

A47 North Tuddenham to Easton Dualling

Scheme Number: TR010038

Volume 6

6.3 Environmental Statement Appendices

Appendix 8.8 - Breeding Bird Survey Report

APFP Regulation 5(2)(a)

Planning Act 2008

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

March 2021

Infrastructure Planning

Planning Act 2008

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

The A47 North Tuddenham to Easton
Development Consent Order 202[x]

ENVIRONMENTAL STATEMENT APPENDICES
Appendix 8.8 - Breeding Bird Survey Report

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1. Scheme introduction

1.1. Background

1.1.1. In January 2019, Sweco UK was commissioned to complete breeding bird surveys at the A47 North Tuddenham to Easton. This is to inform the Environmental Statement (ES) Biodiversity Chapter (**TR010038/APP/6.1**) at PCF Stage 3 for the A47 North Tuddenham to Easton Improvement Scheme.

1.2. Scheme description and location

1.2.1. The A47 from North Tuddenham to Easton, comprising a single carriageway, is located approximately 10km to the west of Norwich and forms part of the main arterial highway route connecting Norwich and King's Lynn. The route currently experiences delays and high levels of congestion during peak hours. The situation is predicted to become worse with the proposed growth in residential development.

1.2.2. It is proposed to upgrade the existing section of single carriageway between North Tuddenham and Easton to a dual carriageway. The new section of dual carriageway, with junction improvements, is proposed to be constructed to the north and south of the existing carriageway. This scheme will be referred to as the 'Proposed Scheme'.

1.2.3. The Proposed Scheme is considered to be a Nationally Significant Infrastructure Project (NSIP) under the Planning Act 2008 and therefore requires a Development Consent Order (DCO), issued by the Secretary of State, before construction and operation can commence.

1.2.4. The Proposed Scheme improvements will:

- improve accessibility to and around the region, reducing congestion and delays to enable more reliable journey times
- improve safety performance for all road users, contributing to a 40% reduction target in accidents across Highways England's roads over the implemented schemes' first five years in operation
- provide alternative access to local roads
- improve the environmental impacts of traffic along the A47 route, particularly for the communities of the six Proposed Scheme areas
- support economic growth in the Peterborough, Norwich and Great Yarmouth areas by improving overall road capacity

1.3. Aim and objectives

- 1.3.1. The breeding bird survey aims to determine which species are using the study area during the breeding season (March to August inclusive) and to assess its importance for supporting populations of notable bird species including:
- species cited on Annex I of the European Commission (EC) Birds Directive
 - 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 National 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 breeding birds and the potential effect on assemblages through the following impacts:

Construction

- habitat loss (direct impact)
- disturbance from construction, such as noise and visual disturbance (indirect impacts)

Operation

- mortality of breeding birds, for example traffic collisions (direct impact)
- reduced population size and breeding success due to traffic noise and visual disturbance (indirect impact)

- 1.3.3. This baseline report provides a summary of the results of the breeding bird surveys undertaken between North Tuddenham and Easton in April, May and June 2019. Impacts of the Proposed Scheme and proposals for mitigation are addressed in chapter six (Assessment and conclusions).

1.4. Relevant bird legislation

- 1.4.1. This legal information is presented in summary form and is intended for general guidance only. The original documentation should be referred to for detailed and definitive information. Website addresses can be found in chapter seven (References) (**TR010038/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.
 - 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 (for example, 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.” The Conservation of Habitats and Species Regulations 2017 provide a fuller transposition of the Birds Directive into English law.
 - Annex 1 of the Birds Directive 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

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).

1.4.10. The UKBAP 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

1.4.11. Norfolk Biodiversity Partnership lists 16 bird species as priority species requiring conservation action. Local Biodiversity Action Plans (LBAP) 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 Network National Policy Statement Planning Policy Framework (NSP NN)

1.4.12. The NSP 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 NSP 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.

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 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 International Union for Conservation of Nature (IUCN) Red List of Threatened Species

1.5.2. The IUCN Red List of Threatened Species is widely recognised 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, breeding 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 breeding bird survey was undertaken by an ornithologist from White Young & Green Ltd in July 2017. During the survey, an ornithologist walked a transect route around a 500m buffer survey area of the proposed new A47 road and recorded bird observations, including 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, Burgess, & Hill, 2000).
- 2.2.2. The surveys aimed to determine which species were using the study area during the breeding season and to assess its importance for supporting populations of notable species including:
- species cited on Annex I of the European Commission (EC) Birds Directive
 - 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 44 species were recorded (Table 2-1) (**TR010038/APP/6.1**). This included three species listed on the Birds Directive Annex 1, two on Wildlife & Countryside Act (1981) Schedule 1, four species on the red-listed species of conservation concern and four species on the amber list.

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

BTO Code	Common Name	Scientific Name	Designation and Conservation Status
B	Blackbird	<i>Turdus merula</i>	N/A
BC	Blackcap	<i>Sylvia atricapilla</i>	N/A
BT	Blue Tit	<i>Cyanistes caeruleus</i>	N/A
BF	Bullfinch	<i>Pyrrhula pyrrhula</i>	NERC, Amber List
BZ	Buzzard	<i>Buteo buteo</i>	Bonn

BTO Code	Common Name	Scientific Name	Designation and Conservation Status
C	Carrion Crow	<i>Corvus corone</i>	N/A
CH	Chaffinch	<i>Fringilla coelebs</i>	N/A
CC	Chiffchaff	<i>Phylloscopus collybita</i>	N/A
CT	Coal Tit	<i>Pariparus ater</i>	N/A
CD	Collared Dove	<i>Streptopelia decaocto</i>	N/A
D	Dunnock	<i>Prunella modularis</i>	Bern, NERC, Amber List
GC	Goldcrest	<i>Regulus regulus</i>	N/A
GO	Goldfinch	<i>Carduelis carduelis</i>	Bern
GS	Great-spotted Woodpecker	<i>Dendrocopos major</i>	Bern
GT	Great Tit	<i>Parus major</i>	N/A
G	Green Woodpecker	<i>Picus viridis</i>	Bern
GR	Greenfinch	<i>Chloris chloris</i>	Bern
H	Grey Heron	<i>Ardea cinerea</i>	N/A
HS	House Sparrow	<i>Passer domesticus</i>	NERC, Red List
JD	Jackdaw	<i>Coloeus monedula</i>	Birds Dir 2.2
J	Jay	<i>Garrulus glandarius</i>	Birds Dir 2.2
K	Kestrel	<i>Falco tinnunculus</i>	N/A
LI	Linnet	<i>Linaria cannabina</i>	Bern, NERC, Red List
ET	Little Egret	<i>Egretta garzetta</i>	Bern, Birds Dir 1
LT	Long-tailed Tit	<i>Aegithalos caudatus</i>	N/A
MG	Magpie	<i>Pica pica</i>	Birds Dir 2.2
M	Mistle Thrush	<i>Turdus viscivorus</i>	Birds Dir 2.2, Red List
MH	Moorhen	<i>Gallinula chloropus</i>	Birds Dir 2.2
PE	Peregrine	<i>Falco peregrinus</i>	Bern, Bonn, Birds Dir 1, WCA 1
PH	Pheasant	<i>Phasianus colchicus</i>	Birds Dir 1.2
PW	Pied Wagtail	<i>Motacilla alba yarrellii</i>	Bern
RL	Red-legged Partridge	<i>Alectoris rufa</i>	Birds Dir 1.2
R	Robin	<i>Erithacus rubecula</i>	Bern
RO	Rook	<i>Corvus frugilegus</i>	Birds Dir 2.2
S	Skylark	<i>Alauda arvensis</i>	Birds Dir 2.2, NERC, LBAP Red List
ST	Song Thrush	<i>Turdus philomelos</i>	Birds Dir 2.2, NERC, LBAP Red List
SG	Starling	<i>Sturnus vulgaris</i>	Birds Dir 2.2, NERC, BoCC Red
SD	Stock Dove	<i>Columba oenas</i>	Birds Dir 2.2, BoCC Amber
SL	Swallow	<i>Hirundo rustica</i>	Bern
TC	Treecreeper	<i>Certhia familiaris</i>	N/A
WS	Whooper Swan	<i>Cygnus cygnus</i>	Bern, Bonn, Birds Dir 1, WCA 1, BoCC Amber
WP	Woodpigeon	<i>Columba palumbus</i>	Birds Dir 2.1

BTO Code	Common Name	Scientific Name	Designation and Conservation Status
WR	Wren	<i>Troglodytes troglodytes</i>	Bern
Y	Yellowhammer	<i>Emberiza citrinella</i>	Bern, NERC, Red List

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

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. No designated sites were identified within this buffer zone. The closest designated site outside this buffer zone was Hockering Wood Site of Special Scientific Interest (SSSI) more than 1km north of the proposed route of the new A47 road.

2.3.3. There are four County Wildlife Sites (CWS) within the 500m buffer zone for the proposed route of the new A47 road:

- Fen West of East Tuddenham - Grid ref TG088122
- Old Covert, Wood Lane - Grid ref TG096128
- Fen Plantation - Grid ref TG097117
- Land adjoining River Tud - Grid ref TG128113

2.3.4. These sites are offered some protection from development and are managed in Norfolk by the Norfolk Wildlife Trust in partnership with Natural England and Norfolk County Council. The local authority has 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 763 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 used in this report:

- Open Government Licence (OGL)

- Creative Commons Licence with Attribution (CC-BY)

2.4.3. A total of 250 records were identified which could be used for commercial purposes (as above). These have been summarised in Table 2-2 (TR010038/APP/6.1).

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>	39	2009	N/A
Blue Tit	<i>Cyanistes caeruleus</i>	14	2009	N/A
Chaffinch	<i>Fringilla coelebs</i>	12	2009	N/A
Coal Tit	<i>Parus ater</i>	8	2009	N/A
Collared Dove	<i>Streptopelia decaocto</i>	12	2009	N/A
Common Swift	<i>Apus apus</i>	5	2012	Bern, BoCC Amber, LBAP
Dunnock	<i>Prunella modularis</i>	9	2009	Bern, NERC, BoCC Amber
Feral Pigeon	<i>Columba livia domestica</i>	2	2009	N/A
Goldfinch	<i>Carduelis carduelis</i>	9	2009	Bern
Great spotted Woodpecker	<i>Dendrocopos major</i>	1	2009	Bern
Great Tit	<i>Parus major</i>	14	2009	N/A
Greenfinch	<i>Chloris chloris</i>	8	2009	Bern
House Sparrow	<i>Passer domesticus</i>	28	2009	NERC, BoCC Red
Jackdaw	<i>Corvus monedula</i>	1	2009	N/A
Lapwing	<i>Vanellus vanellus</i>	2	2001	NERC, BoCC Red, IUCN VU
Long-tailed Tit	<i>Aegithalos caudatus</i>	6	2009	N/A
Magpie	<i>Pica pica</i>	6	2009	N/A
Pheasant	<i>Phasianus colchicus</i>	2	2009	N/A
Pied/White Wagtail	<i>Motacilla alba</i>	2	2009	Bern
Red-legged Partridge	<i>Alectoris rufa</i>	1	2009	N/A
Robin	<i>Erithacus rubecula</i>	14	2009	Bern
Siskin	<i>Spinus spinus</i>	1	2009	Bern
Song Thrush	<i>Turdus philomelos</i>	3	2009	NERC, BoCC Red, LBAP
Spotted Flycatcher	<i>Muscicapa striata</i>	2	2004	NERC, BoCC Red, LBAP
Starling	<i>Sturnus vulgaris</i>	26	2009	NERC, BoCC Red
Tree Sparrow	<i>Passer montanus</i>	1	2004	NERC, BoCC Red, LBAP
Turtle Dove	<i>Streptopelia turtur</i>	7	2005	Bonn, NERC, BoCC Red, LBAP, IUCN VU

Common Name	Scientific Name	Number of Records	Latest Sighting	Designation and Conservation Value
Woodlark	<i>Lullula arborea</i>	1	2005	Birds Dir 1, WCA 1, NERC, LBAP
Woodpigeon	<i>Columba palumbus</i>	10	2009	N/A
Wren	<i>Troglodytes troglodytes</i>	3	2009	Bern

Legislation

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

Conservation Value

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 three occasions through the breeding bird season (March to August inclusive). The ‘look-see’ method (Gilbert, Gibbons, & Evans, 1998) was used, where all birds observed using the site were counted. The survey method was broadly based on that of territory mapping (Bibby, Burgess, & Hill, 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, 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.

Breeding bird assemblages

- 3.1.4. As Fuller’s criteria was written in 1980, bird species have continued to suffer a large-scale decline across the UK. Due to this, consideration of counts which are within the upper limits of each criteria should be assessed using professional judgement to determine whether the count should be upgraded into the lower limits of the next highest criteria.

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

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

- 3.1.5. Fuller’s criteria and professional judgement have been used to assess the importance of the survey area for breeding birds. In addition to evaluating the area based on the breeding bird assemblages, consideration is given to the value of the area for the populations of individual key species that it supports.

Bird community conservational value

- 3.1.6. A breeding bird community quality assessment calculation can be undertaken through combining data on national breeding pairs per annum against the number of species recorded on site. Each breeding species is assigned a score based on its national breeding population. These scores are then calculated to produce an index figure that is set again the criteria outlined by Fuller (1980).

The final total illustrates the conservation importance of the site regarding breeding bird communities on site.

- 3.1.7. All species on site are assigned a class based on the national abundance of breeding pairs as described by Holling and the Rare Breeding Bird Panel (RBBP) (2018) and RBBP species selection criteria¹.

Table 3-2 - Breeding bird population status categories. Breeding pairs per annum. *species not assessed by RBBP

Very Rare (a)	Rare (b)	Scarce (c)	Less scarce (d)	Not Scarce (e)*
<30	30-300	301-1000	>1000	>1000

- 3.1.8. Species in each class of abundance (Table 3-2) is then assigned a numerical value (5-1) (**TR010038/APP/6.1**). A calculation is then undertaken through multiplying the category value with the number of species on-site to produce an index figure as shown in Table 3-3 (**TR010038/APP/6.1**).

Table 3-3 - Example calculation of breeding bird community index

Category	A (5)	B (4)	C (3)	D (2)	E (1)	Index
Number of species	1	2	4	9	21	
Category score total	5	8	12	18	21	64

- 3.1.9. The index figure is then checked against the criteria outlined by Fuller (1980) as shown in Table 3-4 (**TR010038/APP/6.1**).

Table 3-4 Bird species diversity criteria: The importance of an area based on the breeding bird community index (Fuller, 1980)

National	Regional	County	Local
60+	59-40	39-20	19-10

- 3.1.10. For the example in Table 3-3, the bird community conservation value would then be considered of national importance (**TR010038/APP/6.1**).

Individual species conservation value

- 3.1.11. The conservation value of individual species can be cross-checked 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 3-5 (**TR010038/APP/6.1**). In some cases, professional judgement may be required

¹ http://www.rbbp.org.uk/downloads/rbbp_species_selection_criteria.pdf

to increase or decrease the allocation of specific value, based upon local knowledge.

Table 3-5 - 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 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 occurs in county important numbers.</p> <p>Species present in county important numbers (>1% of county population).</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 which 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 principal 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 green-list, common and widespread species.

3.2. Pre survey constraints

- 3.2.1. The pre-designed survey transects were modified from the breeding bird survey transects undertaken in 2017 due to access restrictions and scoping out unimportant habitats.
- 3.2.2. The transects accessed 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 breeding bird surveys and possibilities of birds not vocalising or being in dense vegetation. There is also potential to miss crepuscular and 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. The assessment and conclusions within this report should be reviewed (and reassessed if necessary) should there be any changes to the proposed DCO boundary or development proposals which this report was based upon.

4. Field survey

4.1.1. The field surveys were undertaken during the breeding bird season (March to August inclusive). All surveys were led by a specialist ornithological ecologist and assisted by members of the ecology team.

4.2. Survey data and conditions

Table 4-1 - Survey data and conditions

Survey Number	Date	Weather Conditions
Survey One – April 2019	9	Bright with scattered cloud. Gusting winds. Temperature 8 – 11°C. Wind NE4
	10	Bright with scattered cloud. Temperature 7 – 9°C. Wind NE4
	11	Bright with clouds. Temperature 4 – 8°C. Wind NE3
Survey Two – May 2019	13	Bright with scattered cloud. Temperature 4 – 15°C. Wind E3
	14	Bright with scattered cloud. Temperature 6 – 16°C. Wind E3
	15	Bright with scattered cloud. Temperature 7 – 16°C. Wind E3
Survey Three - June 2019	11	Rain with heavy showers. Temperature 12 – 13°C. Wind NE3
	12	Cloudy with rain showers. Temperature 11 – 14°C. Wind N1
	13	Cloudy with rain showers. Temperature 12 – 14°C. Wind SW3

4.3. Bird survey records

4.3.1. In total 79 species were recorded during the breeding bird survey between April to June 2019 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
Birds Directive	5
Wildlife and Countryside Act	3
NERC	13
BoCC Red List	12
BoCC Amber List	19
LBAP	5
IUCN	8

Survey One – April 2019

4.3.2. Table 4-3 summarises the total number of species recorded in April 2019 which are cited under legislation outlined in chapter one (Scheme introduction) (**TR010038/APP/6.1**). Some species are cited on multiple legislations. A total of 63 species were observed.

Table 4-3 - April 2019 - Total species recorded which cited on European and UK legislation and of conservation concern.

Designation	Number of species
Birds Directive	3
Wildlife and Countryside Act	3
NERC	12
BoCC Red List	10
BoCC Amber List	14
LBAP	3
IUCN	6

Survey Two – May 2019

4.3.3. Table 4-4 summarises the total number of species recorded in May 2019 which are cited under legislation outlined in chapter one (Scheme introduction) (TR010038/APP/6.1). Some species are cited on multiple legislations. A total of 70 species were observed.

Table 4-4 May 2019 - Total species recorded which cited on European and UK legislation and of conservation concern.

Designation	Number of species
Birds Directive	4
Wildlife and Countryside Act	1
NERC	12
BoCC Red List	10
BoCC Amber List	13
LBAP	5
IUCN	6

Survey Three – June 2019

4.3.4. Table 4-5 summarises the total number of species recorded in June 2019 which are cited under legislation outlined in chapter one (Scheme introduction). Some species are cited on multiple legislations. A total of 70 species were observed.

Table 4-5 - June 2019 - Total species recorded which cited on European and UK legislation and of conservation concern.

Designation	Number of species
Birds Directive	4
Wildlife and Countryside Act	1
NERC	12
BoCC Red List	10
BoCC Amber List	16

Designation	Number of species
LBAP	4
IUCN	6

4.4. Disturbance events

4.4.1. Disturbance was recorded at numerous points during the bird surveys. 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.
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
Gamekeeping	Occasional shooting activities and gamekeepers driving around estates.	Moderate – flocks of woodpigeons flushed by gunshots and game birds seen to flush.
Aeroplanes and helicopters	Low flying military planes.	Negligible – no obvious signs of disturbance, although alarm calls were not audible.
Arboriculture operation	Occasional chainsaw operations in woodland areas.	Low – mainly a reduction in bird activity including vocalising.
Ecological surveying	Additional visits from ecologists undertaking additional surveys in the area	Low – birds were seen flushing from areas staff were working in and vocalisations in the form of alarm calls were noted.
Road verge cutting	A single occasion where grass verges were being cut.	Moderate – birds flushed out of adjacent hedgerows and out of long grass. Alarm calls were also noted.

4.5. Survey constraints

4.5.1. Due to unsuitable weather in June, not all the transects were able to be walked during the visit. This data was subsequently collected on 15 July under suitable weather conditions, this data has been combined with the June survey data.

5. Results

5.1.1. A total of 79 species were recorded within the DCO boundary during the surveys between April and July 2019. Of the 79 species,

- 5 are listed on Annex 1 of the Birds Directive
- 3 are listed on Schedule 1 of the WCA
- 13 are cited on the NERC Act
- 12 are red-listed
- 19 are amber-listed
- 5 are listed on LBAP
- 9 on IUCN red list

5.1.2. Table 5-1 outlines all the key species breeding on site (those cited on Birds Directive Annex I, WCA Schedule One, NERC Act, LBAP, Birds of Conservation Concern and listed on IUCN) (**TR010038/APP/6.1**). This information is displayed spatially in Annex C. Full survey results are provided in Annex B.

5.1.3. Of the species recorded within the DCO boundary:

- 41 species were confirmed as breeding. This was concluded through the identification of recently fledged young, adults visiting the nest and adults carrying food.
- 12 species were considered probable breeders on the site. This was concluded through pair observed in suitable breeding habitat, bird permanently on territories, agitated behaviour, nest building and performing courtship displays.
- 12 species were considered as possible breeding on site. This was concluded by birds either being observed in suitable breeding habitat or singing males present in suitable habitat.
- 14 species were considered as non-breeders. This includes all birds flying over the site and species which were presumed to still be on migration.

Table 5-1 - Key species recorded, their designations, conservation status and breeding status on-site and in Norfolk

Common Name	Scientific Name	Designation	Conservation Status	Breeding Status	UK Breeding Status	Status in Norfolk
Bullfinch	<i>Pyrrhula pyrrhula</i>	NERC	BoCC Amber	Probable	Not Scarce	Resident
Coot	<i>Fulica atra</i>	Bonn	IUCN NT	Possible	Not Scarce	Common resident
Dunnock	<i>Prunella modularis</i>	Bern, NERC	BoCC Amber	Breeding	Not Scarce	Common resident

Common Name	Scientific Name	Designation	Conservation Status	Breeding Status	UK Breeding Status	Status in Norfolk
Goldcrest	<i>Regulus regulus</i>	N/A	IUCN NT	Probable	Not Scarce	Resident breeder
Greylag Goose	<i>Anser anser</i>	Bonn	BoCC Amber	Breeding	Not Scarce	Feral population
House Martin	<i>Delichon urbicum</i>	Bern	BoCC Amber	Breeding	Not Scarce	Common migratory breeder
House Sparrow	<i>Passer domesticus</i>	NERC	BoCC Red	Breeding	Not Scarce	Common but declining resident
Linnet	<i>Linaria cannabina</i>	Bern, NERC	BoCC Red	Breeding	Not Scarce	Common resident
Mallard	<i>Anas platyrhynchos</i>	Bonn	BoCC Amber	Breeding	Not Scarce	Widespread resident
Marsh Tit	<i>Poecile palustris</i>	NERC	BoCC Red	Possible	Not Scarce	Breeding resident
Meadow Pipit	<i>Anthus pratensis</i>	N/A	BoCC Amber, IUCN VU	Possible	Not Scarce	Common migrant breeder and passage migrant
Mistle Thrush	<i>Turdus viscivorus</i>	N/A	BoCC Red	Possible	Not Scarce	Common resident
Mute Swan	<i>Cygnus olor</i>	Bonn	BoCC Amber	Breeding	Not Scarce	Resident
Red Kite	<i>Milvus milvus</i>	Bonn, Birds Dir 1, WCA 1	IUCN NT	Breeding	Not Scarce	Increasing visitor, birds from British reintroduction scheme occur
Reed Bunting	<i>Emberiza schoeniclus</i>	Bern, NERC, LBAP	BoCC Amber	Probable	Not Scarce	Resident
Skylark	<i>Alauda arvensis</i>	NERC, LBAP	BoCC Red	Possible	Not Scarce	Resident
Song Thrush	<i>Turdus philomelos</i>	NERC, LBAP	BoCC Red	Breeding	Not Scarce	Common resident, recently decreasing
Sparrowhawk	<i>Accipiter nisus</i>	Bonn, Birds Dir 1	N/A	Breeding	Not Scarce	Common resident
Starling	<i>Sturnus vulgaris</i>	NERC	BoCC Red	Breeding	Not Scarce	Common resident
Stock Dove	<i>Columba oenas</i>	N/A	BoCC Amber	Breeding	Not Scarce	Resident
Swift	<i>Apus apus</i>	Bern, LBAP	BoCC Amber	Probable	Not Scarce	Common migratory breeder
Tawny Owl	<i>Strix aluco</i>	Bern	BoCC Amber	Breeding	Not Scarce	Widespread resident
Willow Warbler	<i>Phylloscopus trochilus</i>	N/A	BoCC Amber	Probable	Not Scarce	Common summer breeder
Yellowhammer	<i>Emberiza citrinella</i>	Bern, NERC	BoCC Red	Breeding	Not Scarce	Once common resident, currently in decline

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 – Natural 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 (European Status)
IUCN NT – IUCN Near Threatened Status (European Status)

5.2. Breeding community quality calculations

5.2.1. Based on the process outlined in chapter 3 (methodology), the following calculation has been undertaken to provide an index score of the breeding community quality (**TR010038/APP/6.1**). Of the 65 species recorded as either confirmed, probable and possible breeding, each was checked against the national abundance of breeding pairs as described by Holling and the RBBP (2018).

Table 5-2 - Breeding calculator

Category	A (5)	B (4)	C (3)	D (2)	E (1)	Index
Number of species	0	0	0	0	65	---
Category score total	0	0	0	0	65	65

5.3. Incidental records

- 5.3.1. Barn owl pellets were located near Hall Farm Cottages at TG 11051 12078 during the wintering bird surveys. However, during the breeding bird survey, this site was not active, therefore it is considered that the pair bred in an alternative location around this area. This was also supported by a series of incidental records of this species by Sweco staff visiting sites.
- 5.3.2. A barn owl (*Tyto alba*) was observed at TG 05905 13140 at the western end of the site on 9 May by ecologists undertaking great-crested newt (*Triturus cristatus*) surveys.
- 5.3.3. A barn owl was observed near Hall Farm Cottages, during the afternoon at TG 10604 12154 in June by members of the Sweco ground investigation team.

6. Assessment and conclusions

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) (**TR010038/APP/6.1**). The species list for the whole site was 79. This places the site within the range of regional importance.

6.2. Bird community site conservation value

- 6.2.1. Based on the breeding bird community quality calculator, the study area is considered to be of national importance with an index score of 65.
- 6.2.2. On comparing the breeding 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 3-5), most of the species recorded within the breeding bird community are resident and regular breeding species within the region (**TR010038/APP/6.1**). Therefore, at the species value level, the site is of local conservation value.

6.3. Effects of habitat change or loss

- 6.3.1. The effects on breeding bird species across the site arising from the impacts of the proposed works is based upon an understanding of each species individual requirements for suitable breeding and foraging habitat.
- 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 and those on the Local Biodiversity Action Plan. The habitat requirements, species status during the surveys and nature conservation value are summarised in Table 6-1. In addition, residual effects arising from the proposed works through habitat loss or change have also been assessed for these species.
- 6.3.3. It is considered that effects on other species that are breeding 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 breeding birds.

Species ²	Habitat Requirement	Survey Account	Nature Conservation Value ³	Unmitigated Impacts
Bullfinch	Breed mainly in broad-leaved woodland, but also common in dense hedgerow and thickets. Adult birds are vegetarian although invertebrates are important for fledglings.	Small numbers were recorded on all surveys	Local	Loss of hedgerow sections and scrub habitat within the site which currently offers nesting habitat.
Dunnock	Commonly invades 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 surveys.	Local	Loss of hedgerow and scrub areas within the site which currently offers nesting 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 all surveys	Local	Loss of woodland habitat across the site will reduce foraging and nesting habitat.
House Martin	Often associated with urbanised areas such as towns and villages, often nesting in the eaves of buildings. Feed on aerial insects.	Birds were seen around suitable habitat during surveys two and three	Local	N/A
House Sparrow	Often associated with humans, will 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 surveys	Local	Loss of scrub and hedgerow habitat across the site which currently offers nesting habitat.
Linnet	Found on commons, heathland, rough ground, farm hedges, saltmarshes and urbanised areas near parks and gardens. Mainly seed eaters, with invertebrates being consumed during the summer	Numbers were at their peak during survey one, where likely wintering birds remained. Counts of 27 and 24 during survey two and three in suitable habitat illustrate total population size on site.	Local	Removal of scrub, hedgerow will reduce nesting habitat across the site. The loss of arable land will reduce foraging habitat.

² Greylag Goose has been scoped out of the final assessment. Although a BoCC Amber species, it is considered this species is of a feral population on not the wild population which hold the 'Amber' citation.

³ Based on criteria set out in Table 3-5 and professional judgement.

Species ²	Habitat Requirement	Survey Account	Nature Conservation Value ³	Unmitigated Impacts
Mallard	Commonly found in suitable wetland habitats and urban areas such as parks.	Birds were recorded in all suitable locations during all surveys	Local	Loss of wetland areas across the site will reduce both foraging and nesting habitat.
Marsh Tit	Found mainly in broadleaved woodland also copses, parks and gardens. Nests usually within hole in trees although artificial boxes can be used. Feeds mainly on insects and seeds.	An individual singing bird was recorded during survey one.	Local	Removal of woodland and scrub will reduce nesting and foraging habitat.
Meadow Pipit	Breeds 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.	The peak count of 10 were recorded on survey one. These are likely to be passage birds. A single bird was recorded on survey three.	Local	Removal of grassland and agricultural areas will reduce suitable nesting and foraging habitat.
Mistle Thrush	Commonly found in woodland and woodland edge, farmland, parkland and gardens. Nesting in trees more than 2m high.	Birds were recorded around suitable habitat during survey two and three.	Local	Loss of woodland edge and parkland will reduce nesting 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.	Birds were recorded in suitable habitat during all three surveys	Local	Loss of wetland areas across the site will reduce both foraging and nesting habitat.
Red Kite	Found in woodland habitat and near agricultural land. Nests high in trees. Feeds mainly carrion and worms, but will occasionally take small mammals.	Birds were recorded across all three surveys. Peak count on survey one (12). Two nest sites successful breeding	Local	Loss of broadleaved woodland habitat will reduce nesting habitat. Loss of agricultural habitat will reduce foraging habitat.
Reed Bunting	Mainly breeds in farmland and wetland habitats including, ditch edges, crops and set aside. Young are fed solely on invertebrates until they fledge.	Small numbers observed in suitable habitat on all three surveys	Local	Loss of hedgerow habitat with reduce nesting habitat and the loss of arable land will remove foraging habitat.
Skylark	Ground nesting species which prefer open farmland habitats where short, sparse vegetation provides cover and foraging habitat. Feeds on plant and animal product with insect prey being especially important in the summer.	Birds present in suitable habitat on all three surveys	Local	Loss of arable areas where species are currently breeding.

Species ²	Habitat Requirement	Survey Account	Nature Conservation Value ³	Unmitigated Impacts
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 on all surveys	Local	Loss of hedgerows across site which currently offers nesting habitat.
Sparrowhawk	Breeds in woodland habitats near open fields. Mainly feed on birds.	A single bird was recorded on survey two. Two birds were recorded on survey three	Local	Breeds in woodland habitats near open fields. Mainly feed on birds.
Starling	During the breeding season the species will concentrate where small cavities are present, both naturally and man-made. Invertebrates are an important food source for young.	Birds were recorded across all suitable habitat during all surveys	Local	Loss of foraging habitat across the site and removal of trees with suitable nest cavities.
Stock Dove	Often breed in parkland, along woodland edges, near quarries and cliffs. Using nesting cavities in rotten trees and bird boxes.	Birds were recorded across all three surveys. Peak count of 95 on survey one would indicate birds which have remained from the wintering period.	Local	Removal of trees with potential nesting cavities. Loss of foraging habitat across the site.
Swift	Nesting high in eaves of old houses, churches, and areas where birds can drop from the nest into the air.	Birds were recorded during survey two and three primarily around residential areas	Local	N/A
Tawny Owl	Found and nests in broadleaved woodland and around agricultural land. Feeds mainly on small mammals, small birds and insects.	Tawny owl raised young in a nestbox behind a house on Rotten Row.	Local	Loss of broadleaved woodland habitat will reduce nesting habitat. Loss of agricultural habitat will reduce foraging habitat.
Willow Warbler	Breeds in pioneer scrub, young woodland and sparsely wooded areas dominated by small-leaved deciduous trees like birch, alder and willow. Diet consists of insects and spiders and berries in autumn.	Birds were recorded in suitable habitat during survey one and two	Local	Loss of scrub and hedgerow habitat across the site which currently offers nesting habitat.
Yellowhammer	Traditionally based on edges of open areas or forest and scrub. Breeding sites extend extensively across cultivated land with hedges and plantations. Feeds mainly on seeds, with an increase in invertebrates during the summer.	Birds were recorded in suitable habitat across all three surveys.	Local	The loss of arable fields will greatly reduce the foraging opportunities. Removal of hedgerows will also reduce the nesting opportunities.

