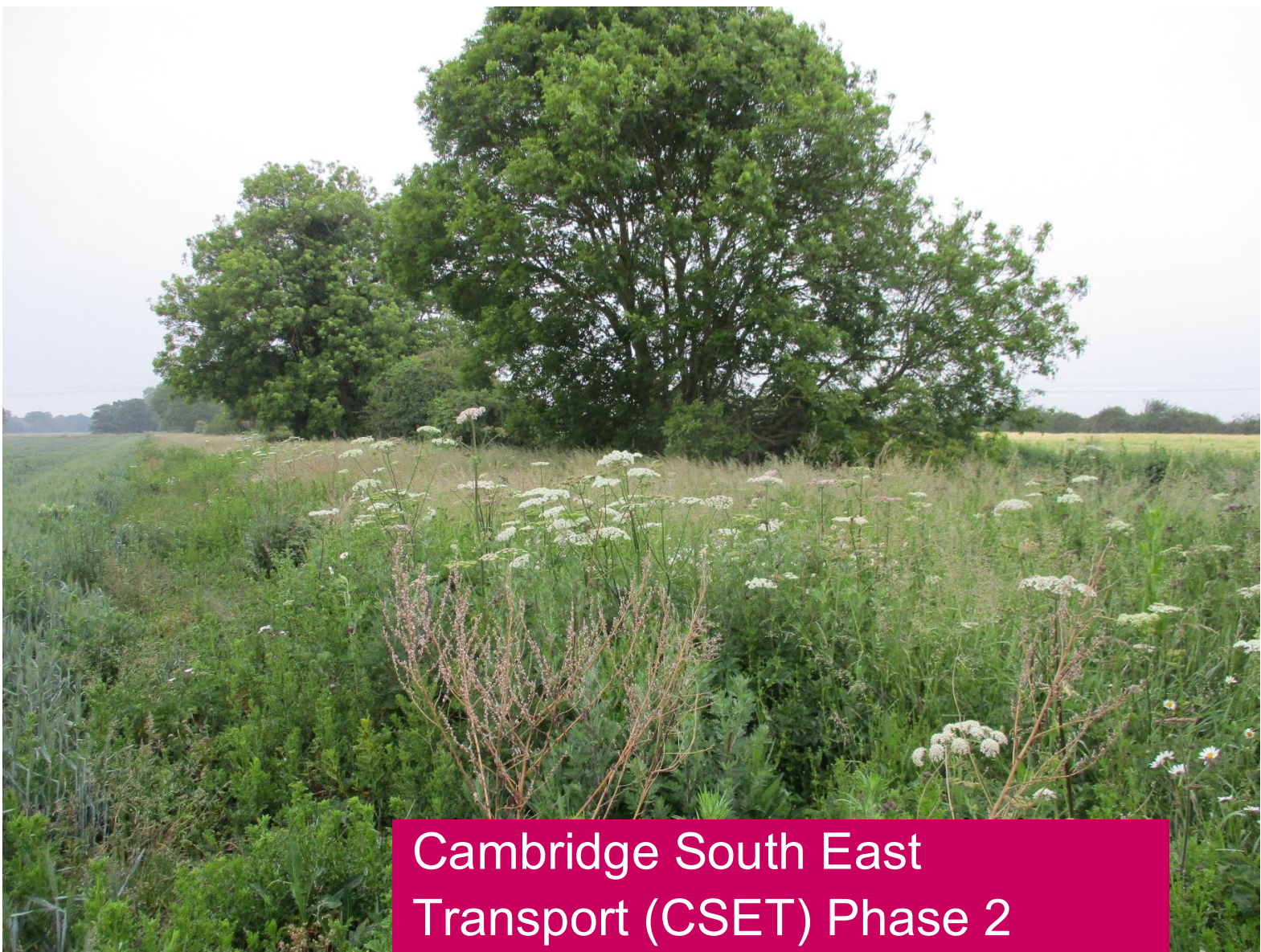

The Cambridge South East Transport Order

Transport And Works Act 1992

Transport And Works (Applications And Objections Procedure) (England And Wales) Rules 2006

Volume 3: Appendix 10.3 Bird Surveys

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Cambridge South East
Transport (CSET) Phase 2
Breeding Bird Survey Report

January 2021

Quality Management

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1. Summary

Capita Real Estate & Infrastructure’s Ecologists were commissioned by the Greater Cambridgeshire Partnership to carry out a series of breeding bird surveys across the route of Phase 2 of the Cambridge South East Transport (CSET) Project between Cambridge Biomedical Campus and Babraham in Cambridgeshire (henceforth referred to as the Scheme).

This report details the breeding bird surveys which have been carried out to provide baseline ecological information to inform the impact avoidance and mitigation measures and ultimately the design of the scheme.

Three surveys were carried out between April and June 2020, focussing on the proposed areas of land to be affected by the five proposed route options of CSET Phase 2.

A total of 58 species were recorded during the surveys (plus kingfisher, barn owl and dipper, bringing the total to 61, but these species are reported separately).

A total of nine species are confirmed breeders, including:

- Red listed house sparrow*, and
- Amber listed reed bunting*.

A total of 43 species are probable/possible breeders, including:

- Red listed: corn bunting*, grey wagtail, linnet*, skylark*, song thrush, starling, yellowhammer* and yellow wagtail* and
- Amber listed: dunnoek, house martin, kestrel, mallard, meadow pipit, swift and willow warbler.

Those with an asterisk (*) are also Local Biodiversity Action Plan (LBAP) Priority Species.

A cuckoo was also heard outside of the survey area in the local vicinity near Babraham during the second breeding bird survey.

The range of woodland, farmland, riparian corridor (including running water/river, scrub and woodland) and suburban habitats across the survey area provide a range of breeding, foraging and sheltering/resting opportunities for breeding birds. Some key areas supporting birds across the proposed route of the scheme include the River Granta and Hobson’s Conduit vegetated corridors (including woodland, scrub and rough grassland), as well as farmland around Babraham, Stapleford and Great Shelford/Trumpington.

2. Introduction

2.1 Background

- 2.1.1. Capita Real Estate & Infrastructure's Ecologists were commissioned by the Greater Cambridgeshire Partnership (GCP) in March 2020 to undertake breeding bird surveys. These surveys were undertaken in relation to the development of Phase 2 of the Cambridge South East Transport (CSET) Project, (the 'Scheme').
- 2.1.2. The aim of the breeding bird report is to summarise the results of the baseline surveys conducted between April and June 2020 to inform the design of the Scheme. It includes the results of all breeding bird surveys carried out. However, separate reports have been produced for the barn owl *Tyto alba* and kingfisher *Alcedo atthis* surveys.

2.2 Project Description and Purpose of the Scheme

- 2.2.1. The Cambridge South East Transport, (CSET) project aims to create a vital link to ease congestion, offer sustainable travel choices, connect communities and support growth in the in the South East of Cambridge. CSET would form part of the Cambridgeshire Autonomous Metro, providing high quality, frequent and affordable public transport.
- 2.2.2. CSET Phase 2 comprises a segregated public transport route from the A11 (near Brabham) to the Cambridge Biomedical Campus (CBC). This would include new walking, cycling and equestrian links.

2.3 Legislation and Policy

- 2.3.1. Birds receive protection in the UK as a result of both legislation and planning policies. This section outlines the primary legislation protecting breeding birds. All of the information below is relevant to this report and to the work proposed at the development site.

Legislation

Conservation of Habitats and Species Regulations

- 2.3.2. Under section 9A – Duties in relation to wild bird habitat - of the Conservation of Habitats and Species Regulations 2017 (as amended) '*without prejudice to regulation of 9(1), the appropriate authority, the nature conservation bodies and, in relation to the marine area, a competent authority **must take such steps in the exercise of their functions as they consider appropriate to secure the objective in paragraph (3), so far as lies within their powers.***
- 2.3.3. (3) *The objective is the preservation, maintenance and re-establishment of a sufficient diversity and area of habitat for wild birds in the United Kingdom, including by any means of the upkeep, management and creation of such habitat, as appropriate, having regard to the requirements of Article 2 of the new Wild Birds Directive.*
- 2.3.4. (8) *So far as lies within their powers, a competent authority in exercising any function in, or in relation to the United Kingdom, must use all reasonable endeavours to **avoid any pollution or deterioration of habitats of wild birds** (except habitats beyond the outer limits of the area to which the Wild Birds Directive applies).'*

Wildlife & Countryside Act 1981 (as amended)

- 2.3.5. Under the Wildlife & Countryside Act 1981 (as amended) it is an offence to:
- Kill, injure or take any wild bird (subject to certain exceptions);
 - Take, damage or destroy a nest while it is being used or being built; and,
 - Take or destroy the egg of any wild bird.
- 2.3.6. It is also an offence to disturb any wild bird protected under Schedule 1 of the Wildlife & Countryside Act 1981 (as amended):
- While it is nest building;
 - At a nest containing eggs; and,
 - While the young of any such bird are still dependent.

Purpose of the Legislation

- 2.3.7. The purpose of the legislation is to maintain and restore breeding bird populations within their natural range. This implies that the habitats on which they rely and the ecology of their life cycles should not be compromised by human activities. Where activities have the potential to compromise breeding bird populations, measures are required to be put in place to avoid impacts or compensate and mitigate for those impacts.

Natural Environment and Rural Communities (NERC) Act 2006

- 2.3.8. Section 40 of the NERC Act 2006 places a statutory duty on public bodies, such as local authorities that “every public body must, in exercising its functions have regard, so far as is consistent with proper exercise of those functions, to the purpose of conserving biodiversity”.
- 2.3.9. Section 41 of the NERC Act requires the Secretary of State to draw up a list of Habitats and Species of Principal Importance which should be used to guide decision-makers (which include local authorities) in implementing their duty under Section 40.

Planning Policy

- 2.3.10. National Planning Policy is set out by the National Planning Policy Framework (NPPF February 2019) combined with the guidance document Planning for Biodiversity and Geological Conservation: A Guide to Good Practice” (ODPM 2005).
- 2.3.11. Biodiversity net gains are referenced strongly in terms of developing local planning policy and decision-making for development applications. The environmental test of sustainable development requires planning policy and planning decisions to help to ‘improve biodiversity’ (paragraph 8c).
- 2.3.12. References to biodiversity net gain elsewhere in the new NPPF (such as paragraph 175d) support the delivery of biodiversity net gain through sustainable development. Net gain for biodiversity is far more prominent than in the previous NPPF and considers a holistic landscape approach to protect, and enhance biodiversity promoting conservation, restoration and enhancement of Priority Habitats (also listed as Habitats of Principal Importance) identified under the NERC Act 2006), ecological networks and the protection and recovery of Priority Species (also listed as Species of Principal Importance) identified under the NERC Act 2006). The NPPF includes requirements for planning authorities to identifying and pursuing opportunities for securing measurable net gains for biodiversity (paragraph 174b).

- 2.3.13. Protected sites and species are a material consideration in determining planning applications and therefore all information relating to protected sites and species must be submitted with planning submissions for determination of the whole application. The NPPF (paragraph 175) which promotes Local Planning Authorities to assess if significant harm would occur to biodiversity and decide accordingly.

Biodiversity Policy

- 2.3.14. Section 41 of the NERC Act requires the Secretary of State to draw up a list of Habitats and Species of Principal Importance which should be used to guide decision-makers (which include local authorities) in implementing their duty under Section 40. There are 41 species of bird that are considered to be Species of Principal Importance, an important factor when considering proposed developments, in accordance with the Natural Environment and Rural Communities (NERC) Act 2006.
- 2.3.15. There are 26 species of birds recognised as local Priority Species under the Cambridgeshire and Peterborough Local Biodiversity Action Plan (LBAP) (Cambridgeshire and Peterborough Biodiversity Group, Aug 20). These include the following species, which are relevant to this assessment:
- Corn bunting *Emberiza calandra*
 - House Sparrow *Passer domesticus*
 - Linnet *Linaria cannabina*
 - Reed bunting *Emberiza schoeniclus*
 - Skylark *Alauda arvensis*
 - Song thrush *Turdus philomelos*
 - Yellowhammer *Emberiza citronella*, and
 - Yellow wagtail *Motacilla flava*.
- 2.3.16. Additionally swift *Apus apus* and barn owl are listed as ‘additional species of interest’.

2.4 Personnel and Quality Assurance

- 2.4.1. The breeding bird surveys were undertaken by Senior Ecologists Andrea Sarkissian, Neil Page and Phil Dutt and Assistant Ecologist Mark Johnson.
- 2.4.2. Andrea Sarkissian is an (Associate member of CIEEM) Senior Ecologist with over seven years' experience in ecological consultancy and has obtained bird survey and identification experience both within and outside of work over the past nine years. She has undertaken bird surveys including breeding and wintering bird surveys for twelve schemes across England and Wales whilst at Capita in a variety of habitats including rural farmland, suburban, estuarine and riverine. These projects range from road and rail to school developments and flood alleviation schemes.
- 2.4.3. Neil is a Full Member of CIEEM and has been an Ecological Consultant for 14 years. Neil has a broad range of professional experience in consulting services, including ecosystem management, the design and planning of protected species mitigation, and environmental research projects. Neil has a Schedule 1 barn owl licence and has undertaken and participated in surveys and mitigation for various bird species.
- 2.4.4. Philip Dutt has over 15 years' experience working in the ecological sector including ecology consultancies (five years), Natural England (five years), local authorities and NGOs such as the RSPB. He has undertaken a range of bird surveys including breeding bird surveys as well as seabird recording on fisheries research vessels.
- 2.4.5. Mark Johnson is an Assistant Ecologist with over three years' experience working within professional ecological consultancy. Mark continues to develop his bird surveying knowledge having previously assisted with breeding and wintering bird surveys on projects in the midlands and Yorkshire. He has also supported with species specific surveys for barn owl, kingfisher and nightjar across sites in England, as well as conducting nesting bird checks.

3. Methods

3.1 Survey and Report Objectives

- 3.1.1 The surveys and report were carried out to fulfil the following objectives.
1. To detail the survey methodology employed
 2. To present a summary of local bird records
 3. To identify the use of the scheme area by breeding birds
 4. To identify any birds of conservation interest
 5. To determine the likely importance of the scheme area for breeding birds.

3.2 Desk-Based Study

- 3.2.1 Local ecological records were obtained from Cambridgeshire and Peterborough Environmental Records Centre in July 2020 from within 2km of the scheme.

3.3 Field Survey

- 3.3.1 The breeding bird surveys followed a modified version of the British Trust for Ornithology (BTO) Breeding Bird Survey and Common Bird Census (CBC); with the location of each bird heard or seen marked on a site map using standard two-letter (BTO). Notes and subsequent analysis were made regarding breeding status using guidance from the BTO breeding status codes in Table 1 below (from the BTO Bird Atlas) (BTO Bird Atlas 2007-2011).

