i>	Birds Dir 2.2
S	Skylark	<i>Alauda arvensis</i>	Birds Dir 2.2, NERC, LBAP, BoCC Red
SH	Sparrowhawk	<i>Accipiter nisus</i>	Bonn, Birds Dir 1
ST	Song Thrush	<i>Turdus philomelos</i>	Birds Dir 2.2, NERC, LBAP, BoCC Red
SD	Stock Dove	<i>Columba oenas</i>	Birds Dir 2.2, BoCC Amber
WK	Woodcock	<i>Scolopax rusticola</i>	Birds Dir 2.1, BoCC Red
WP	Woodpigeon	<i>Columba palumbus</i>	Birds Dir 2.1
WR	Wren	<i>Troglodytes troglodytes</i>	Bern

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 LC – IUCN Least Concern Status (European Status)

2.3. Designated sites

2.3.1. A MAGIC search was undertaken for all statutory and non-statutory protected sites within 500m buffer of the existing A47/A11 Thickthorn Junction site.

2.3.2. No designated sites were identified within this buffer zone. The closest designated site outside this buffer zone was Easton Common and Easton Marsh (both Local Nature Reserve) more than 1km east of the proposed works.

2.4. Data search

2.4.1. A data search from the National Biodiversity Network (NBN) Atlas returned 234 bird records within 1km of the proposed new Thickthorn Junction, however, due to licence restrictions, not all these records can be reported for commercial purposes.

2.4.2. NBN Atlas record sources under the following licences were used:

- Open Government Licence (OGL)
- Creative Commons Licence with Attribution (CC-BY)

2.4.3. A total of 14 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 Records	Latest Sighting	Designation and Conservation Value
Blackbird	<i>Turdus merula</i>	2	2009	N/A
Blue Tit	<i>Cyanistes caeruleus</i>	1	2009	N/A
Chaffinch	<i>Fringilla coelebs</i>	1	2009	N/A
Coal Tit	<i>Parus ater</i>	1	2009	N/A
Firecrest	<i>Regulus ignicapilla</i>	1	2003	WCA 1
Goldfinch	<i>Carduelis carduelis</i>	1	2009	Bern
Great Tit	<i>Parus major</i>	1	2009	N/A
Long-tailed Tit	<i>Aegithalos caudatus</i>	1	2009	N/A

Common Name	Scientific Name	Number of Records	Latest Sighting	Designation and Conservation Value
Marsh Tit	<i>Poecile palustris</i>	1	2004	NERC, BoCC Red
Robin	<i>Erithacus rubecula</i>	1	2009	Bern
Song Thrush	<i>Turdus philomelos</i>	1	2009	NERC, LBAP BoCC Red
Spotted Flycatcher	<i>Muscicapa striata</i>	1	2003	NERC, LBAP, BoCC Red
Woodpigeon	<i>Columba palumbus</i>	1	2009	N/A

Bern – Bern Convention (1982)

Birds Dir 2.1 – EC Directive on the Conservation of Wild Birds (791409/EEC)

LBAP – Local Biodiversity 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)

3. Methodology

- 3.1.1. The site was visited on four occasions throughout the wintering bird season (January, February, November and December 2019). 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 areas importance in value can be determined by several factors including geographical location, diversity of habitats present and size. Fuller (1980) detail the diversity of criteria, for bird species diversity, as shown in the table 3-1.

Table 3-1 Bird species diversity criteria: The importance of an area based on the number of bird species recorded (Fuller 1980)¹

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

- 3.1.4. Fuller’s criteria, plus 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, counts which are at the upper limits of each criteria should be considered using professional judgement whether it will need upgrading into the lower limits of the next highest criteria.
- 3.1.6. The conservation value of individual species can be measured by two separate approaches: nature conservation value and conservation status. The Chartered

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

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 occurs 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 occurs 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 UK BAP List of Priority Species.</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>

Species Value	Selection Criteria
	<p>Species present in numbers just short of county importance.</p> <p>Sustainable populations of species which are rare or scarce within the locality.</p> <p>A site whose designation falls just short for inclusion for 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 Communities (NERC) Act (2006) which are not covered above, regularly occurring in locally sustainable populations.</p>
Site	<p>All other BoCC green-listed, common and widespread species.</p>

3.2. Pre-survey constraints

- 3.2.1. The pre-designed survey transects followed the wintering bird survey transects undertaken in 2017.
- 3.2.2. The transects were accessed through private property after permission was granted and where possible access was along 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 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 red line boundary or development proposals which this report was based upon.

4. Field survey

4.1.1. The field surveys were undertaken during the wintering bird season (January, February, November and December 2019) inclusive. All surveys were led by a specialist ornithological ecologist and assisted by fellow members of the ecology team.

4.2. Survey data and conditions

Table 4-1 Date and weather conditions of each survey

Survey Number	Date	Weather Conditions
Survey One – January 2019	24	Sunny start with scattered cloud later in the day. Temperature -2 – 2°C. Wind SW1
Survey Two – February 2019	20	Sunny with scattered cloud. Temperature 7-11°C. Wind SW3
Survey Three – November 2019	25	Cloudy. Temperature 9°C. Wind SW1
Survey Four – December 2019	20	Cloudy with light rain, Temperature 12°C. Wind W1

4.3. Bird survey records

4.3.1. In total 42 species were recorded during the wintering bird survey across the site. 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	1
Birds Directive	2
NERC	8
BoCC Red List	9
BoCC Amber List	6
LBAP	2
IUCN	4

4.4. Survey one – January 2019

4.4.1. Table 4-3 summarises the total number of species which are cited under legislation outlined in chapter one. Some species are cited on multiple legislations. A total of 32 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	0

Designation	Number of Species
Birds Directive	1
NERC	5
BoCC Red List	4
BoCC Amber List	4
LBAP	1
IUCN	2

4.5. Survey two – February 2019

4.5.1. Table 4-4 summarises the total number of species which are cited under legislation outlined in chapter one. Some species are cited on multiple legislations. A total of 28 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	0
Birds Directive	0
NERC	6
BoCC Red List	7
BoCC Amber List	2
LBAP	2
IUCN	2

4.6. Survey three – November 2019

4.6.1. Table 4-5 summarises the total number of species which are cited under legislation outlined in chapter one. Some species are cited on multiple legislations. A total of 26 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	1
Birds Directive	0
NERC	5
BoCC Red List	5
BoCC Amber List	3
LBAP	2
IUCN	3

4.7. Survey four – December 2019

4.7.1. Table 4-6 summarises the total number of species which are cited under legislation outlined in chapter one. Some species are cited on multiple legislations. A total of 20 species were observed.