6.4. Construction impacts

- 6.4.1. Construction operations are likely to disturb bird species of nature conservation interest using the site for breeding, roosting and foraging. The construction of the Proposed Scheme will result in land-take, fragmentation and general habitat loss. The upgrading of the A47 from a single to dual carriageway may also inhibit the movement of species through the landscape due to the increased width of the road and associated landscaping.
- 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 breeding grounds.
- 6.4.3. Hedgerows are also likely to be removed, increasing 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 including those listed as red and amber species of conservation concern (for example, yellowhammer and reed bunting).
- 6.4.4. Visual (light) and noise disturbance from machinery required during the construction phase will likely lead to desertion or avoidance of the area by breeding bird species. Noise pollution has been found to have a fundamental influence on the population densities of breeding birds. This affects both single species and bird communities. Light pollution will affect crepuscular and nocturnal species, primarily owls. The lighting of construction areas and access routes during times when the owl species are active may cause individual owls to avoid areas and cause a barrier to dispersal. Movement between foraging areas even where lighting is not directed towards nests and roosts will also be impacted.
- 6.4.5. Red kite, a Schedule One species under the Wildlife and Countryside Act, were recorded as breeding on site. In total two confirmed nests were identified, with one additional nest site remaining unconfirmed. The nest on Easton Estate, near Hall Farm is approximately 220m north-east of the proposed DCO boundary. The second nest near Greenacres Farm is approximately 185m south-west of the proposed DCO boundary.
- 6.4.6. Construction activities have the potential to damage or destroy active birds' nest through vegetation removal, access routes and laydown areas. This would constitute an offence under the Wildlife and Countryside Act 1981.
- 6.4.7. The magnitude of these impacts is considered to be moderate to adverse, relative to the sensitivity of the 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 A47 North Tuddenham to Easton route.
- 6.5.2. Artificial lighting has also been found to affect birds. Under artificial lighting birds may alter their foraging pattern and may leave them susceptible as prey items for various predator species. Artificial lighting can also cause early onset of breeding in the spring. Although this could be conceived as a positive, it is more likely to have a negative impact on the fledgelings whereby the weather conditions prove too adverse, directly impacting food availability and natural survival rates.
- 6.5.3. Birds may also suffer effects from air pollution whereby, the increase in air pollution has a direct effect on the plant and invertebrate communities across the site and thus in turn negatively affects food availability for breeding birds, reducing breeding success.
- 6.5.4. Mortality rates on the proposed A47 North Tuddenham to Easton route may also have a negative impact on the breeding species across the site. Although no baseline data was gathered in regards to the existing mortality rates, it is proven that where the road is level without screening vegetation, or elevated above the surrounding area birds are more likely to fly into the path of oncoming traffic (Erritzoe, Mazgajski, & Rejt, 2003). Improvements to the traffic flow, which will reduce overall congestion will lead to an increase in average traffic speed through the site, this then also increases the chance of species being struck by vehicles.
- 6.5.5. A lack of tall vegetation alongside the new carriageway and an increase in traffic speed will have an adverse effect on owl species across the site and potentially lead to the loss of barn owl across the site.

6.6. Mitigation and conservation compensation

- 6.6.1. To ensure biodiversity is retained, protected and enhanced within the Proposed Scheme resulting in a net gain for breeding birds the following is required:
 - Hedgerow gaps are to be infilled with at least double hedge planting, ideally triple.
 - Ensuring 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 where practicable, 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 DCO boundary hedgerows and sown with seed rich plant species to provide suitable foraging for breeding birds to promote species moving back into the site after works have completed.

6.6.2. In addition to the above, standardised mitigation and compensation measures, more targeted measures should also be adopted.

Barn owl

6.6.3. Where any parts of the proposed A47 North Tuddenham to Easton route traverse linear habitat feature such as drainage ditches, low-flight prevention screening should be installed to help prevent barn owl road casualties. This would consist of high hedges or tree screens being planted on raised banks (bunds) at locations where barn owls regularly cross roads and where potential or known 'blackspots' have been identified. These natural 'screens' can be of value by encouraging low-flying owls to rise above traffic, reducing their vulnerability to collision.

Vegetation clearance

6.6.4. If it is not possible to retain existing hedgerows, trees and areas of scrub, any vegetation clearance which is required as part of the Proposed Scheme would be undertaken outside of the main breeding bird season (September to February inclusive). If this is not achievable, suitable nesting habitat would be checked immediately before vegetation removal by an ecologist (no more than 48 hours) to confirm no nesting birds are present. Should an active nest be found, an exclusion area around the nest site would be established and works within that area ceased until all young birds are fledged.

Tree and hedgerow replacement

6.6.5. If practicable, any existing important hedgerows to be removed would be translocated to a nearby location or incorporated into the planned landscaping. Where this is not feasible, replanting would be undertaken.

6.6.6. To increase the extent and enhance existing hedgerows, gaps would be filled and connectivity between hedgerows increased where practicable.

- 6.6.7. A number of trees would be removed as part of the scheme. New native trees would be planted as part of the landscape design.
- 6.6.8. New hedgerows planting and gap filling would be made up of a species-rich mix of typical hedgerow species, for example hawthorn *Crataegus monogyna*, blackthorn *Prunus spinosa*, field maple *Acer campestre*, dogwood *Cornus sanguinea* and buckthorn *Rhamnus cathartica* (Herbert, Samuel, & Patterson, 1999).

Lighting

- 6.6.9. To minimise light pollution across the site, lighting should only be installed in areas which are critically important for example at junctions and roundabouts. In these locations, lights should be directed downwards to the carriageway and there should be no light spillage away from the main carriageway and junctions.

Nest boxes

- 6.6.10. The installation of nest boxes on retained trees would mitigate for the loss of nesting habitats such as trees, hedgerows and scrub. It is recommended that between 10 and 40 nest boxes should be installed per hectare in mitigation areas. The types of nest boxes would be distributed as follows:
- 60% with 32 millimetre entrance hole
 - 20% with 26 to 25 millimetre entrance hole
 - 20% to be boxes suitable for species which nest in recesses or cavities
- 6.6.11. To ensure the longevity of the nest boxes, they should be made of durable material and be weather treated.
- 6.6.12. Once the areas of habitat lost have been finally calculated, ecological input into the landscape design will be undertaken to ensure a suitable density of nest boxes per hectare of habitat lost is achieved.
- 6.6.13. The option of installing specific swift nest boxes on suitable buildings adjacent to the new road and any new structure built during the process of the works should be investigated.

Further enhancement

- 6.6.14. It is recommended that biodiversity enhancements are included within the landscape design, to maintain or enhance connectivity to surrounding habitats. This will assist in ensuring the long-term persistence of breeding bird diversity and abundance in and around the Proposed Scheme. This will also help to fulfil the local planning authority's obligations to maintain or enhance biodiversity

through the course of their normal activities under Section 40 of the NERC Act 2006.

- 6.6.15. Where possible, habitat planting would be undertaken before the start of construction to minimise the intervening period between vegetation clearance and the establishment of the new habitat. The planting would be augmented with the provision of habitat piles in key locations, including log piles, partly buried hay and woodchip, to encourage the invertebrate assemblage and promote ecosystem functionality. This would ensure a more readily available supply of prey species.
- 6.6.16. It is not possible to replace farmland habitat such as arable fields so the enhancement and creation of species-rich semi-improved grassland off-site should be included in the Outline Environmental Management Plan. A matrix of grassland habitats should be created to appeal to a wide variety of breeding birds on-site on what is currently largely low-grade arable land.
- 6.6.17. All enhancement or creation of species-rich semi-improved grassland would be tailored to meet the requirements of farmland birds. Some areas of grassland would be allowed to grow to a long sward length (where possible) to create rough grassland which would provide abundant small mammals for birds of prey. Where practicable, establishment and management in perpetuity, should be in accordance with guidance from the RSPB⁴ or until this guidance is superseded.
- 6.6.18. Wetland creation will be undertaken to mitigate the loss of the pre-existing wetland habitat. Wetland creation can be achieved through the incorporation of attenuation ponds as part of the drainage planning, wildlife pond creation and the developed of sustainable drainage systems (SuDS). Ecological input into the landscape planning design will be undertaken to ensure suitable wetland features are planned. Where wetland areas are to be removed, opportunities to replace this habitat should be explored as part of the landscape design. Compensatory wildlife ponds to support other non-bird species could also be considered as part of the landscape design to mitigate the loss of standing water bodies to provide foraging habitat.
- 6.6.19. If larger ponds are to be removed, the option to compensate this loss should be explored as part of the landscape design for the provision of wildlife ponds which are of similar size or greater than those which are lost

⁴ Winspear, R. and Davis, G. (2005) A management guide to birds of lowland farmland. RSPB, Sandy, Bedfordshire.

6.7. Further surveys

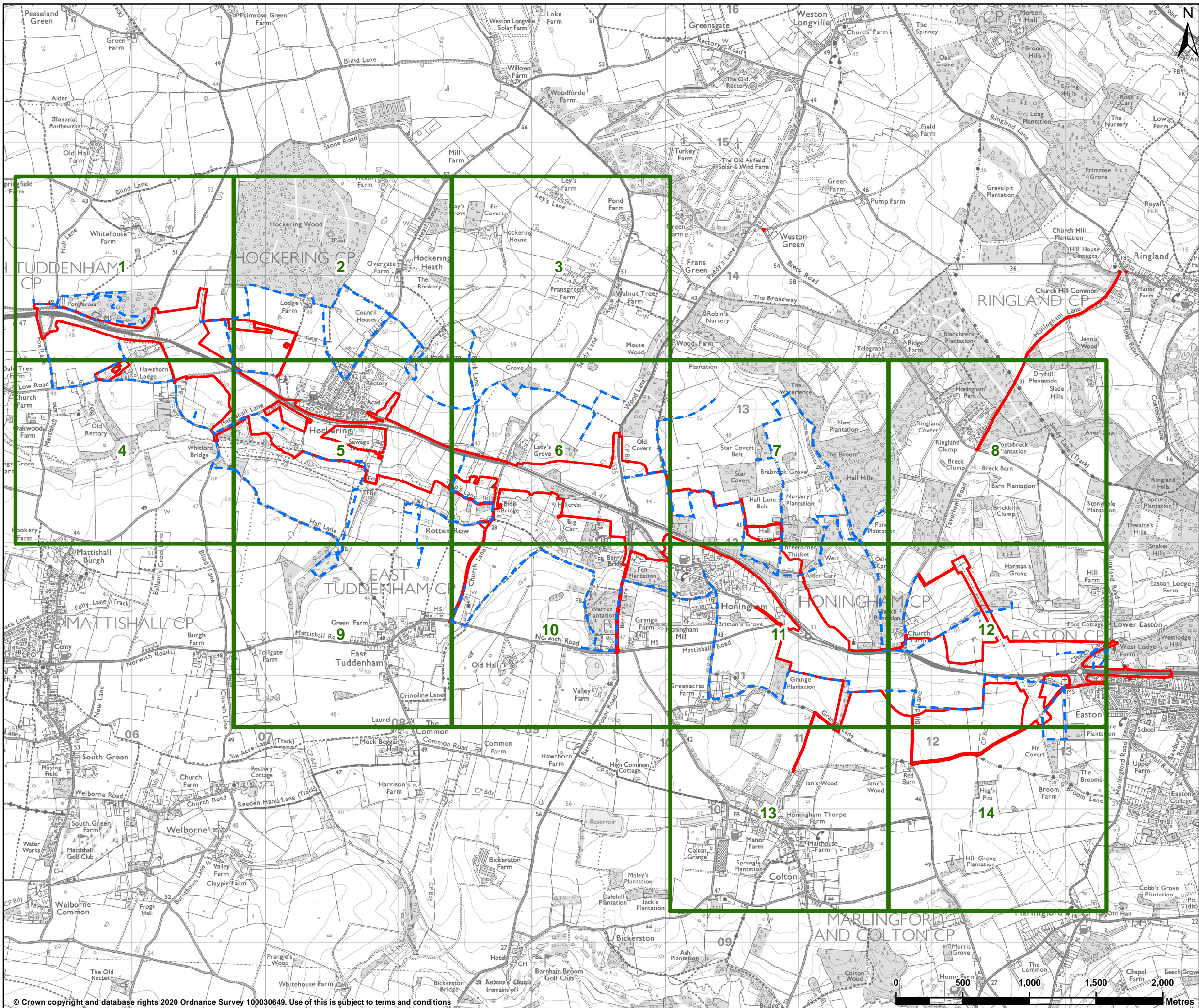
- 6.7.1. As there were incidental records of barn owl and potential nesting activities during the breeding bird survey, a comprehensive barn owl survey should be undertaken to gather information on the location of nest and roosts locations in order to offer suitable mitigation.
- 6.7.2. Post-construction monitoring of the site should be undertaken to establish if there has been an increase in road casualties as a result of the proposed works. A breeding 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 will be required.

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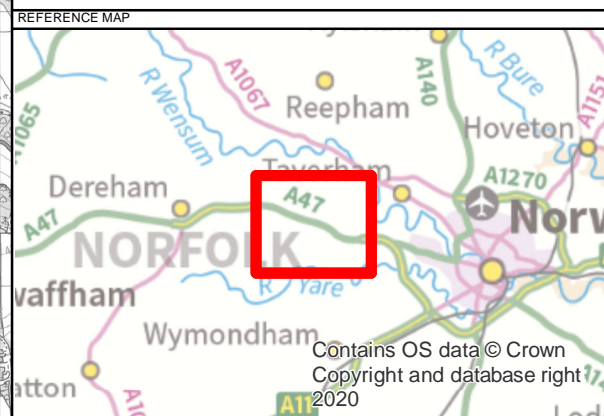
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Annex A. Transect route



LEGEND

- DCO boundary
- Survey transects
- Sheet overview



P01	26/02/2021	First Edition	AC	MY	DW
REV	DATE	REVISION NOTE	ORG	CHKD	APPD

DESIGNER

CONTRACTOR

CLIENT

PROJECT TITLE
A47 NORTH TUDDENHAM TO EASTON

PROJECT STAGE
PCF STAGE 3

DRAWING TITLE
**APPENDIX A:
 BREEDIG BIRD SURVEY TRANSECTS
 AND SHEET OVERVIEW
 TR010038/APP/6.2**

SUITABILITY
FOR INFORMATION

SHEET SIZE	SCALE	STATUS
A3	1:27,500	S2

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HE551489-GTY-EBD-000-DR-LB-30127

Annex B. Total individuals recorded

Common Name	Scientific Name	Designation	Conservation Status	Breeding Status	UK Breeding Status	Status in Norfolk
Blackbird	<i>Turdus merula</i>	N/A	N/A	Breeding	Not Scarce	Common resident
Blackcap	<i>Sylvia atricapilla</i>	N/A	N/A	Probable	Not Scarce	Summer breeding
Black-headed Gull	<i>Chroicocephalus ridibundus</i>	N/A	BoCC Amber	Non-breeding	Not Scarce	Summer breeding
Blue Tit	<i>Cyanistes caeruleus</i>	N/A	N/A	Breeding	Not Scarce	Breeding resident
Bullfinch	<i>Pyrrhula pyrrhula</i>	NERC	BoCC Amber	Probable	Not Scarce	Resident
Buzzard	<i>Buteo buteo</i>	Bonn	N/A	Breeding	Not Scarce	Passage migrant, small, increasing breeding population
Canada Goose	<i>Branta canadensis</i>	N/A	N/A	Breeding	Not Scarce	Introduced resident
Carrion Crow	<i>Corvus corone</i>	N/A	N/A	Breeding	Not Scarce	Resident
Chaffinch	<i>Fringilla coelebs</i>	N/A	N/A	Breeding	Not Scarce	Common resident
Chiffchaff	<i>Phylloscopus collybita</i>	N/A	N/A	Probable	Not Scarce	Common summer breeder
Coal Tit	<i>Periparus ater</i>	N/A	N/A	Breeding	Not Scarce	Breeding resident
Collared Dove	<i>Streptopelia decaocto</i>	N/A	N/A	Breeding	Not Scarce	Common resident
Common Gull	<i>Larus canus</i>	N/A	BoCC Amber	Non-breeding	Not Scarce	Passage migrant and winter visitor, sporadic breeder
Common Tern	<i>Sterna hirundo</i>	Bern, Bonn, Birds Dir 1	BoCC Amber	Non-breeding	Not Scarce	Migratory breeder
Coot	<i>Fulica atra</i>	Bonn	IUCN NT	Possible	Not Scarce	Common resident
Cormorant	<i>Phalacrocorax carbo</i>	N/A	N/A	Non-breeding	Not Scarce	Passage migrant, sporadic breeder
Dunnock	<i>Prunella modularis</i>	Bern, NERC	BoCC Amber	Breeding	Not Scarce	Common resident
Egyptian Goose	<i>Alopochen aegyptiaca</i>	Bonn	N/A	Possible	Not Scarce	Resident feral population
Rock/Feral Pigeon	<i>Columba livia</i>	N/A	N/A	Probable	Not Scarce	Resident
Fieldfare	<i>Turdus pilaris</i>	WCA 1	BoCC Red, IUCN VU	Non-breeding	Very Rare	Passage migrant, winter visitor

Common Name	Scientific Name	Designation	Conservation Status	Breeding Status	UK Breeding Status	Status in Norfolk
Garden Warbler	<i>Sylvia borin</i>	N/A	N/A	Possible	Not Scarce	Summer breeder
Goldcrest	<i>Regulus regulus</i>	N/A	IUCN NT	Probable	Not Scarce	Resident breeder
Goldfinch	<i>Carduelis carduelis</i>	Bern	N/A	Breeding	Not Scarce	Common resident
Great Black-backed Gull	<i>Larus marinus</i>	N/A	BoCC Amber	Non-breeding	Not Scarce	Non-breeding summer visitor
Great Spotted Woodpecker	<i>Dendrocopos major</i>	Bern	N/A	Probable	Not Scarce	Common resident
Great Tit	<i>Parus major</i>	N/A	N/A	Breeding	Not Scarce	Common breeding resident
Green Woodpecker	<i>Picus viridis</i>	Bern	N/A	Possible	Not Scarce	Resident
Greenfinch	<i>Chloris chloris</i>	Bern	N/A	Probable	Not Scarce	Common resident
Grey Heron	<i>Ardea cinerea</i>	N/A	N/A	Breeding	Not Scarce	Resident
Greylag Goose	<i>Anser anser</i>	Bonn	BoCC Amber	Breeding	Not Scarce	Feral population
Herring Gull	<i>Larus argentatus</i>	NERC	BoCC Red, IUCN VU	Non-breeding	Not Scarce	Increasing breeder
House Martin	<i>Delichon urbicum</i>	Bern	BoCC Amber	Breeding	Not Scarce	Common migratory breeder
House Sparrow	<i>Passer domesticus</i>	NERC	BoCC Red	Breeding	Not Scarce	Common but declining resident
Jackdaw	<i>Coloeus monedula</i>	N/A	N/A	Breeding	Not Scarce	Common resident
Jay	<i>Garrulus glandarius</i>	N/A	N/A	Probable	Not Scarce	Common resident
Kestrel	<i>Falco tinnunculus</i>	N/A	N/A	Breeding	Not Scarce	Resident breeder
Lapwing	<i>Vanellus vanellus</i>	NERC	BoCC Red, IUCN VU	Non-breeding	Not Scarce	Declining breeder
Lesser Black-backed Gull	<i>Larus fuscus</i>	N/A	BoCC Amber	Non-breeding	Not Scarce	Migratory breeder
Lesser Whitethroat	<i>Sylvia curruca</i>	N/A	N/A	Possible	Not Scarce	Migratory breeder
Linnet	<i>Linaria cannabina</i>	Bern, NERC	BoCC Red	Breeding	Not Scarce	Common resident
Little Egret	<i>Egretta garzetta</i>	Bern, Birds Dir 1	N/A	Non-breeding	Scarce	Increasing breeder
Little Grebe	<i>Tachybaptus ruficollis</i>	Bern	N/A	Breeding	Not Scarce	Resident
Long-tailed Tit	<i>Aegithalos caudatus</i>	N/A	N/A	Breeding	Not Scarce	Common resident breeder

Common Name	Scientific Name	Designation	Conservation Status	Breeding Status	UK Breeding Status	Status in Norfolk
Magpie	<i>Pica pica</i>	N/A	N/A	Possible	Not Scarce	Common resident
Mallard	<i>Anas platyrhynchos</i>	Bonn	BoCC Amber	Breeding	Not Scarce	Widespread resident
Marsh Tit	<i>Poecile palustris</i>	NERC	BoCC Red	Possible	Not Scarce	Breeding resident
Meadow Pipit	<i>Anthus pratensis</i>	N/A	BoCC Amber, IUCN VU	Possible	Not Scarce	Common migrant breeder and passage migrant
Mediterranean Gull	<i>Ichthyaetus melanocephalus</i>	Bern, Bonn, Birds Dir 1, WCA 1	BoCC Amber	Non-breeding	Scarce	Regular visitor, recent breeder
Mistle Thrush	<i>Turdus viscivorus</i>	N/A	BoCC Red	Possible	Not Scarce	Common resident
Moorhen	<i>Gallinula chloropus</i>	N/A	N/A	Breeding	Not Scarce	Abundant resident
Mute Swan	<i>Cygnus olor</i>	Bonn	BoCC Amber	Breeding	Not Scarce	Resident
Nuthatch	<i>Sitta europaea</i>	N/A	N/A	Breeding	Not Scarce	Breeding resident, probably in decline
Oystercatcher	<i>Haematopus ostralegus</i>	N/A	BoCC Amber, IUCN VU	Non-breeding	Not Scarce	Passage migrant and breeder
Pheasant	<i>Phasianus colchicus</i>	N/A	N/A	Breeding	Not Scarce	Common introduced resident
Pied Wagtail	<i>Motacilla alba</i>	Bern	N/A	Breeding	Not Scarce	Common breeding resident
Raven	<i>Corvus corax</i>	N/A	N/A	Non-breeding	Not Scarce	Passage, non-breeding
Red Kite	<i>Milvus milvus</i>	Bonn, Birds Dir 1, WCA 1	IUCN NT	Breeding	Not Scarce	Increasing visitor, birds from British reintroduction scheme occur
Red-legged Partridge	<i>Alectoris rufa</i>	N/A	N/A	Breeding	Not Scarce	Common introduced resident
Reed Bunting	<i>Emberiza schoeniclus</i>	Bern, NERC, LBAP	BoCC Amber	Probable	Not Scarce	Resident
Reed Warbler	<i>Acrocephalus scirpaceus</i>	N/A	N/A	Possible	Not Scarce	Summer breeder
Robin	<i>Erithacus rubecula</i>	Bern	N/A	Breeding	Not Scarce	Common resident
Rook	<i>Corvus frugilegus</i>	N/A	N/A	Breeding	Not Scarce	Common resident
Siskin	<i>Spinus spinus</i>	Bern	N/A	Possible	Not Scarce	Passage migrant, breeder

Common Name	Scientific Name	Designation	Conservation Status	Breeding Status	UK Breeding Status	Status in Norfolk
Skylark	<i>Alauda arvensis</i>	NERC, LBAP	BoCC Red	Possible	Not Scarce	Resident
Song Thrush	<i>Turdus philomelos</i>	NERC, LBAP	BoCC Red	Breeding	Not Scarce	Common resident, recently decreasing
Sparrowhawk	<i>Accipiter nisus</i>	Bonn, Birds Dir 1	N/A	Breeding	Not Scarce	Common resident
Starling	<i>Sturnus vulgaris</i>	NERC	BoCC Red	Breeding	Not Scarce	Common resident
Stock Dove	<i>Columba oenas</i>	N/A	BoCC Amber	Breeding	Not Scarce	Resident
Swallow	<i>Hirundo rustica</i>	Bern	N/A	Breeding	Not Scarce	Common migratory breeder
Swift	<i>Apus apus</i>	Bern, LBAP	BoCC Amber	Probable	Not Scarce	Common migratory breeder
Tawny Owl	<i>Strix aluco</i>	Bern	BoCC Amber	Breeding	Not Scarce	Widespread resident
Treecreeper	<i>Certhia familiaris</i>	N/A	N/A	Breeding	Not Scarce	Widespread woodland resident
Tufted Duck	<i>Aythya fuligula</i>	N/A	N/A	Probable	Not Scarce	Summer breeder
Turtle Dove	<i>Streptopelia turtur</i>	NERC, LBAP	BoCC Red, IUCN VU	Non-breeding	Not Scarce	Migratory breeder, recent decline
Whitethroat	<i>Sylvia communis</i>	N/A	N/A	Breeding	Not Scarce	Summer breeder
Willow Warbler	<i>Phylloscopus trochilus</i>	N/A	BoCC Amber	Probable	Not Scarce	Common summer breeder
Woodpigeon	<i>Columba palumbus</i>	N/A	N/A	Breeding	Not Scarce	Resident
Wren	<i>Troglodytes troglodytes</i>	Bern	N/A	Breeding	Not Scarce	Very common resident
Yellowhammer	<i>Emberiza citronella</i>	Bern, NERC	BoCC Red	Breeding	Not Scarce	Once common resident, currently in decline

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

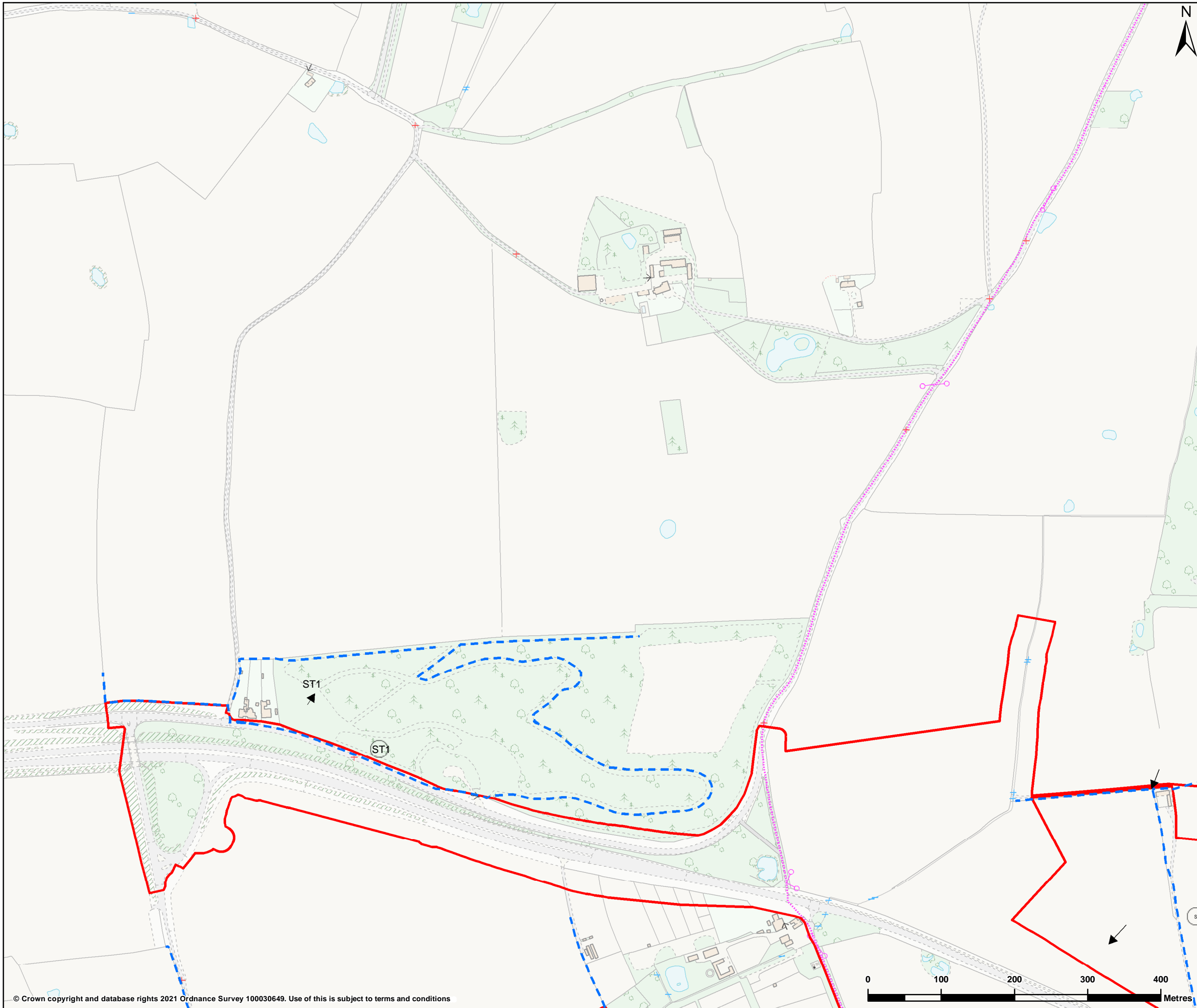
BoCC Red – Birds of Conservation Concern Red List

BoCC Amber - Birds of Conservation Concern Amber List

IUCN VU – IUCN Vulnerable Status (European Status)

IUCN NT – IUCN Near Threatened Status (European Status)

Annex C. Distribution map of key species



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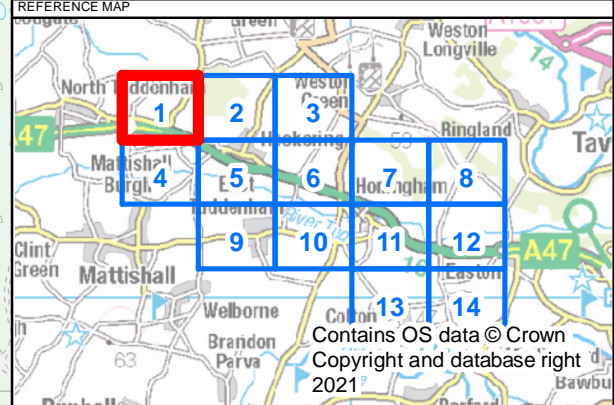
- DCO boundary
- Survey transects

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

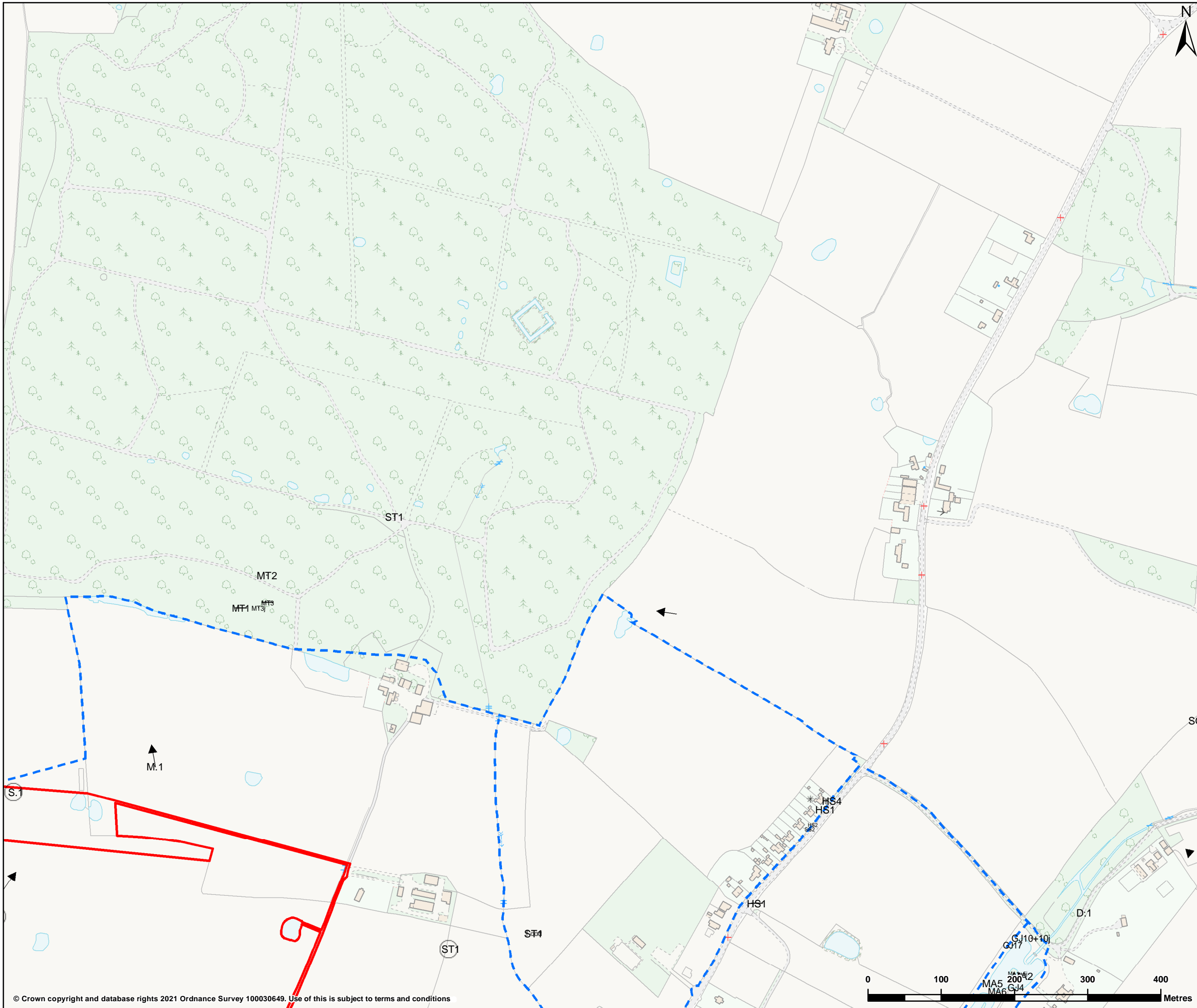
- ♀ Female
- ♂ Male
- juve Juvenile
- ♂♀ Pair