Table 1 - BTO Breeding Status Codes

Non-breeding	
F	Flying over
M	Species observed but suspected to be still on Migration
U	Species observed but suspected to be summer non-breeder
Possible breeder	
H	Species observed in breeding season in suitable nesting Habitat
S	Singing male present (or breeding calls heard) in breeding season in suitable breeding habitat
P	Pair observed in suitable nesting habitat in breeding season
Probably breeding	
T	Permanent Territory presumed through registration of territorial behaviour (song etc) on at least two different days a week or more part at the same place or many individuals on one day
D	Courtship and Display (judged to be in or near potential breeding habitat; be cautious with wildfowl)
N	Visiting probable Nest site
A	Agitated behaviour or anxiety calls from adults, suggesting probable presence of nest or young nearby
I	Brood patch on adult examined in the hand, suggesting Incubation
B	Nest Building or excavating nest-hole
Confirmed breeding	
DD	Distraction-Display or injury feigning
UN	Used Nest or eggshells found (occupied or laid within period of survey)
FL	Recently FLedged young (nidicolous species) or downy young (nidifugous species). Careful consideration should be given to the likely provenance of any fledged juvenile capable of significant geographical movement. Evidence of dependency on adults (e.g. feeding) is helpful. Be cautious, even if the record comes from suitable habitat.
ON	Adults entering or leaving nest-site in circumstances indicating an Occupied Nest (including high nests or nest holes, the contents of which cannot be seen) or adults seen incubating.
FF	Adult carrying Faecal sac or Food for young
NE	Nest containing Eggs
NY	Nest with Young seen or heard

- 3.3.2 The Scheme area and a corridor of 500m either side was visited to scope out the locations for the survey transects. Transect locations were established to sample representative habitats within the Scheme and to inform likely impacts.
- 3.3.3 The survey involved walking slowly along predefined routes, stopping regularly and listening and looking for any songs, calls or visuals of birds, with the aid of binoculars.
- 3.3.4 The surveys commenced within one hour of sunrise where possible and were carried out in good weather where possible, avoiding periods of heavy rain, poor visibility or strong winds when bird activity is reduced.
- 3.3.5 Three surveys were undertaken, covering the whole survey area (where accessible) during each survey. The three surveys were undertaken across several days (to cover the whole survey area) and across three timeframes: 30 April to 5 May, 27 to 29 May and 9 to 12 June.
- 3.3.6 During the first survey, access was largely limited to Public Rights of Way (PRoW). However during the second and third surveys, further areas of privately owned land were accessible and so the transect routes were altered. The transect routes for the second and third surveys covered the same areas and the starting locations were changed to cover surveys areas at different times of the morning to minimise survey design bias.
- 3.3.7 Transect locations are shown on the overview map at Appendix A as well as in the survey results maps in Appendix B.

3.4 Evaluation Methods

- 3.4.1 The maps from each survey were analysed to determine which species were possible, probable or definite breeders. Birds observed in the breeding season in suitable nesting habitat were deemed possible breeders and those seen/heard singing in the same location on more than one survey (holding a territory) and those seen carrying nesting materials were classed as probable breeders. Those seen entering or leaving nest sites, incubating eggs, with chicks present or carrying food or faecal sacs to a location on site were classed as confirmed breeders.
- 3.4.2 The analysis aims to assess the importance of the site for birds, particularly identifying those species of greater conservation importance such as red and amber listed declining bird species under the Birds of Conservation Concern 4 list ((BTO), December 2015), Schedule 1 species and UK Species of Principal Importance (listed under Section 41 of the NERC Act) and Local BAP Priority Species.

3.5 Limitations and Assumptions

- 3.5.1 At the point of commencement of the surveys in April 2020 measures relating to the management of the coronavirus pandemic came into force which caused a delay to the start of surveys. This occurred as it was determined between the client and Capita how work could be carried out safely. Therefore, the usual methodology of conducting breeding bird surveys from March could not be achieved. This led to a delay in starting the surveys until April 2020. However, surveys were carried out from late April 2020 and this constraint is not considered to have affected the reliability of the results outlined in this report.
- 3.5.2 Some of the survey days started later than the first hour after sunset due to requirements to meet land-owners on site at a certain time.
- 3.5.3 Further areas were surveyed during the second and third surveys due to land access obtained. The lack of a first survey for these areas is not considered to represent a significant constraint.
- 3.5.4 During the first survey, access was largely limited to Public Rights of Way (PRoW). However during the second and third surveys, further areas of land were accessible and so the transect routes were altered. The transect routes for the second and third surveys covered the same areas. This is not considered to represent a significant constraint.

4. Results

4.1 Desk study

- 4.1.1 The 2km local ecological records search including the following notable bird records.

Schedule 1:

- Barn owl *Tyto alba*
- Kingfisher *Alcedo atthis*, and
- Peregrine *Falco peregrinus*.

Red listed:

- Black redstart *Phoenicurus ochruros*
- Corn bunting *Emberiza calandra*
- Cuckoo *Cuculus canorus*
- Grey partridge *Perdix perdix*
- Lapwing *Vanellus vanellus*
- Lesser spotted woodpecker *Dendrocopos minor*
- Linnet *Linaria cannabina*
- Marsh tit *Poecile palustris*
- Skylark *Alauda arvensis*
- Starling *Sturnus vulgaris*
- Spotted flycatcher *Muscicapa striata*
- Yellow wagtail *Motacilla flava*, and
- Yellowhammer *Emberiza citrinella*.

Amber listed:

- Dunnock *Prunella modularis*, and
- Stone-curlew *Burhinus oedichnemus*.

4.2 Field Survey

Breeding Bird Survey

4.2.1 The survey timings and weather are presented in Table 2 and the results including breeding and conservation status are presented in Table 3. The mapped survey results are presented at Appendix B.

Table 2 - Survey Timings and Weather Conditions for Breeding Bird Surveys.

	Date	Start/End Time	Sunrise	Weather
Survey 1	30 April 2020	07:45 – 10:45	05:30	Dry, sunny, light breeze-breezy, 8°C at start, 25% cloud cover
	1 May 2020	06:20 – 11:00	05:28	Dry, 6°C at start, 60% cloud cover
	4 May 2020	06:25 – 09:45	05:23	Dry, 6°C at start, 75% cloud cover
	5 May 2020	07:45 – 10:45	05:21	Dry, 8°C at start, 90% cloud cover
Survey 2	27 May 2020	05:37 – 12:13	04:48	Dry, still, 13°C at start, 50% cloud cover.
	28 May 2020	05:45 – 11:34	04:47	Dry, bright, still, 10°C at start, 0% cloud cover,
	29 May 2020	06:31 – 10:36	04:46	Dry, sunny, still, 12°C at start, 5% cloud cover.
Survey 3	9 June 2020	05:28 – 10:30	04:39	Dry, still, 6°C at start, 5% cloud cover.
	10 June 2020	05:29 – 07:02	04:39	Intermittent light drizzle for 30 minutes, light breeze, 12°C at start, 100% cloud cover.
	11 June 2020	05:32 – 10:30	04:38	Intermittent showers, light breeze, 11°C at start, 100% cloud cover.

	Date	Start/End Time	Sunrise	Weather
	12 June 2020	04:30 – 09:11	04:38	Dry, light breeze-breezy, 13°C at start, 100% cloud cover.

Table 3 - Bird Survey Results with Breeding and Conservation Status

Species	BTO Code	Survey 1	Survey 2	Survey 3	Breeding Status	¹ BTO Red or Amber Status/ Schedule 1	² UK SPI / Local Priority
Blackbird (<i>Turdus merula</i>)	B.	19	18	20	Probably	-	-
Blackcap (<i>Sylvia atricapilla</i>)	BC	17	26	22	Confirmed	-	-
Black-headed gull (<i>Chroicocephalus ridibundus</i>)	BH	1	-	4	Non-breeding	Amber	-
Blue tit (<i>Cyanistes caeruleus</i>)	BT	6	15	18	Confirmed	-	-
Buzzard (<i>Buteo buteo</i>)	BZ	4	3	4	Probably	-	-
Canada goose (<i>Branta canadensis</i>)	CG	11	8	8	Confirmed	-	-
Carriion crow (<i>Corvus corone</i>)	C.	30	9	6	Probably	-	-
Chaffinch (<i>Fringilla coelebs</i>)	CH	7	6	8	Probably	-	-
Chiffchaff (<i>Phylloscopus collybita</i>)	CC	10	10	17	Probably	-	-
Collared dove (<i>Streptopelia decaocto</i>)	CD	-	-	5	Confirmed	-	-
Cormorant (<i>Phalacrocorax carbo</i>)	CA	1	-	1	Non-breeding	-	-
Corn bunting (<i>Emberiza calandra</i>)	CB	6	19	18	Probably	Red	UK / Local
Dunnock (<i>Prunella modularis</i>)	D.	6	9	5	Probably	Amber	UK
Goldcrest (<i>Regulus regulus</i>)	GC	-	1	2	Possibly	-	-
Goldfinch (<i>Carduelis carduelis</i>)	GO	7	16	14	Probably	-	-
Great spotted woodpecker (<i>Dendrocopos major</i>)	GS	-	6	1	Probably	-	-
Great tit (<i>Parus major</i>)	GT	9	9	4	Confirmed	-	-
Greenfinch (<i>Carduelis chloris</i>)	GR	3	5	4	Confirmed	-	-

¹ Red/Amber List on Bird of Conservation Concern 4 List or Wildlife and Countryside Act (1981 as amended) Schedule 1
² Local (Cambridgeshire and Peterborough Biodiversity Partnership) Species of Principal Importance (SPI) (priority species) / UK SPI (JNCC)

Species	BTO Code	Survey 1	Survey 2	Survey 3	Breeding Status	¹ BTO Red or Amber Status/ Schedule 1	² UK SPI / Local Priority
Green woodpecker (<i>Picus viridis</i>)	G.	4	3	3	Probably	-	-
Grey heron (<i>Ardea cinerea</i>)	H.	2	1	1	Non-breeding	-	-
Greylag goose (<i>Anser anser</i>)	GJ	7	3	-	Possibly	-	-
Grey wagtail (<i>Motacilla cinerea</i>)	GL	-	2	-	Possibly	Red	-
Herring gull (<i>Larus argentatus</i>)	HE	1	-	1	Non-breeding	Red	-
House martin (<i>Delichon urbica</i>)	HM	-	-	5	Possibly	Amber	-
House sparrow (<i>Passer domesticus</i>)	HS	4	12	4	Confirmed	Red	UK / Local
Jay (<i>Garrulus glandarius</i>)	J.	-	2	2	Possibly	-	-
Jackdaw (<i>Corvus monedula</i>)	JD	6	8	18	Probably	-	-
Kestrel (<i>Falco tinnunculus</i>)	K.	1	2	-	Possibly	Amber	-
Lesser black-backed gull (<i>Larus fuscus</i>)	LB	4	-	-	Non-breeding	Amber	-
Lesser whitethroat (<i>Sylvia curruca</i>)	LW	-	1	1	Possibly	-	-
Linnet (<i>Linaria cannabina</i>)	LI	1	35	23	Probably	Red	UK / Local
Little egret (<i>Egretta garzetta</i>)	ET	-	1	-	Non-breeding	-	-
Long tailed tit (<i>Aegithalos caudatus</i>)	LT	4	14	9	Probably	-	-
Magpie (<i>Pica pica</i>)	MG	8	4	7	Probably	-	-
Mallard (<i>Anas platyrhynchos</i>)	MA	14	9	12	Probably	Amber	-
Meadow pipit (<i>Anthus pratensis</i>)	MP	5	-	-	Possibly	Amber	-
Moorhen (<i>Gallinula chloropus</i>)	MH	1	1	1	Probably	-	-
Pheasant (<i>Phasianus colchicus</i>)	PH	11	4	3	Probably	-	-
Pied wagtail (<i>Motacilla alba</i>)	PW	-	1	4	Possibly	-	-
Red legged partridge (<i>Alectoris rufa</i>)	RL	13	4	1	Probably	-	-
Reed warbler (<i>Acrocephalus scirpaceus</i>)	RW	-	3	3	Probably	-	-
Reed bunting (<i>Emberiza schoeniclus</i>)	RB	-	3	5	Confirmed	Amber	UK / Local

Species	BTO Code	Survey 1	Survey 2	Survey 3	Breeding Status	¹ BTO Red or Amber Status/ Schedule 1	² UK SPI / Local Priority
Robin (<i>Erithacus rubecula</i>)	R.	10	19	13	Probably	-	-
Rook (<i>Corvus frugilegus</i>)	RO	51	3	10	Probably	-	-
Red kite (<i>Milvus milvus</i>)	KT	-	1	1	Possibly	-	-
Skylark (<i>Alauda arvensis</i>)	S.	46	43	66	Probably	Red	UK / Local
Song thrush (<i>Turdus philomelos</i>)	ST	4	2	7	Probably	Red	UK / Local
Sparrowhawk (<i>Accipiter nisus</i>)	SH	1	-	-	Possibly	-	-
Starling (<i>Sturnus vulgaris</i>)	SG	-	-	14	Possibly	Red	UK
Swallow (<i>Hirundo rustica</i>)	SL	7	3	7	Confirmed	-	-
Swift (<i>Apus apus</i>)	SI	-	6	14	Possibly	Amber	Local *
Tufted duck (<i>Aythya fuligula</i>)	TU	7	2	2	Probably	-	-
Whitethroat (<i>Sylvia communis</i>)	WH	19	24	18	Probably	-	-
Willow warbler (<i>Phylloscopus trochilus</i>)	WW	3	-	1	Probably	Amber	-
Woodpigeon (<i>Columba palumbus</i>)	WP	74	272	127	Probably	-	-
Wren (<i>Troglodytes troglodytes</i>)	WR	27	40	38	Probably	-	-
Yellowhammer (<i>Emberiza citrinella</i>)	Y.	14	12	25	Probably	Red	UK / Local
Yellow wagtail (<i>Motacilla flava</i>)	YW	1	3	2	Probably	Red	UK / Local

NB kingfisher and dipper *Cinclus cinclus* field records are detailed in the separate kingfisher report.

NB individuals in ‘fam’ (family groups) where total number of young are not counted individually are counted as one record in the table.

NB cuckoo recorded off site (not in table).

* Local ‘additional species of interest’ under the Cambridgeshire and Peterborough Biodiversity Partnership.

Other Notable Faunal Recordings

- 4.2.2 A cuckoo was recorded singing off site, in the local vicinity of the survey area towards Babraham Village, on 27 May 2020.
- 4.2.3 Kingfisher, dipper and barn owl have been recorded. The kingfisher and barn owl surveys are reported in separate reports.
- 4.2.4 Brown hares *Lepus europaeus* were recorded across the survey areas during the breeding bird surveys.

Survey Results Summary

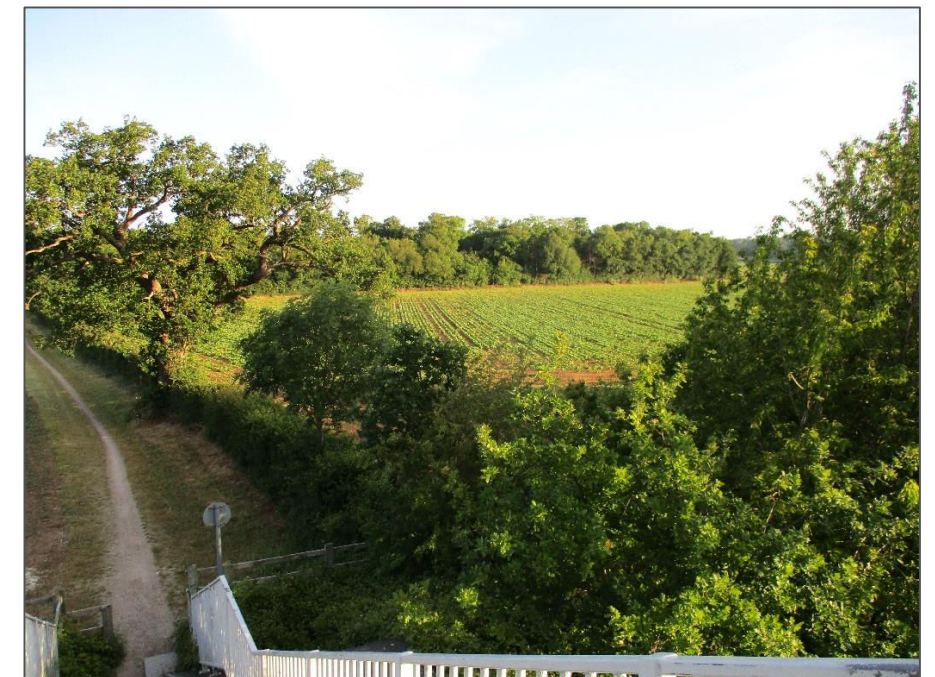
- 4.2.5 A total of 58 species were recorded during the surveys (plus kingfisher, barn owl and dipper, bringing the total to 61, but these species are reported separately).
- 4.2.6 A total of nine species are confirmed breeders, including:
- Red listed house sparrow
 - Amber listed reed bunting, and
 - Green listed: blackcap, blue tit, Canada goose, collared dove, great tit, greenfinch and swallow.
- 4.2.7 A total of 43 species are probable/possible breeders, including:
- Red listed: corn bunting, grey wagtail, linnet, skylark, song thrush, starling, yellowhammer and yellow wagtail, and
 - Amber listed: dunnoek, house martin, kestrel, mallard, meadow pipit, swift and willow warbler.