Table 4-6 Total species recorded which cited on European and UK legislation and of conservation concern

Designation	Number of species
Wildlife and Countryside Act	0
Birds Directive	1
NERC	3
BoCC Red List	2
BoCC Amber List	4
LBAP	1
IUCN	2

4.8. Disturbance events

4.8.1. Disturbance was recorded at numerous points during the bird survey. The main disturbance events include the following detailed in Table 4-7;

Table 4-7 Disturbance events

Activity	Time	Level of disturbance
Dog Walkers	Dogs occasionally chased flocks of birds. Alarm calls heard by birds on footpaths when dogs were present.	Low – alarm calls and low-level flushing from areas adjacent to footpaths
PPE/High Visibility Clothing	As surveyors were walking the transect route, the high visibility clothing was seen by birds and often resulted in birds being flushed before identification.	Moderate – alarm calls and flushing of birds into dense vegetation
Agricultural Operations	During one survey a tractor was present flailing the edges of fields.	Moderate – general detection levels were low in this area, most likely from the agricultural operations which were occurring.

5. Results

5.1. Wintering birds survey

- 5.1.1. A total of 42 species were recorded within the site boundary during the surveys. Of these species, nine were red-listed, six amber-listed, one cited on WCA 1 and two on the Birds Directive Annex 1.
- 5.1.2. Table 5-1 outlines the key species (cited on Birds Directive Annex I, WCA Schedule One, Birds of Conservation Concern and LBAP) which are wintering on site. This information is displayed spatially in Annex C. Full survey results are provided in Annex 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	Survey Four
Black-headed Gull	<i>Chroicocephalus ridibundus</i>	Birds Dir 2.2	BoCC Amber	3	3	4	4
Bullfinch	<i>Pyrrhula pyrrhula</i>	NERC, UKBAP	BoCC Amber	2	0	0	0
Dunnock	<i>Prunella modularis</i>	Bern, NERC, UKBAP	BoCC Amber	11	12	1	6
Fieldfare	<i>Turdus pilaris</i>	Birds Dir 2.2, WCA 1	BoCC Red, IUCN LC	0	0	1	0
Goldcrest	<i>Regulus regulus</i>	0	IUCN LC (NT)	1	7	0	0
Great Black-backed Gull	<i>Larus marinus</i>	Birds Dir 2.2	BoCC Amber	0	0	0	4
Herring Gull	<i>Larus argentatus</i>	Birds Dir 2.2, NERC,	BoCC Red, IUCN NT	2	3	7	10
House Sparrow	<i>Passer domesticus</i>	NERC,	BoCC Red	0	6	0	0
Linnet	<i>Linaria cannabina</i>	Bern, NERC,	BoCC Red	0	0	3	0
Little Egret	<i>Egretta garzetta</i>	Bern, Birds Dir 1	0	1	0	0	0
Meadow Pipit	<i>Anthus pratensis</i>	0	BoCC Amber, IUCN NT	0	0	31	7
Mistle Thrush	<i>Turdus viscivorus</i>	Birds Dir 2.2	BoCC Red	3	6	0	0
Mute Swan	<i>Cygnus olor</i>	Bonn, Birds Dir 2.2,	BoCC Amber	1	0	0	0
Skylark	<i>Alauda arvensis</i>	Birds Dir 2.2, NERC, LBAP	BoCC Red	0	1	1	0
Song Thrush	<i>Turdus philomelos</i>	Birds Dir 2.2, NERC, LBAP	BoCC Red	1	1	1	2
Sparrowhawk	<i>Accipiter nisus</i>	Bonn, Birds Dir 1	0	0	0	0	1

Common Name	Scientific Name	Designation	Conservation Status	Total Individuals			
				Survey One	Survey Two	Survey Three	Survey Four
Starling	<i>Sturnus vulgaris</i>	Birds Dir 2.2, NERC,	BoCC Red	10	2	0	0
Woodcock	<i>Scolopax rusticola</i>	Birds Dir 2.1,	BoCC Red	0	1	0	0

Designation

Bern – Bern Convention (1982)

Bonn – Bonn Convention (1979)

WCA 1.1 – 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 NT – IUCN Near Threatened Status (European 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. These species are partially characterised by 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 42. This places the site within the range of local 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 Norfolk Bird and Mammal Report 2017 (produced by Norfolk and Norwich Naturalist Society) with the guidance on ecological impact assessment (Table 3-2), all 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. 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 Birds Directive, birds which are cited on the Birds of Conservation Concern red and amber list and those on the Local Biodiversity Action Plan.
- 6.3.2. The habitat requirements, species status during the surveys and nature conservation value are summarised in Table 6-1. Residual impacts arising from the proposed works through habitat loss or change have also been assessed for these species.
- 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 ²	Unmitigated Impacts
Black-headed Gull	Highly gregarious in winter both when feeding and roosting. Commonly feeds on worms, insects, fish and carrions both on agricultural land and wetland habitats during the winter months.	Small numbers were present during Survey one & two, mainly flying over the site.	Local	Loss of arable land and wetland habitat across the site will 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 fledgelings.	Two birds were recorded during survey one.	Local	Loss of hedgerow sections and scrub habitat within the site which currently offers foraging habitat.
Duncock	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 survey one and two.	Local	Loss of hedgerow and scrub areas within the site which currently offers foraging and roosting habitat. Loss of arable land will reduce suitable foraging habitat
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.	A single bird was recorded during survey three	Local	Loss of hedgerow and scrub areas within the site which currently offers foraging and roosting habitat. Loss of arable land will reduce suitable foraging habitat
Goldcrest	Found mainly in coniferous woodlands and parks with large mature trees although they can range during the winter months when food is in short supply. Feeds mainly on small invertebrates such as spiders and moth eggs.	Birds were recorded in suitable woodland habitats throughout the site during survey one and two.	Local	Loss of woodland habitat across the site will reduce wintering foraging and roosting habitat.
Great Black-backed Gull	In winter months birds can range widely and can associate with other gulls feeding near suburban areas, open countryside and wetland habitats. Feeds on shellfish, birds and carrion	Four birds were recorded during survey four	Local	Loss of arable land and wetland habitat across site will reduce foraging habitat.
Herring Gull	Commonly found across countryside and urban areas, feeding on open fields, wetlands, lakes and parkland. A	Small numbers were recorded during both survey one and two.	Local	Loss of arable land and wetland habitat across the site will reduce foraging habitat.