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DESIGNER					
CONTRACTOR					
CLIENT					
PROJECT TITLE					
A47 NORTH TUDDENHAM TO EASTON					
PROJECT STAGE					
PCF STAGE 3					
DRAWING TITLE					
APPENDIX C BREEDING BIRD SURVEY - JUNE SHEET 1 OF 14 TR010038/APP/6.2					
SUITABILITY					
FOR INFORMATION					
SHEET SIZE		SCALE		STATUS	
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DRAWING NUMBER					
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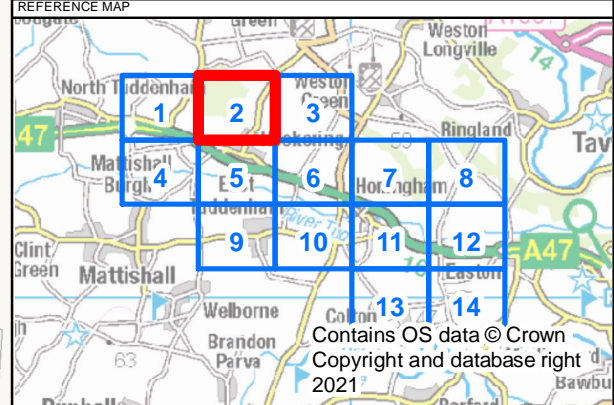
- DCO boundary
- Survey transects

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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A47 NORTH TUDDENHAM TO EASTON

PROJECT STAGE
PCF STAGE 3

DRAWING TITLE
APPENDIX C
BREEDING BIRD SURVEY - JUNE
SHEET 2 OF 14
TR010038/APP/6.2

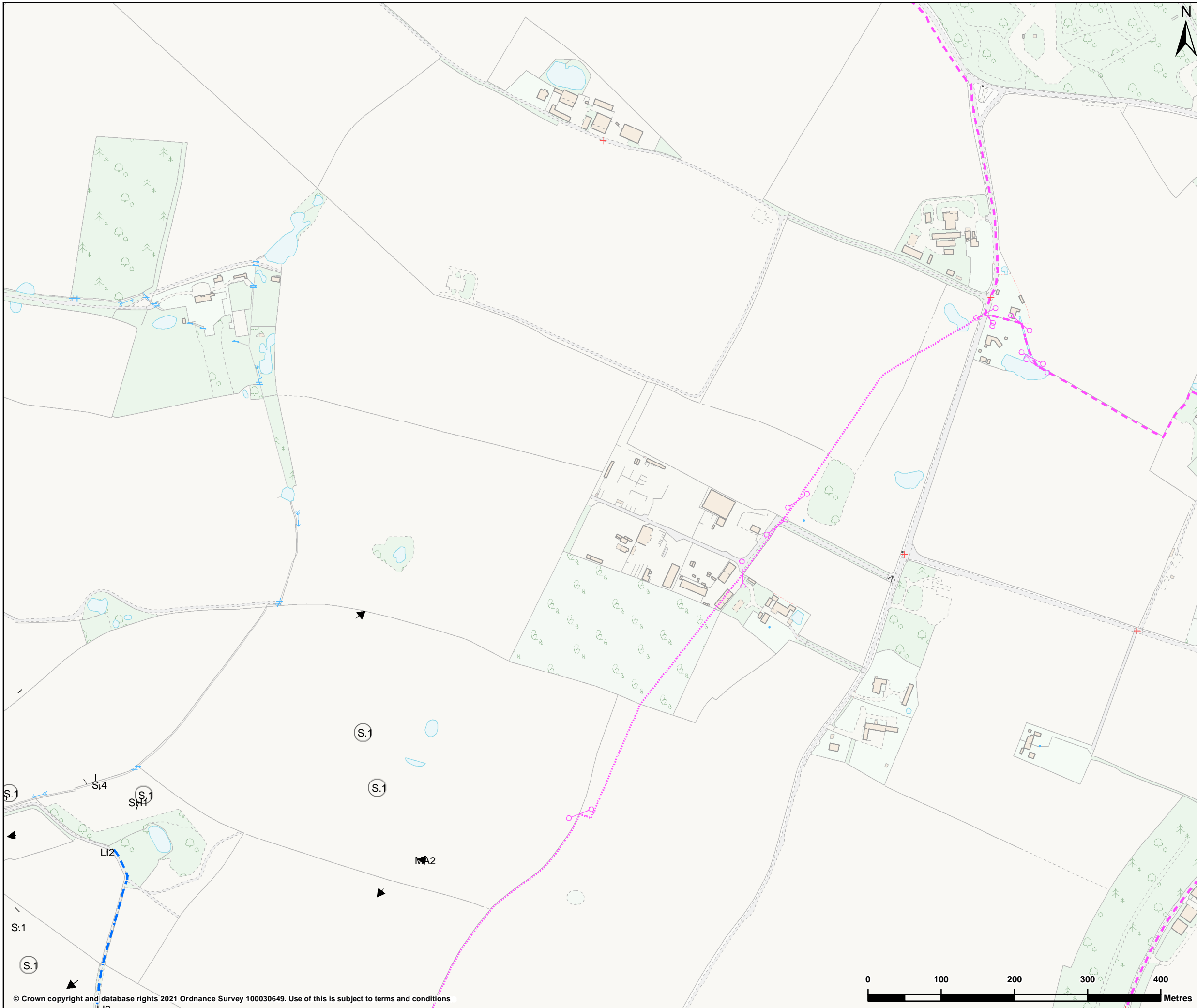
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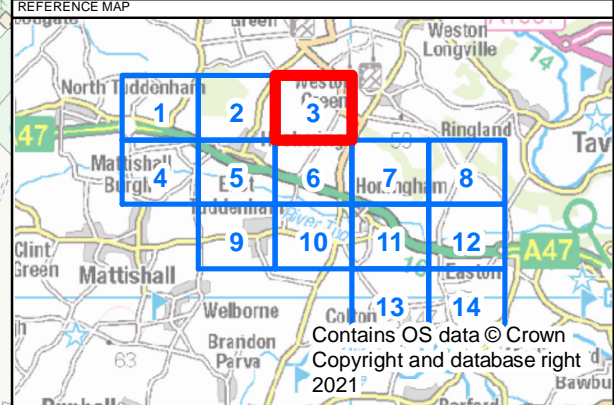
- DCO boundary
- - - Survey transects

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



P01	23/02/2021	First Edition	AC	MY	DW
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DESIGNER

SWECO ✱

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GallifordTry

CLIENT

**highways
england**

PROJECT TITLE

A47 NORTH TUDDENHAM TO EASTON

PROJECT STAGE

PCF STAGE 3

DRAWING TITLE

APPENDIX C
BREEDING BIRD SURVEY - JUNE
SHEET 3 OF 14
TR010038/APP/6.2

SUITABILITY

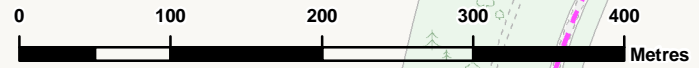
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A3	1:5,000	S2

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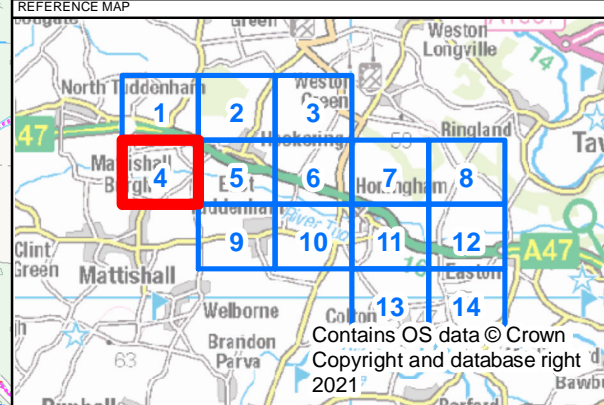
- DCO boundary
- Survey transects

Bird Activity

- on Adult Sitting
- * Aggressive Encounter
- == Alarm Calls
- Calling
- f ood Carrying Food
- mat Carrying Nest Mat
- In Song
- * Occupied Nest
- ⊠ Occupied Nest -Provided
- Flight Path

Sex

- ♀ Female
- ♂ Male
- juve Juvenile
- ♀♂ Pair



P01	23/02/2021	First Edition	AC	MY	DW
REV	DATE	REVISION NOTE	ORG	CHKD	APPD

DESIGNER

SWECO

CONTRACTOR

GallifordTry

CLIENT

**highways
england**

PROJECT TITLE

A47 NORTH TUDDENHAM TO EASTON

PROJECT STAGE

PCF STAGE 3

DRAWING TITLE

APPENDIX C
BREEDING BIRD SURVEY - JUNE
SHEET 4 OF 14
TR010038/APP/6.2

SUITABILITY

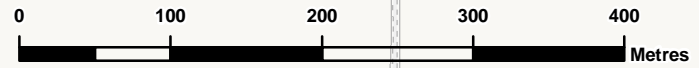
FOR INFORMATION

SHEET SIZE	SCALE	STATUS
A3	1:5,000	S2

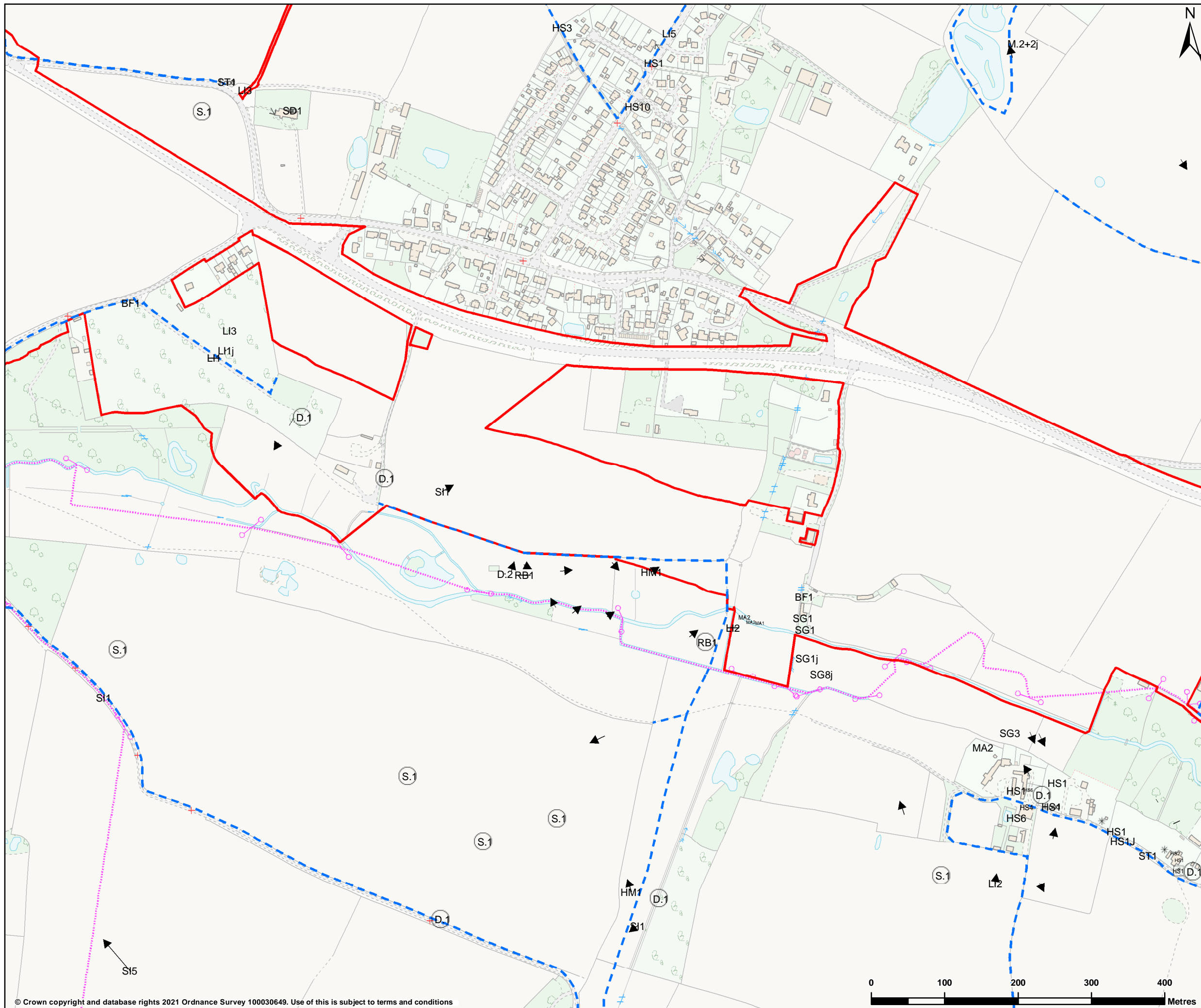
DRAWING NUMBER

HE551489-GTY-EBD-000-DR-LB-30112

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LEGEND

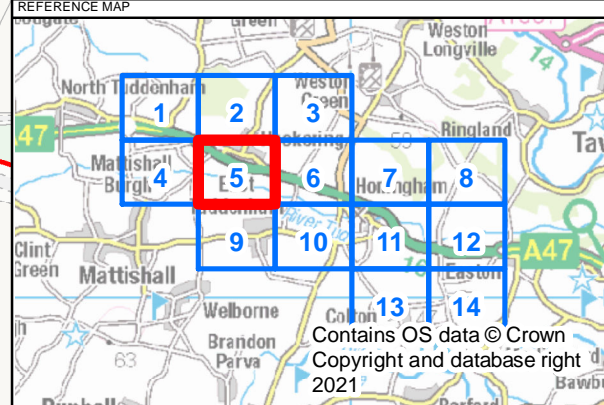
- DCO boundary
- Survey transects

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

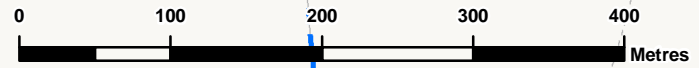
Sex

- ♀ Female
- ♂ Male
- juve Juvenile
- ♀♂ Pair

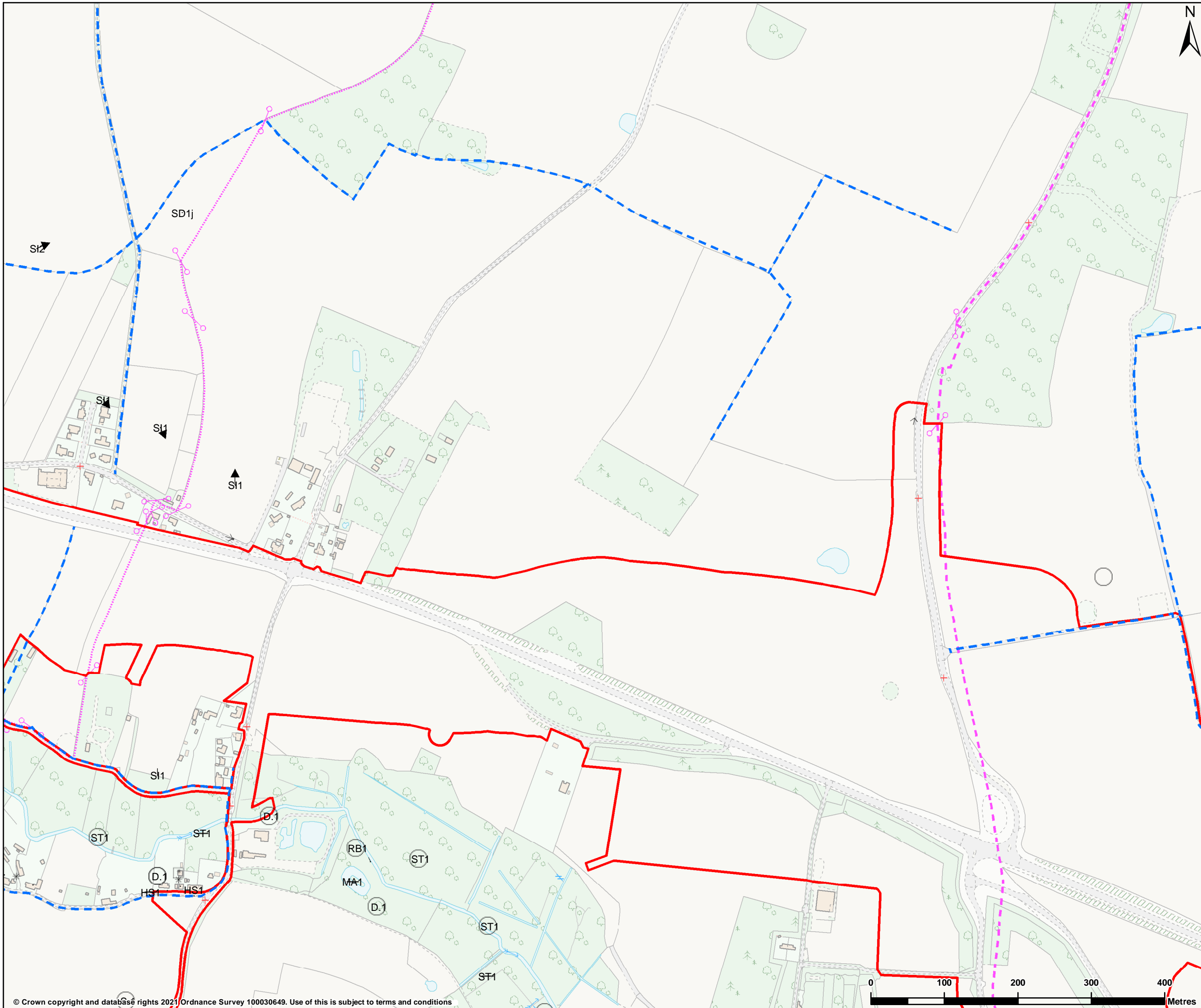


P01	23/02/2021	First Edition	AC	MY	DW
REV	DATE	REVISION NOTE	ORG	CHKD	APPD
DESIGNER					
CONTRACTOR					
CLIENT					
PROJECT TITLE					
A47 NORTH TUDDENHAM TO EASTON					
PROJECT STAGE					
PCF STAGE 3					
DRAWING TITLE					
APPENDIX C BREEDING BIRD SURVEY - JUNE SHEET 5 OF 14 TR010038/APP/6.2					
SUITABILITY					
FOR INFORMATION					
SHEET SIZE		SCALE		STATUS	
A3		1:5,000		S2	
DRAWING NUMBER					
HE551489-GTY-EBD-000-DR-LB-30113					

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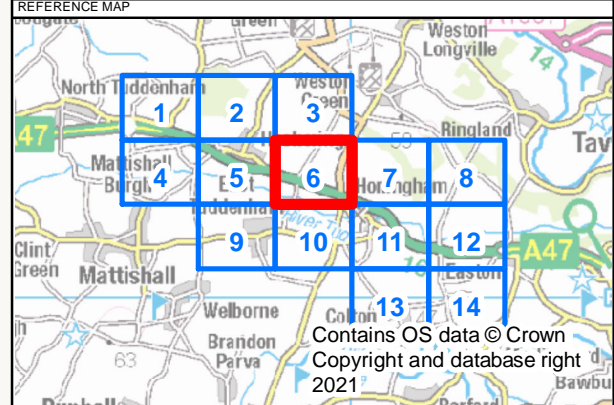
- DCO boundary
- Survey transects

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



P01	23/02/2021	First Edition	AC	MY	DW
REV	DATE	REVISION NOTE	ORG	CHKD	APPD

DESIGNER

SWECO

CONTRACTOR

GallifordTry

CLIENT

**highways
england**

PROJECT TITLE

A47 NORTH TUDDENHAM TO EASTON

PROJECT STAGE

PCF STAGE 3

DRAWING TITLE

APPENDIX C
BREEDING BIRD SURVEY - JUNE
SHEET 6 OF 14
TR010038/APP/6.2

SUITABILITY

FOR INFORMATION

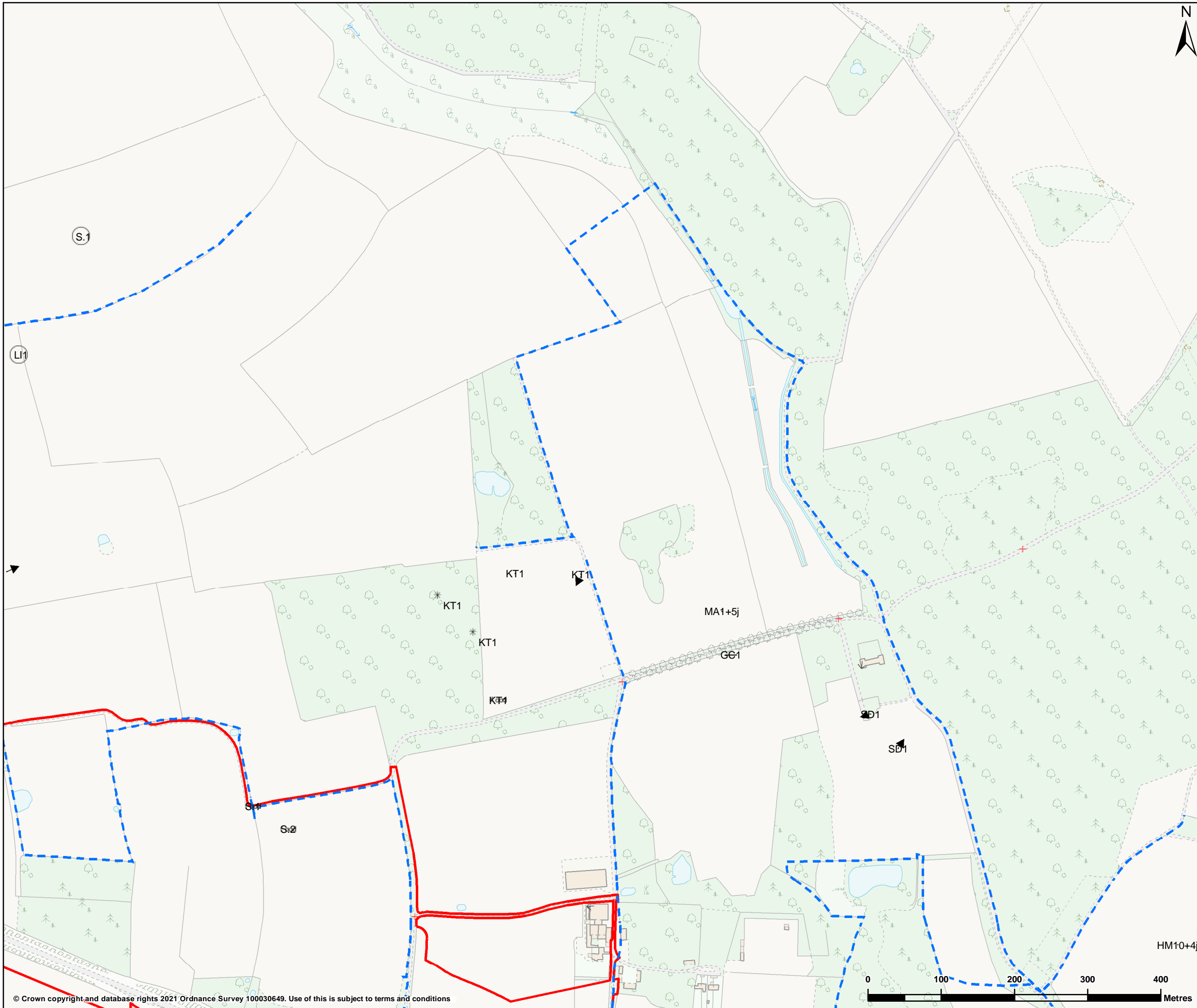
SHEET SIZE	SCALE	STATUS
A3	1:5,000	S2

DRAWING NUMBER

HE551489-GTY-EBD-000-DR-LB-30114

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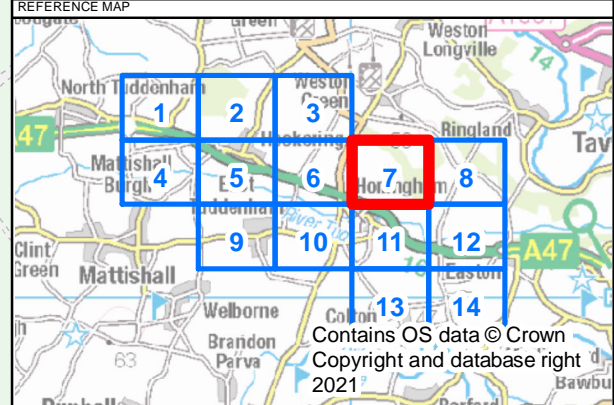
- DCO boundary
- Survey transects

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



P01	23/02/2021	First Edition	AC	MY	DW
REV	DATE	REVISION NOTE	ORG	CHKD	APPD

DESIGNER

SWECO ✱

CONTRACTOR

GallifordTry

CLIENT

**highways
england**

PROJECT TITLE

A47 NORTH TUDDENHAM TO EASTON

PROJECT STAGE

PCF STAGE 3

DRAWING TITLE

APPENDIX C
BREEDING BIRD SURVEY - JUNE
SHEET 7 OF 14
TR010038/APP/6.2

SUITABILITY

FOR INFORMATION

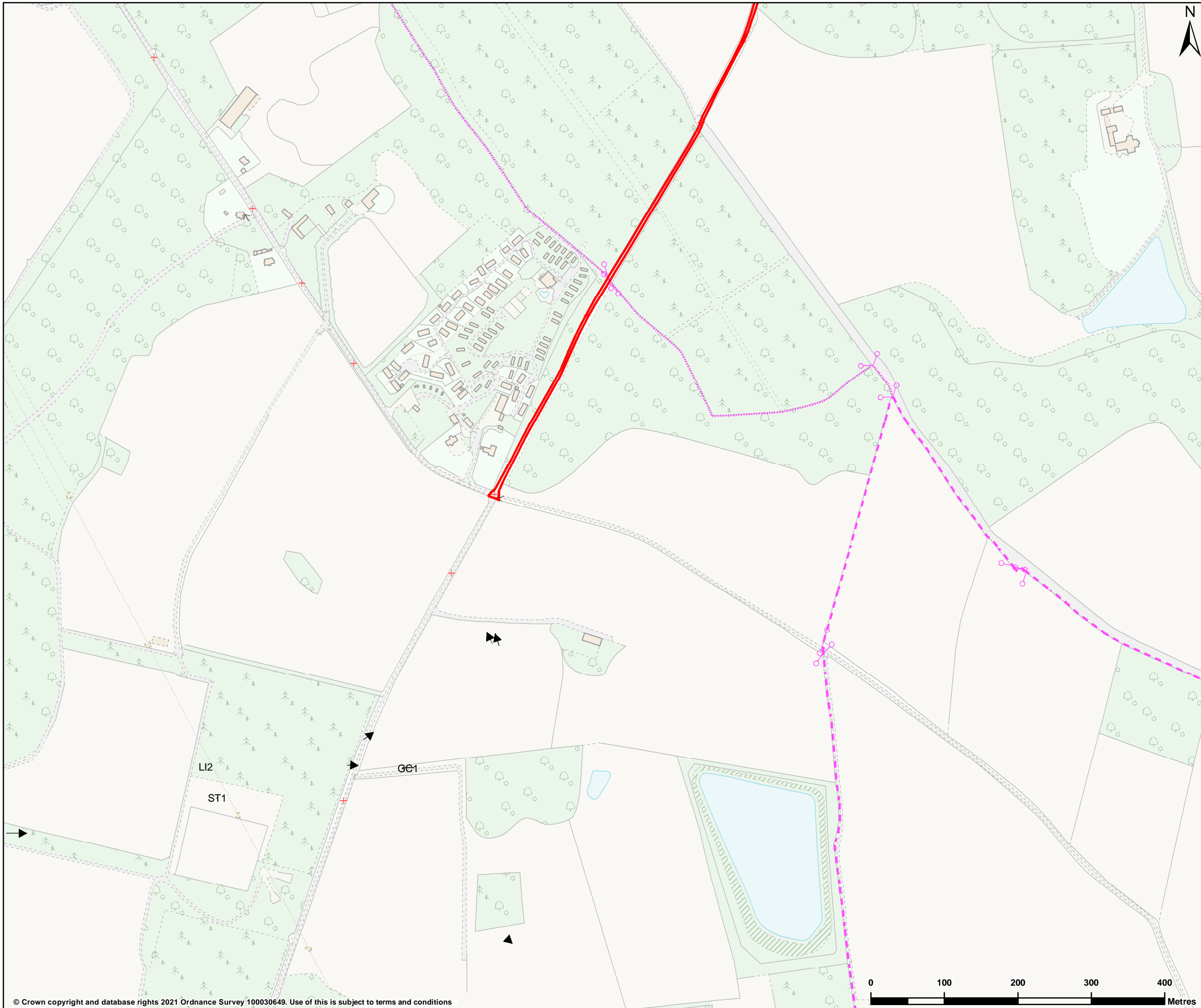
SHEET SIZE	SCALE	STATUS
A3	1:5,000	S2

DRAWING NUMBER

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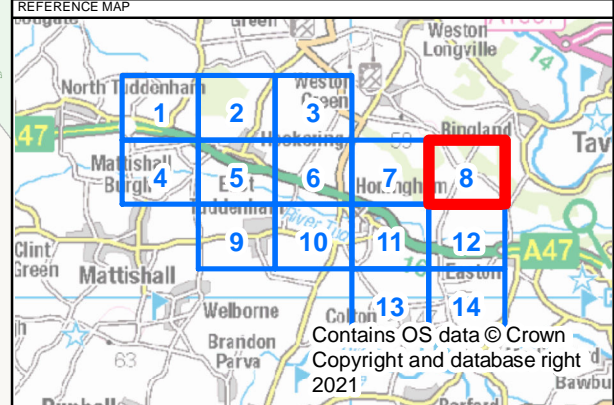
- DCO boundary
- Survey transects