Habitats Used By Birds within Survey Area

- 4.2.8 Photographs 1 to 6 show a range of habitats across the survey area which are being used by birds during the breeding season. The locations in the photographs run consecutively from the eastern end of the scheme in Little Abington to the western end, north of Great Shelford.



Photograph 1 - Farmland north of the A1307 road (Little Abington). Arable fields, hedgerow, mature trees, woodland.



Photograph 2 - Farmland west of the A11 road near Babraham. Woodland, arable fields, hedgerows with mature trees.



Photograph 3 - River Granta adjacent arable field, west of A11 road near Babraham.



Photograph 4 - Vegetated ditch and arable fields south of the River Granta (north of Sawston village).



Photograph 5 - Vegetated ditch and arable fields adjacent Hobson's Conduit and woodland (north of Great Shelford).



Photograph 6 - Hobson's Conduit woodland (north of Great Shelford).

5. Interpretation of Results

- 5.1.1 The arable farmland with mature hedgerows and trees across the scheme support red listed species such as corn bunting, skylark and yellowhammer. The mosaic of farmland, rough grassland, scrub and vegetated ditches around the River Granta north of Sawston (north of Cambridge Road) support a range of birds including red listed yellowhammer, linnet, skylark and song thrush as well as amber listed willow warbler and reed bunting. The farmland just north of this is one of the only three locations in which the red listed species yellow wagtail was recorded. The others include the farmland at the far northern end of the transect route near Trumpington and the large hedgerow-lined arable fields north of Sawston Road (west of Babraham). This latter location also supports a number of corn buntings and skylarks as well as dunnoek and yellowhammers. Red listed house sparrows are present on the field edges near to the adjacent residential housing.
- 5.1.2 The rough grassland, scrub and woodland along the River Granta corridor support a range of passerines such as red listed grey wagtail, amber listed: dunnoek, willow warbler and song thrush as well as greenfinch which is suffering recent declines although is still green listed. The pond along the River Granta to the south of Babraham also supports amber listed mallard (as well as tufted duck, cormorant and Canada geese).
- 5.1.3 Hobson's Conduit and the adjacent woodland, scrub and farmland at the northern end of the transect again support a number of red and amber listed and Local BAP Priority Species including skylark, yellowhammer, linnet, reed bunting, corn bunting, song thrush and yellow wagtail.