² Based on criteria set out in table 3-2 and professional judgement.

Species	Habitat Requirement	Survey Account	Nature Conservation Value ²	Unmitigated Impacts
	varied diet of carrion, seeds, fruits, birds, small mammals, insects and fish.			
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.	Six birds were recorded during survey two, mainly around homes and gardens.	Local	Loss of scrub and hedgerow habitat across the site which currently offers roosting habitat.
Little Egret	Found more commonly in wetland habitats such as marshland, fenland, streams, and estuaries. They feed mainly on fish.	A single bird was seen during survey one on a small stream at TG 17793 04911 which flows through the site, under the A11.	Local	Loss of wetland areas across the site will 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 insects with some seeds in the winter months.	A flock of 31 birds were recorded on waste-ground during survey three.	Local	Removal of grassland and agricultural areas will reduce suitable roosting and foraging habitat.
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 open habitat across the site during survey one and two.	Local	Loss of woodland edge and parkland will reduce roosting and foraging habitat.
Mute Swan	Can be found in a wide range of wetland habitats ranging from urban parks to river, lakes and reservoirs. Feeds mainly on aquatic vegetation, amphibians, invertebrates and molluscs.	A single bird was recorded during survey one on small stream at TG 17575 04960 which flows through the site, under the A11.	Local	Loss of wetland areas across the site will reduce foraging habitat.
Skylark	Species which 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.	A single bird was recorded during survey two to the east of the site in rough grassland.	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. The main food source is worms and snails when insect larvae and berry crops are not available.	Single birds were recorded during both survey one and two.	Local	Loss of hedgerows across the 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.	A single bird was recorded on survey four.	Local	Loss of woodland habitat, hedgerows and farmland will reduce the feeding availability for this species.

Species	Habitat Requirement	Survey Account	Nature Conservation Value ²	Unmitigated Impacts
Starling	Found in a wide range of habitats from open countryside, suburban areas such as gardens, parkland and saltmarsh. Feeds mainly on invertebrates and fruit.	Small numbers of birds were recorded on both survey one and two. Mainly feeding on rough grassland habitats or near houses.	Local	Loss of foraging habitat across the site and removal of trees with suitable roosting cavities.
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 recorded flying over the A11 at TG 18235 05157 during survey two.	Local	The loss of woodland habitat will reduce suitable wintering habitat for this species.

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 Proposed Scheme will 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 will move away to find alternative suitable winter feeding grounds.
- 6.4.3. Hedgerows are also likely to be removed and increase the fragmentation of corridors across the site. This will be unfavourable to many bird species recorded and will 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 will 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 the Proposed Scheme.
- 6.5.2. Post-construction monitoring of the site should be undertaken to establish if there have been any increases in road casualties as a result of the proposed works. A wintering bird survey is suggested to establish whether there has been a reduction in population size from the works. If a reduction is observed, further mitigation will be required.

6.6. Mitigation measures

- 6.6.1. The following mitigation measures are suggested:
 - Areas across the site which required 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 site boundary should be buffered where possible using retained hedgerows or artificial screening to reduce visual disturbance.
 - Where fragmentation of hedgerows occurs, where possible movable screens should be placed across the gaps created 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.
- It is important that hedgerows, scrub and standard trees are retained where possible 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 it is suggested that:

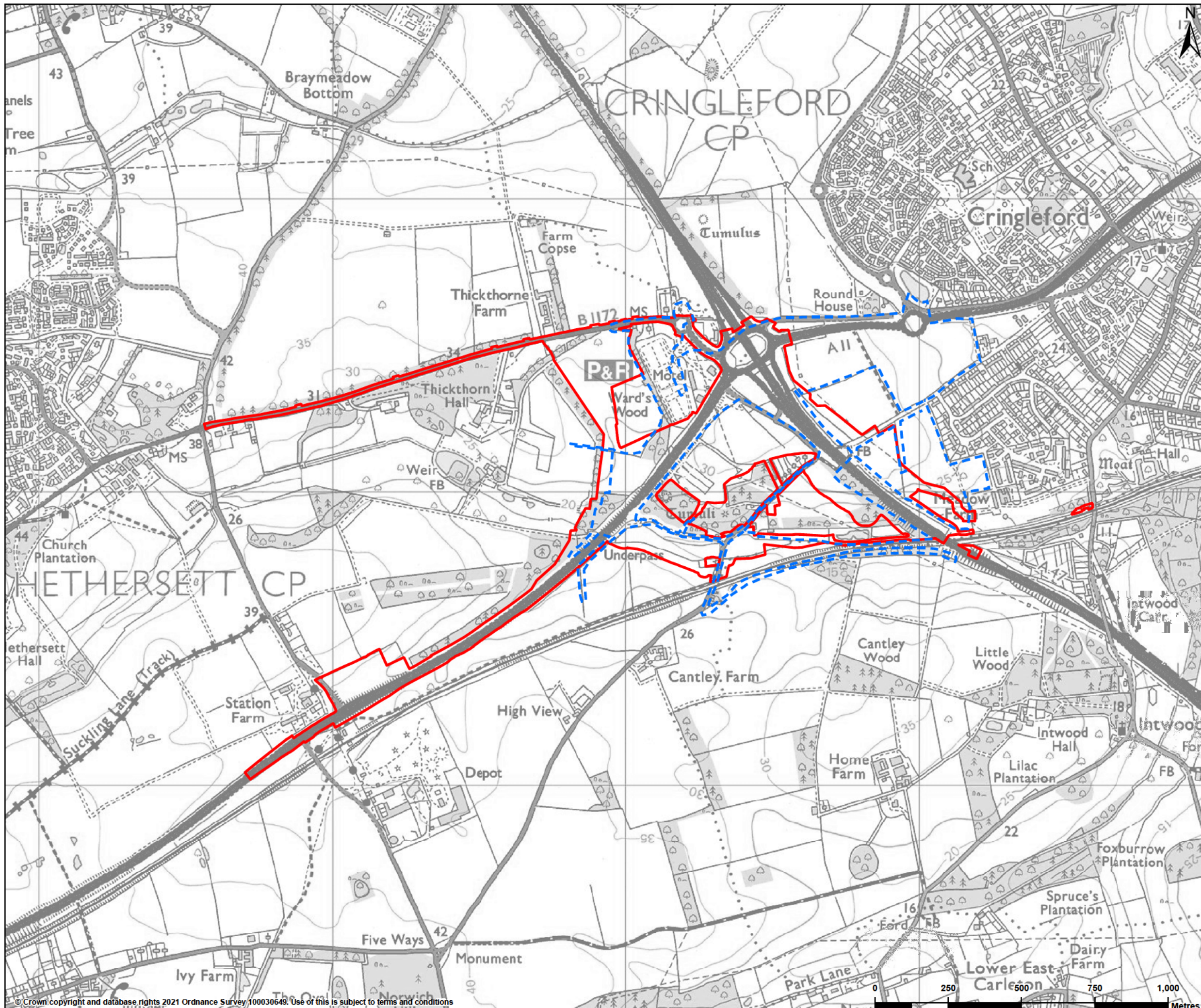
- Hedgerows gaps are to be infilled with at least double hedge planting; ideally triple.
- Ensure all trees around the site are protected and retained where possible, and any trees are afforded a root protection zone.
- Native planting should be encouraged to attract invertebrates, and berry-rich species 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-a-side should be allowed along pre-designated 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.