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



P01	23/02/2021	First Edition	AC	MY	DW
REV	DATE	REVISION NOTE	ORG	CHK'D	APP'D

DESIGNER

CONTRACTOR

CLIENT

PROJECT TITLE
A47 NORTH TUDDENHAM TO EASTON

PROJECT STAGE
PCF STAGE 3

DRAWING TITLE
APPENDIX C
BREEDING BIRD SURVEY - JUNE
SHEET 8 OF 14
TR010038/APP/6.2

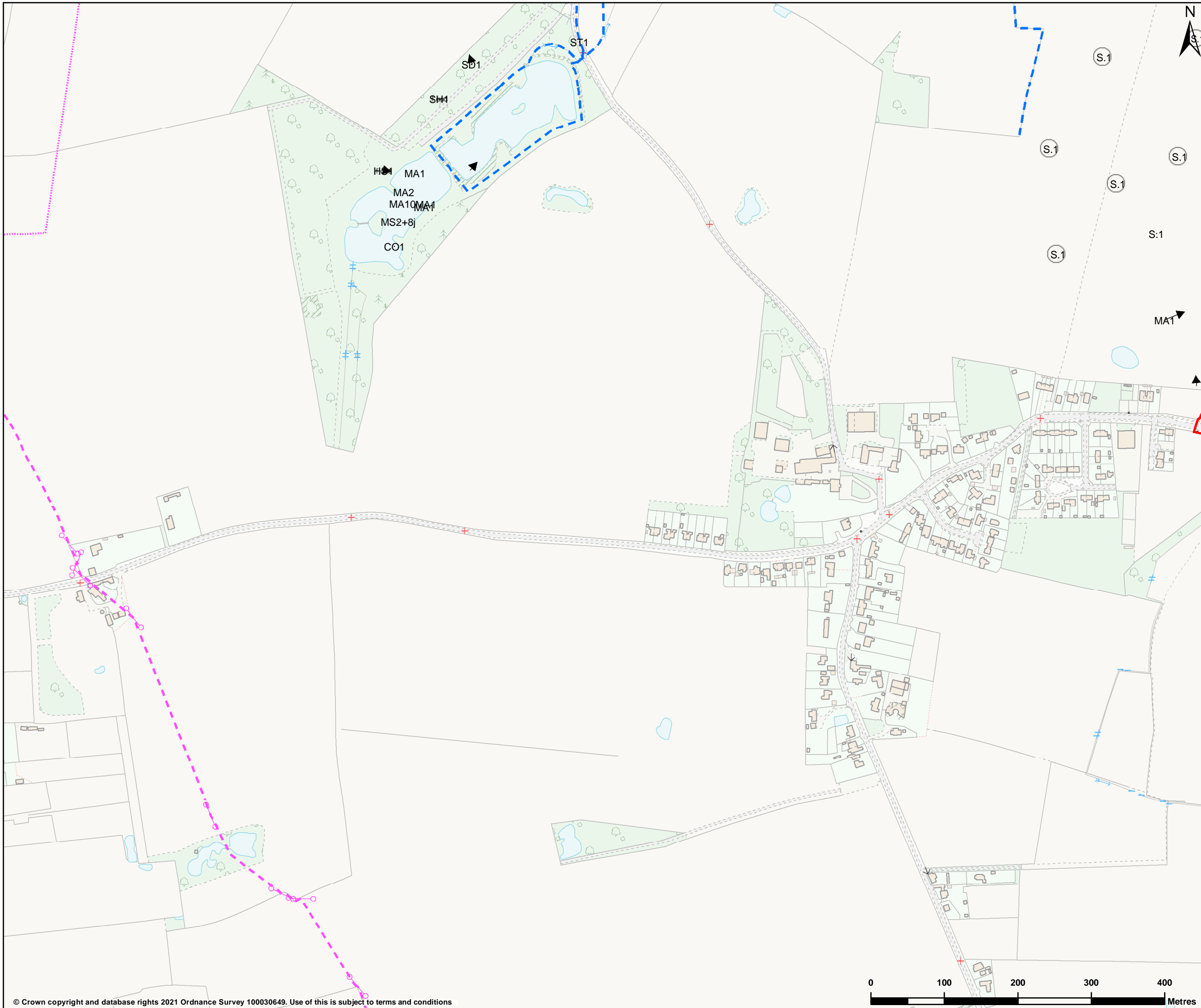
SUITABILITY
FOR INFORMATION

SHEET SIZE A3	SCALE 1:5,000	STATUS S2
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DRAWING NUMBER
HE551489-GTY-EBD-000-DR-LB-30116

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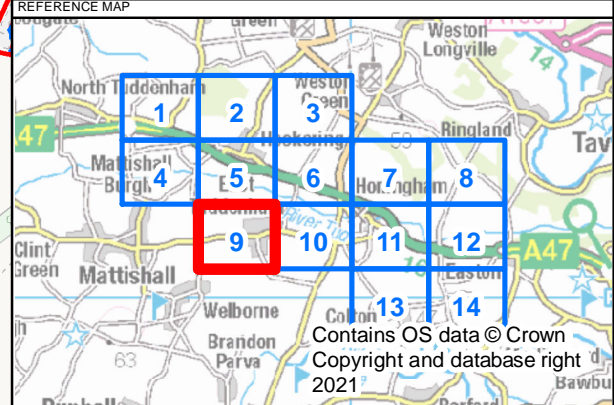
- DCO boundary
- Survey transects

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



P01	23/02/2021	First Edition	AC	MY	DW
REV	DATE	REVISION NOTE	ORG	CHK'D	APP'D

DESIGNER

CONTRACTOR

CLIENT

PROJECT TITLE
A47 NORTH TUDDENHAM TO EASTON

PROJECT STAGE
PCF STAGE 3

DRAWING TITLE
APPENDIX C
BREEDING BIRD SURVEY - JUNE
SHEET 9 OF 14
TR010038/APP/6.2

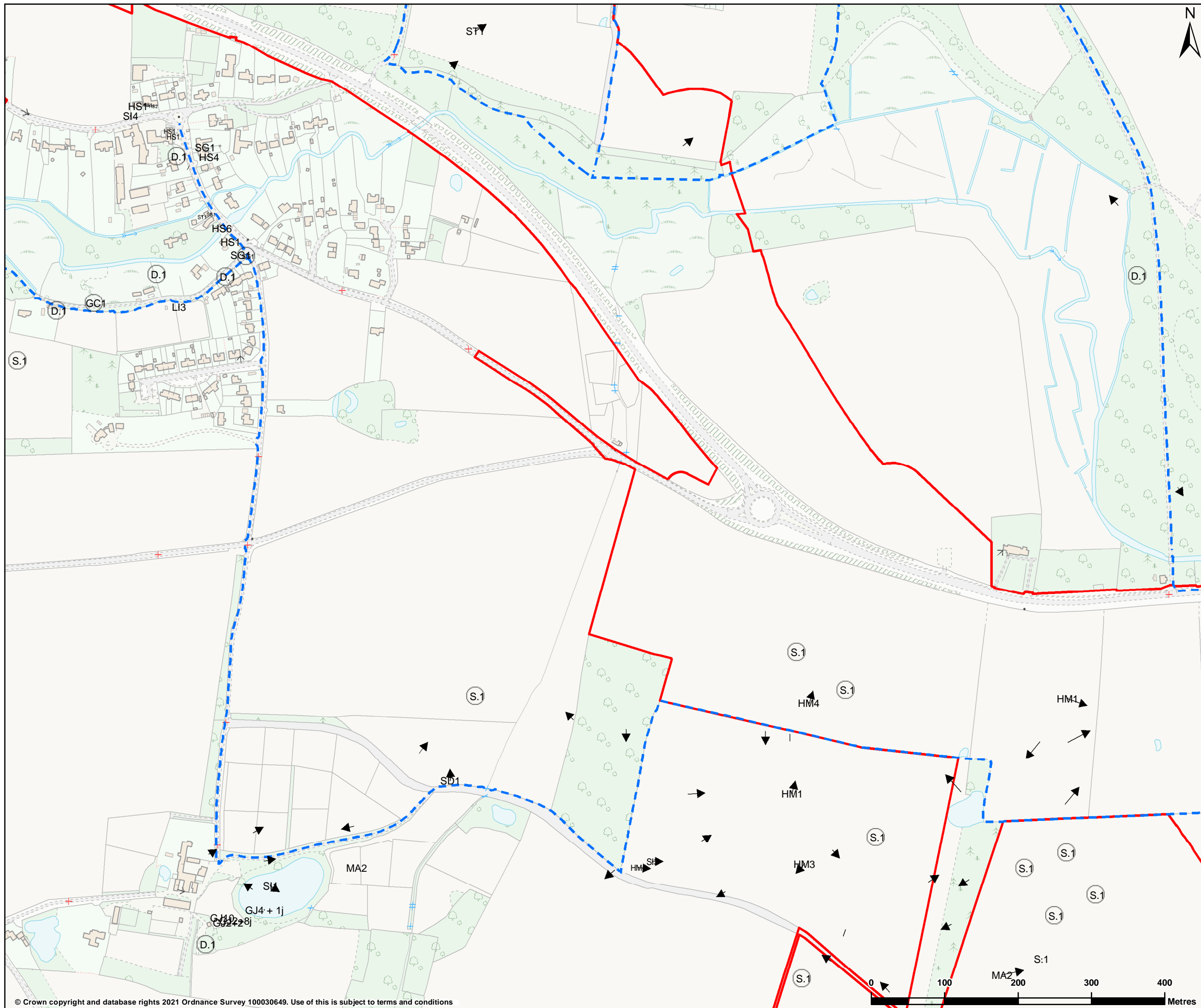
SUITABILITY
FOR INFORMATION

SHEET SIZE	SCALE	STATUS
A3	1:5,000	S2

DRAWING NUMBER
HE551489-GTY-EBD-000-DR-LB-30117

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LEGEND

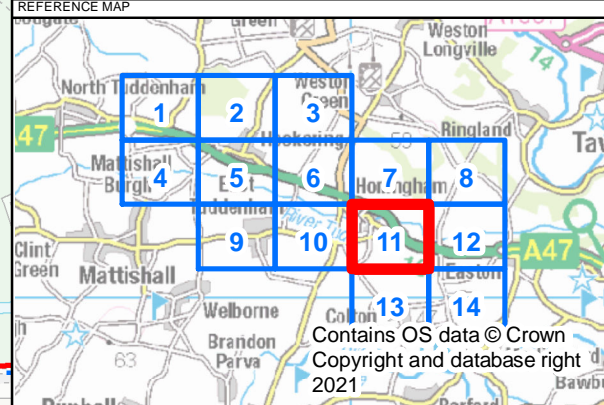
- DCO boundary
- Survey transects

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

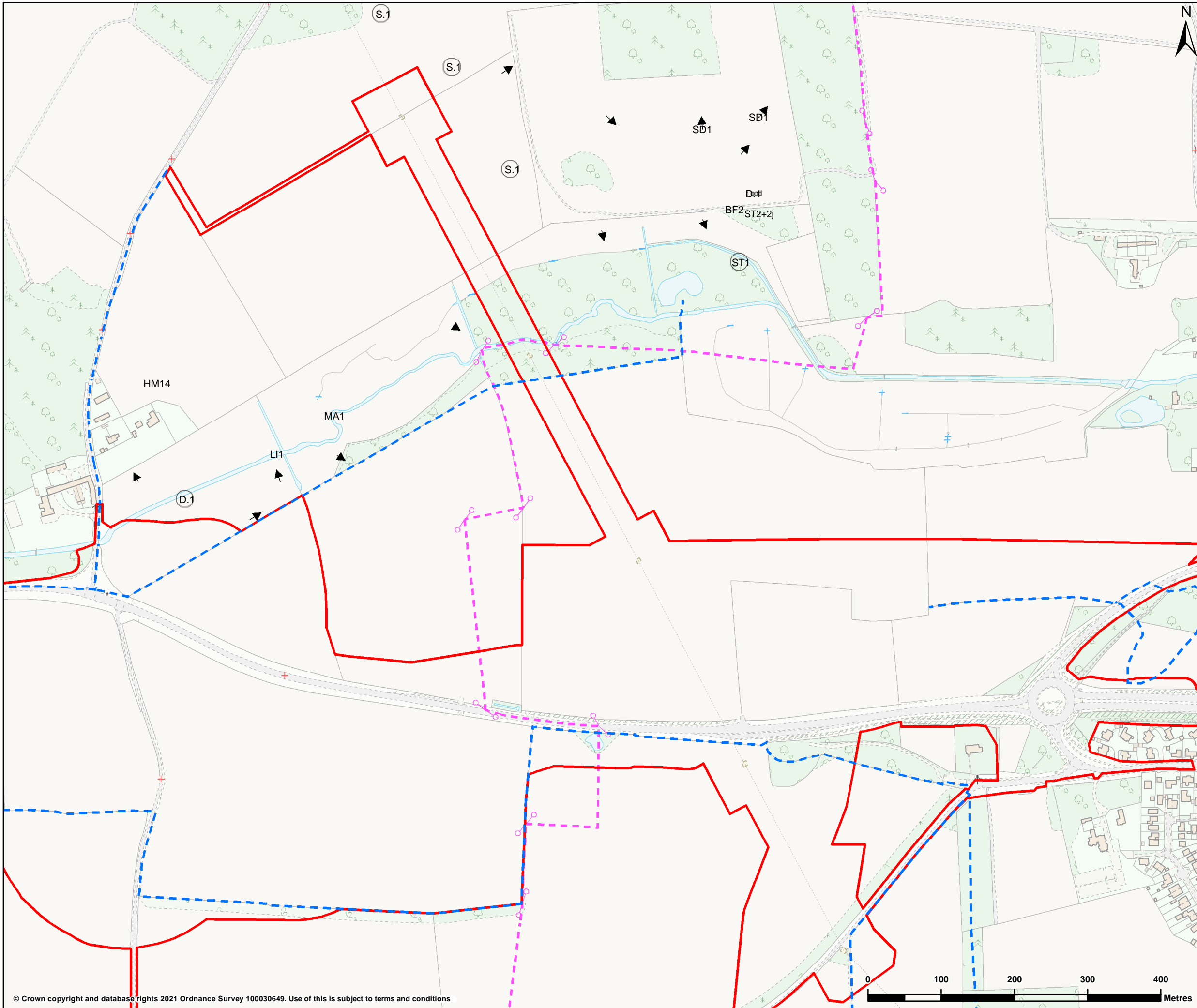
- ♀ Female
- ♂ Male
- juv Juvenile
- ♂♀ Pair



P01	23/02/2021	First Edition	AC	MY	DW
REV	DATE	REVISION NOTE	ORG	CHK'D	APP'D
DESIGNER					
CONTRACTOR					
CLIENT					
PROJECT TITLE					
A47 NORTH TUDDENHAM TO EASTON					
PROJECT STAGE					
PCF STAGE 3					
DRAWING TITLE					
APPENDIX C BREEDING BIRD SURVEY - JUNE SHEET 11 OF 14 TR010038/APP/6.2					
SUITABILITY					
FOR INFORMATION					
SHEET SIZE		SCALE		STATUS	
A3		1:5,000		S2	
DRAWING NUMBER					
HE551489-GTY-EBD-000-DR-LB-30119					

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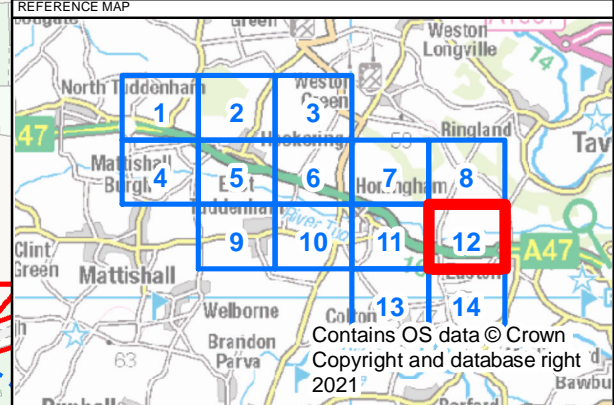
- DCO boundary
- Survey transects

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



P01	23/02/2021	First Edition	AC	MY	DW
REV	DATE	REVISION NOTE	ORG	CHK'D	APP'D

DESIGNER

SWECO ✱

CONTRACTOR

GallifordTry

CLIENT

**highways
england**

PROJECT TITLE

A47 NORTH TUDDENHAM TO EASTON

PROJECT STAGE

PCF STAGE 3

DRAWING TITLE

APPENDIX C
BREEDING BIRD SURVEY - JUNE
SHEET 12 OF 14
TR010038/APP/6.2

SUITABILITY

FOR INFORMATION

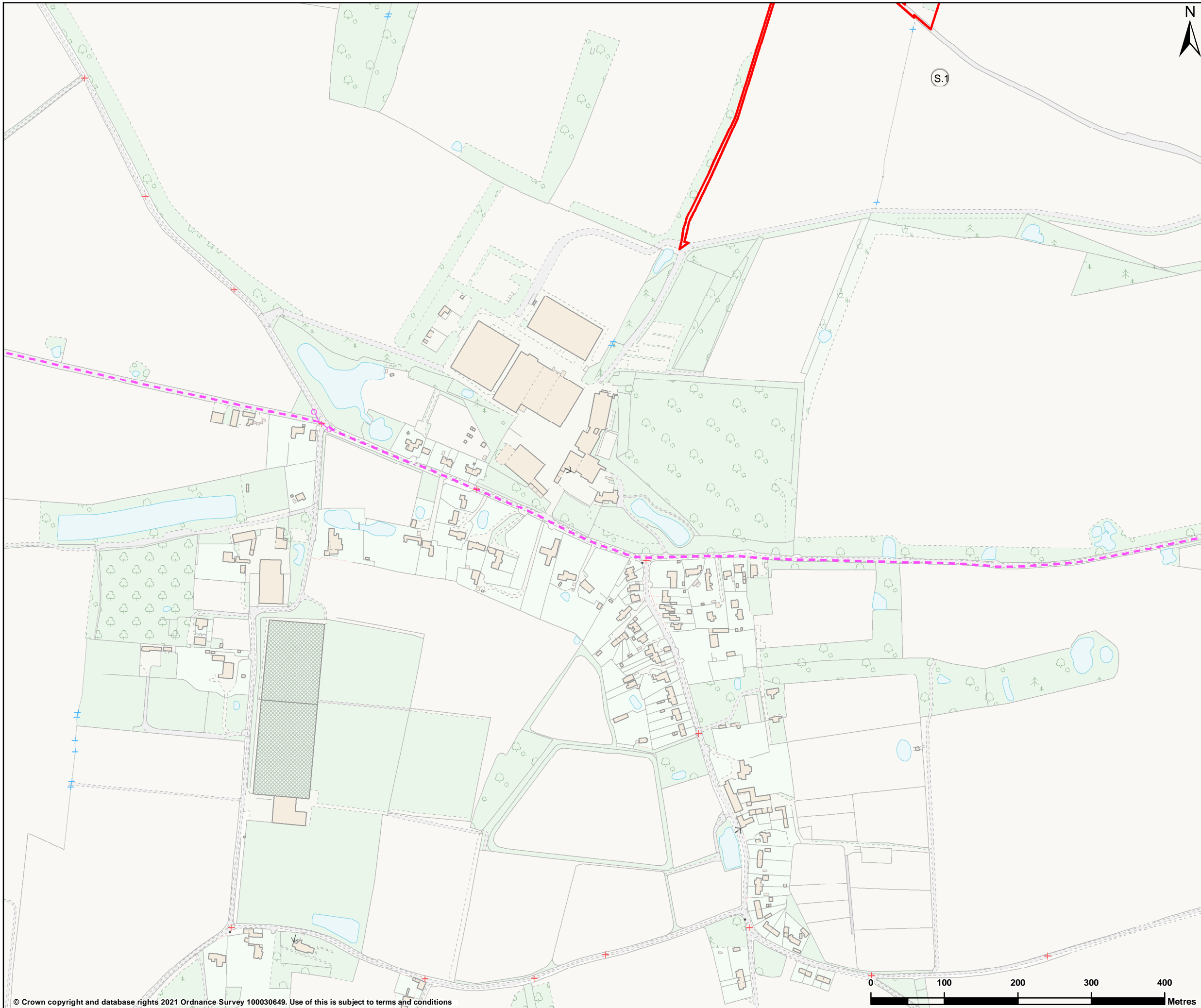
SHEET SIZE	SCALE	STATUS
A3	1:5,000	S2

DRAWING NUMBER

HE551489-GTY-EBD-000-DR-LB-30120

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LEGEND

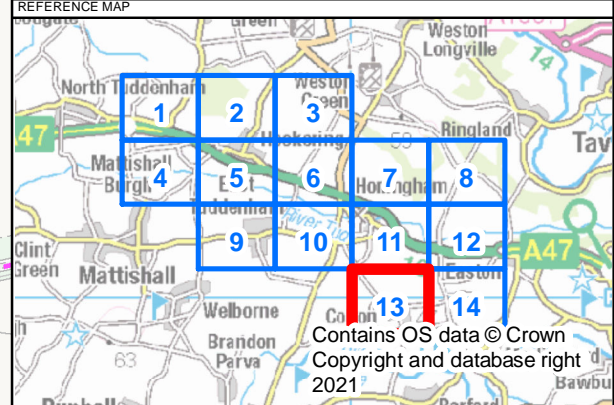
- DCO boundary
- Survey transects

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



P01	23/02/2021	First Edition	AC	MY	DW
REV	DATE	REVISION NOTE	ORG	CHKD	APPD

DESIGNER

SWECO ✱

CONTRACTOR

GallifordTry

CLIENT

**highways
england**

PROJECT TITLE

A47 NORTH TUDDENHAM TO EASTON

PROJECT STAGE

PCF STAGE 3

DRAWING TITLE

APPENDIX C
BREEDING BIRD SURVEY - JUNE
SHEET 13 OF 14
TR010038/APP/6.2

SUITABILITY

FOR INFORMATION

SHEET SIZE	SCALE	STATUS
A3	1:5,000	S2

DRAWING NUMBER

HE551489-GTY-EBD-000-DR-LB-30121

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LEGEND

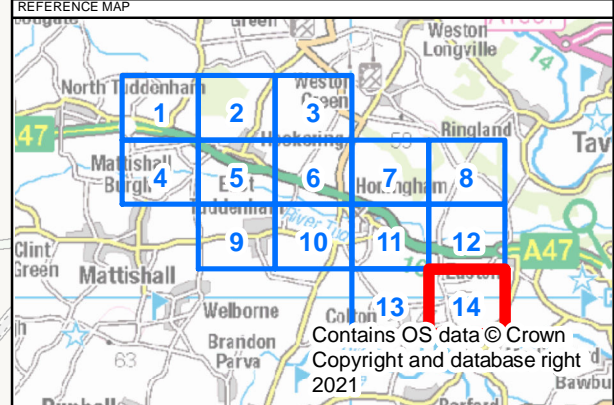
- DCO boundary
- Survey transects

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



P01	23/02/2021	First Edition	AC	MY	DW
REV	DATE	REVISION NOTE	ORG	CHKD	APPD

DESIGNER

SWECO

CONTRACTOR

GallifordTry

CLIENT

**highways
england**

PROJECT TITLE

A47 NORTH TUDDENHAM TO EASTON

PROJECT STAGE

PCF STAGE 3

DRAWING TITLE

APPENDIX C
BREEDING BIRD SURVEY - JUNE
SHEET 14 OF 14
TR010038/APP/6.2

SUITABILITY

FOR INFORMATION

SHEET SIZE	SCALE	STATUS
A3	1:5,000	S2

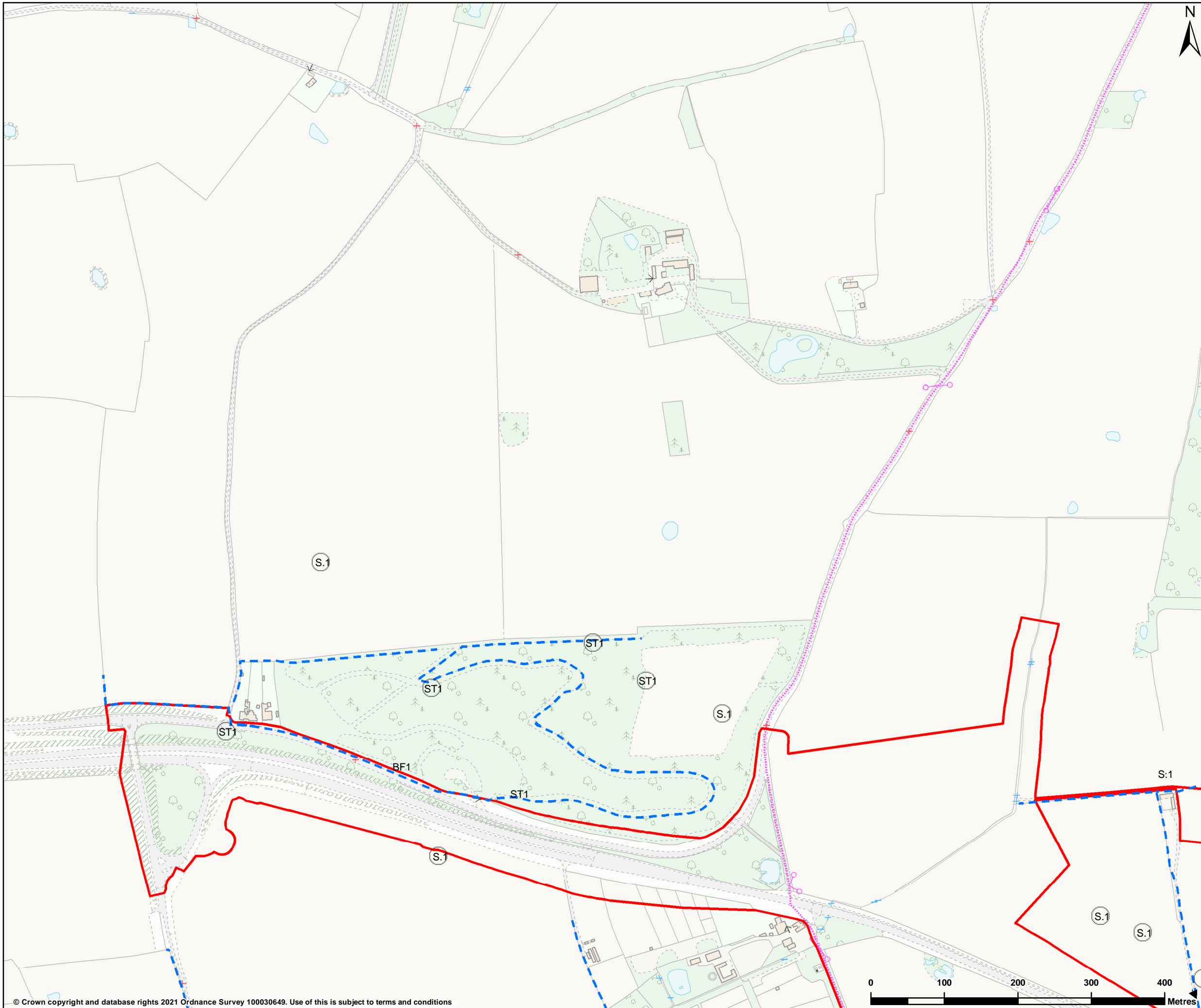
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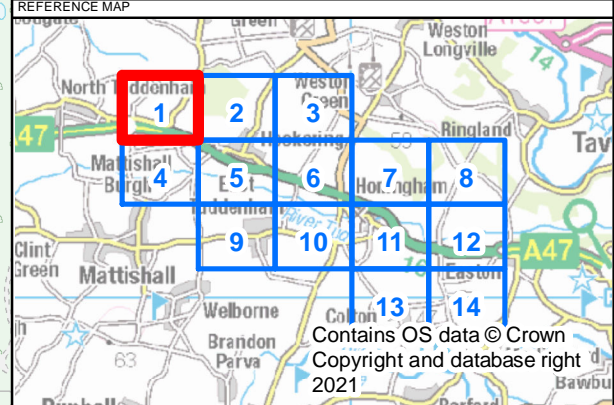
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LEGEND

- FlightPaths
- DCO boundary
- 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



P01	23/02/2021	First Edition	AC	MY	DW
REV	DATE	REVISION NOTE	ORG	CHK'D	APP'D

DESIGNER

SWECO

CONTRACTOR

GallifordTry

CLIENT

**highways
england**

PROJECT TITLE

A47 NORTH TUDDENHAM TO EASTON

PROJECT STAGE

PCF STAGE 3

DRAWING TITLE

APPENDIX C:
BREEDING BIRD SURVEY - APRIL
SHEET 1 OF 14
TR010038/APP/6.2

SUITABILITY

FOR INFORMATION

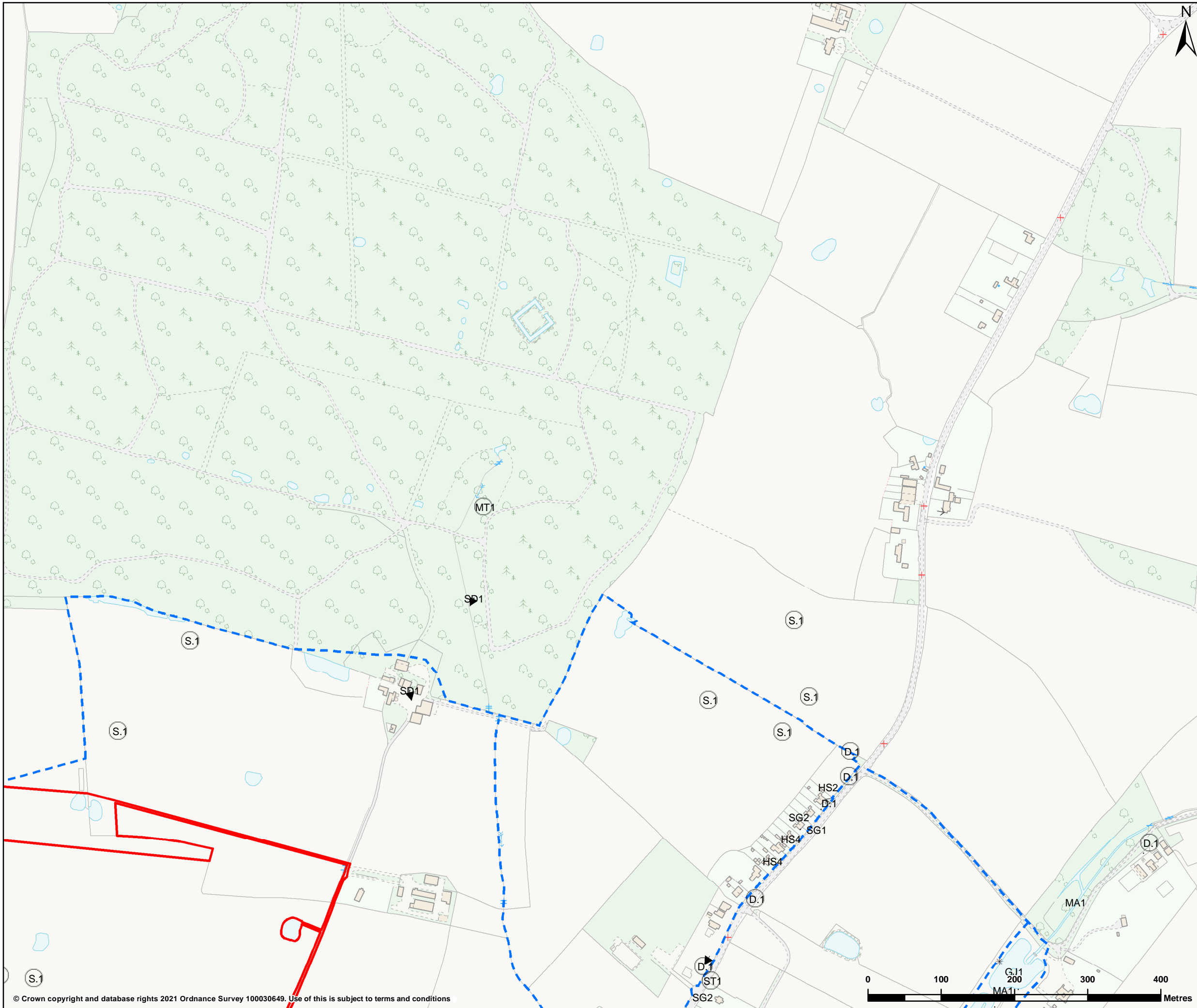
SHEET SIZE	SCALE	STATUS
A3	1:5,000	S2

DRAWING NUMBER

HE551489-GTY-EBD-000-DR-LB-30081

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LEGEND

- FlightPaths
- DCO boundary

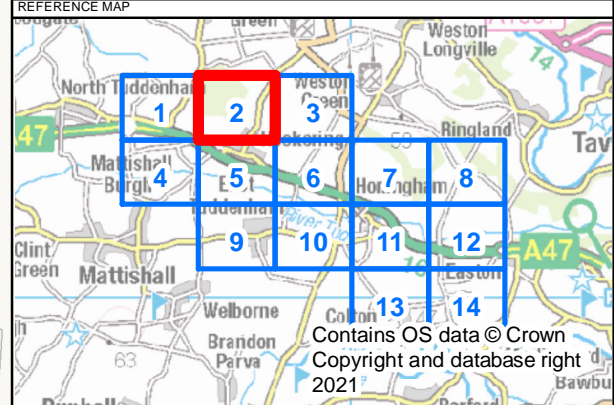
Bird Activity

- 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



P01	23/02/2021	First Edition	AC	MY	DW
REV	DATE	REVISION NOTE	ORG	CHKD	APPD

DESIGNER

CONTRACTOR

CLIENT

PROJECT TITLE
A47 NORTH TUDDENHAM TO EASTON

PROJECT STAGE
PCF STAGE 3

DRAWING TITLE
APPENDIX C:
BREEDING BIRD SURVEY - APRIL
SHEET 2 OF 14
TR010038/APP/6.2

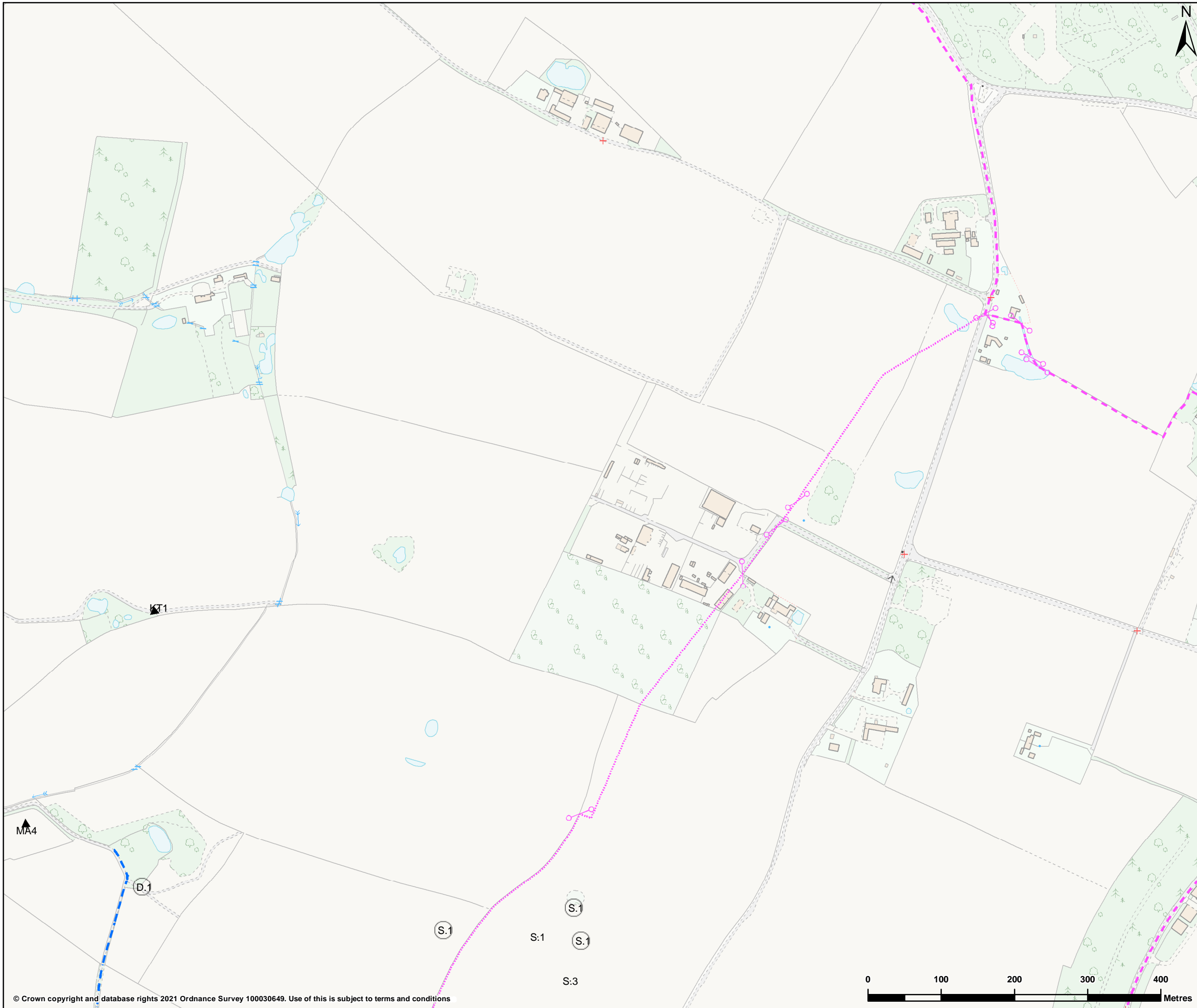
SUITABILITY
FOR INFORMATION

SHEET SIZE A3	SCALE 1:5,000	STATUS S2
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DRAWING NUMBER
HE551489-GTY-EBD-000-DR-LB-30082