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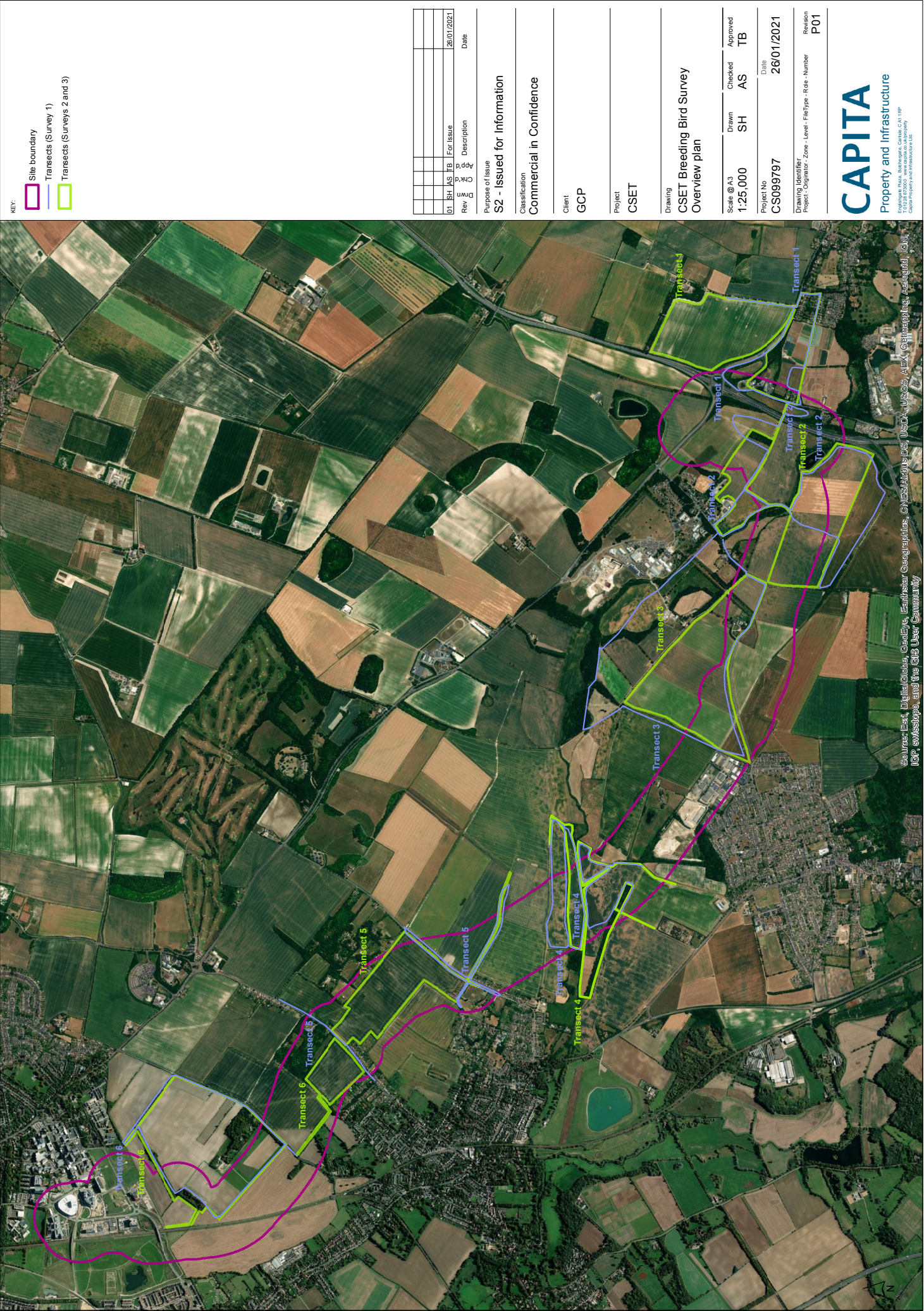
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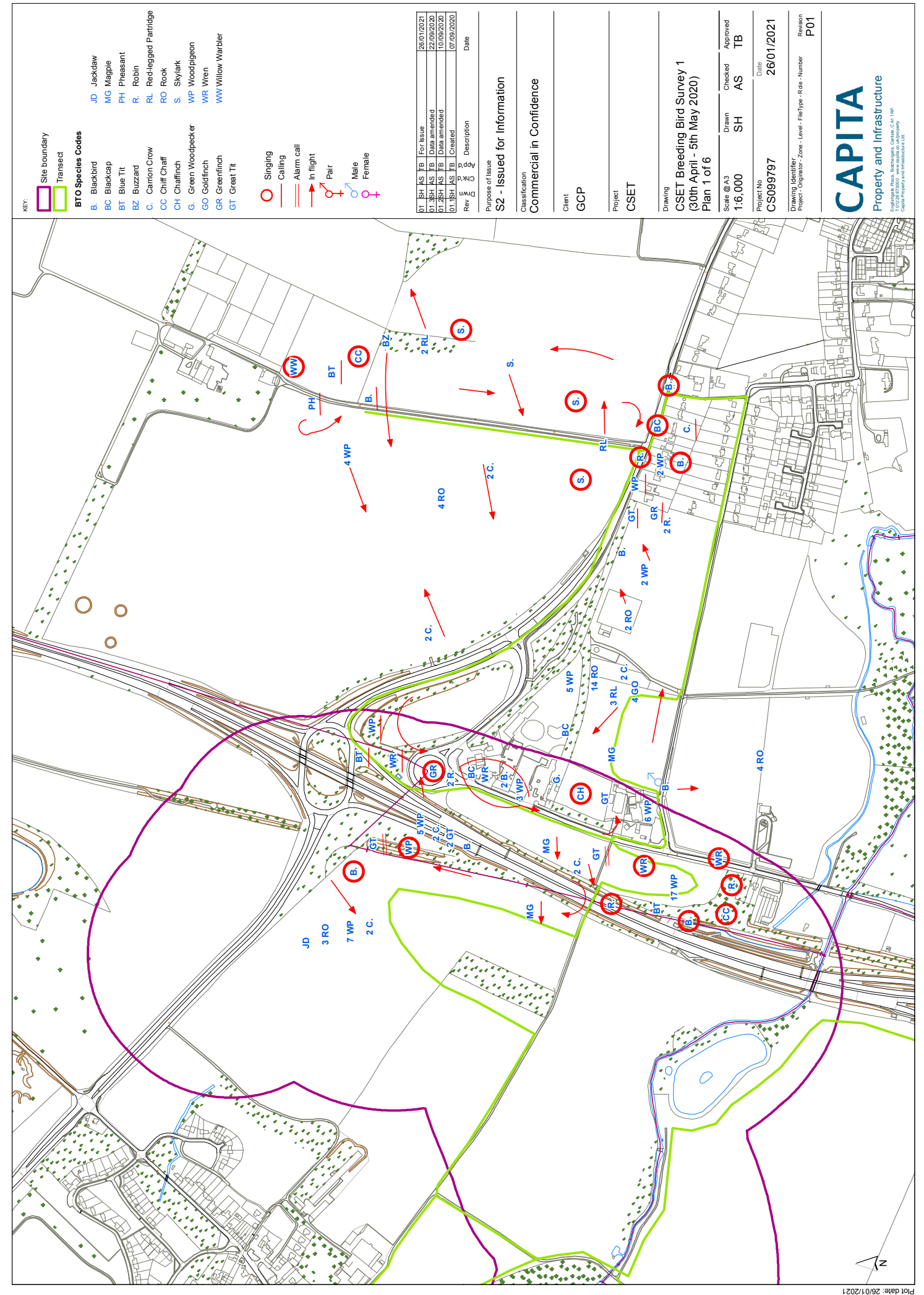
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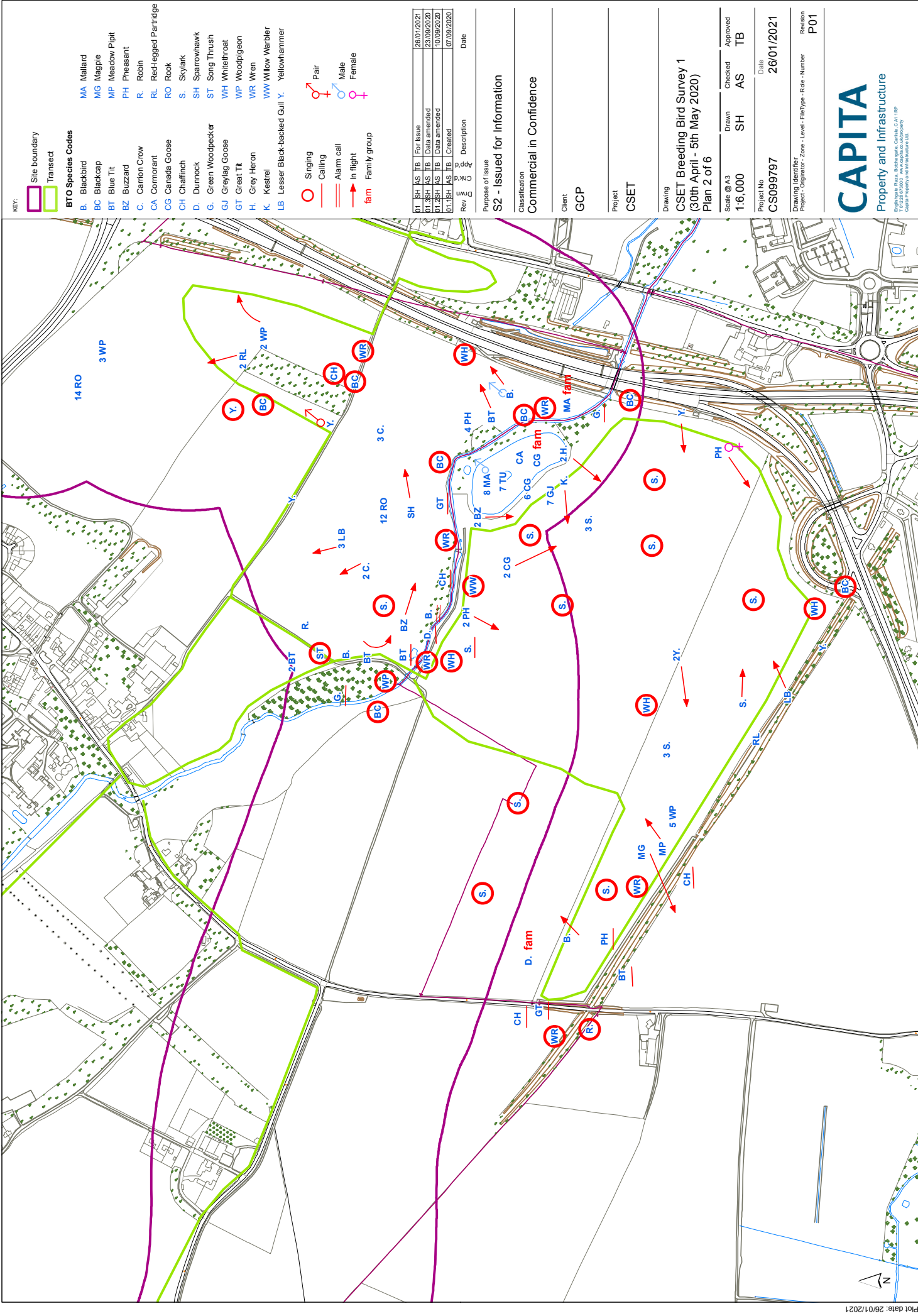
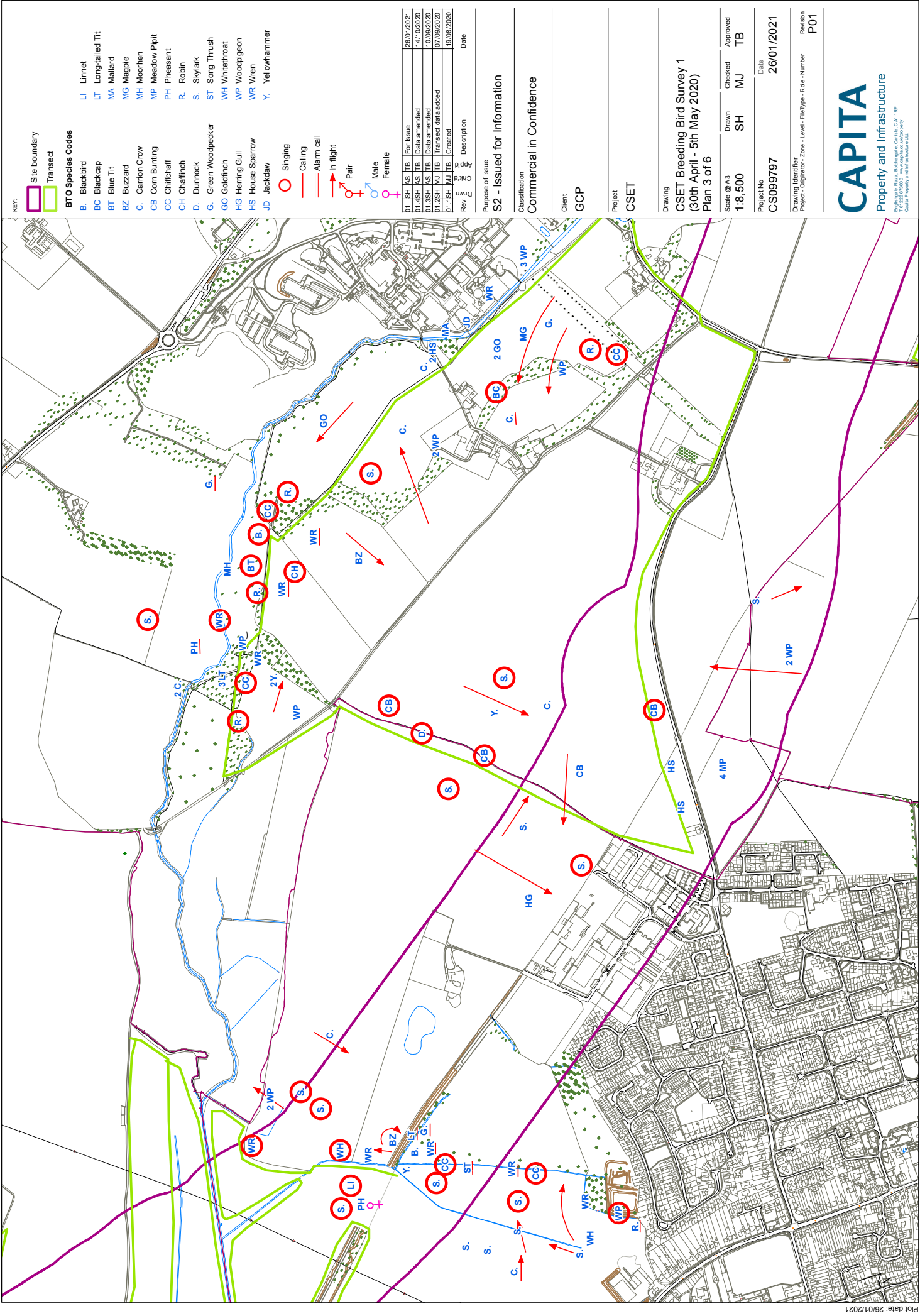
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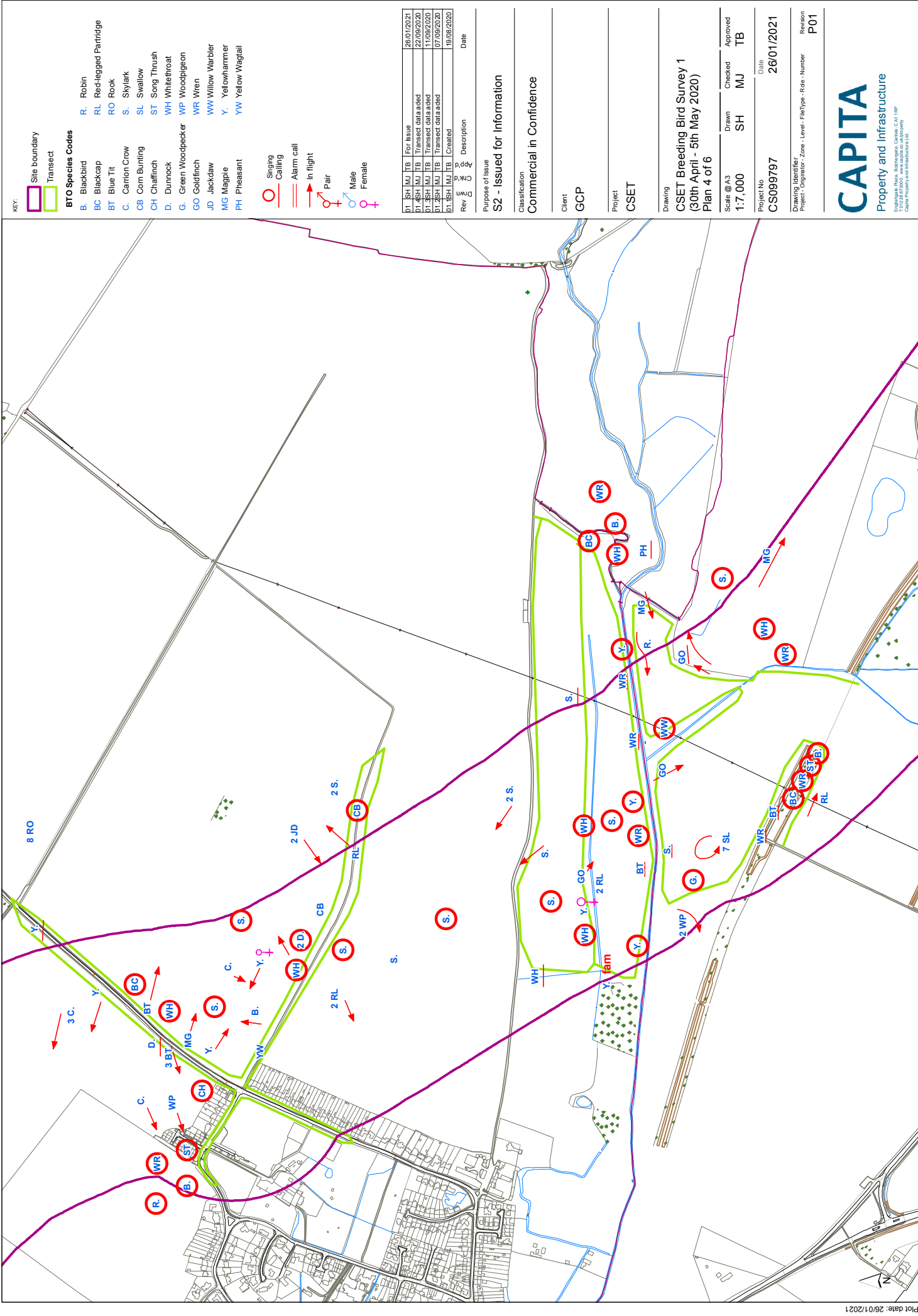
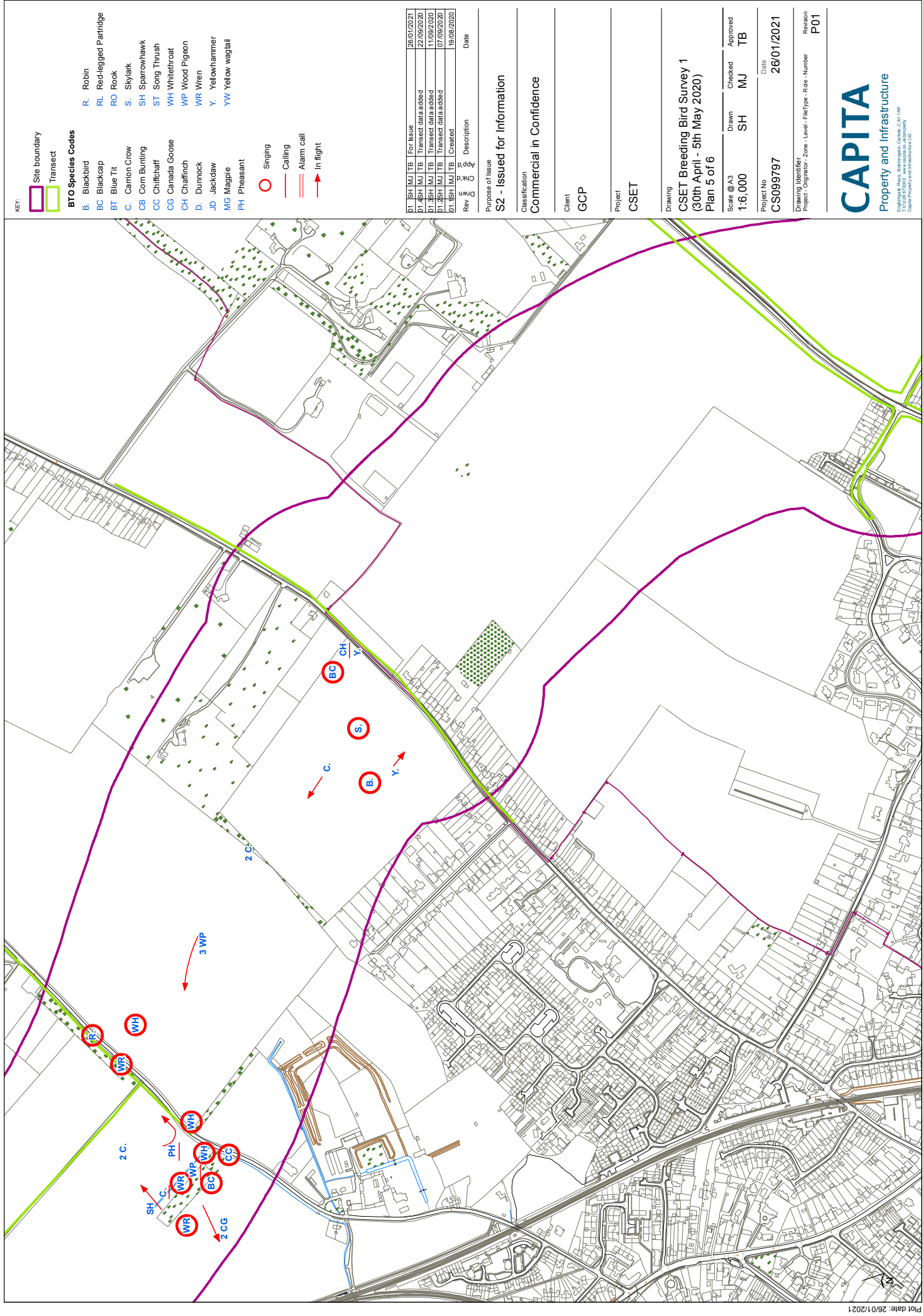
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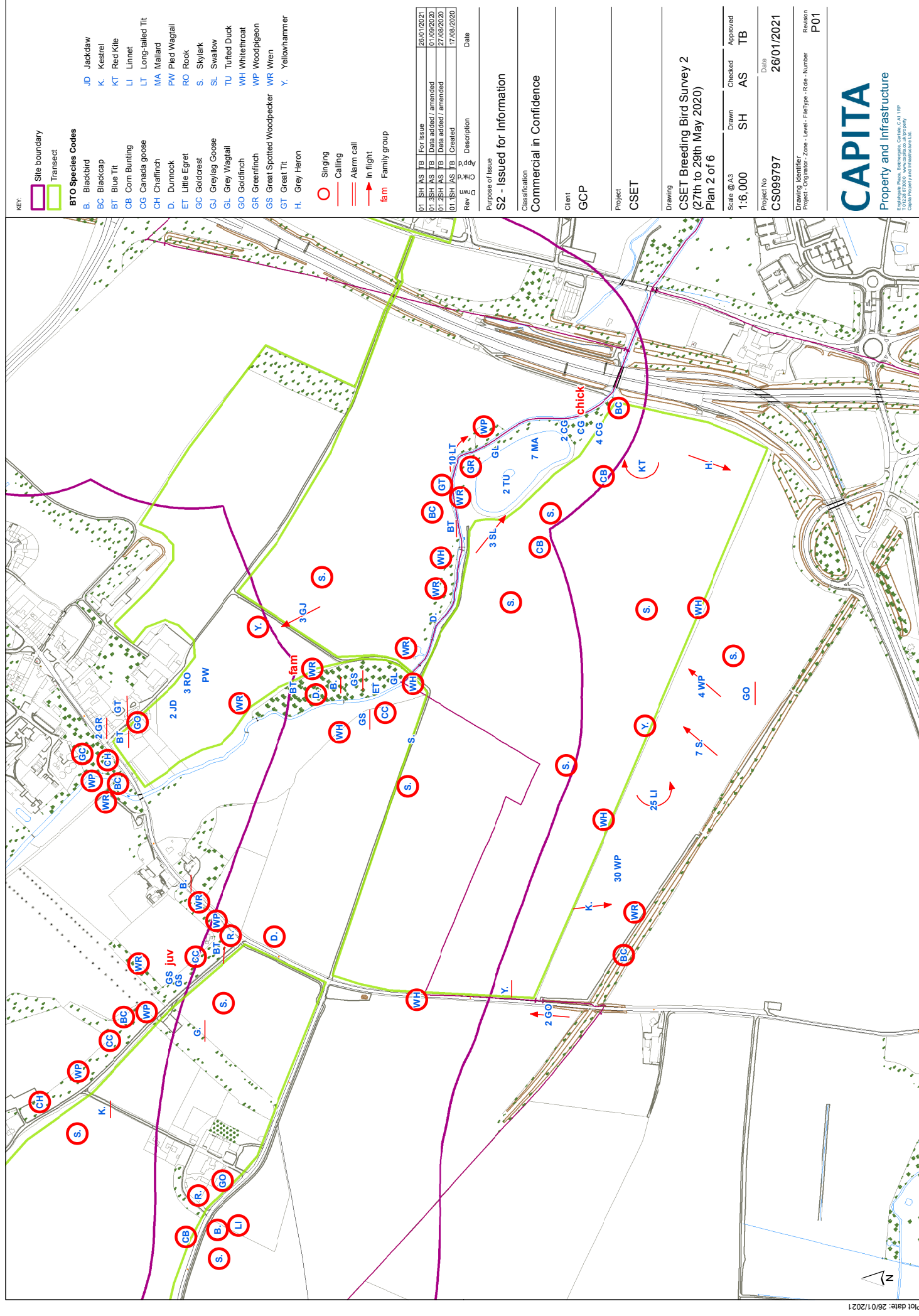


Appendix B – Breeding Bird Survey Transect Locations and Survey Results (Three Surveys April to June 2020)









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01.2SH	AS	TB		Data added / amended	27/08/2020
01.1SH	AS	TB		Created	17/08/2020

Purpose of Issue

Purpose of Issue
S2 - Issued for Information

Classification

Classification
Commercial in Confidence

Client

Client

Project

Project CSE-

Drawing

CSET Breeding Bird Survey 2
(27th to 29th May 2020)
Plan 2 of 6

Scale @ A3	Drawn	Checked	Approved
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Project No
C-S0999797