7. References

- Bern (1982) [online] [REDACTED]
[REDACTED] [accessed March 2019]
- Bibby, C.J., N.D. Burgess & D.A. Hill (2000): Bird Census Techniques (Second Edition). London: Academic Press
- Birds Directive (2009) [online] [https://\[REDACTED\]](https://[REDACTED])
[REDACTED]
[REDACTED]
- Bonn (1979) [online] [REDACTED]
[REDACTED]
- CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland, Chartered Institute of Environmental Management, Winchester.
- Department of the Environment (1981) Wildlife and Countryside Act 1981 (as amended) [online]
[REDACTED]
[REDACTED]
- Eaton, M., Aebischer, N., Brown, A., Hearn, R., Lock, L., Musgrove, A., Noble, D., Stroud, D. and Gregory, R. (2015) Birds of Conservation Concern 4: the population status of birds in the UK, Channel Islands and Isle of Man. British Birds 108: 708 - 746.
- Fuller, R.J. (1980) A Method for Assessing the Ornithological Importance of Sites for Nature Conservation Biological Conservation 17:229-239
- Gilbert, G., Gibbons, D.W., and Evans, J. (1998). Bird Monitoring Methods-a manual of techniques for key UK species. RSPB, Sandy.
- Highways England (2014) A47 corridor improvement programme [online]
[REDACTED]
[REDACTED]
- International Union for Conservation of Nature (2017) The IUCN Red list of Threatened Species [online] [REDACTED]
[REDACTED]
- Musgrove, A., Aebischer, N., Eaton, M., Hearn, S., Newson, S., Noble, D., Parsons, M., Risely, K. & Stroud, D. (2013) Population estimates of birds in Great Britain and the United Kingdom. British Birds 106:64-100.
- National Planning Policy Framework (2019) [online]
[REDACTED]
[REDACTED] accessed March 2019]
- Natural Environment and Rural Communities Act (2006) [online]
[REDACTED] [accessed March 2019]
- Norfolk and Norwich Naturalist Society (2017) Norfolk Bird and Mammal Report 2017, Volume 50, Part 2

- Norfolk Local Biodiversity Action Plan (2011) [online]
[REDACTED]
- UK Post 2010 Biodiversity Framework (2012) JNCC and Defra (on behalf of the Four Countries' Biodiversity Group) UK Post-2010 Biodiversity Framework. [online] [http://\[REDACTED\]](http://[REDACTED])
[REDACTED]

Annex A. Transect route



LEGEND

- DCO boundary
- Survey transects

REFERENCE MAP

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PR2	10/03/2021	UPDATED DCO	AC	MY	DW
REV	DATE	REVISION NOTE	ORG	CHK D	APPD

DESIGNER

SWECO

CONTRACTOR

GallifordTry

CLIENT

highways england

PROJECT TITLE

A47/A11 THICKTHORN JUNCTION

PROJECT STAGE

PCF STAGE 3

DRAWING TITLE

ANNEX A – TRANSECT ROUTE

SUITABILITY

FOR INFORMATION

SHEET SIZE	A3	SCALE	1:12,500	STATUS	S2
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DRAWING NUMBER