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LEGEND

- FlightPaths
- DCO boundary

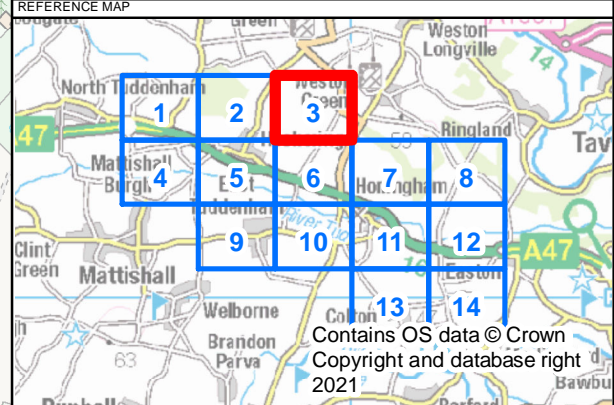
Bird Activity

- 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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REV	DATE	REVISION NOTE	ORG	CHKD	APPD

DESIGNER

CONTRACTOR

CLIENT

PROJECT TITLE
A47 NORTH TUDDENHAM TO EASTON

PROJECT STAGE
PCF STAGE 3

DRAWING TITLE
APPENDIX C:
BREEDING BIRD SURVEY - APRIL
SHEET 3 OF 14
TR010038/APP/6.2

SUITABILITY
FOR INFORMATION

SHEET SIZE A3	SCALE 1:5,000	STATUS S2
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DRAWING NUMBER
HE551489-GTY-EBD-000-DR-LB-30083

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LEGEND

- FlightPaths
- DCO boundary

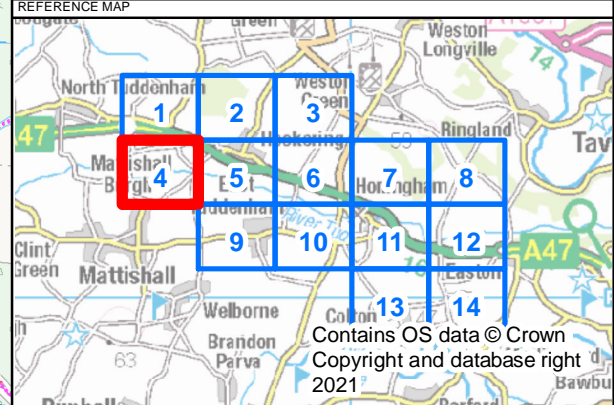
Bird Activity

- on Adult Sitting
- * Aggressive Encounter
- ≡ Alarm Calls
- Calling
- f ood 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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DESIGNER

CONTRACTOR

CLIENT

PROJECT TITLE
A47 NORTH TUDDENHAM TO EASTON

PROJECT STAGE
PCF STAGE 3

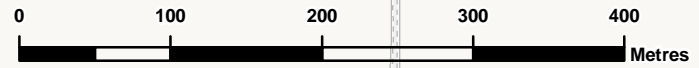
DRAWING TITLE
APPENDIX C:
BREEDING BIRD SURVEY - APRIL
SHEET 4 OF 14
TR010038/APP/6.2

SUITABILITY
FOR INFORMATION

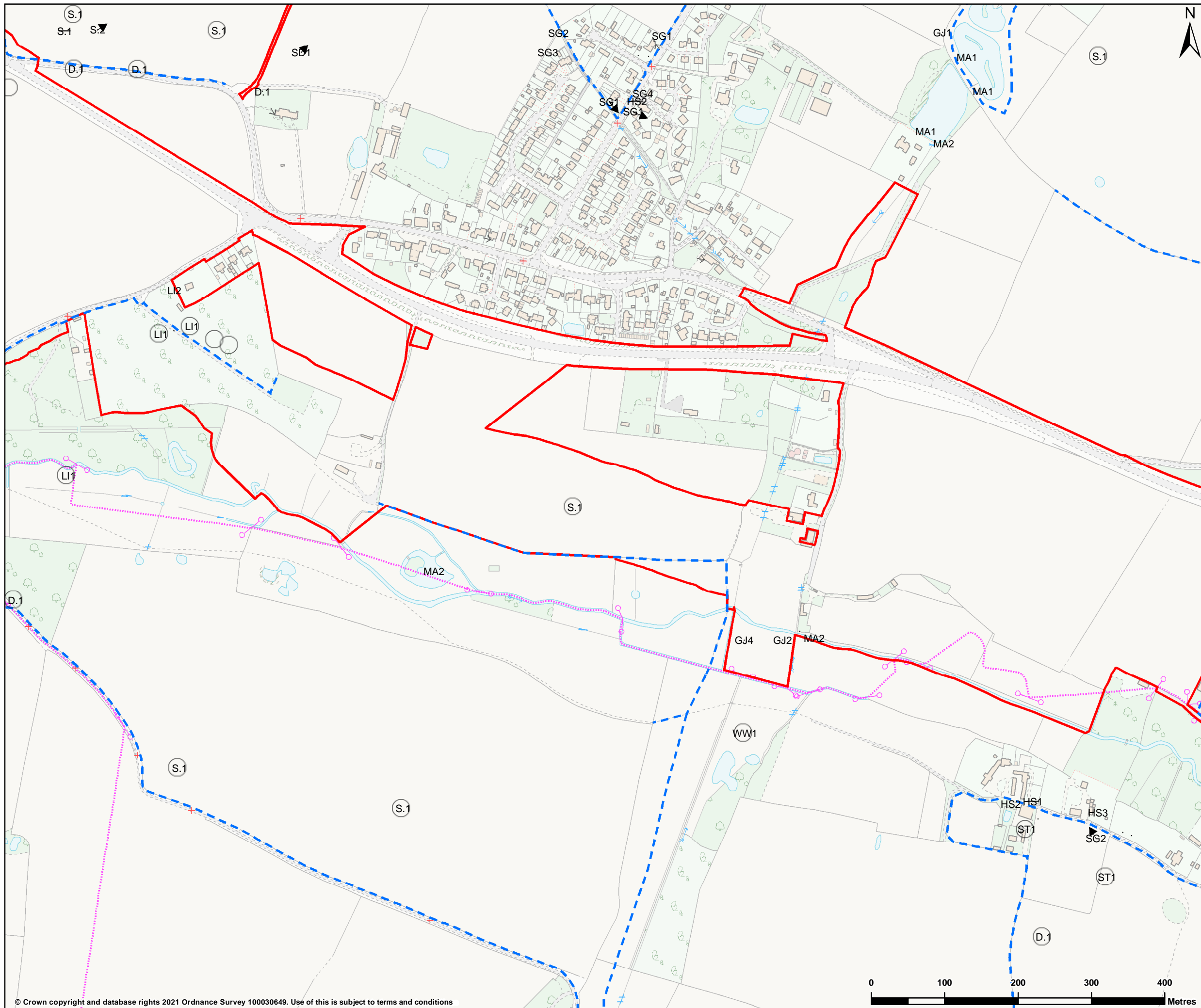
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A3	1:5,000	S2

DRAWING NUMBER
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LEGEND

- FlightPaths
- ▭ DCO boundary

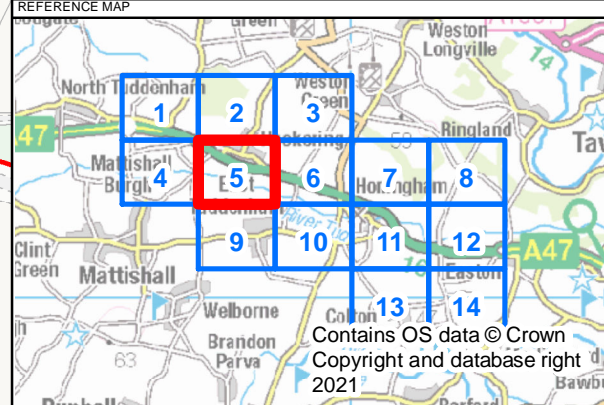
Bird Activity

- 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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REV	DATE	REVISION NOTE	ORG	CHK'D	APP'D

DESIGNER

SWECO

CONTRACTOR

GallifordTry

CLIENT

highways england

PROJECT TITLE

A47 NORTH TUDDENHAM TO EASTON

PROJECT STAGE

PCF STAGE 3

DRAWING TITLE

APPENDIX C:
BREEDING BIRD SURVEY - APRIL
SHEET 5 OF 14
TR010038/APP/6.2

SUITABILITY

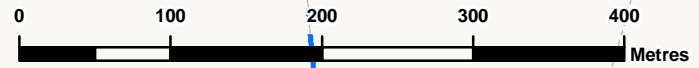
FOR INFORMATION

SHEET SIZE	SCALE	STATUS
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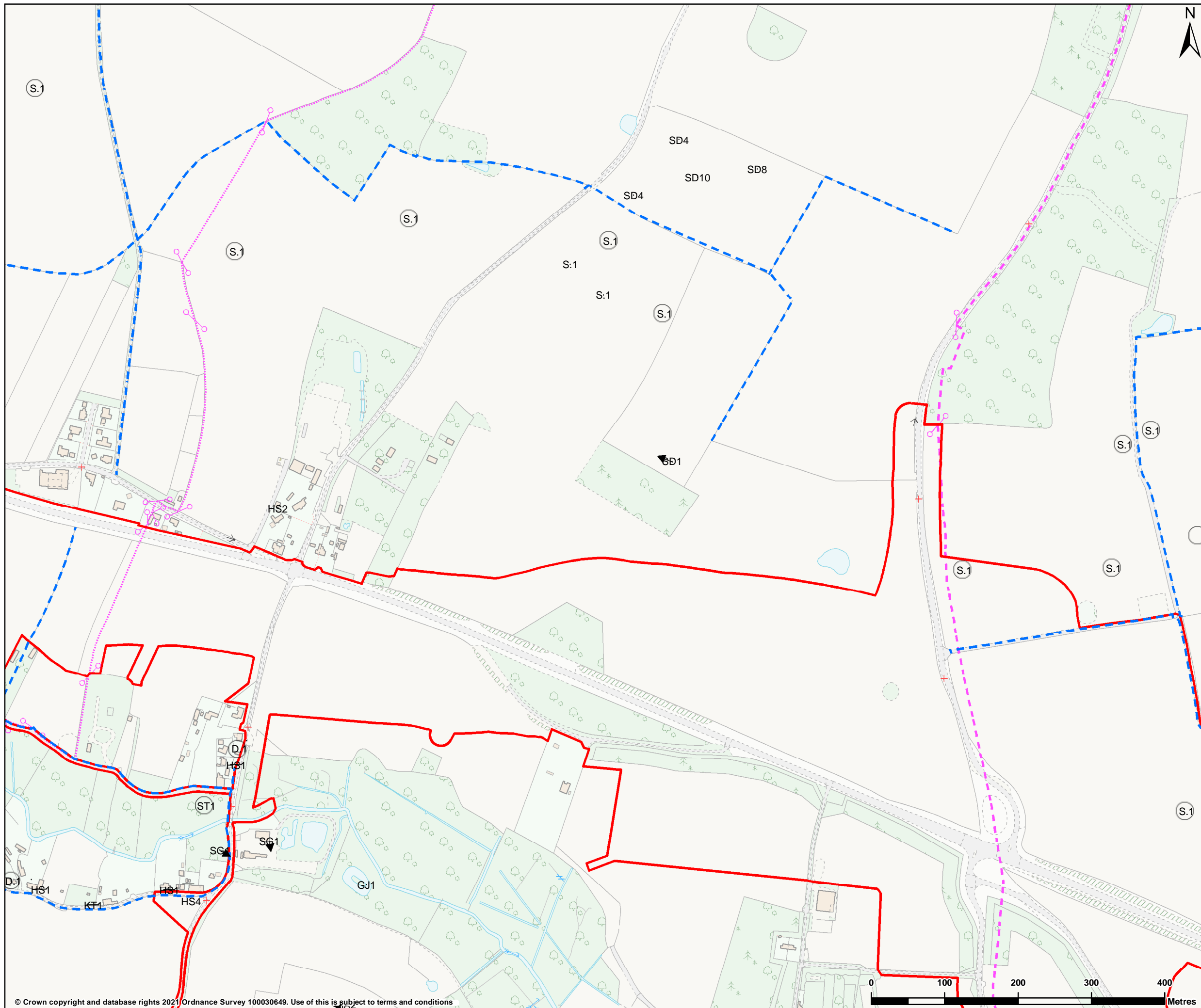
DRAWING NUMBER

HE551489-GTY-EBD-000-DR-LB-30085

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LEGEND

- FlightPaths
- DCO boundary

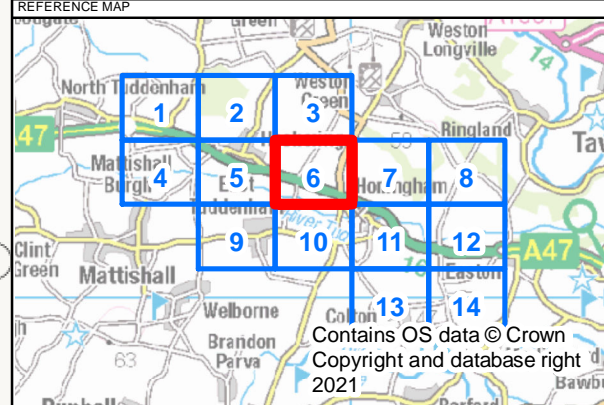
Bird Activity

- 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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REV	DATE	REVISION NOTE	ORG	CHKD	APPD

DESIGNER

SWECO

CONTRACTOR

GallifordTry

CLIENT

**highways
england**

PROJECT TITLE

A47 NORTH TUDDENHAM TO EASTON

PROJECT STAGE

PCF STAGE 3

DRAWING TITLE

APPENDIX C:
BREEDING BIRD SURVEY - APRIL
SHEET 6 OF 14
TR010038/APP/6.2

SUITABILITY

FOR INFORMATION

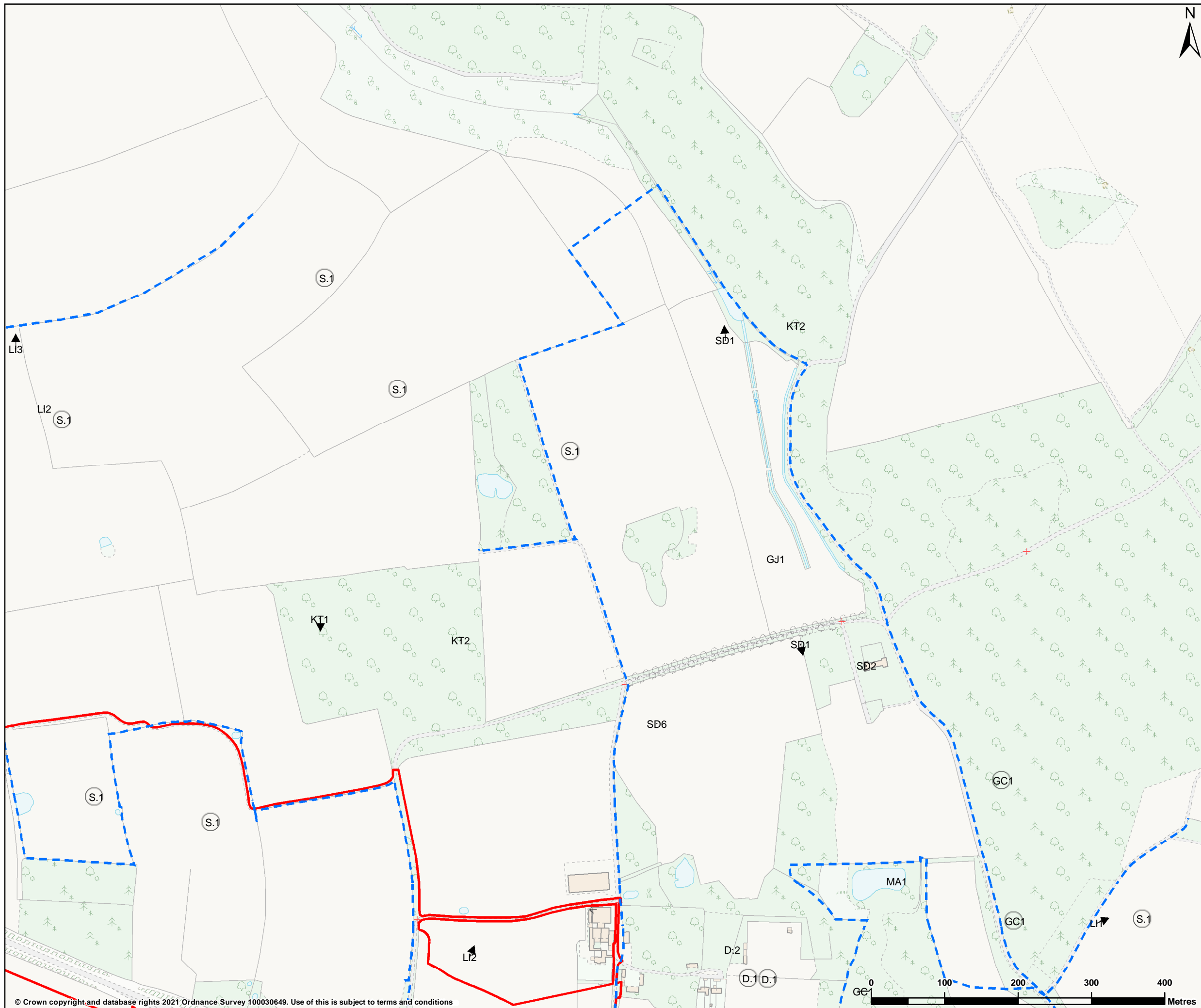
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A3	1:5,000	S2

DRAWING NUMBER

HE551489-GTY-EBD-000-DR-LB-30086

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LEGEND

- FlightPaths
- DCO boundary

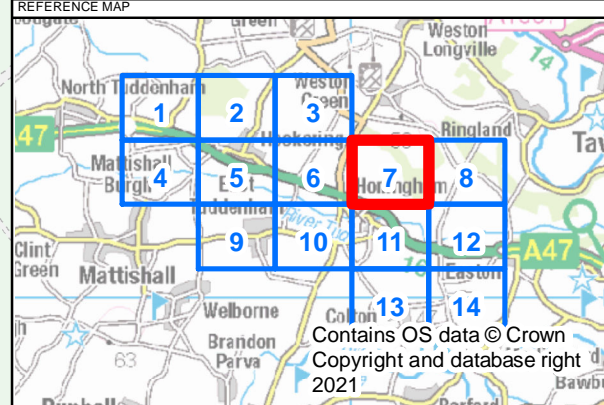
Bird Activity

- 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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REV	DATE	REVISION NOTE	ORG	CHKD	APPD

DESIGNER

SWECO

CONTRACTOR

GallifordTry

CLIENT

highways england

PROJECT TITLE

A47 NORTH TUDDENHAM TO EASTON

PROJECT STAGE

PCF STAGE 3

DRAWING TITLE

APPENDIX C:
BREEDING BIRD SURVEY - APRIL
SHEET 7 OF 14
TR010038/APP/6.2

SUITABILITY

FOR INFORMATION

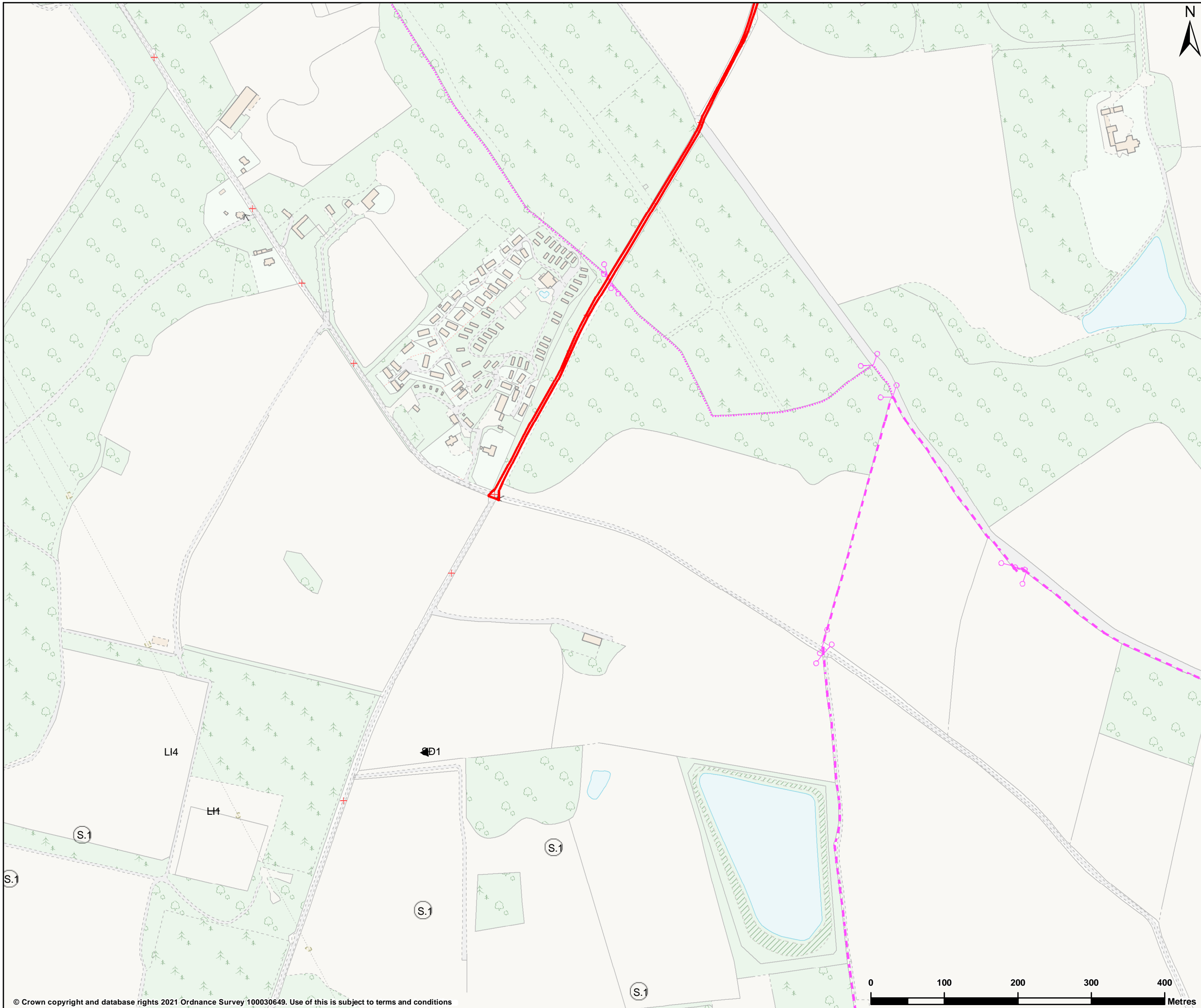
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A3	1:5,000	S2

DRAWING NUMBER

HE551489-GTY-EBD-000-DR-LB-30087

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LEGEND

- FlightPaths
- DCO boundary

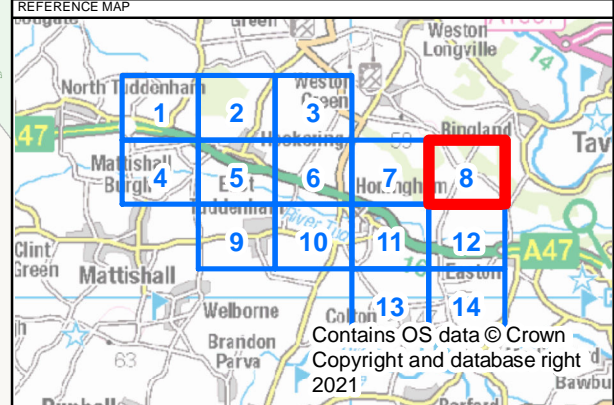
Bird Activity

- 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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REV	DATE	REVISION NOTE	ORG	CHK'D	APP'D

DESIGNER

CONTRACTOR

CLIENT

PROJECT TITLE
A47 NORTH TUDDENHAM TO EASTON

PROJECT STAGE
PCF STAGE 3

DRAWING TITLE
APPENDIX C:
BREEDING BIRD SURVEY - APRIL
SHEET 8 OF 14
TR010038/APP/6.2

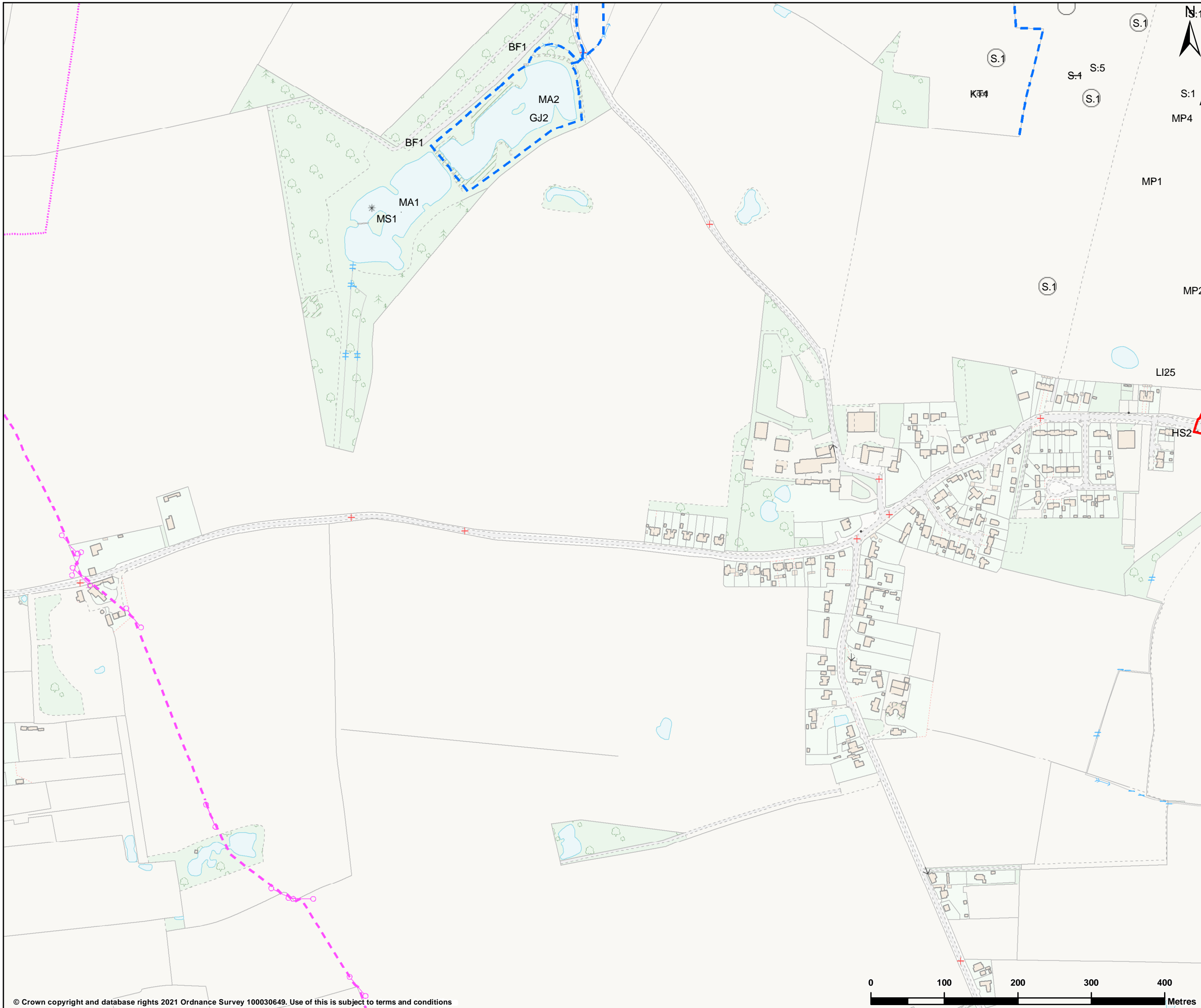
SUITABILITY
FOR INFORMATION

SHEET SIZE A3	SCALE 1:5,000	STATUS S2
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DRAWING NUMBER
HE551489-GTY-EBD-000-DR-LB-30088

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LEGEND

- FlightPaths
- DCO boundary

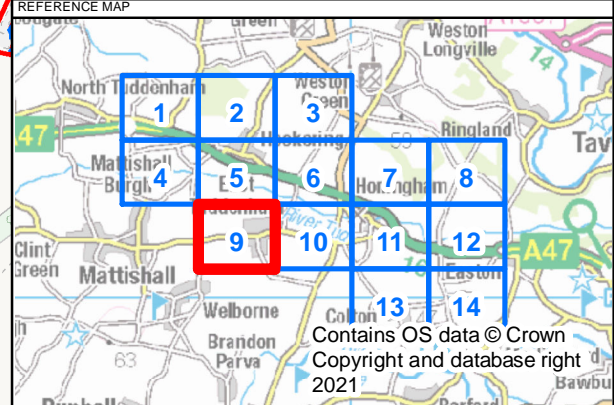
Bird Activity

- 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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REV	DATE	REVISION NOTE	ORG	CHK'D	APP'D