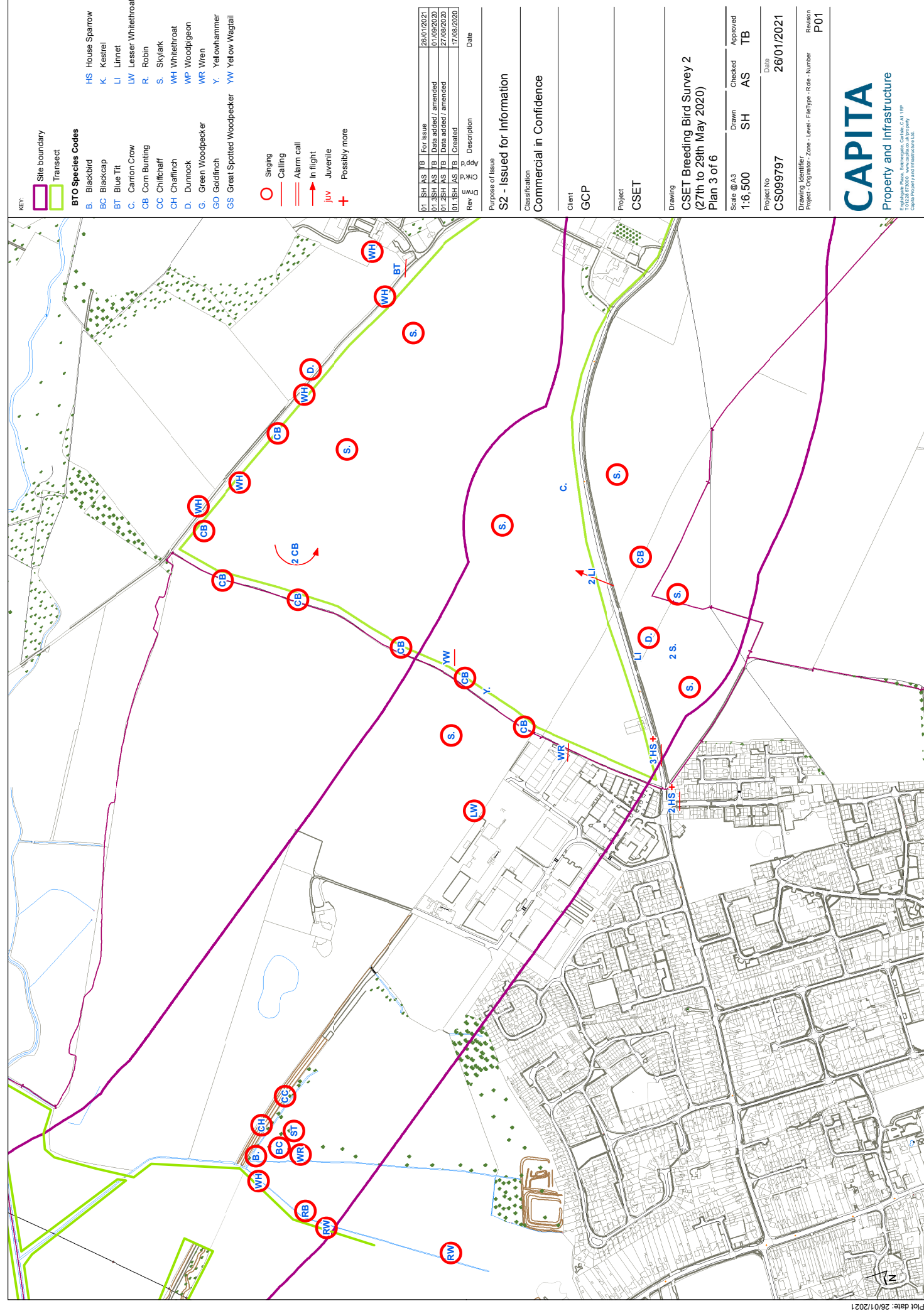
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Drawing Identifier
Project - Originator - Zone - Level - FileType - Rde - Number

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01.	25H	AS	TB	Data added / amended	27/08/2020
01.	15H	AS	TB	Created	17/08/2020

Purpose of Issue

Purpose of Issue	S2 - Issued for Information

Classification

Classification
Commercial in Confidence

Client

GCP

Project

CS-
Project

Drawing

CSET Breeding Bird Survey 2
(27th to 29th May 2020)
Plan 3 of 6

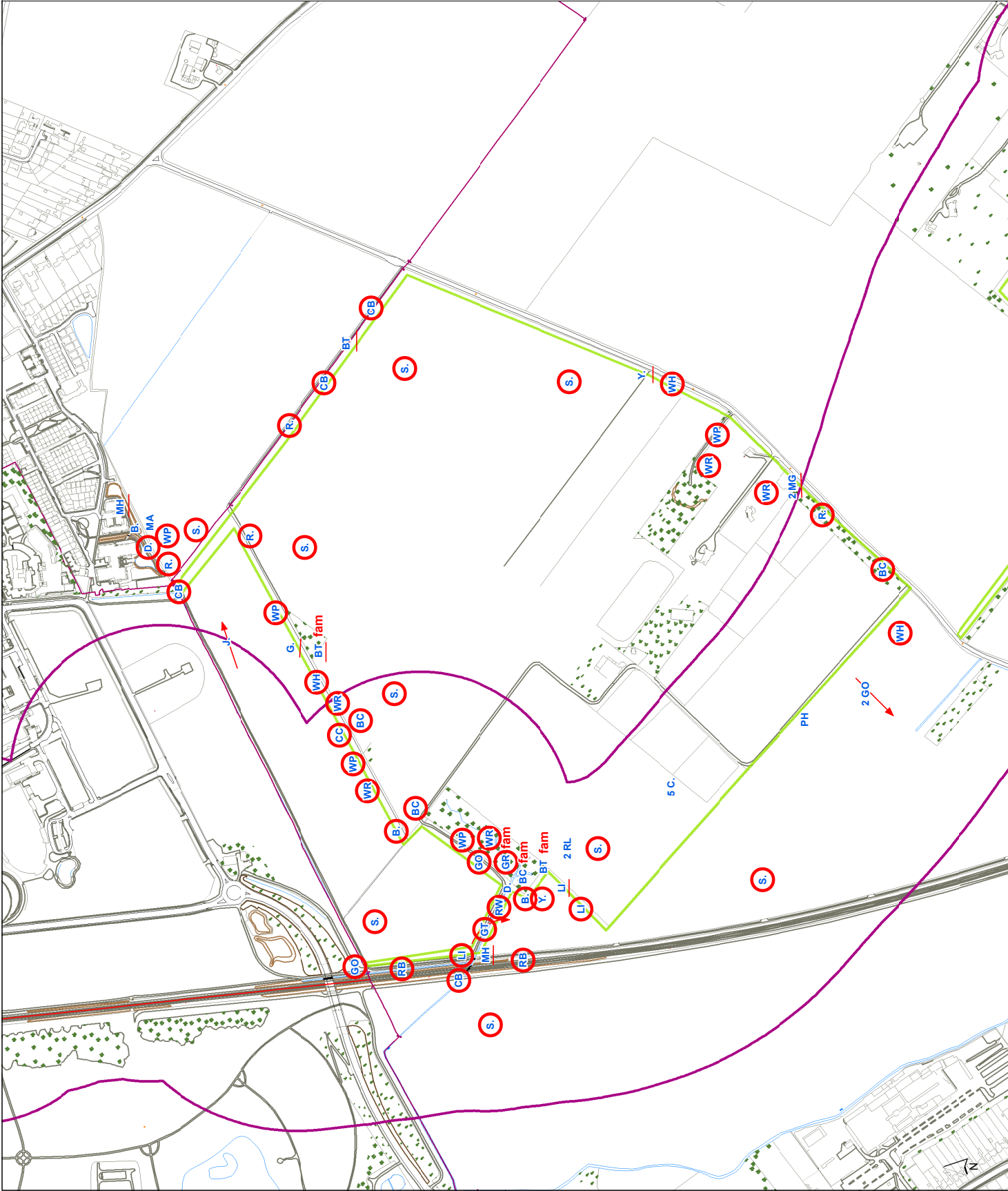
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Project No CS099797 Date 26/01/2021

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Drawing Identifier
Project - Originator - Zone - Level - File Type - Rde - Number

CAPITA
Property and Infrastructure



Plot date: 26/01/2021

KEY:
Site boundary
Transect

BTO Species Codes
B. Blackbird
BC Blackcap
BT Blue Tit
C. Carrion Crow
CB Corn Bunting
CC Chiffchaff
D. Dunnock
G. Green Woodpecker
GO Goldfinch
GR Greenfinch
GT Great Tit
J. Jay
LI Linnet
MA Mallard
MG Magpie
MH Moorhen
PH Pheasant
R. Robin
RB Reed Bunting
RL Red-legged Partridge
RW Reed Warbler
S. Skylark
WH White-throat
WP Woodpigeon
WR Wren
Y. Yellowhammer

Singing
Calling
Alarm call
In flight
fam Family group

Rev	W	Q	2	dd	yy	Date
01	SH	AS	TB			26/01/2021
02	SH	AS	TB			27/06/2020
03	SH	AS	TB			17/06/2020

Purpose of Issue
S2 - Issued for Information

Classification
Commercial in Confidence

Client
GCP

Project
CSET

Drawing
CSET Breeding Bird Survey 2

(27th to 29th May 2020)

Plan 6 of 6

Scale @A3	Drawn	Checked	Approved
1:6,000	SH	AS	TB

Project No	Date
CS099797	26/01/2021

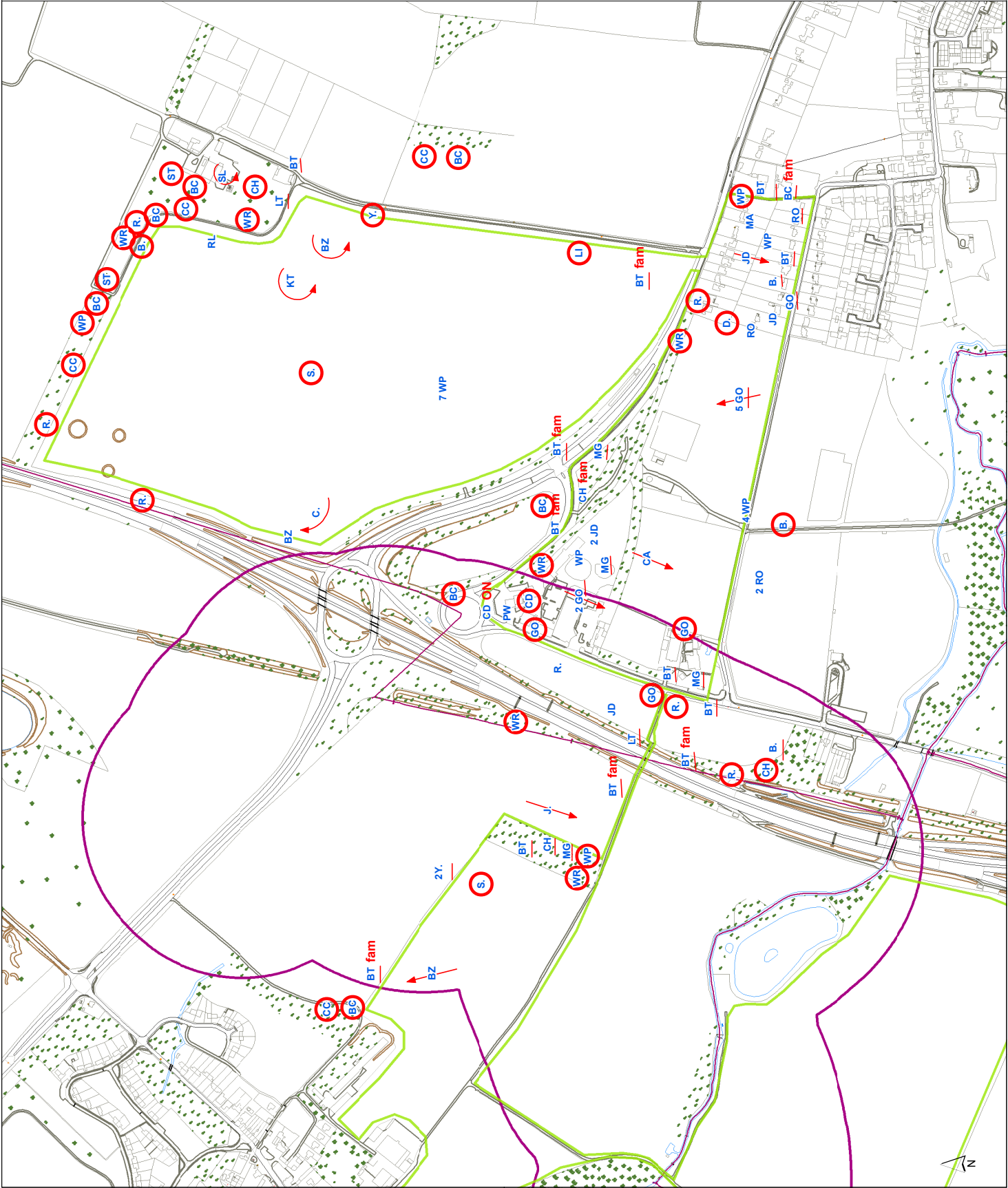
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Englebridge Place, Bournemouth, Dorset, BA1 1EP
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Capita Property and Infrastructure Ltd



Plot date: 26/01/2021

KEY:
Site boundary
Transect

BTO Species Codes
B. Blackbird
BC Blackcap
BT Blue Tit
BZ Buzzard
C. Carrion Crow
CA Cormorant
CC Chiffchaff
CD Collared Dove
CH Chaffinch
D. Dunnock
GO Goldfinch
J. Jay
JD Jackdaw
KT Red Kite
LI Linnet
LT Long-tailed Tit
MA Mallard
MG Magpie
PW Pied Wagtail
R. Robin
RL Red-legged Partridge
RO Rook
S. Skylark
SL Swallow
ST Song Thrush
WP Woodpigeon
WR Wren
Y. Yellowhammer

Singing
Calling
Alarm call
In flight
fam Family group
ON On nest

Rev	W	Q	2	dd	yy	Date
01	SH	AS	TB			26/01/2021
02	SH	AS	TB			27/06/2020
03	SH	AS	TB			17/06/2020

Purpose of Issue
S2 - Issued for Information

Classification
Commercial in Confidence

Client
GCP

Project
CSET

Drawing
CSET Breeding Bird Survey 3

(9th to 12th June 2020)