HE551492-GTY-EBD-000-DR-LB-30014

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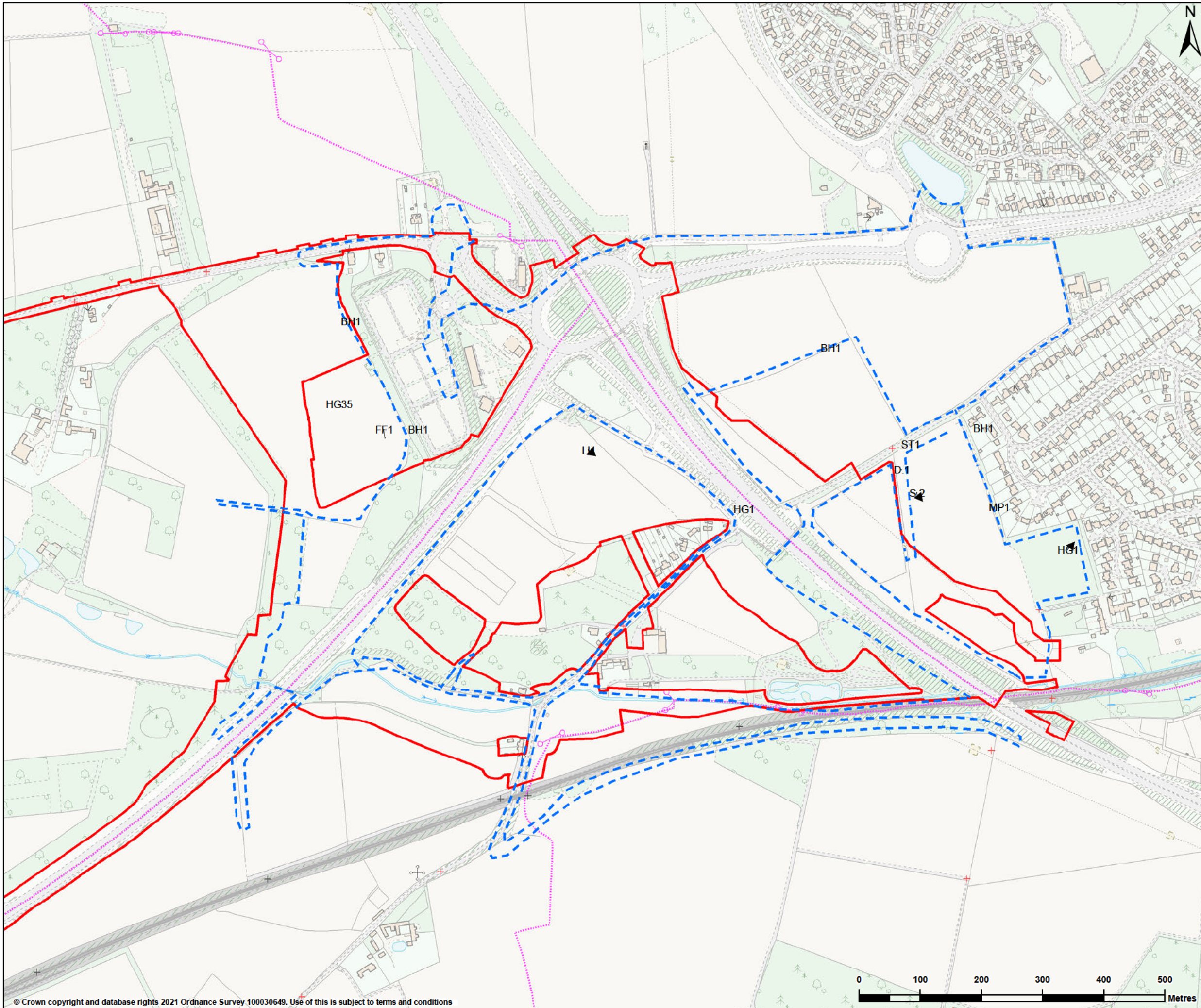
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Annex B. Full winter birds data

Common Name	Scientific Name	Designation	Conservation Status	Total Individuals			
				Survey One	Survey Two	Survey Three	Survey Four
Blackbird	<i>Turdus merula</i>	Birds Dir 2.2	0	15	18	14	14
Black-headed Gull	<i>Chroicocephalus ridibundus</i>	Birds Dir 2.2	BoCC Amber	3	3	4	4
Blue Tit	<i>Cyanistes caeruleus</i>	0	0	31	29	9	12
Bullfinch	<i>Pyrrhula pyrrhula</i>	NERC, UKBAP	BoCC Amber	2	0	0	0
Buzzard	<i>Buteo buteo</i>	Bonn	0	1	4	3	2
Carrion Crow	<i>Corvus corone</i>	Birds Dir 2.2	0	10	5	23	5
Chaffinch	<i>Fringilla coelebs</i>	0	0	9	8	2	0
Coal Tit	<i>Periparus ater</i>	0	0	1	5	0	0
Collared Dove	<i>Streptopelia decaocto</i>	Birds Dir 2.2	0	1	1	0	0
Dunnock	<i>Prunella modularis</i>	Bern, NERC, UKBAP	BoCC Amber	11	12	1	6
Fieldfare	<i>Turdus pilaris</i>	Birds Dir 2.2, WCA 1	BoCC Red, IUCN LC	0	0	1	0
Goldcrest	<i>Regulus regulus</i>	0	IUCN LC (NT)	1	7	0	0
Goldfinch	<i>Carduelis carduelis</i>	Bern	0	47	2	5	6
Great Black-backed Gull	<i>Larus marinus</i>	Birds Dir 2.2	BoCC Amber	0	0	0	4
Great Spotted Woodpecker	<i>Dendrocopos major</i>	Bern	0	0	0	1	0
Great Tit	<i>Parus major</i>	0	0	24	38	15	6
Green Woodpecker	<i>Picus viridis</i>	Bern	0	1	2	0	0
Greenfinch	<i>Chloris chloris</i>	Bern	0	1	0	0	0
Herring Gull	<i>Larus argentatus</i>	Birds Dir 2.2, NERC,	BoCC Red, IUCN NT	2	3	7	10
House Sparrow	<i>Passer domesticus</i>	NERC,	BoCC Red	0	6	0	0
Jackdaw	<i>Coloeus monedula</i>	Birds Dir 2.2	0	40	30	89	11
Jay	<i>Garrulus glandarius</i>	Birds Dir 2.2	0	4	1	3	0
Linnet	<i>Linaria cannabina</i>	Bern, NERC,	BoCC Red	0	0	3	0
Little Egret	<i>Egretta garzetta</i>	Bern, Birds Dir 1	0	1	0	0	0
Long-tailed Tit	<i>Aegithalos caudatus</i>	0	0	10	13	23	19
Magpie	<i>Pica pica</i>	Birds Dir 2.2	0	10	39	9	2
Meadow Pipit	<i>Anthus pratensis</i>	0	BoCC Amber, IUCN NT	0	0	31	7
Mistle Thrush	<i>Turdus viscivorus</i>	Birds Dir 2.2	BoCC Red	3	6	0	0