DESIGNER

SWECO

CONTRACTOR

GallifordTry

CLIENT

**highways
england**

PROJECT TITLE

A47 NORTH TUDDENHAM TO EASTON

PROJECT STAGE

PCF STAGE 3

DRAWING TITLE

APPENDIX C:
BREEDING BIRD SURVEY - APRIL
SHEET 9 OF 14
TR010038/APP/6.2

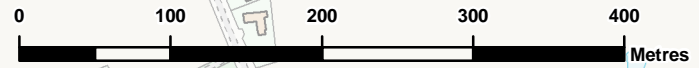
SUITABILITY

FOR INFORMATION

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A3	1:5,000	S2

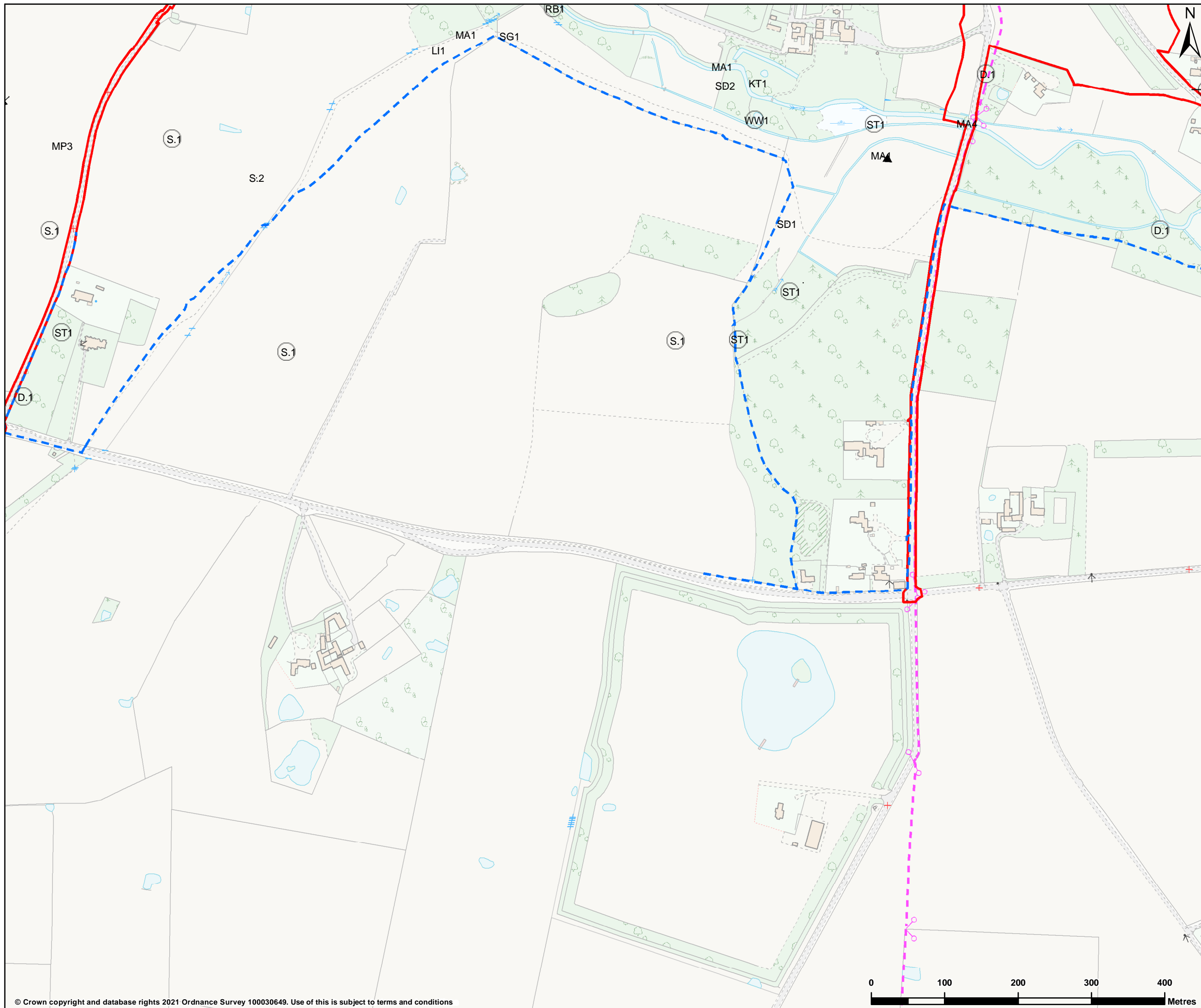
DRAWING NUMBER

HE551489-GTY-EBD-000-DR-LB-30089



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LEGEND

- FlightPaths
- ▭ DCO boundary

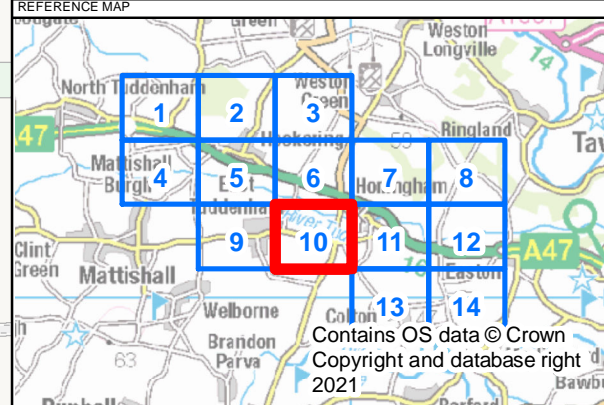
Bird Activity

- on Adult Sitting
- * Aggressive Encounter
- ≡ Alarm Calls
- Calling
- f ood 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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REV	DATE	REVISION NOTE	ORG	CHKD	APPD

DESIGNER

SWECO

CONTRACTOR

GallifordTry

CLIENT

**highways
england**

PROJECT TITLE

A47 NORTH TUDDENHAM TO EASTON

PROJECT STAGE

PCF STAGE 3

DRAWING TITLE

APPENDIX C:
BREEDING BIRD SURVEY - APRIL
SHEET 10 OF 14
TR010038/APP/6.2

SUITABILITY

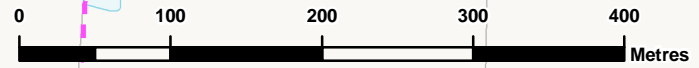
FOR INFORMATION

SHEET SIZE	SCALE	STATUS
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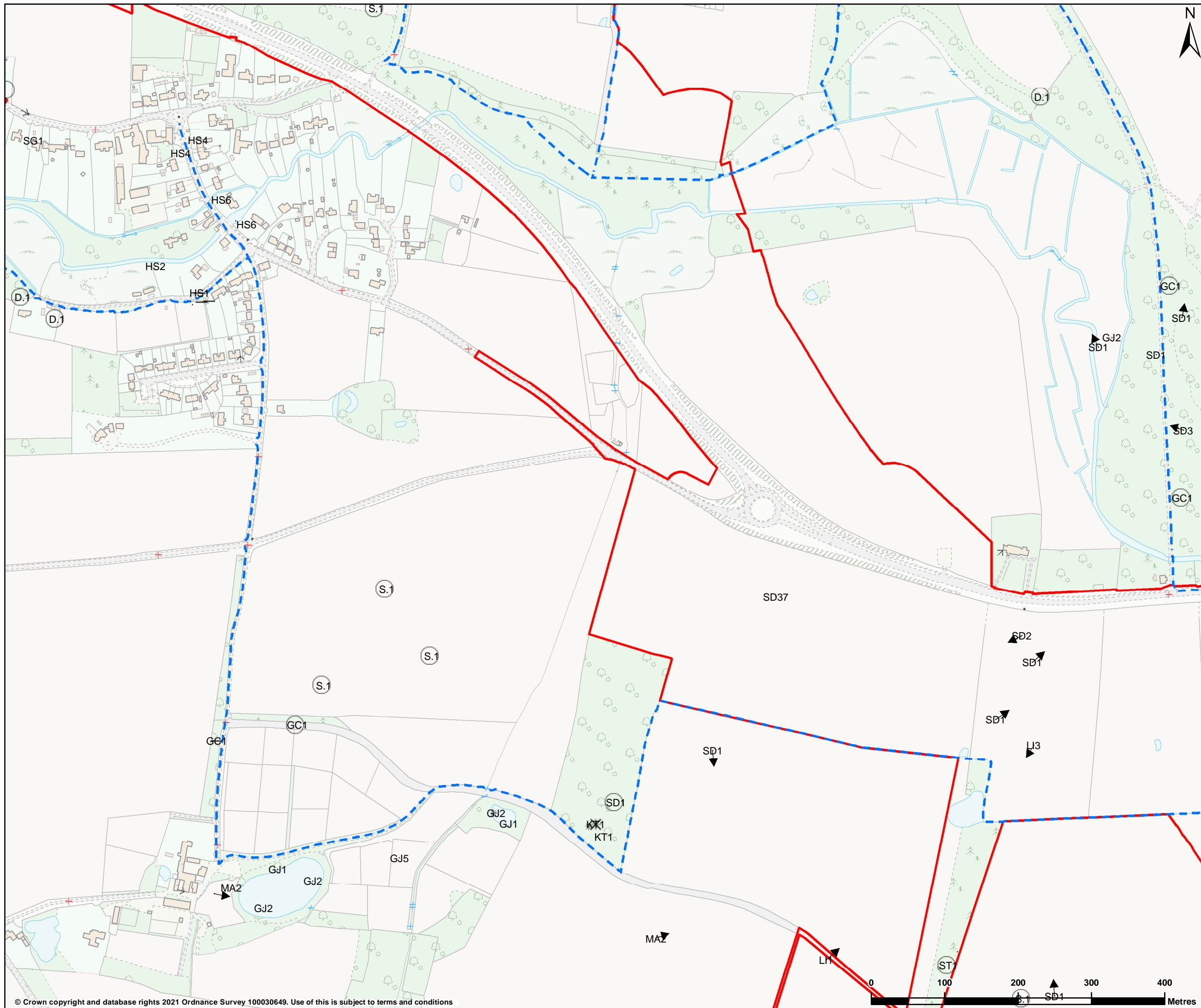
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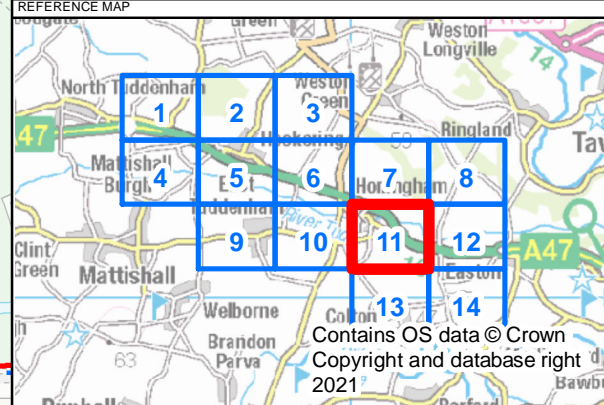


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LEGEND

- Flight Paths
- DCO boundary
- 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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DESIGNER

SWECO

CONTRACTOR

GallifordTry

CLIENT

highways
england

PROJECT TITLE

A47 NORTH TUDDENHAM TO EASTON

PROJECT STAGE

PCF STAGE 3

DRAWING TITLE

APPENDIX C:
BREEDING BIRD SURVEY - APRIL
SHEET 11 OF 14
TR010038/APP/6.2

SUITABILITY

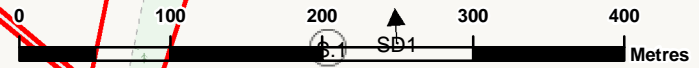
FOR INFORMATION

SHEET SIZE	SCALE	STATUS
A3	1:5,000	S2

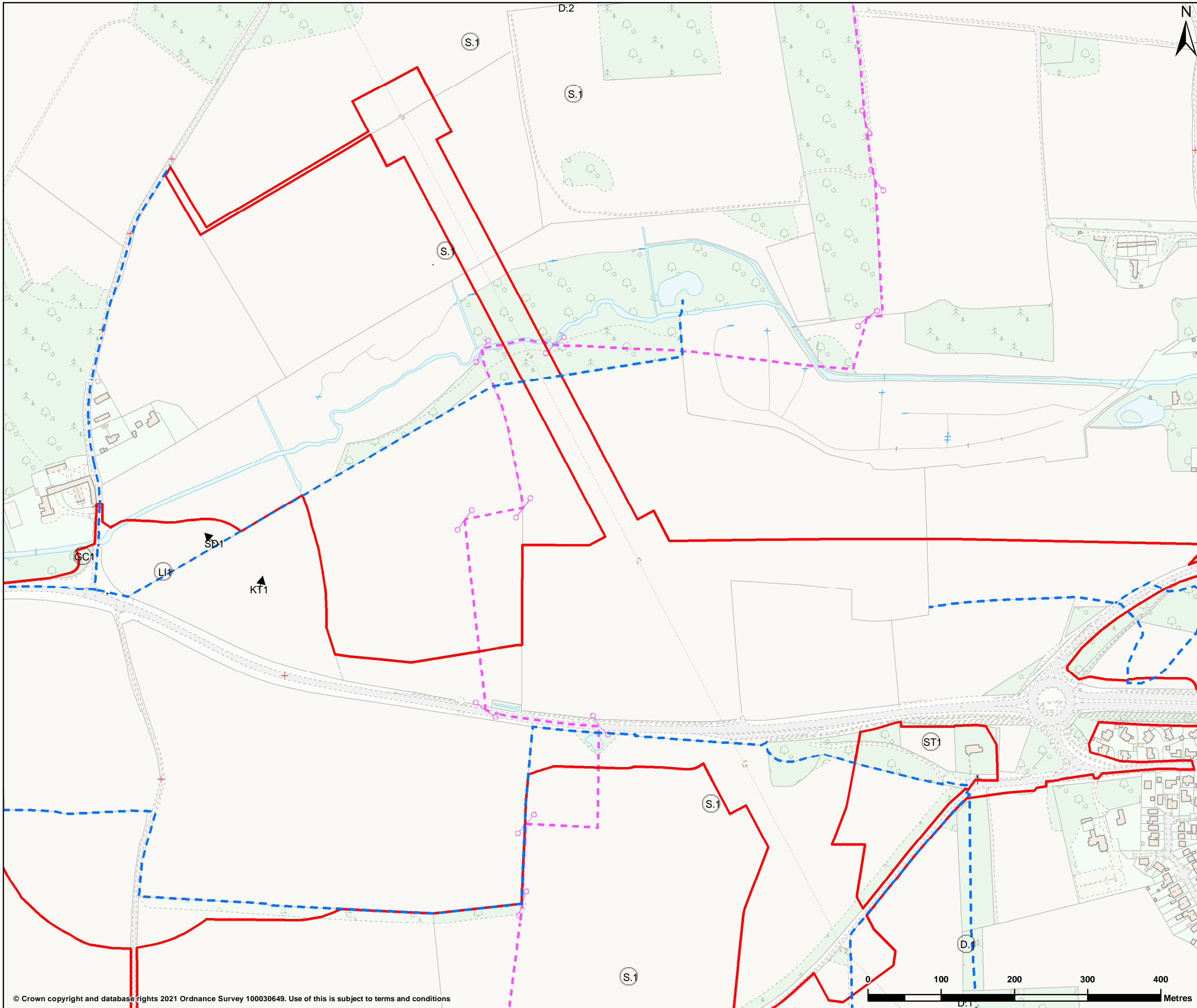
DRAWING NUMBER

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LEGEND

- FlightPaths
- DCO boundary

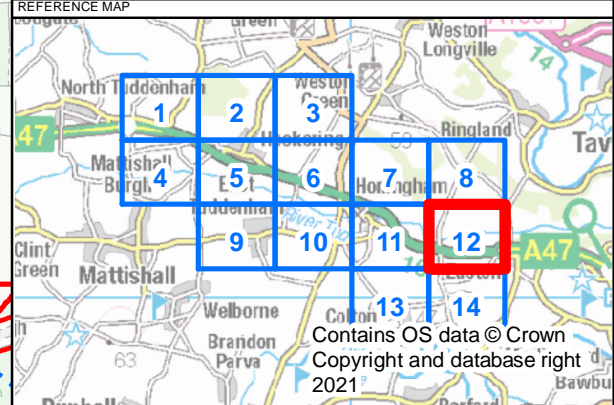
Bird Activity

- 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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REV	DATE	REVISION NOTE	ORG	CHKD	APPD

DESIGNER

SWECO

CONTRACTOR

GallifordTry

CLIENT

highways england

PROJECT TITLE

A47 NORTH TUDDENHAM TO EASTON

PROJECT STAGE

PCF STAGE 3

DRAWING TITLE

APPENDIX C:
BREEDING BIRD SURVEY - APRIL
SHEET 12 OF 14
TR010038/APP/6.2

SUITABILITY

FOR INFORMATION

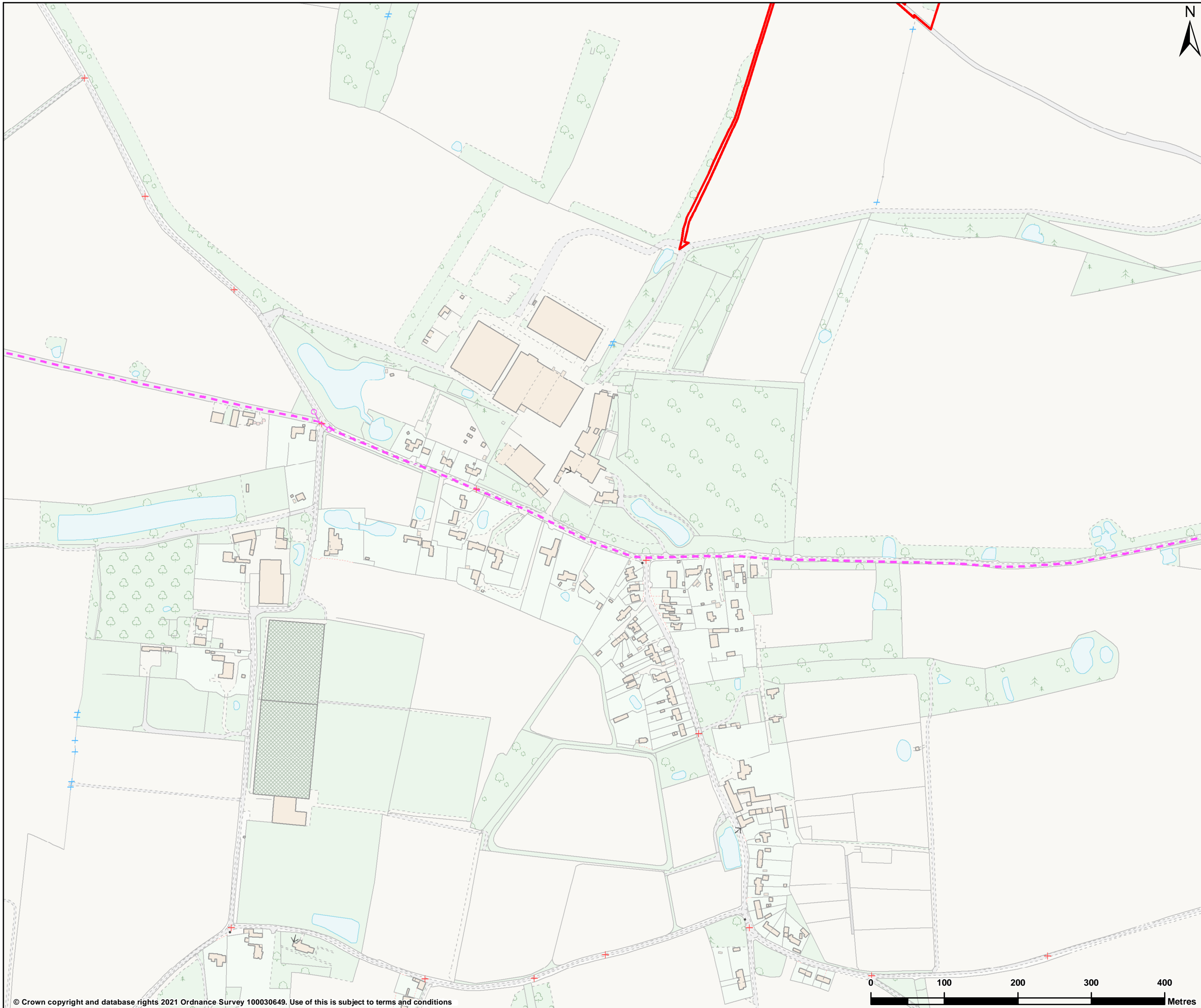
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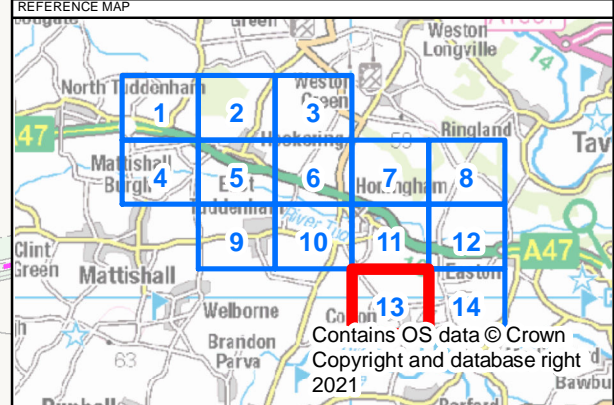
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LEGEND

- FlightPaths
- DCO boundary
- 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



P01	23/02/2021	First Edition	AC	MY	DW
REV	DATE	REVISION NOTE	ORG	CHKD	APPD

DESIGNER

SWECO

CONTRACTOR

GallifordTry

CLIENT

**highways
england**

PROJECT TITLE

A47 NORTH TUDDENHAM TO EASTON

PROJECT STAGE

PCF STAGE 3

DRAWING TITLE

APPENDIX C:
BREEDING BIRD SURVEY - APRIL
SHEET 13 OF 14
TR010038/APP/6.2

SUITABILITY

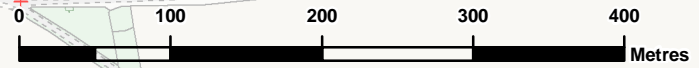
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SHEET SIZE	SCALE	STATUS
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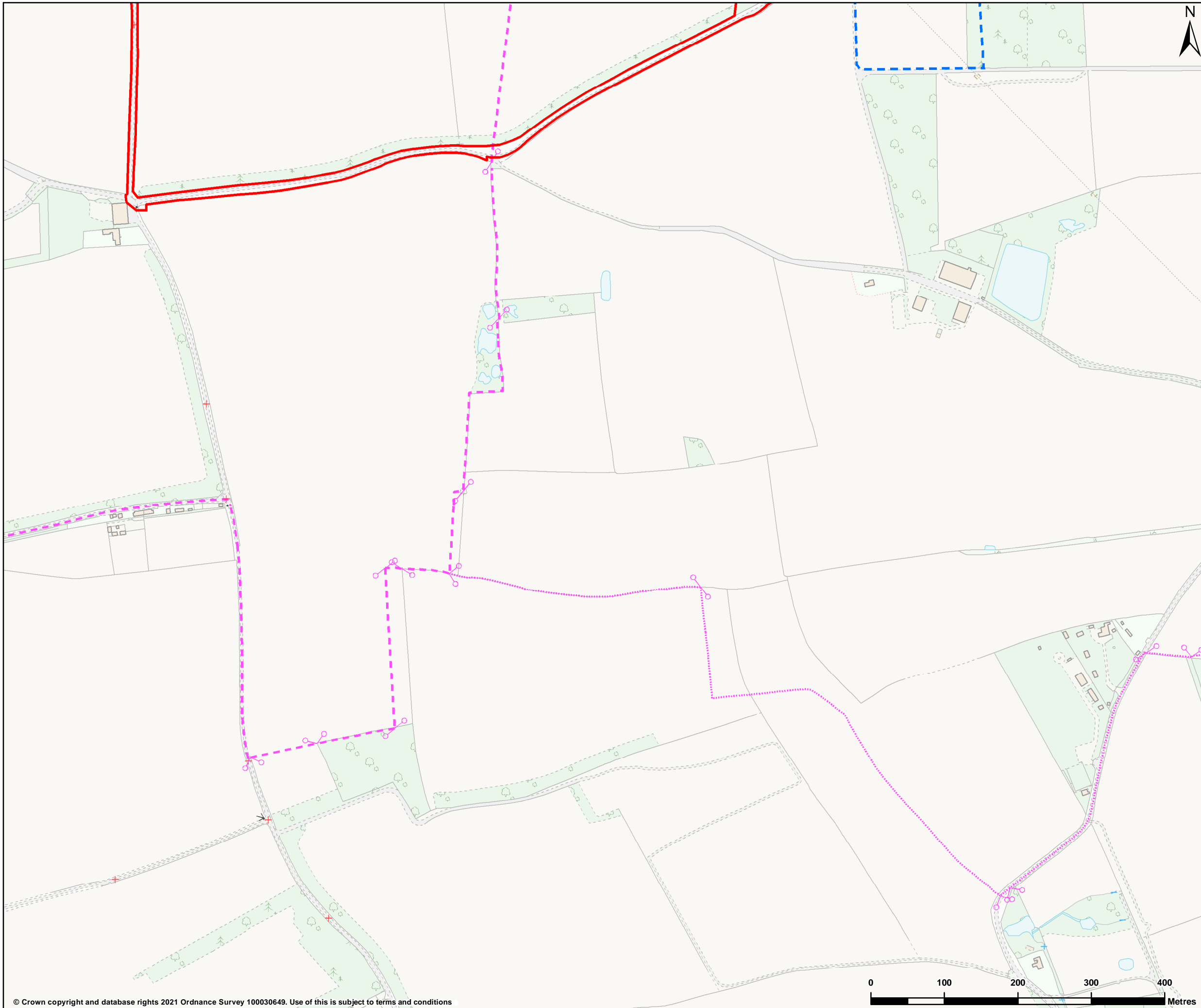
DRAWING NUMBER

HE551489-GTY-EBD-000-DR-LB-30093

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LEGEND

- FlightPaths
- DCO boundary

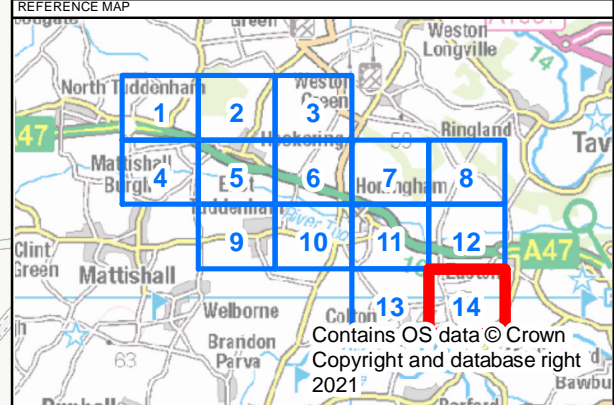
Bird Activity

- 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



P01	23/02/2021	First Edition	AC	MY	DW
REV	DATE	REVISION NOTE	ORG	CHKD	APPD

DESIGNER

CONTRACTOR

CLIENT

PROJECT TITLE
A47 NORTH TUDDENHAM TO EASTON

PROJECT STAGE
PCF STAGE 3

DRAWING TITLE
APPENDIX C:
BREEDING BIRD SURVEY - APRIL
SHEET 14 OF 14
TR010038/APP/6.2

SUITABILITY
FOR INFORMATION

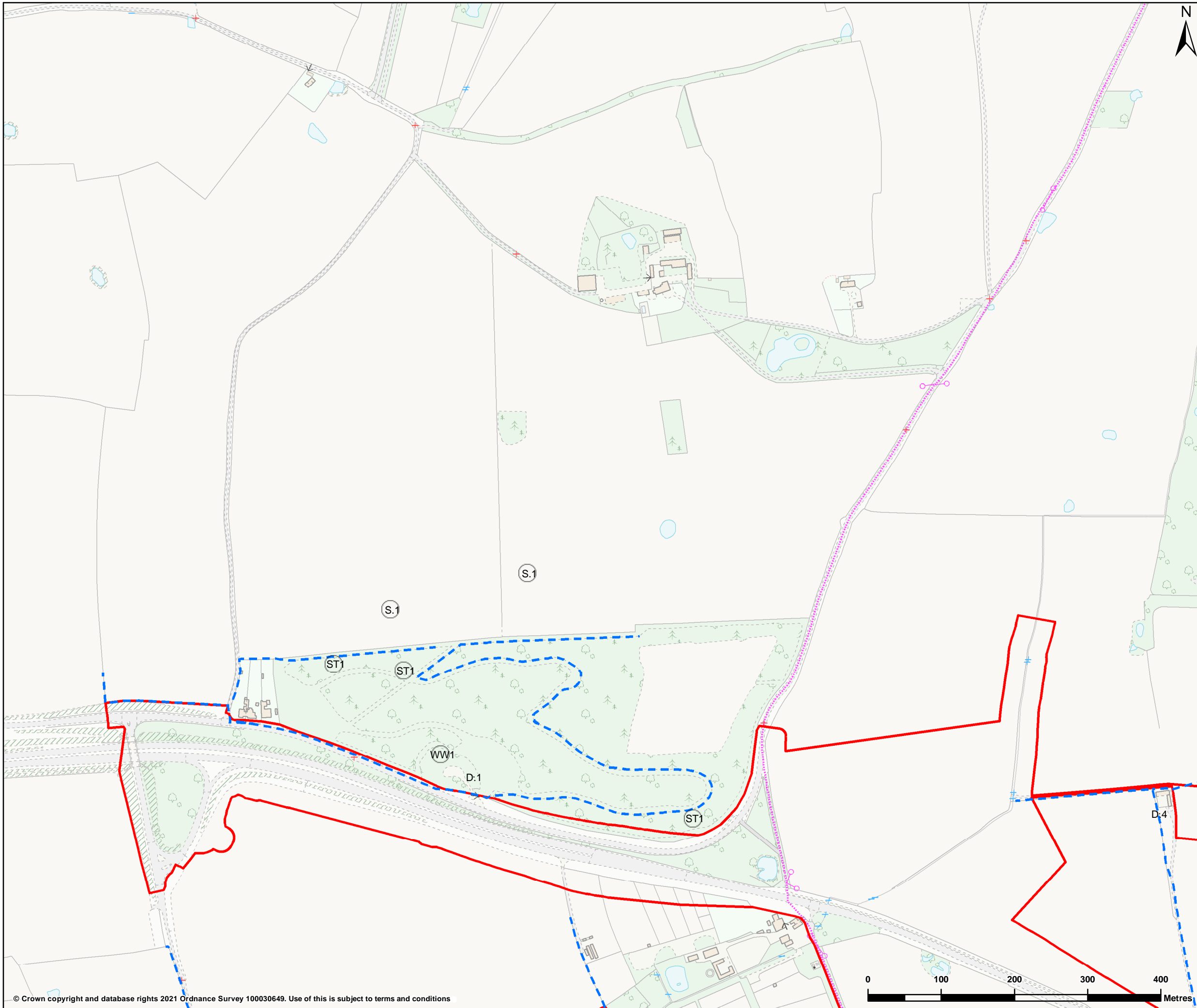
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DRAWING NUMBER
HE551489-GTY-EBD-000-DR-LB-30094

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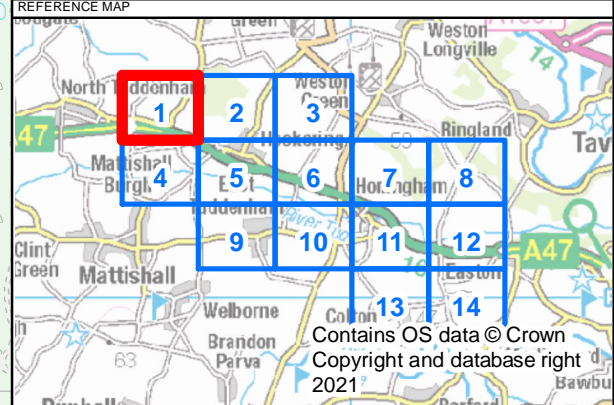
- DCO boundary
- Survey transects