Plan 1 of 6

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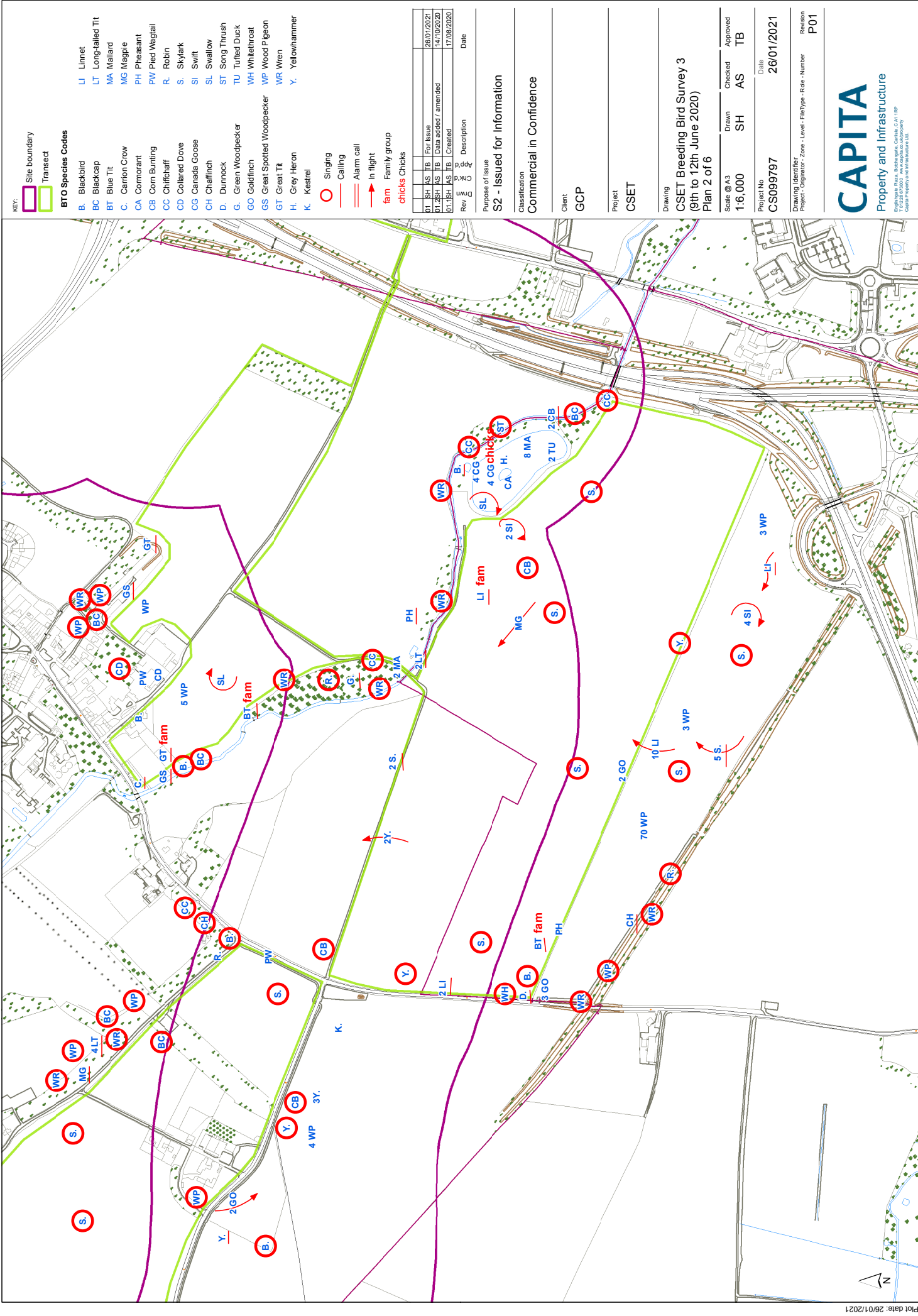
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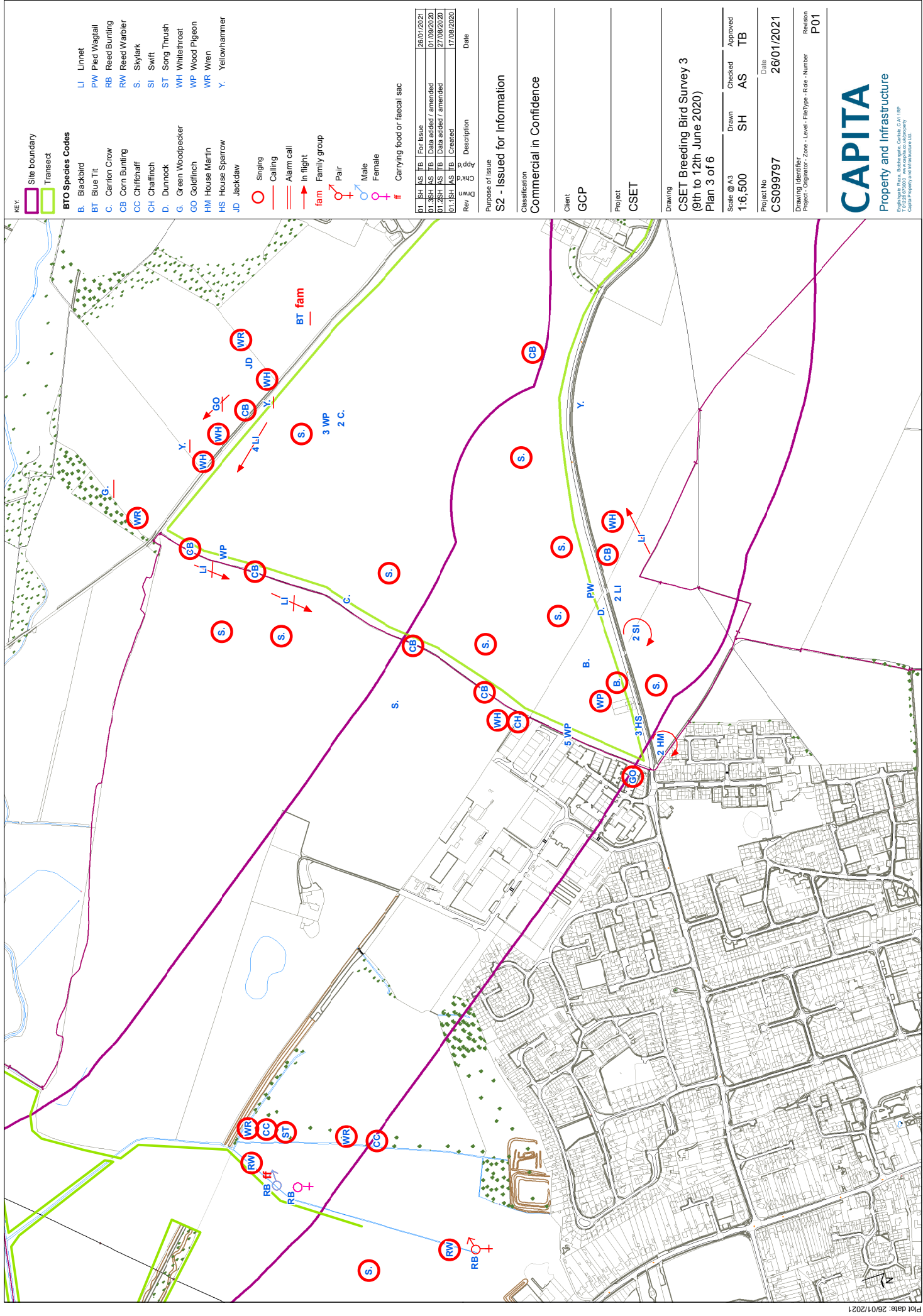
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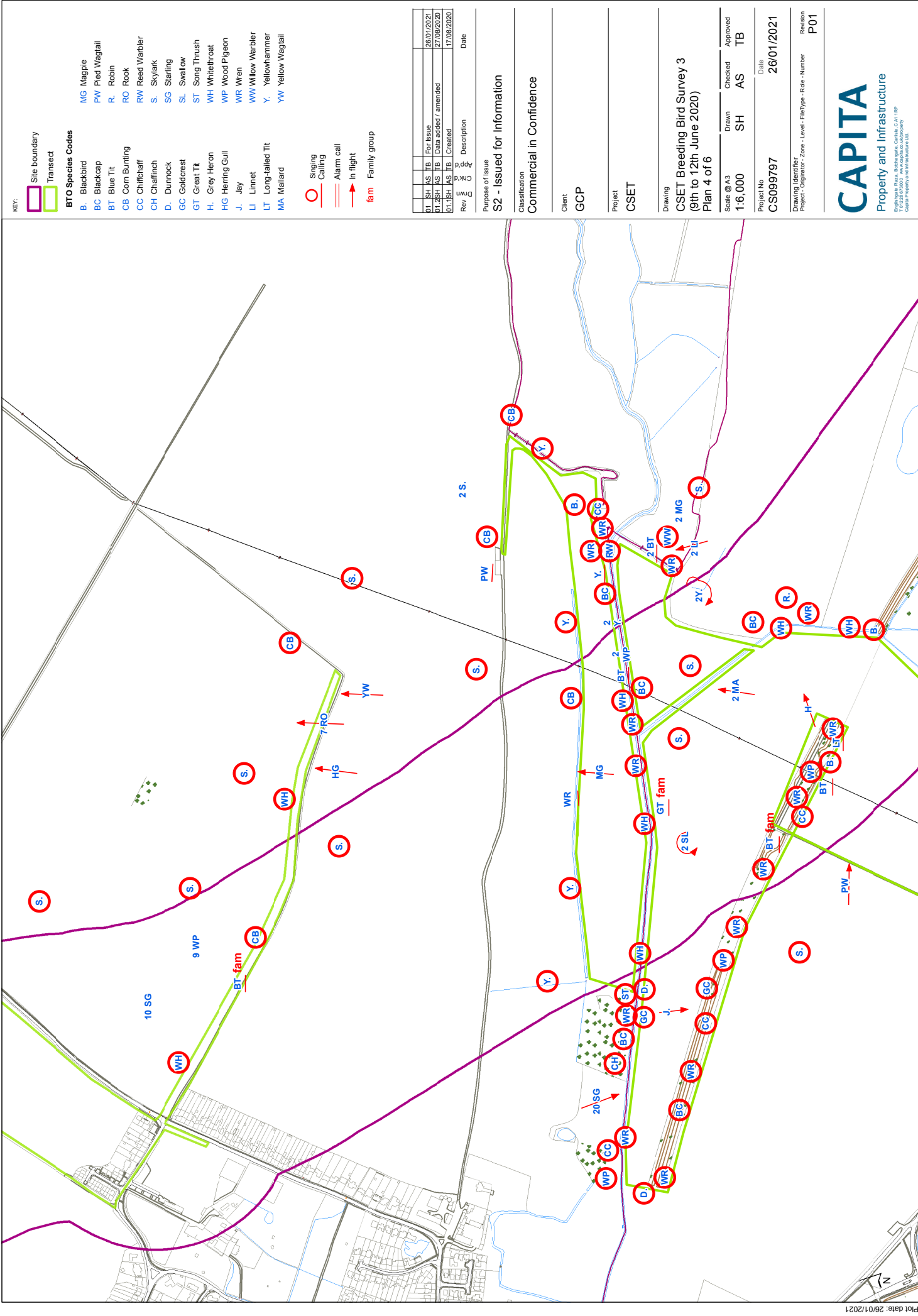
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Email: info@capita.co.uk
Capita Property and Infrastructure Ltd



Plot date: 26/01/2021



Plot date: 26/01/2021





Cambridge South East Transport Strategy (CSET) Factual Wintering Bird Report



For Greater Cambridgeshire
Partnership
June 2020

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Highways\REPORTS\CSET Wintering Birds

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V2	02/06/20	D. Goddard	Elizabeth Sanders	Changes requested by Cambridgeshire County Council
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Executive Summary

Contents	Summary
Site Location	The site comprises a linear route which extends from the Cambridge Biomedical Campus in Cambridge, through to the A11 beyond the village of Babraham. The site is centred at Ordnance Survey National Grid Reference (OSNGR) TL 48499 51169. The most north-western point is OSNGR TL 45829 55102. The most easterly point is OSNGR TL 53005 49788.
Proposals	Phase 2 of the Cambridge South East Transport (CSET) project proposes a new off-road public transport route linking the Cambridge Biomedical Campus via Great Shelford, Stapleford and Sawston to a new travel hub near the A11/A1307/A505 with connections to Babraham, the Babraham Research Campus and Granta Park.
Existing Site Information	Two previous reports produced by WYG (2019) and Plowman Craven (2018) were used to inform this report.
Scope of this Survey(s)	A winter bird walkover survey was undertaken across the site where access was granted. The surveys were conducted on four separate occasions to comply with survey guidelines for wintering birds (Marchant, 1983; Gilbert <i>et al.</i> , 2002). The study area was walked at a slow pace in appropriately weather conditions in order to locate and identify individual birds. All field boundaries and suitable habitats were walked.
Results	A total of 55 bird species were recorded from the surveyed area including: <ul style="list-style-type: none">• six species listed on Schedule 1 of the WCA Act 1981 (as amended),• 11 species listed on NERC S41,• 14 species BoCC Red Listed,• ten species BoCC Amber Listed and• 29 species included on the BoCC Green list. Please note, that some species appear on multiple lists.



Glossary

BoCC	Bird(s) of Conservation Concern
BTO	British Trust for Ornithology
CEnv	Chartered Environmentalist
CIEEM	Chartered Institute of Ecology & Environmental Management
CRoW Act	Countryside and Rights of Way Act 2000
DEFRA	Department for the Environment, Food and Rural Affairs
EcIA	Ecological Impact Assessment
EIA	Environmental Impact Assessment
HPI	Habitat(s) of Principal Importance
HRA	Habitats Regulations Assessment
JNCC	Join Nature Conservation Committee
LBAP	Local Biodiversity Action Plan
LNR	Local Nature Reserve
MCIEEM	Member of Chartered Institute of Ecology & Environmental Management
Natura 2000 site	A European site designated for its nature conservation value
NE	Natural England
NERC Act	Natural Environment and Rural Communities Act 2006
NPPF	National Planning Policy Framework
PEA	Preliminary Ecological Appraisal
RSPB	Royal Society for the Protection of Birds
SAC	Special Area of Conservation
SAP	Species Action Plan
SPA	Special Protection Area
SPI	Species of Principal Importance
SSSI	Site(s) of Special Scientific Interest
W&CA	Wildlife & Countryside Act 1981 (as amended)



1.0 Introduction

1.1 Background

WYG was commissioned by Greater Cambridgeshire Partnership on 18th July 2019 to complete wintering bird surveys of the at the proposed route for Cambridgeshire South East Transport Strategy (CSET) site starting at Cambridge Biomedical Campus to the A11 beyond the village of Babraham (hereafter referred to as the 'site').

This report was prepared by WYG Senior Ecologist Richard Brown MCIEEM and WYG Assistant Ecologist Thomas Cumberland and should be read with reference to the Report Conditions provided in Appendix A.

1.2 Site Location

The site comprises a linear route which extends from the Cambridge Biomedical Campus in Cambridge, through to the A11 beyond the village of Babraham. The site is centred at OSNGR TL 48499 51169. The most north-western point is OSNGR TL 45829 55102. The most easterly point is OSNGR TL 53005 49788 and is shown on Figure 1.

The survey area generally falls across a predominately arable landscape, interspersed with residential and commercial land, with areas of semi-natural habitat including woodland and grassland. The River Granta flows through the site at two locations. The wider landscape consists of agricultural land and the villages of Stapleford, Sawston and Babraham.

1.3 Development Proposals

Phase 2 of the Cambridge South East Transport (CSET) project proposes a new off-road public transport route linking the Cambridge Biomedical Campus via Great Shelford, Stapleford and Sawston to a new travel hub near the A11/A1307/A505 with connections to Babraham, the Babraham Research Campus and Granta Park.

1.4 Purpose of the Report

The purpose of this report is to:

- Outline the legislative protection given to birds;
- Nationally and Locally designated sites of relevance to birds; and
- Summarise the findings of the bird surveys and report on the presence or otherwise of wintering bird species on and around the site.

Note that scientific names are provided at the first mention of each species and common names (where appropriate) are then used throughout the rest of the report for ease of reading.

A summary of the key legislation is also provided in Appendix B.



2.0 Methodology

2.1 Desk Study

2.1.1 Previous Reports

Two reports have been previously undertaken at the site;

- WYG (2019), Cambridgeshire South East Transport Strategy (CSET): Constraints Report; and
- Plowman Craven (2018), Cambridge South East Transport Study Phase 2: Strategy 1: Preliminary Ecological Appraisal.

2.1.2 Online Resources

The MAGIC website (managed by Natural England) was also consulted to reveal records of statutory and non-statutory designated sites within 2 km of the site which are designated for their bird interest including Special Protection Areas (SPA), Ramsar sites, important bird areas, Royal Society for the Protection of Birds (RSPB) reserves, etc.

2.2 Field Surveys

2.2.1 Winter bird surveys

The survey methodology involved standard (registration) mapping techniques as detailed in Marchant (1983) and Gilbert *et al.* (2002). Registrations of birds, using standard British Trust for Ornithology (BTO) two letter species codes and activity codes (Gilbert *et al.*, 2002), were placed onto an appropriate field map.