Common Name	Scientific Name	Designation	Conservation Status	Total Individuals			
				Survey One	Survey Two	Survey Three	Survey Four
Mute Swan	<i>Cygnus olor</i>	Bonn, Birds Dir 2.2,	BoCC Amber	1	0	0	0
Pheasant	<i>Phasianus colchicus</i>	Birds Dir 2.1	0	1	0	2	3
Pied Wagtail	<i>Motacilla alba</i>	Bern	0	0	0	2	0
Robin	<i>Erithacus rubecula</i>	Bern	0	10	35	10	11
Rook	<i>Corvus frugilegus</i>	Birds Dir 2.2	0	29	124	29	0
Skylark	<i>Alauda arvensis</i>	Birds Dir 2.2, NERC, LBAP	BoCC Red	0	1	1	0
Song Thrush	<i>Turdus philomelos</i>	Birds Dir 2.2, NERC, LBAP	BoCC Red	1	1	1	2
Sparrowhawk	<i>Accipiter nisus</i>	Bonn, Birds Dir 1	0	0	0	0	1
Starling	<i>Sturnus vulgaris</i>	Birds Dir 2.2, NERC,	BoCC Red	10	2	0	0
Stonechat	<i>Saxicola rubicola</i>	0	0	1	0	0	0
Treecreeper	<i>Certhia familiaris</i>	0	0	1	0	0	0
Woodcock	<i>Scolopax rusticola</i>	Birds Dir 2.1,	BoCC Red	0	1	0	0
Woodpigeon	<i>Columba palumbus</i>	Birds Dir 2.1	0	88	103	91	60
Wren	<i>Troglodytes troglodytes</i>	Bern	0	4	6	2	3

Annex C. **Distribution maps of key species**



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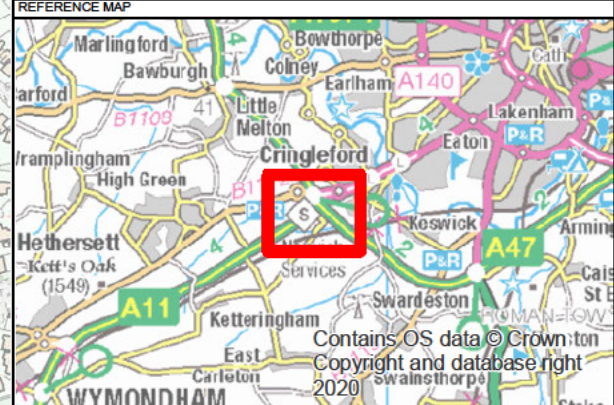
- DCO boundary
- Survey transects