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



P01	23/02/2021	First Edition	AC	MY	DW
REV	DATE	REVISION NOTE	ORG	CHK'D	APP'D

DESIGNER

SWECO ✱

CONTRACTOR

GallifordTry

CLIENT

**highways
england**

PROJECT TITLE

A47 NORTH TUDDENHAM TO EASTON

PROJECT STAGE

PCF STAGE 3

DRAWING TITLE

APPENDIX C
BREEDING BIRD SURVEY - MAY
SHEET 1 OF 14
TR010038/APP/6.2

SUITABILITY

FOR INFORMATION

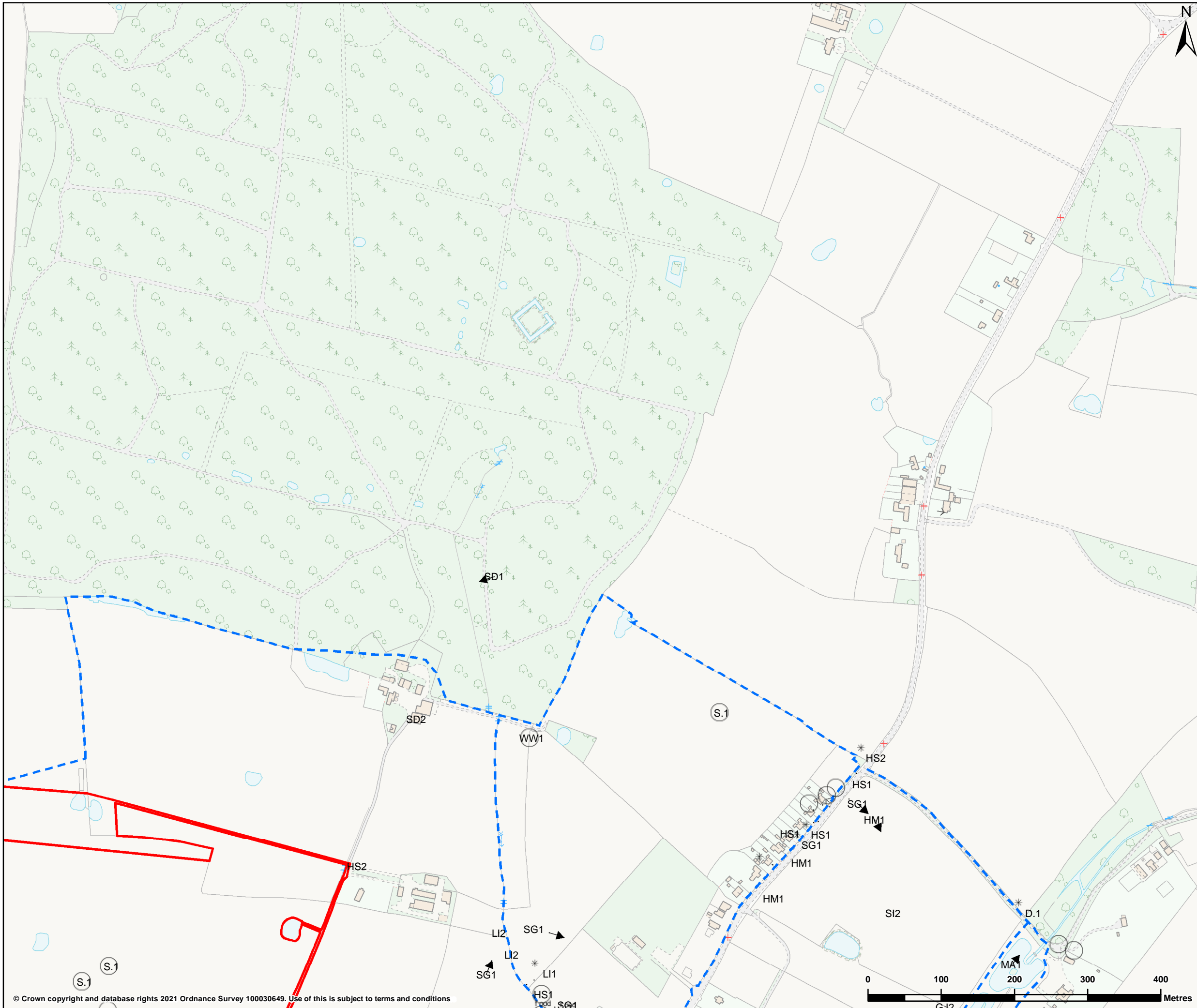
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DRAWING NUMBER

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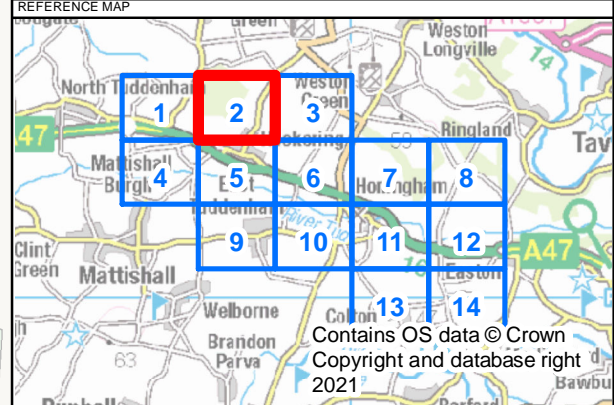
- DCO boundary
- Survey transects

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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REV	DATE	REVISION NOTE	ORG	CHKD	APPD

DESIGNER

CONTRACTOR

CLIENT

PROJECT TITLE
A47 NORTH TUDDENHAM TO EASTON

PROJECT STAGE
PCF STAGE 3

DRAWING TITLE
APPENDIX C
BREEDING BIRD SURVEY - MAY
SHEET 2 OF 14
TR010038/APP/6.2

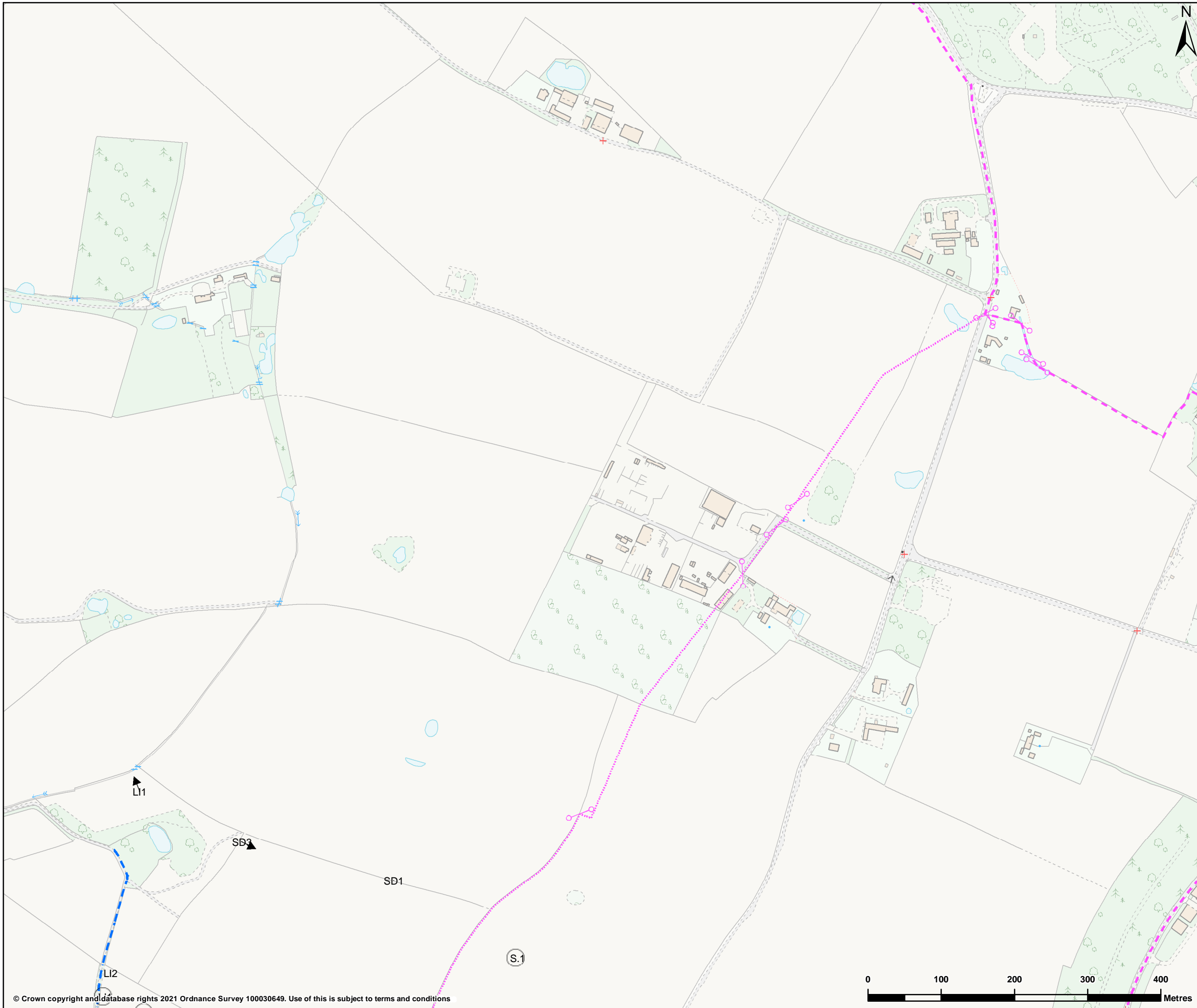
SUITABILITY
FOR INFORMATION

SHEET SIZE A3	SCALE 1:5,000	STATUS S2
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DRAWING NUMBER
HE551489-GTY-EBD-000-DR-LB-30096

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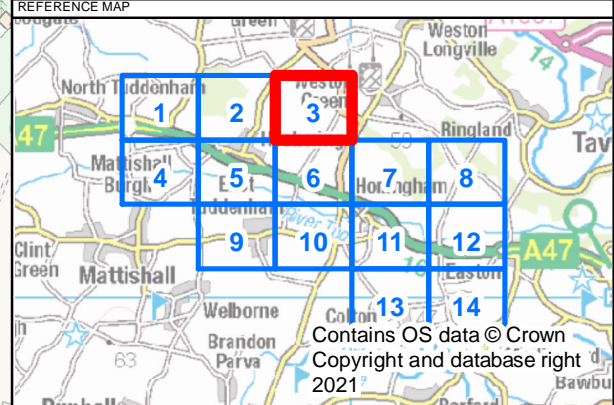
- DCO boundary
- Survey transects

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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DESIGNER

CONTRACTOR

CLIENT

PROJECT TITLE
A47 NORTH TUDDENHAM TO EASTON

PROJECT STAGE
PCF STAGE 3

DRAWING TITLE
APPENDIX C
BREEDING BIRD SURVEY - MAY
SHEET 3 OF 14
TR010038/APP/6.2

SUITABILITY
FOR INFORMATION

SHEET SIZE A3	SCALE 1:5,000	STATUS S2
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DRAWING NUMBER
HE551489-GTY-EBD-000-DR-LB-30097

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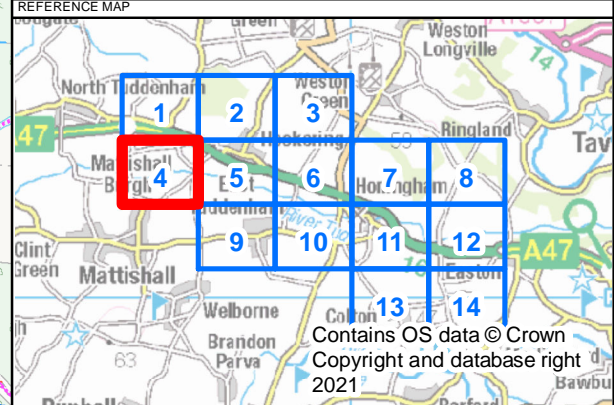
- DCO boundary
- Survey transects

Bird Activity

- on Adult Sitting
- ✱ Aggressive Encounter
- Alarm Calls
- Calling
- f o o d Carrying Food
- m a t Carrying Nest Mat
- In Song
- * Occupied Nest
- Occupied Nest -Provided
- ➔ Flight Path

Sex

- ♀ Female
- ♂ Male
- juv Juvenile
- ♂♀ Pair



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DESIGNER

CONTRACTOR

CLIENT

PROJECT TITLE
A47 NORTH TUDDENHAM TO EASTON

PROJECT STAGE
PCF STAGE 3

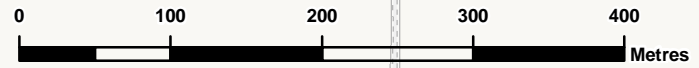
DRAWING TITLE
APPENDIX C
BREEDING BIRD SURVEY - MAY
SHEET 4 OF 14
TR010038/APP/6.2

SUITABILITY
FOR INFORMATION

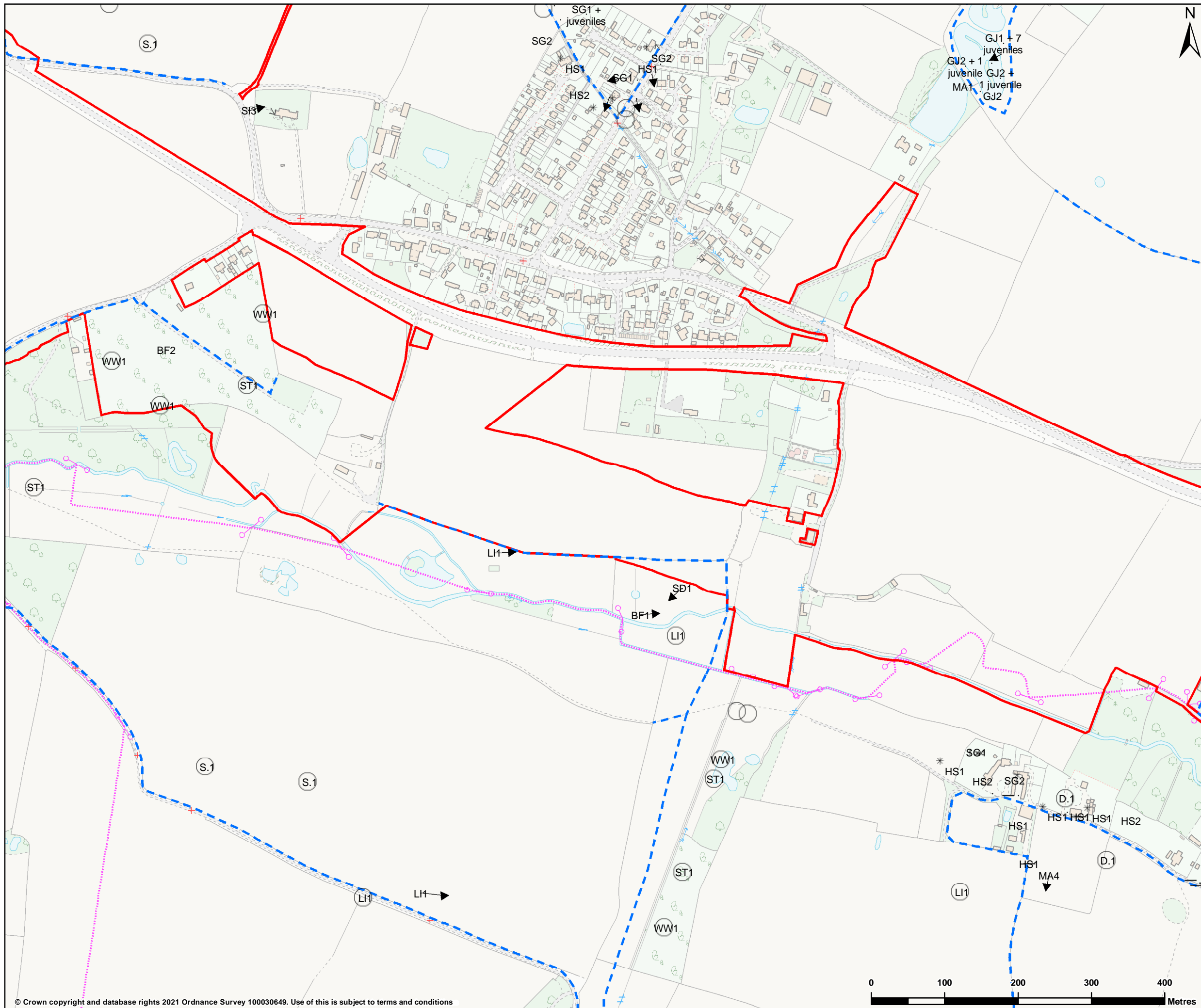
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DRAWING NUMBER
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LEGEND

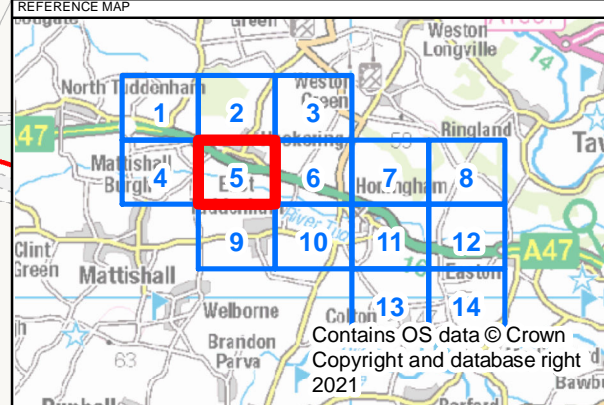
- DCO boundary
- Survey transects

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



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DESIGNER

CONTRACTOR

CLIENT

PROJECT TITLE
A47 NORTH TUDDENHAM TO EASTON

PROJECT STAGE
PCF STAGE 3

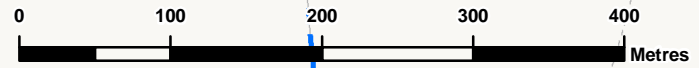
DRAWING TITLE
APPENDIX C
BREEDING BIRD SURVEY - MAY
SHEET 5 OF 14
TR010038/APP/6.2

SUITABILITY
FOR INFORMATION

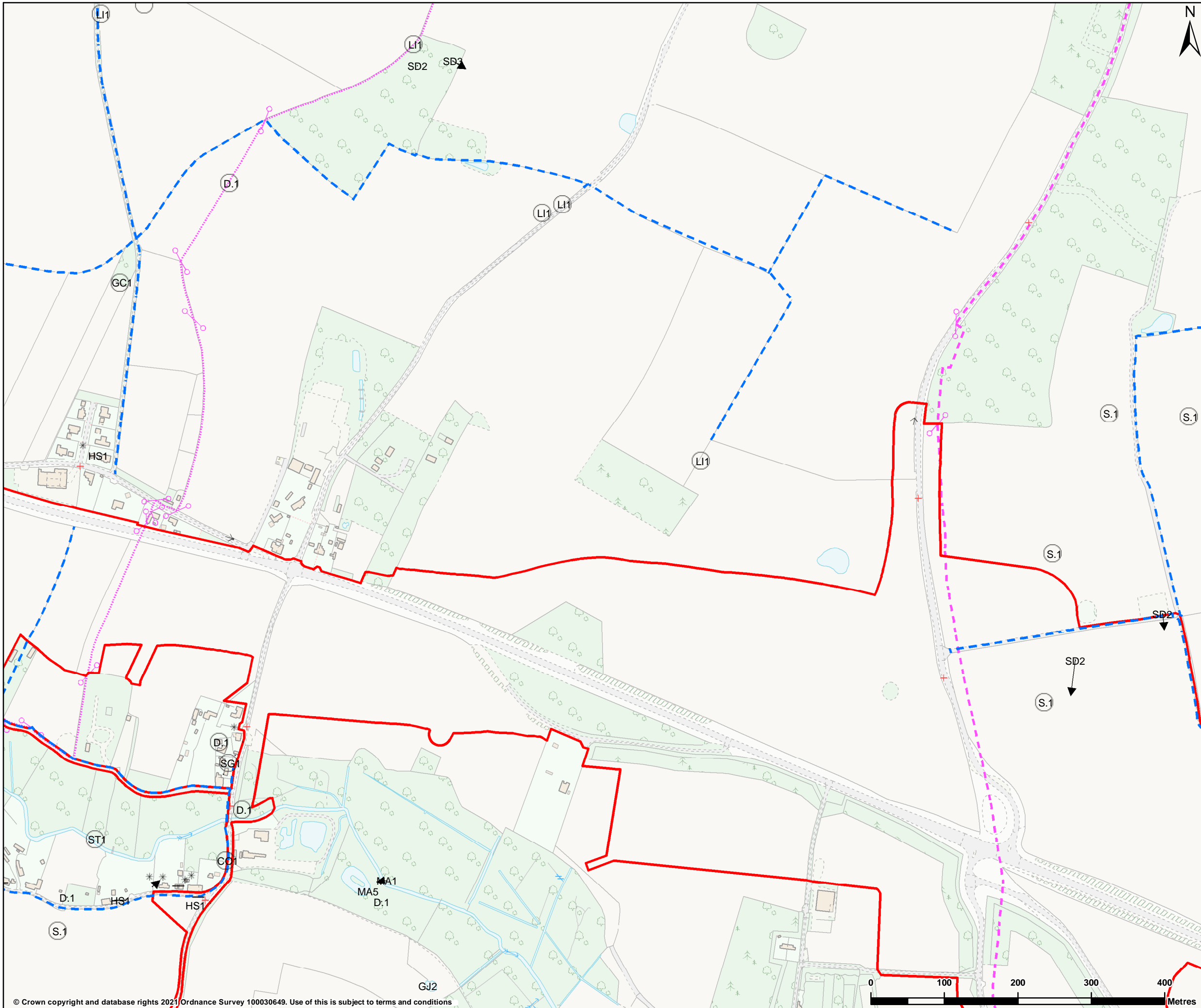
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DRAWING NUMBER
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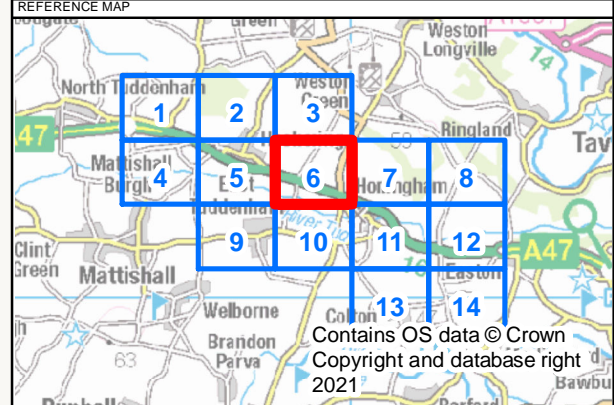
- DCO boundary
- Survey transects

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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REV	DATE	REVISION NOTE	ORG	CHKD	APPD

DESIGNER

SWECO

CONTRACTOR

GallifordTry

CLIENT

**highways
england**

PROJECT TITLE

A47 NORTH TUDDENHAM TO EASTON

PROJECT STAGE

PCF STAGE 3

DRAWING TITLE

APPENDIX C
BREEDING BIRD SURVEY - MAY
SHEET 6 OF 14
TR010038/APP/6.2

SUITABILITY

FOR INFORMATION

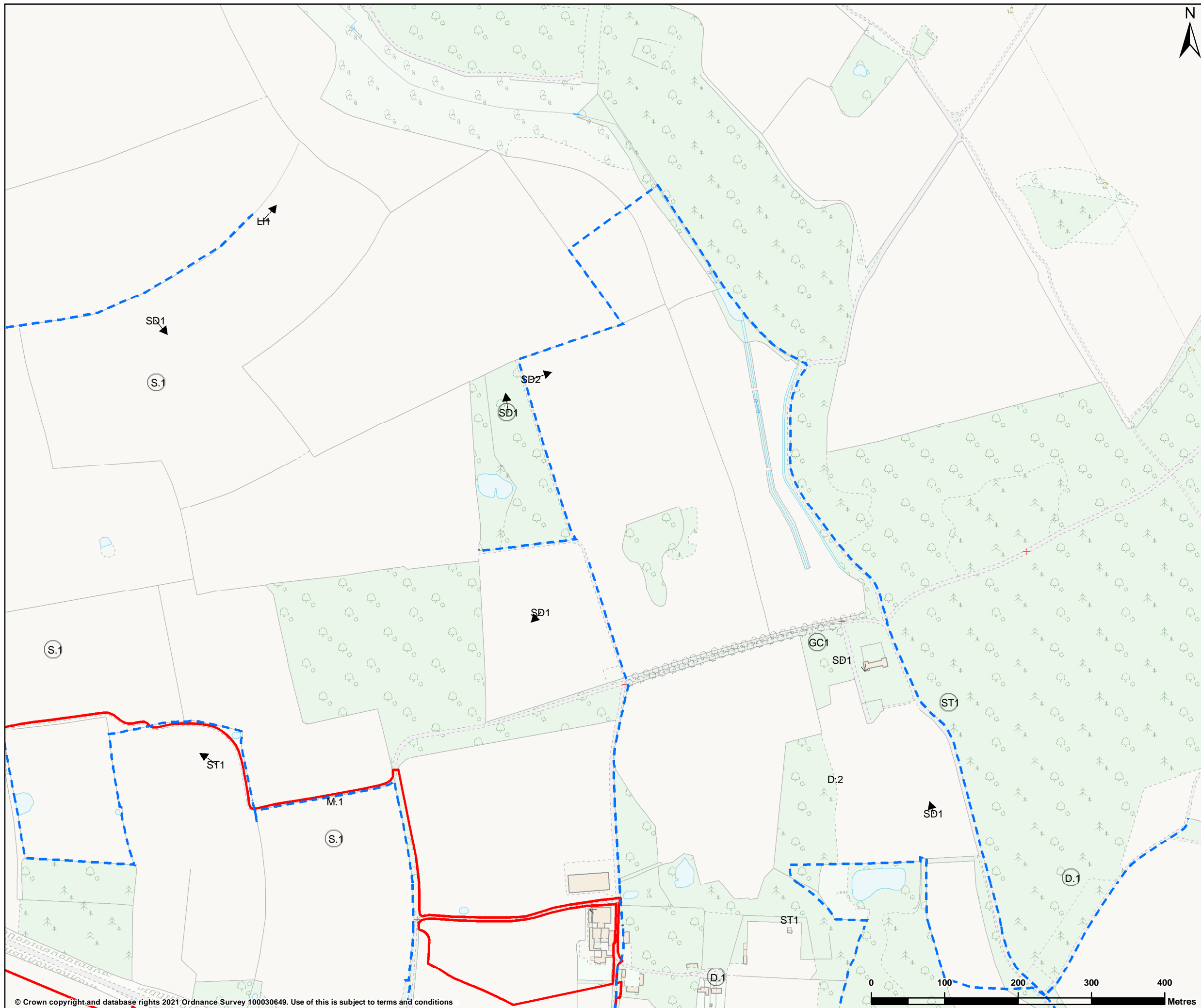
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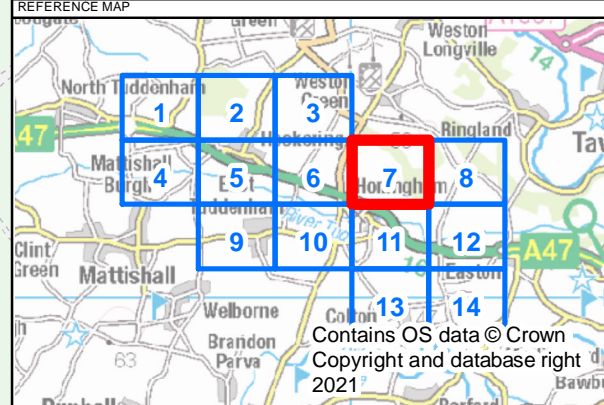
- DCO boundary
- Survey transects

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



P01	23/02/2021	First Edition	AC	MY	DW
REV	DATE	REVISION NOTE	ORG	CHKD	APPD

DESIGNER

SWECO

CONTRACTOR

GallifordTry

CLIENT

**highways
england**

PROJECT TITLE

A47 NORTH TUDDENHAM TO EASTON

PROJECT STAGE

PCF STAGE 3

DRAWING TITLE

APPENDIX C
BREEDING BIRD SURVEY - MAY
SHEET 7 OF 14
TR010038/APP/6.2

SUITABILITY

FOR INFORMATION

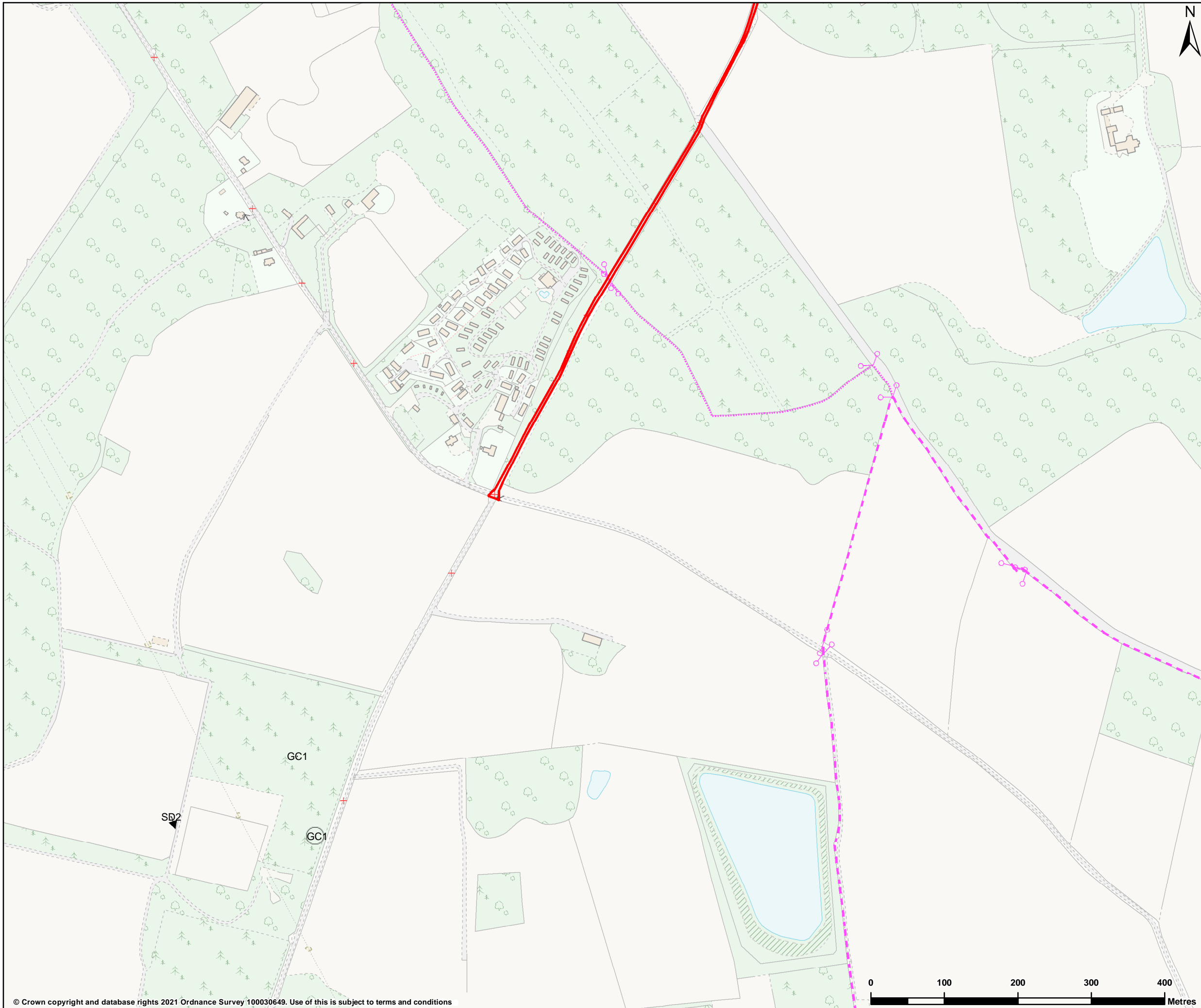
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DRAWING NUMBER

HE551489-GTY-EBD-000-DR-LB-30101

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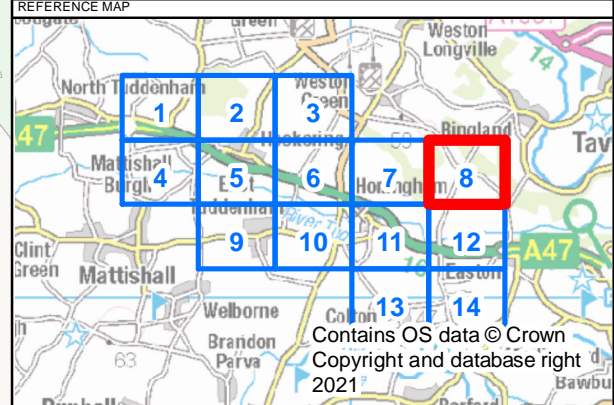
- DCO boundary
- Survey transects