Specific symbols were also used for movements between areas, flying and other notable behaviour. The study area was walked at a slow pace in appropriate weather conditions in order to locate and identify individual birds. All field boundaries and suitable habitats were walked.

All surveys were conducted in suitable weather conditions, which, can be seen in Table 2 in section 3.2.1. The diurnal variation in bird activity was accounted for by surveying different areas of the site at different times of day i.e. the same areas was not surveyed at the same time of day on each survey occasion.

A factual report was commissioned therefore no mitigation guidance or recommendations for further survey work will be stated in this report.

2.3 Limitations

Figure 2 shows the areas across the site which the surveyor has not been able to gain access to. Some areas, as detailed on the map, have had temporary access restrictions for all survey occasions between September 2019 to January 2020 due to game rearing and shooting. The temporary area which was restricted consists of two large arable fields adjacent to the River Granta. These were the only areas which were temporarily inaccessible for three survey occasions between November 2019 and January 2020. The surveyor could not see these areas which were restricted due to the topology of the land with the area not being fully visible from adjacent public rights of way. On the fourth survey occasion in February 2020, the area of temporary access restriction was accessible and the

surveyor was able to view the whole area for wintering birds. This is not considered to be a limitation to the survey effort as parts of the area with temporary access restrictions were visible from adjacent public rights of way and access was gained for the survey in February 2020, as such it is therefore not considered to impose a significant reduction in the number and diversity of species recorded within this area.

Figure 2 also shows areas of the site that have had permanent access restrictions. The majority of the land parcels which have permanent no access throughout the duration of the surveys are areas of hardstanding and residential dwellings which offer limited suitable habitat for wintering birds. Therefore the permanent access restrictions are not considered as a limitation to the survey effort.

The site is mainly arable fields and as such they subject to different crops being grown in different years. This has the potential to affect both the diversity and numbers of bird species recorded which are to some extent dependent upon the crops being grown, e.g. winter wheat is favoured by ducks, geese and swans as a food resource over the winter period. Birds being mobile species will move depending upon the resources available to them. The winter of 2019/2020 was relatively mild and dry turning into a wet early spring, this is considered to be a milder / drier than normal winter which may impact upon species presence, however this is not considered to be a limitation to the survey results as a high proportion of the expected Cambridgeshire species were recorded during the surveys.

The details of this report will remain valid for a period of **two years (CIEEM, 2019)** from the date of the survey (e.g. February 2022), after which the validity of this assessment should be reviewed to determine whether further updates are necessary. This report should be reviewed (and reassessed if necessary) should there be any changes to the red line boundary or development proposals which this report was based on.



3.0 Results

3.1 Desk Study

3.1.1 Previous survey reports

WYG (2019)

A constraints report (WYG, 2019) was produced which detailed the nearest SPA to the site, was The Ouse Washes, which is located 20 km north of the site. The SPA is designated for a range of wintering bird species including Beswicks Swan *Cygnus columbianus bewickii*, ruff *Philomachus pugnax* and black-tailed godwit *Limosa limosa*.

The constraints report also identified the lake towards the south-east of the site and large open fields throughout the site as potentially suitable habitat for wintering birds and these habitats may be impacted by the development.

Plowman Craven (2018)

The report identified habitat which is suitable for wintering bird species. The report recommended further survey work to establish presence of notable species and their populations.

3.1.2 Online Resources

Table 1 Designated Sites within 2 km

Designation	Site Name	Distance and Direction	Summary of Features	Qualifying Features	Suitability for Wintering Birds
LNR	Nine Wells	Within site, north-west near Addenbrookes hospital	Local wildlife site designated for chalk stream and springs.	Historically important site containing several chalk springs, with notable invertebrates and surrounding woodland.	The site has suitable habitats to support foraging, nesting and roosting opportunities for birds.
SSSI	Gog Magog Golf Course	1.17 km north of the site boundary	Supports calcareous chalk grassland.	The management of the grassland coupled with the nationally rare moon carrot <i>Seseli libanotis</i> .	The golf course may provide a foraging resource for birds.

Designation	Site Name	Distance and Direction	Summary of Features	Qualifying Features	Suitability for Wintering Birds
SSSI	Dernford Fen	1.2 km south-west of the site boundary	The site has areas of open pools with ditches and a chalk stream. The vegetation on the site includes dry grassland, relic fen, alder carr and reedbed.	The site is a relic of a historical area of rough fen and carr.	The site has suitable habitats to support foraging, nesting and roosting opportunities for birds.
LNR	The Beechwoods	1.5 km north east of the site boundary	Small area of beech woodland on chalk which is known to support large flocks of brambling <i>Fringilla montifringilla</i> .	Small area of beech woodland.	The site has suitable habitats to support foraging, nesting and roosting opportunities for birds. Birds include great spotted woodpecker <i>Dendrocopos major</i> and green woodpecker <i>Picus viridis</i> , nuthatch <i>Sitta europaea</i> , spotted flycatcher <i>Muscicapa striata</i> and brambling.
SSSI	Alder Carr	1.6 km east of the eastern most site boundary	The woodland is now rare in Cambridgeshire and in East Anglia as a whole.	Wet valley Alderwood on fen peat.	The site has suitable habitats to support foraging, nesting and roosting opportunities for birds.
SSSI	Swaston Hall meadow	1.74 km south of the site boundary	Supports generally scarce and poorly represented species in	Meadows with overlying spring-fed	The site has suitable habitats to support foraging, nesting and roosting



Gallinula chloropus, coot *Fulica atra* and kingfisher *Alcedo atthis* which could be recorded within the drainage ditches and along the River Granta.

3.2 Field Survey Results

3.2.1 Survey Dates and Weather Conditions

All surveys were carried out in suitable weather conditions, see Table 2 for the weather conditions noted on each survey occasion.

Table 2 Dates and weather conditions

Date	Time		Temperature (°C)	Wind speed/Direction	Cloud cover (Oktas)	Rain
	Start	End				
26.11.2019	10:30	16:00	11	3 / SE	8/8	Light drizzle 12:15 - 12:30; Moderate rain 15:15 - 15:29
27.11.2019	08:15	13:00	9	2 / SE	8/8	Misty/damp start to the day, cleared by 10:00; Moderate rain 11:31 - 11:45; Moderate rain 12:33 - 12:46
03.12.2019	10:10	16:00	5 → 7	1 / SE	8/8 → 3/8	Nil
04.12.2019	08:15	13:10	0 → 8	0 → 1 / SW	0/8 → 1/8	Nil
16.01.2020	10:00	16:27	6 → 11	2 → 3 / SE	8/8	Light rain 13:36 - 13:49
17.01.2020	08:15	13:15	7 → 10	2 → 3 / SW	3/8 → 8/8	Occasional heavy showers from 11:25 onwards
05.02.2020	09:45	16:50	3 → 8	1 / SE	2/8 → 7/8	Nil
06.02.2020	07:45	13:00	0 → 7	1 / SE	0/8 → 1/8	Nil

3.2.2 Wintering Bird Field Survey Data

A total of 55 bird species were recorded from the surveyed area including six species listed on Schedule 1 of the WCA Act 1981, 11 species listed on the NERC S41 list, 14 species Birds of Conservation Concern (BoCC) Red Listed, ten species BoCC Amber Listed and 29 species included on the BoCC Green list. Please note, that some species appear on multiple lists. Figures 3-9 show the results of the four winter bird surveys conducted on the site.

Designation	Site Name	Distance and Direction	Summary of Features	Qualifying Features	Suitability for Wintering Birds
			Cambridgeshire. Supports the nationally scarce Cambridge milk-parsley <i>Selinum carvifolia</i> .	peat over chalk.	opportunities for birds.
SSSI	Roman Road	1.76 km north west of the eastern most site boundary	A small area of chalk grassland supporting a range of mammals and plants. Birds on the site include yellowhammer <i>Emberiza citrinella</i> , brambling, skylark <i>Alauda arvensis</i> , linnet <i>Linaria cannabina</i> , fieldfare <i>Turdus pilaris</i> and long-tailed tit <i>Aegithalos caudatus</i> .	The site supports species-rich calcareous grassland communities. This habitat is now scarce in lowland England.	The site has suitable habitats to support foraging, nesting and roosting opportunities for birds.

3.1.3 Cambridgeshire and Peterborough LBAP Species

The Cambridgeshire and Peterborough LBAP has 26 birds species listed, of these 12 are considered to be potentially be present within the site. These species are bullfinch *Pyrrhula pyrrhula*, linnet, corn bunting *Emberiza calandra*, tree sparrow *Passer montanus*, grey partridge *Perdix perdix*, lesser redpoll *Carduelis cabaret*, lapwing *Vanellus vanellus*, reed bunting *Emberiza schoeniclus*, skylark, song thrush *Turdus philomelos*, house sparrow *Passer domesticus* and yellowhammer.

These birds are mainly typical farmland species with some woodland edge / hedgerow species.

3.1.4 Cambridgeshire Bird Atlas

Checking the Cambridgeshire bird atlas (Bacon *et al.*, 2011) to gain an understanding as to what species may be recorded during the winter bird surveys revealed a potential 59 species having been recorded within the area over the winter period. The majority of these species are considered to be typical farmland species with some woodland edge / hedgerow species. There are also other species such as mallard *Anas platyrhynchos*, little egret *Egretta garzetta*, grey heron *Ardea cinerea*, moorhen



3.2.3 Protected / Notable Species Recorded within the Survey Area

The protected/notable bird species recorded in and adjacent to the site are listed in Table 3 below. The standard BTO codes are shown in brackets after the common name.

Notable species are considered to be those listed under one or more of the following:

- Species of principle importance for the conservation of biodiversity in England listed under Section 41 of the Natural Environment and Rural Communities Act 2006;
- Red and Amber species listed under the Birds of Conservation Concern (BoCC) (Eaton *et al.*, 2015); and
- Local Biodiversity Action Plan Cambridgeshire and Peterborough Biodiversity Group Priority species.

These statutes / conservation lists are detailed in Section 4 of this report.

Table 3 W&CA Schedule 1, BoCC Red and Amber listed species recorded with the peak number recorded and the species status.

Common Name (BTO Code)	Scientific Name	Peak Count	Status
Barnacle goose (BY)	<i>Branta leucopsis</i>	6	BoCC Amber
Black-headed gull (BH)	<i>Chroicocephalus ridibundus</i>	c 80	BoCC Amber
Brambling (BL)	<i>Fringilla montifringilla</i>	1	W&CA Sch 1 pt 1, BoCC Green
Corn bunting (CB)	<i>Emberiza calandra</i>	6	NERC S41, BoCC Red
Duncock (D.)	<i>Prunella modularis</i>	7	NERC S41, BoCC Amber
Fieldfare (FF)	<i>Turdus pilaris</i>	7	W&CA Sch 1 pt 1, BoCC Red
Great black-backed gull (GB)	<i>Larus marinus</i>	1	BoCC Amber
Green sandpiper (GE)	<i>Tringa ochropus</i>	2	W&CA Sch 1 pt 1, BoCC Amber
Grey partridge (P.)	<i>Perdix perdix</i>	6	NERC S41, BoCC Red
Greylag goose (GJ)	<i>Anser anser</i>	3	BoCC Amber
Herring gull (HG)	<i>Larus argentatus</i>	25	NERC S41, BoCC Red
House sparrow (HS)	<i>Passer domesticus</i>	8	NERC S41, BoCC Red
Kestrel (K.)	<i>Falco tinnunculus</i>	5	BoCC Amber
Lesser black-backed gull (LB)	<i>Larus fuscus</i>	39	BoCC Amber
Linnet (LI)	<i>Linaria cannabina</i>	241	NERC S41, BoCC Red,



Common Name (BTO Code)	Scientific Name	Peak Count	Status
Mallard (MA)	<i>Anas platyrhynchos</i>	2	BoCC Amber
Marsh tit (MT)	<i>Poecile palustris</i>	1	NERC S41, BoCC Red
Meadow pipit (MP)	<i>Anthus pratensis</i>	40	BoCC Amber
Mistle thrush (M.)	<i>Turdus viscivorus</i>	1	BoCC Red
Red kite (RK)	<i>Milvus milvus</i>	2	W&CA Sch 1 pt 1, BoCC Green
Redwing (RE)	<i>Turdus iliacus</i>	6	W&CA Sch 1 pt 1, BoCC Red
Skylark (S.)	<i>Alauda arvensis</i>	52	NERC S41, BoCC Red
Song thrush (ST)	<i>Turdus philomelos</i>	12	NERC S41, BoCC Red
Starling (SG)	<i>Sturnus vulgaris</i>	163	NERC S41, BoCC Red
Woodcock (WK)	<i>Scolopax rusticola</i>	1	BoCC Red
Yellowhammer (Y.)	<i>Emberiza citrinella</i>	35	NERC S41, BoCC Red

Connectivity Between the Site and surrounding Designated Sites

The Ouse Washes SPA located 20 km north is designate for supporting three Annex I species bewicks swan *Cygnus columbianus*, whooper swan *Cygnus cygnus* and hen harrier *Circus cyaneus*, summer breeding populations for five species and its assemblage of wintering birds of 10 species including cormorant *Phalacrocorax carbo* which was recorded during the winter bird surveys on site. However, the cormorant was only recorded flying over the site during the fourth survey occasion.

The Nine Wells LNR located within the site is not designated for wintering birds but has the potential to provide both foraging and roosting opportunities. Other designated sites within 2 km of the site e.g. The Beechwoods LNR 1.5 km north-east and Roman Road SSSI 1.76 km north-west both have wintering bird species mentions within their citations including brambling, yellowhammer, skylark, fieldfare, linnet and long-tailed tit, all of which were recorded on site during the surveys (see Table 3 above). These two are considered to be separated from the site with minimal habitat connectivity between them.

3.2.4 BoCC Green listed and non-assigned species recorded within the survey area

The following BoCC Green listed and unlisted species were recorded on the site or directly adjacent land see Table 4 and Figures 6 to 9 for BoCC Green listed species.

Table 4 BoCC Green and non-assigned bird species

Common Name (BTO Code)	Scientific Name	Peak Count	Status
Blackbird (B.)	<i>Turdus merula</i>	26	BoCC Green



Common Name (BTO Code)	Scientific Name	Peak Count	Status
Blue tit (BT)	<i>Cyanistes caeruleus</i>	21	BoCC Green
Buzzard (BZ)	<i>Buteo buteo</i>	7	BoCC Green
Carrion crow (C.)	<i>Corvus corone</i>	331	BoCC Green
Chaffinch (CH)	<i>Fringilla coelebs</i>	23	BoCC Green
Collared dove (CD)	<i>Streptopelia decaocto</i>	1	BoCC Green
Golden plover (GP)	<i>Pluvialis apricaria</i>	57	BoCC Green
Cormorant (CA)	<i>Phalacrocorax carbo</i>	1	BoCC Green
Goldcrest (GC)	<i>Regulus regulus</i>	1	BoCC Green
Goldfinch (GO)	<i>Carduelis carduelis</i>	32	BoCC Green
Great spotted woodpecker (GS)	<i>Dendrocopos major</i>	1	BoCC Green
Great tit (GT)	<i>Parus major</i>	3	BoCC Green
Greater Canada goose (CG)	<i>Branta canadensis</i>	3	unlisted
Greenfinch (GR)	<i>Chloris chloris</i>	4	BoCC Green
Green woodpecker (G.)	<i>Picus viridis</i>	1	BoCC Green
Grey heron (H.)	<i>Ardea cinerea</i>	1	BoCC Green
Jackdaw (JD)	<i>Corvus monedula</i>	47	BoCC Green
Jay (J.)	<i>Garrulus glandarius</i>	1	BoCC Green
Little egret (ET)	<i>Egretta garzetta</i>	3	BoCC Green
Long-tailed tit (LT)	<i>Aegithalos caudatus</i>	2	BoCC Green
Magpie (MG)	<i>Pica pica</i>	29	BoCC Green
Pheasant (PH)	<i>Phasianus colchicus</i>	25	unlisted
Pied wagtail (PW)	<i>Motacilla alba</i>	2	BoCC Green
Red-legged partridge (RL)	<i>Alectoris rufa</i>	13	BoCC Green
Robin (R.)	<i>Erithacus rubecula</i>	15	BoCC Green
Rook (RO)	<i>Corvus frugilegus</i>	17	BoCC Green
Sparrowhawk (SH)	<i>Accipiter nisus</i>	1	BoCC Green
Woodpigeon (WP)	<i>Columba palumbus</i>	111	BoCC Green
Wren (WR)	<i>Troglodytes troglodytes</i>	5	BoCC Green

Comparison of Survey data with Cambridgeshire Bird Atlas

Of the 59 species from the Cambridgeshire bird atlas (Bacon *et al.*, 2011) potentially expected to be present within the surveys area only 15 species were not recorded during the winter bird surveys.