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
- juve Juvenile
- ♀♂ Pair



PO1	10/03/2021	First Edition	AC	MY	DW
REV	DATE	REVISION NOTE	ORG	CHK D	APPD

DESIGNER

CONTRACTOR

CLIENT

PROJECT TITLE
A47/A11 THICKTHORN JUNCTION

PROJECT STAGE
PCF STAGE 3

DRAWING TITLE
ANNEX C:
WINTERING BIRD SURVEY - NOVEMBER

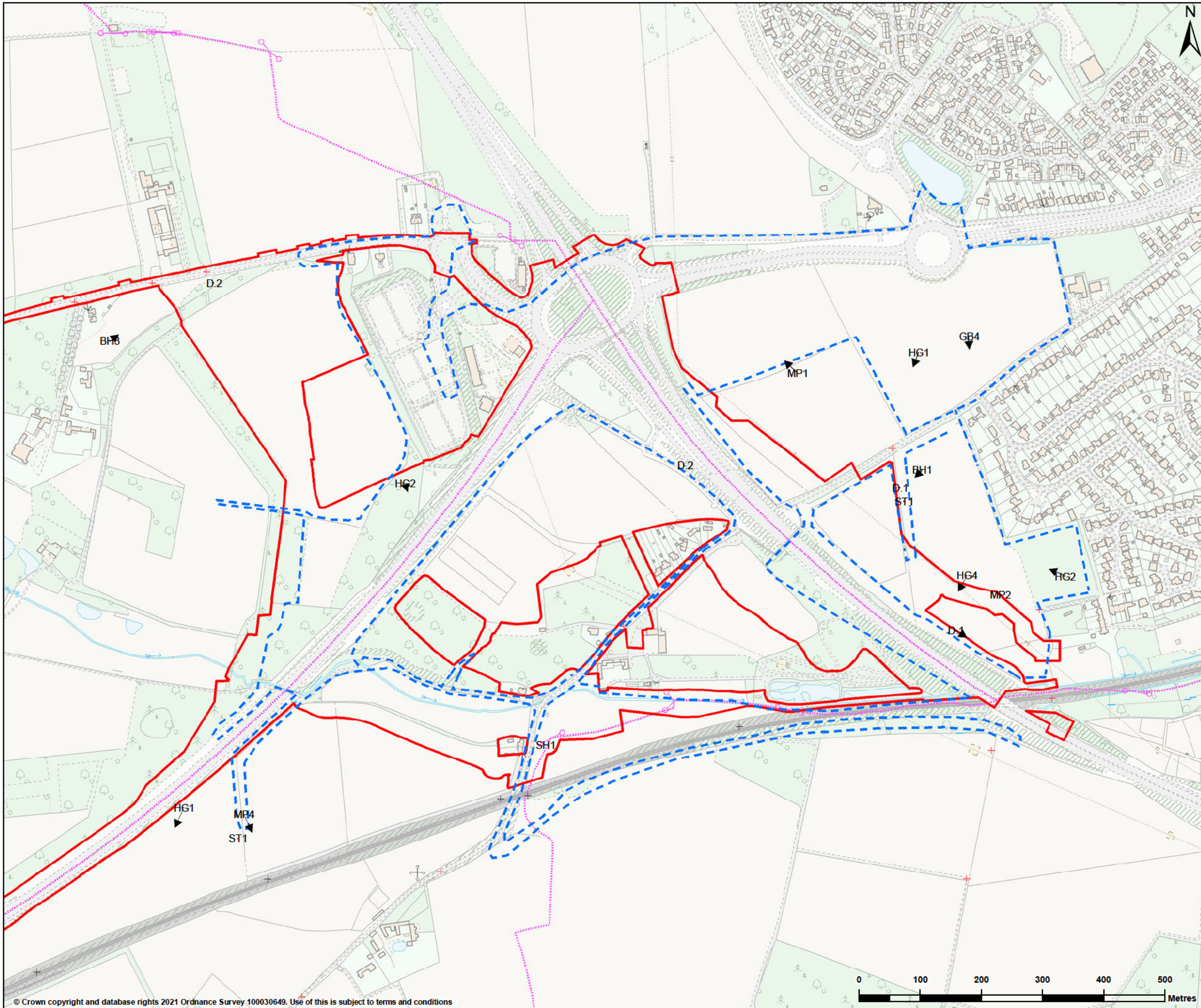
SUITABILITY
FOR INFORMATION

SHEET SIZE	SCALE	STATUS
A3	1:6,000	S2

DRAWING NUMBER
HE551492-GTY-EBD-000-DR-LB-30015

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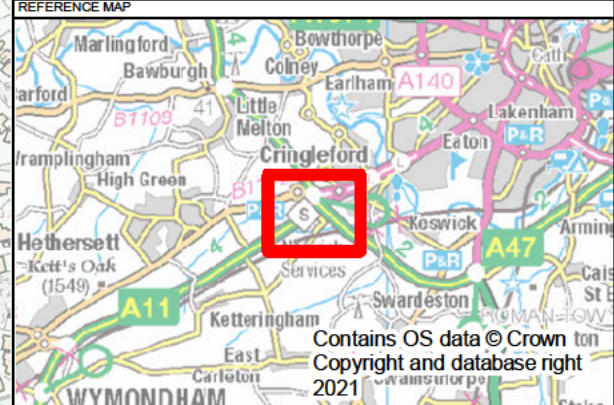
- DCO boundary
- Survey transects

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
- juve Juvenile
- ♀♂ Pair



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england**

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**ANNEX C:
WINTERING BIRD SURVEY - DECEMBER**

SUITABILITY

FOR INFORMATION

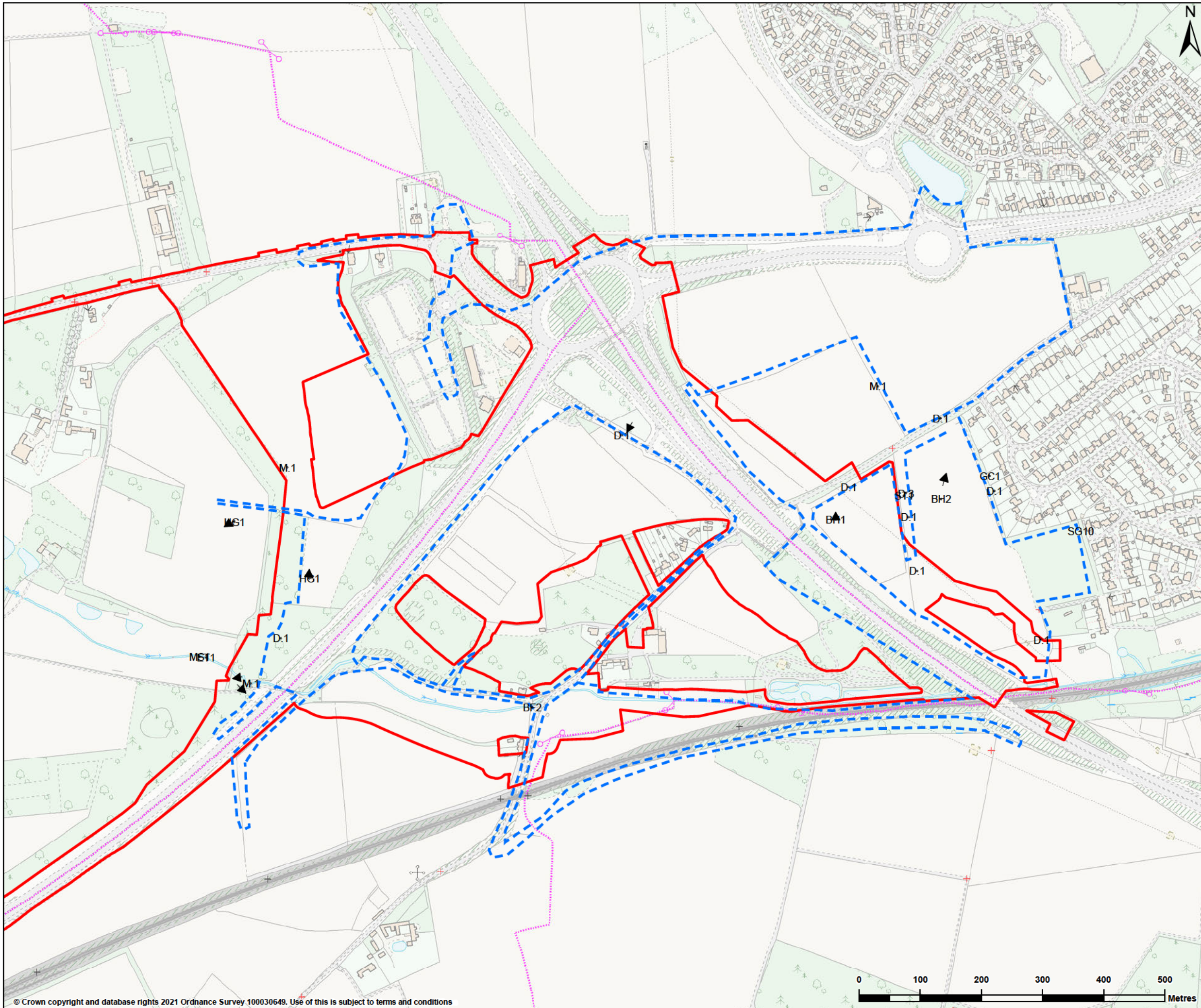
SHEET SIZE	SCALE	STATUS
A3	1:6,000	S2

DRAWING NUMBER

HE551492-GTY-EBD-000-DR-LB-30016

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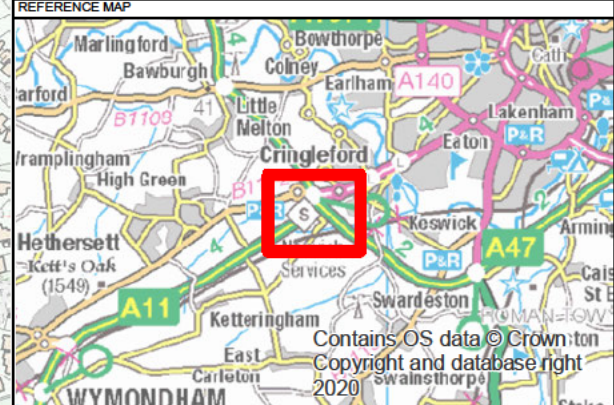
- DCO boundary
- Survey transects