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



P01	23/02/2021	First Edition	AC	MY	DW
REV	DATE	REVISION NOTE	ORG	CHK'D	APP'D

DESIGNER

SWECO

CONTRACTOR

GallifordTry

CLIENT

**highways
england**

PROJECT TITLE

A47 NORTH TUDDENHAM TO EASTON

PROJECT STAGE

PCF STAGE 3

DRAWING TITLE

APPENDIX C
BREEDING BIRD SURVEY - MAY
SHEET 8 OF 14
TR010038/APP/6.2

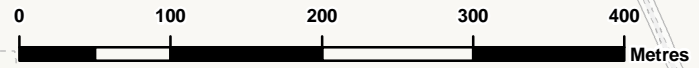
SUITABILITY

FOR INFORMATION

SHEET SIZE A3	SCALE 1:5,000	STATUS S2
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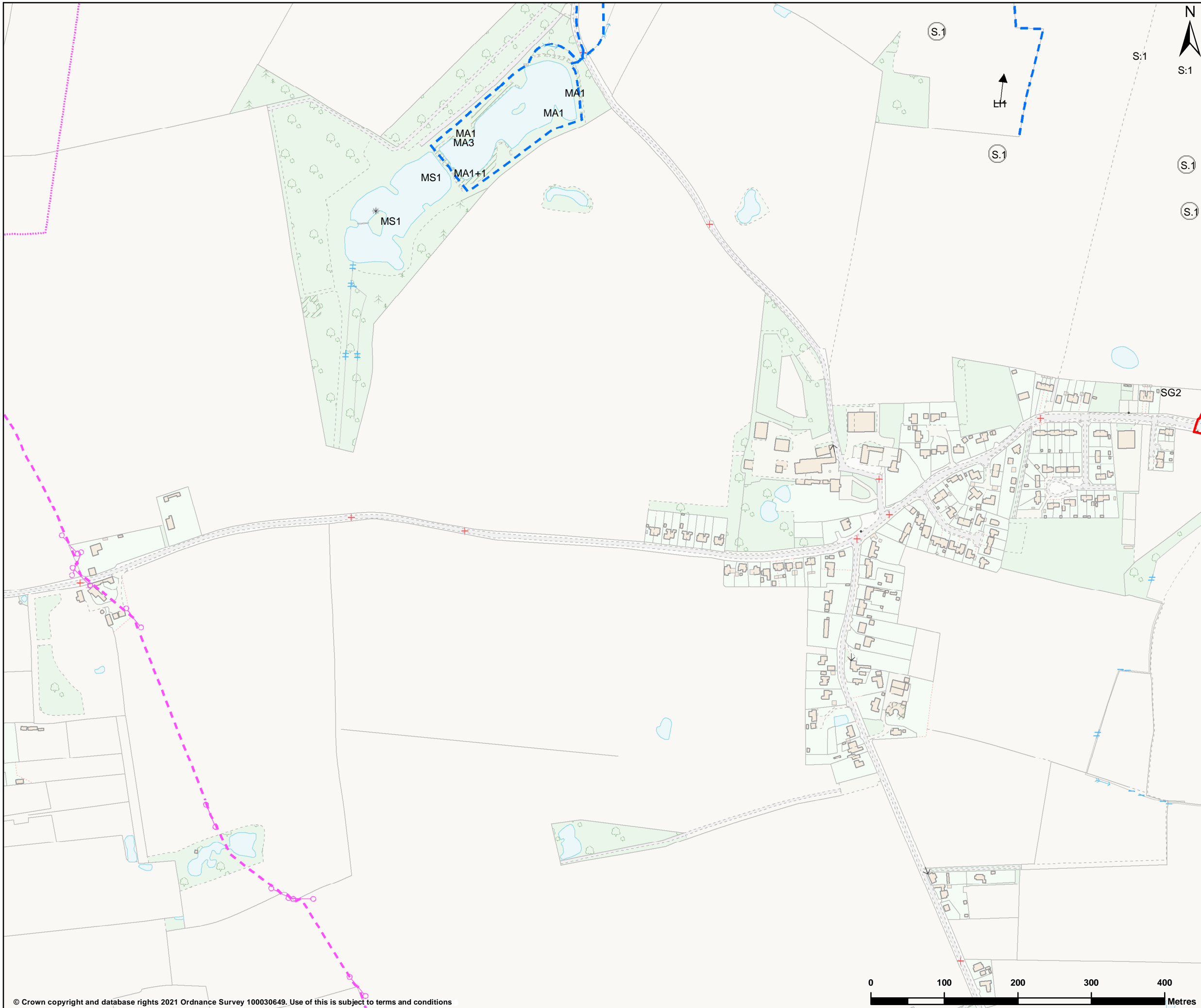
DRAWING NUMBER

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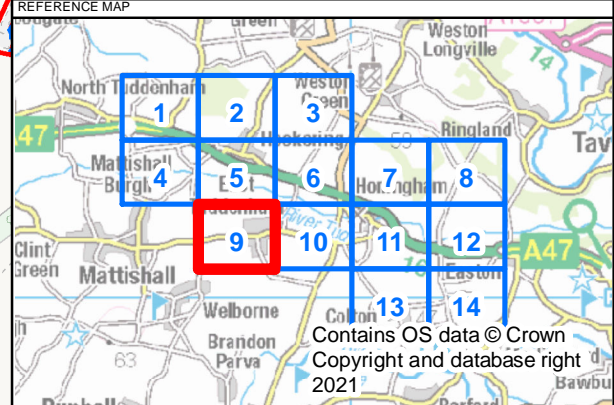
- DCO boundary
- Survey transects

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



P01	23/02/2021	First Edition	AC	MY	DW
REV	DATE	REVISION NOTE	ORG	CHK'D	APP'D

DESIGNER

CONTRACTOR

CLIENT

PROJECT TITLE
A47 NORTH TUDDENHAM TO EASTON

PROJECT STAGE
PCF STAGE 3

DRAWING TITLE
APPENDIX C
BREEDING BIRD SURVEY - MAY
SHEET 9 OF 14
TR010038/APP/6.2

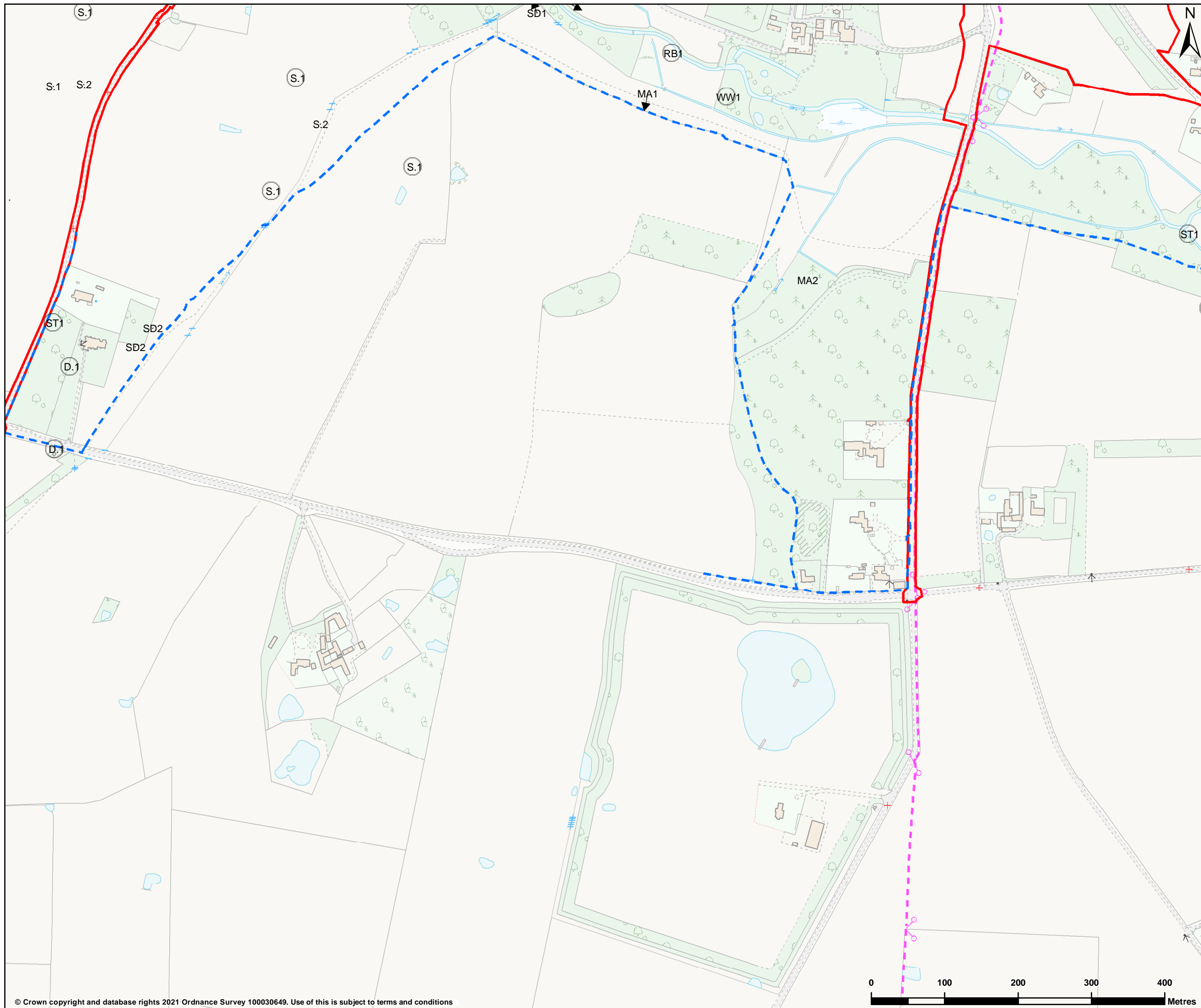
SUITABILITY
FOR INFORMATION

SHEET SIZE	SCALE	STATUS
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DRAWING NUMBER
HE551489-GTY-EBD-000-DR-LB-30103

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LEGEND

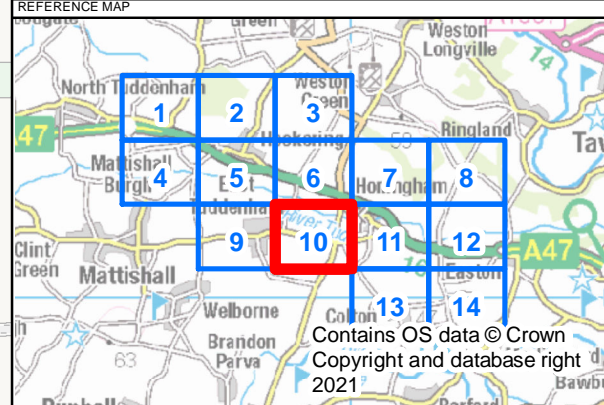
- DCO boundary
- Survey transects

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



P01	23/02/2021	First Edition	AC	MY	DW
REV	DATE	REVISION NOTE	ORG	CHKD	APPD

DESIGNER

SWECO

CONTRACTOR

GallifordTry

CLIENT

highways
england

PROJECT TITLE

A47 NORTH TUDDENHAM TO EASTON

PROJECT STAGE

PCF STAGE 3

DRAWING TITLE

APPENDIX C
BREEDING BIRD SURVEY - MAY
SHEET 10 OF 14
TR010038/APP/6.2

SUITABILITY

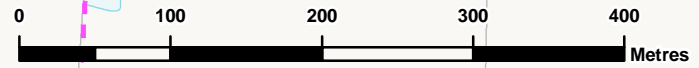
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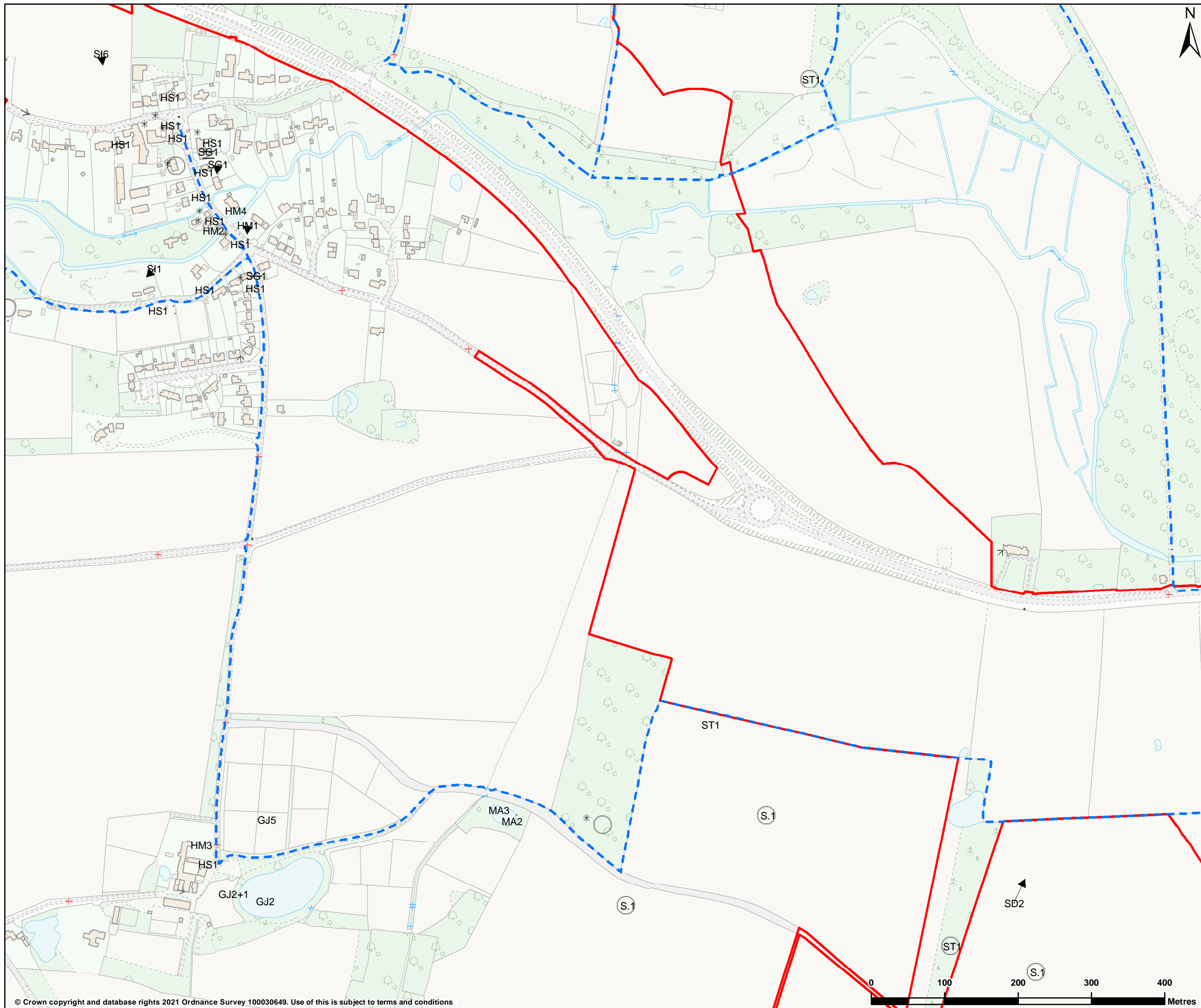
DRAWING NUMBER

HE551489-GTY-EBD-000-DR-LB-30104

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LEGEND

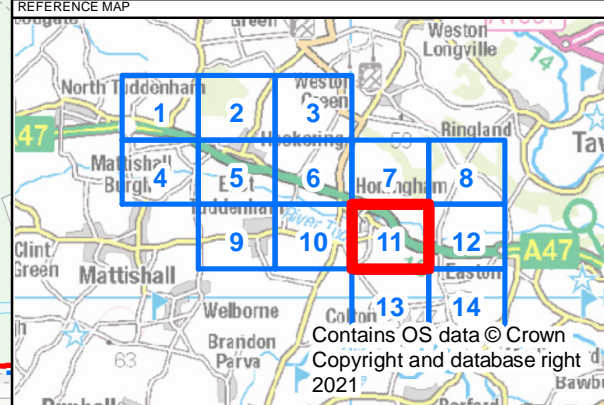
- DCO boundary
- Survey transects

Bird Activity

- on Adult Sitting
- * Aggressive Encounter
- == Alarm Calls
- Calling
- f ood Carrying Food
- mat Carrying Nest Mat
- In Song
- * Occupied Nest
- ⊠ Occupied Nest -Provided
- Flight Path

Sex

- ♀ Female
- ♂ Male
- juve Juvenile
- ♂♀ Pair



P01	23/02/2021	First Edition	AC	MY	DW
REV	DATE	REVISION NOTE	ORG	CHK'D	APP'D

DESIGNER

SWECO

CONTRACTOR

GallifordTry

CLIENT

**highways
england**

PROJECT TITLE

A47 NORTH TUDDENHAM TO EASTON

PROJECT STAGE

PCF STAGE 3

DRAWING TITLE

APPENDIX C
BREEDING BIRD SURVEY - MAY
SHEET 11 OF 14
TR010038/APP/6.2

SUITABILITY

FOR INFORMATION

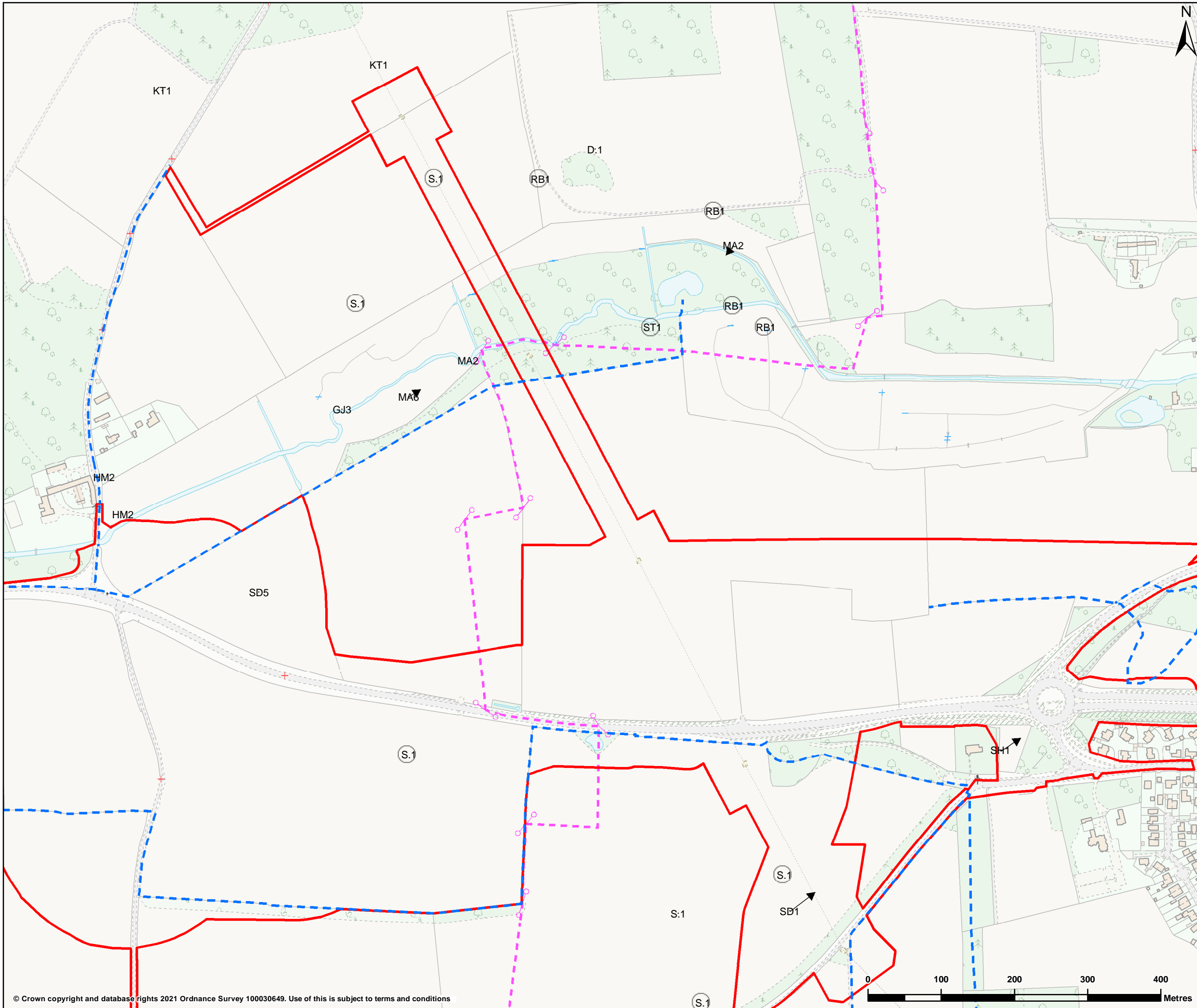
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DRAWING NUMBER

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LEGEND

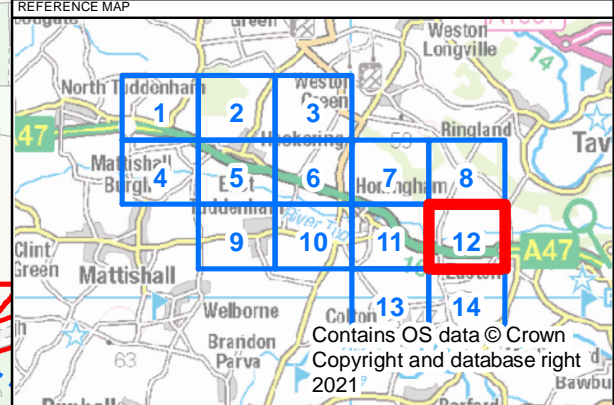
- DCO boundary
- Survey transects

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



P01	23/02/2021	First Edition	AC	MY	DW
REV	DATE	REVISION NOTE	ORG	CHK'D	APP'D

DESIGNER

SWECO ✱

CONTRACTOR

GallifordTry

CLIENT

**highways
england**

PROJECT TITLE

A47 NORTH TUDDENHAM TO EASTON

PROJECT STAGE

PCF STAGE 3

DRAWING TITLE

APPENDIX C
BREEDING BIRD SURVEY - MAY
SHEET 12 OF 14
TR010038/APP/6.2

SUITABILITY

FOR INFORMATION

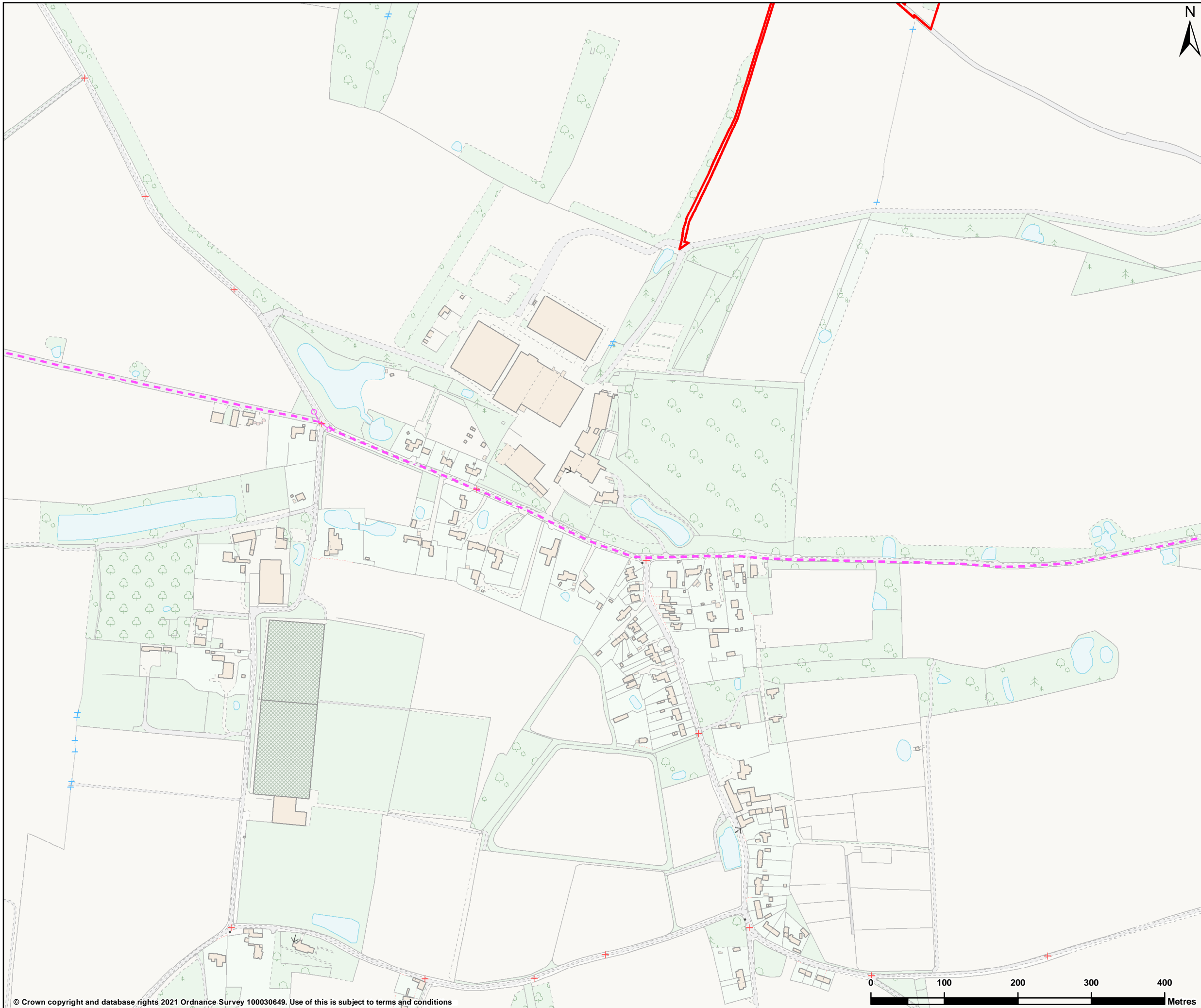
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DRAWING NUMBER

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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

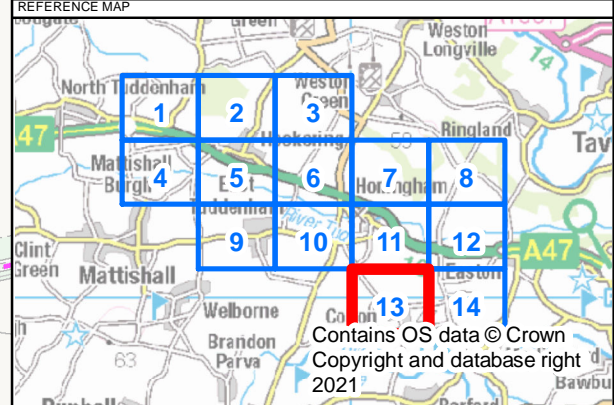
Sex

♀ Female

♂ Male

juve Juvenile

♂♀ Pair



P01	23/02/2021	First Edition	AC	MY	DW
REV	DATE	REVISION NOTE	ORG	CHKD	APPD

DESIGNER

SWECO

CONTRACTOR

GallifordTry

CLIENT

**highways
england**

PROJECT TITLE

A47 NORTH TUDDENHAM TO EASTON

PROJECT STAGE

PCF STAGE 3

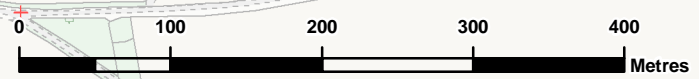
DRAWING TITLE

APPENDIX C
BREEDING BIRD SURVEY - MAY
SHEET 13 OF 14
TR010038/APP/6.2

SUITABILITY

FOR INFORMATION

SHEET SIZE	SCALE	STATUS
A3	1:5,000	S2

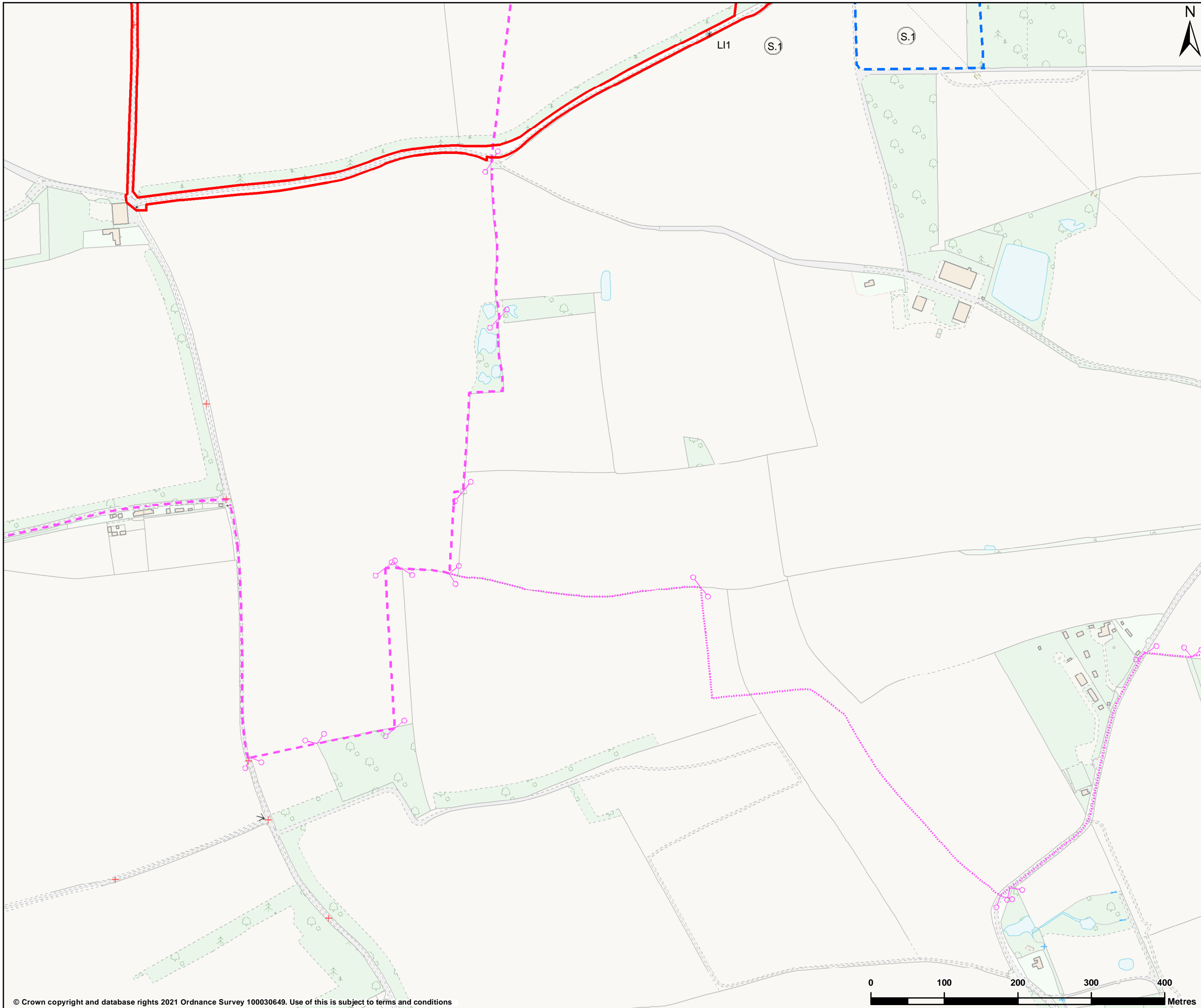


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HE551489-GTY-EBD-000-DR-LB-30107



LEGEND

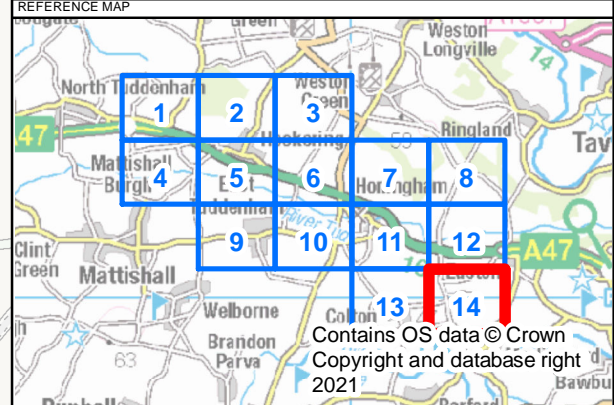
- DCO boundary
- Survey transects

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



P01	23/02/2021	First Edition	AC	MY	DW
REV	DATE	REVISION NOTE	ORG	CHK'D	APP'D

DESIGNER

SWECO

CONTRACTOR

GallifordTry

CLIENT

**highways
england**

PROJECT TITLE

A47 NORTH TUDDENHAM TO EASTON

PROJECT STAGE

PCF STAGE 3

DRAWING TITLE

APPENDIX C
BREEDING BIRD SURVEY - MAY
SHEET 14 OF 14
TR010038/APP/6.2

SUITABILITY

FOR INFORMATION

SHEET SIZE	SCALE	STATUS
A3	1:5,000	S2

DRAWING NUMBER

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