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
- juve Juvenile
- ♀♂ Pair



PD1	10/03/2021	First Edition	AC	MY	DW
REV	DATE	REVISION NOTE	ORG	CHK D	APPD

DESIGNER

CONTRACTOR

CLIENT

PROJECT TITLE
A47/A11 THICKTHORNE JUNCTION

PROJECT STAGE
PCF STAGE 3

DRAWING TITLE
ANNEX C:
WINTERING BIRD SURVEY - JANUARY

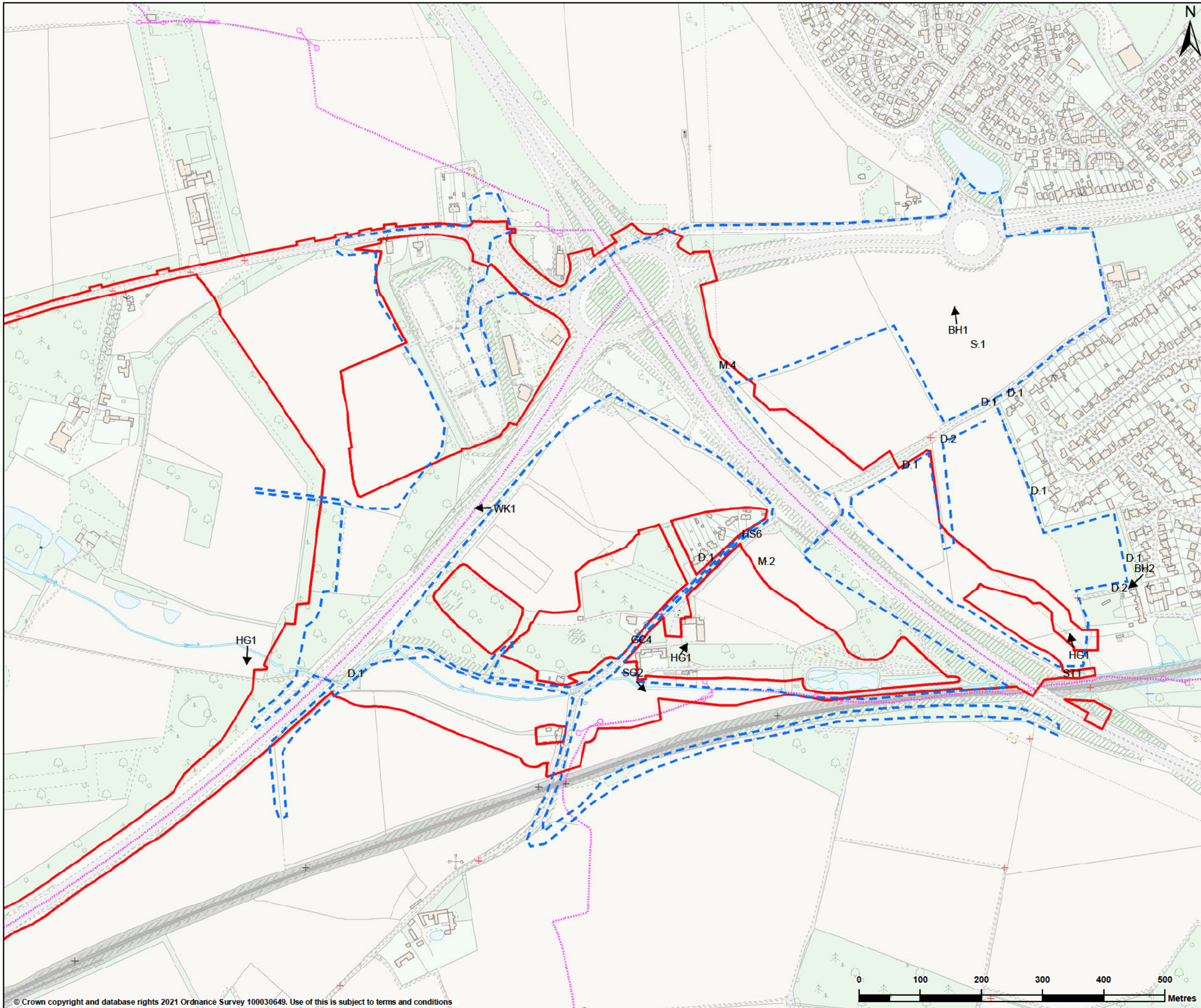
SUITABILITY
FOR INFORMATION

SHEET SIZE	SCALE	STATUS
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HE551492-GTY-EBD-000-DR-LB-30017

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LEGEND

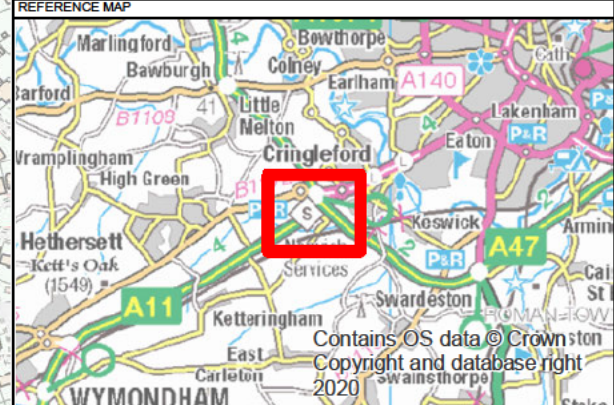
- DCO boundary
- Survey transects

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
- juve Juvenile
- ♀♂ Pair



PD1	10/03/2021	First Edition	AC	MY	DW
REV	DATE	REVISION NOTE	ORG	CHK D	APPD

DESIGNER

CONTRACTOR

CLIENT

PROJECT TITLE
A47/A11 THICKTHORN JUNCTION

PROJECT STAGE
PCF STAGE 3

DRAWING TITLE
ANNEX C:
WINTERING BIRD SURVEY - FEBRUARY

SUITABILITY
FOR INFORMATION

SHEET SIZE	SCALE	STATUS
A3	1:6,000	S2

DRAWING NUMBER
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