These were pochard *Aythya ferina*, tufted duck *Aythya fuligula*, water rail *Rallus aquaticus*, moorhen, coot, lapwing, snipe *Gallinago gallinago*, common gull *Larus canus*, rock/feral pigeon *Columba livia*, stock dove *Columba oenas*, kingfisher, lesser redpoll, bullfinch and reed bunting.

For all the W&CA Sch 1, NERC S41 and BoCC Red listed species listed below, the Cambridgeshire Bird Atlas (CBA) (Bacon *et al.*, 2011) was consulted in order to establish if the Schedule 1, NERC S41 and BoCC Red listed species were resident or just wintering in Cambridgeshire, along with giving information on the numbers wintering and / or resident species.

W&CA Schedule 1 Part 1 Species:

Birds which are protected by special penalties at all times (HMSO, 1981) are listed below:

Brambling

The individual brambling recorded on the third survey occasions is considered to be part of a wintering population of between 50 - 500 individuals (Bacon *et al.*, 2011). No resident brambling are recorded in Cambridgeshire.

Fieldfare

The fieldfare which have been observed on multiple survey occasions are considered to be wintering birds of an annual wintering population of between 5,000 - 30,000 individuals (Bacon *et al.*, 2011). No resident fieldfare are recorded in Cambridgeshire.

Green Sandpiper

The two green sandpipers recorded are considered to be part of the 20 – 60 individuals (Bacon *et al.*, 2011) which winter in Cambridge annually. There are no records of resident green sandpiper in Cambridgeshire.

Red Kite

The red kites recorded during the fourth survey occasion are considered to be part of the wintering population of red kite located in Cambridgeshire. A wintering population of 100-200 individuals annually frequent Cambridgeshire (Bacon *et al.*, 2011). CBA Atlas distribution maps show that red kite are resident to the north-west of the site boundary.

Redwing

The redwing which were recorded on the multiple survey occasions are considered to be part of the 2,500 – 20,000 individuals which winter in Cambridgeshire annually. No resident redwing are recorded in Cambridgeshire (Bacon *et al.*, 2011).

NERC S41 Species:

Corn Bunting

The corn buntings recorded during the survey occasions are part of a wintering population. A total of 2,000 – 4,000 individuals annually winter in Cambridgeshire (Bacon *et al.*, 2011). Corn bunting are resident within Cambridgeshire with a resident population of 1,000 – 1,500 pairs (Bacon *et al.*, 2011).



Dunnoek

The dunnoeks recorded on site are considered to be part of the wintering population of 50,000 – 150,000 individuals (Bacon *et al.*, 2011) which annually frequent Cambridgeshire. There are between 25,000 – 50,000 resident pairs in Cambridgeshire (Bacon *et al.*, 2011).

Grey Partridge

The grey partridge recorded on site are considered to be part of the 1,000 – 5,000 of wintering birds within Cambridgeshire (Bacon *et al.*, 2011). Distribution maps indicate the grey partridge are wintering and resident within the site boundary (Bacon *et al.*, 2011).

Herring Gull

The herring gulls recorded on multiple survey occasions are considered to be part of the 2,000 – 5,000 individuals (Bacon *et al.*, 2011) which annually winter in Cambridgeshire. The birds observed are not considered to be part of the 1 – 20 pairs (Bacon *et al.*, 2011) which are resident in Cambridgeshire.

House Sparrow

The house sparrows recorded on multiple survey occasions are considered to be part of the resident population. Cambridgeshire has between 40,000 – 120,000 wintering individuals and 20,000 – 50,000 resident pairs (Bacon *et al.*, 2011). This species is also listed on the Cambridgeshire and Peterborough LBAP, see below Section 4.3.

Linnet

The linnets recorded on the survey occasions are considered to be part of the Cambridgeshire wintering population. Between 10,000 – 25,000 individuals are recorded wintering in Cambridgeshire, with 5,000 – 10,000 pairs being resident (Bacon *et al.*, 2011).

Marsh Tit

The marsh tit recorded is considered to be part of the wintering population of between 500 – 1,500 individuals which winter in Cambridgeshire annually (Bacon *et al.*, 2011). Distribution maps show that no marsh tits are regularly recorded residing or wintering within or near the survey area. The nearest records are winter visitors which visit to the north-east and south-west of the site boundary.

Skylark

Skylark are considered to be a common resident species in the county although declining with a 10,000 – 20,000 resident population (Bacon *et al.*, 2011). Between 25,000 – 40,000 individuals (Bacon *et al.*, 2011) are considered to be winter visitors. Distribution maps shows a high abundance of winter individuals using the survey area and the areas adjacent to it.

Song Thrush

The song thrush recorded during the surveys are considered to be part of the winter bird population for Cambridgeshire. Cambridgeshire has between 10,000 – 15,000 resident pairs and 30,000 – 50,000 wintering individuals (Bacon *et al.*, 2011). In accordance with the CB Atlas, distribution maps show that winter and confirmed resident populations are present within the survey area.

Starling

The starlings recorded during the surveys are part of the winter bird population for Cambridgeshire. Cambridgeshire has between 15,000 – 25,000 resident pairs and 50,000 – 100,000 wintering individuals (Bacon *et al.*, 2011). In accordance with the CB Atlas, distribution maps show that winter and confirmed resident populations are present within the survey area.

Yellowhammer

The yellowhammers recorded on site are considered to be part of the winter bird population in Cambridgeshire. Cambridgeshire has between 5,000 – 10,000 resident pairs and 10,000 – 25,000 wintering individuals (Bacon *et al.*, 2011). Distribution maps produced within CB Atlas shows that the site is used by both resident and wintering yellowhammer populations (Bacon *et al.*, 2011).

BoCC Red Species:

The following species are also BoCC red list species but have been considered within either the W&CA Schedule 1 or NERC S41 sections above: corn bunting, fieldfare, grey partridge, herring gull, house sparrow, linnet, marsh tit, redwing, skylark, song thrush, starling and yellowhammer.

Mistle Thrush

The mistle thrush recorded during the surveys are considered to be wintering within the survey area. The wintering population consist of 2,000 – 5,000 individuals, these are present on distribution maps near the survey area. The resident population consists of 1,000 – 2,000 pairs (Bacon *et al.*, 2011).

Woodcock

As only one woodcock was recorded during the surveys is considered highly likely to be part of the wintering population which frequent Cambridgeshire. Only 10 – 15 pairs reside in Cambridgeshire, with 100 – 500 wintering individuals present within Cambridgeshire (Bacon *et al.*, 2011). Distribution maps within the CB Atlas are at a 2km resolution which potentially shows that winter populations can be found adjacent to the site boundary whereas resident individuals are not present near or adjacent to the site.

BoCC Amber Species:

Greylag goose

The three greylag geese recorded on the third survey occasion are considered to be wintering birds. They are part of the 2,500 – 7,500 individuals (Bacon *et al.*, 2011) that winter in Cambridgeshire every year. The CBC Atlas distribution maps (Bacon *et al.*, 2011) show greylag geese to be considered as a resident species.



4.0 Relevant Planning Policy & Legislation

4.1 Local Biodiversity Action Plan

Local Biodiversity Action Plans (LBAPs) identify habitat and species conservation priorities at a local level (typically County by County) and are usually drawn up by a consortium of local Government organisations and conservation charities. Although they are no-longer managed at a national level many are still reviewed and updated at a local level.

The Cambridgeshire and Peterborough LBAP is the relevant document for this site and it contains the following Species Action Plans, see Table 5 with additional species of interest within Cambridgeshire in Table 6 below.

Table 5 LBAP Species Action Plan (SAPs)

Species Action Plans	
House sparrow	Turtle dove <i>Streptopelia turtur</i>

Table 6 LBAP SAPs Additional species of interest

Species Action Plans	
Barn owl <i>Tyto alba</i>	Common crane <i>Grus grus</i>
Swift <i>Apus apus</i>	

It should be noted that the existence of a SAP does not always infer an elevated level importance for those features. These plans may be designed to encourage an increase in these habitats / species, rather than to protect a county-scarce feature (for example).

4.2 Cambridge Local Plan 2018

The Cambridge Local Plan was adopted by Cambridge City Council on 18th October 2018. The adopted Cambridge Local Plan forms part of the statutory development plan for the area, setting out the Council's policies and proposals for the area until 2031 and providing the basis for decisions on planning applications. Those policies of relevance to ecology are detailed below.

Policy 70: Protection of priority species and habitats

Development will be permitted which:

- a. protects priority species and habitats; and*
- b. enhances habitats and populations of priority species.*

Proposals that harm or disturb populations and habitats should:

- c. minimise any ecological harm; and*

- d. secure achievable mitigation and/or compensatory measures, resulting in either no net loss or a net gain of priority habitat and local populations of priority species.*

Where development is proposed within or adjoining a site hosting priority species and habitats, or which will otherwise affect a national priority species or a species listed in the national and Cambridgeshire-specific biodiversity action plans (BAPs), an assessment of the following will be required:

- e. current status of the species population;*
- f. the species' use of the site and other adjacent habitats;*
- g. the impact of the proposed development on legally protected species, national and Cambridgeshire-specific BAP species and their habitats; and*
- h. details of measures to fully protect the species and habitats identified.*

If significant harm to the population or conservation status of a protected species, priority species or priority habitat resulting from a development cannot be avoided, adequately mitigated, or, as a last resort, compensated for, then planning permission will be refused.

4.3 Legislation

The *Convention on the Conservation of European Wildlife and Natural Habitats* (the *Bern Convention*) was adopted in Bern, Switzerland in 1979, and was ratified in 1982. Its aims are to protect wild plants and animals and their habitats listed in Appendices 1 and 2 of the Convention, and regulate the exploitation of species listed in Appendix 3. The regulation imposes legal obligations on participating countries to protect over 500 plant species and more than 1000 animals.

To meet its obligations imposed by the Convention, the European Community adopted the *EC Birds Directive* (1979) and the *EC Habitats Directive* (1992 – see below). Since the Lisbon Treaty, in force since 1st December 2009, European legislation has been adopted by the European Union.

The Convention on the Conservation of Migratory Species of Wild Animals or 'Bonn Convention' was adopted in Bonn, Germany in 1979 and came into force in 1985. Participating states agree to work together to preserve migratory species and their habitats by providing strict protection to species listed in Appendix I of the Convention. It also establishes agreements for the conservation and management of migratory species listed in Appendix II.

In the UK, the requirements of the convention are implemented via the Wildlife & Countryside Act 1981 (as amended), Wildlife (Northern Ireland) Order 1985 (as amended), Nature Conservation and Amenity Lands (Northern Ireland) Order 1985 and the Countryside and Rights of Way Act 2000 (CROW).

The Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora, or the 'Habitats Directive', is a European Union directive adopted in 1992 in response to the Bern Convention. Its aims are to protect approximately 220 habitats and 1,000 species listed in its several Annexes.

In the UK, the Habitats Directive is transposed into national law via the Conservation of Habitats and Species Regulations 2017 (as amended) in England and Wales.



All wild birds in the UK are protected under Section 1 of the Wildlife and Countryside Act 1981 (as amended) which makes it an offence to intentionally kill, injure or take any wild bird or take, damage or destroy the nest (whilst being built or in use) or its eggs. Bird species listed in Schedule 1 of the 1981 Act (as amended) receive further protection which makes it an offence to intentionally or recklessly disturb these species while building a nest or in, on or near a nest containing eggs or young; or to disturb dependent young of such a bird (HMSO 1981 & 2000).

Forty-nine bird species are listed as 'species of principal importance for the conservation of biological diversity in England' under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006. Section 40 of this act places a duty (the Statutory Biodiversity Duty) on public bodies (including local planning authorities) when undertaking their duties (including the making of planning decisions) "to take such measures as they consider expedient for the purposes of conserving biodiversity". The conservation of species listed on Section 41 of the NERC Act 2006, including the restoration or enhancement of a population or habitat, is therefore legally required to be considered in planning decisions. *ODPM Circular 06/2005* further clarifies that they are capable of being a material consideration for planning decisions, along with Local Biodiversity Action Plan priority species, as referred to below.

In addition, Annex 1 of the EU 'Birds' Directive (1979) lists 194 species that are subject to special conservation measures concerning their habitat in order to ensure their survival and reproduction. Member States are required to designate Special Protection Areas (SPAs) for the Annex 1 and all migratory species. SPAs are scientifically identified areas critical to the survival of the targeted species. The SPAs form part of the Natura 2000 EU network of protected nature sites. The designation of an area as an SPA gives it a high level of protection from potentially damaging developments (European Commission (EC) 2004).

4.4 Other Conservation Lists and Guidance

4.4.1 Local Biodiversity Action Plans

The Cambridgeshire LBAP lists two bird species that are found in a variety of habitats. Although LBAP status is not a material consideration as part of the planning process, it does however help to guide future mitigation and can help inform a baseline against which the bird assemblage of the site can be valued.

4.4.2 Birds of Conservation Concern (BoCC)

The conservation status of all regularly occurring British birds has been analysed in co-operation with the leading governmental and non-governmental conservation organisations, including the Royal Society for the Protection of Birds (RSPB), British Trust for Ornithology (BTO) and Birdlife International Birds of Conservation Concern 4 (Eaton *et al.*, 2015). The basis of species ongoing population trends are assigned to one of three lists of Conservation Concern. These are the UK Red, Amber and Green list.

The criteria for birds being include in the lists is as follows.

Red List

- Globally threatened
- Historical population decline in UK during 1800–1995



- Severe (at least 50%) decline in UK breeding population over last 25 years, or longer-term period (the entire period used for assessments since the first BoCC review, starting in 1969). Severe (at least 50%) contraction of UK breeding range over last 25 years, or the longer-term period

Amber List

- Species with unfavourable conservation status in Europe (SPEC = Species of European Conservation Concern)
- Historical population decline during 1800–1995, but recovering; population size has more than doubled over last 25 years
- Moderate (25–49%) decline in UK breeding population over last 25 years, or the longer-term period
- Moderate (25–49%) contraction of UK breeding range over last 25 years, or the longer-term period
- Moderate (25–49%) decline in UK non-breeding population over last 25 years, or the longer-term period
- Rare breeder; 1–300 breeding pairs in UK
- Rare non-breeders; less than 900 individuals
- Localised; at least 50% of UK breeding or non-breeding population in 10 or fewer sites, but not applied to rare breeders or non-breeders
- Internationally important; at least 20% of European breeding or non-breeding population in UK (NW European and East Atlantic Flyway populations used for non-breeding wildfowl and waders respectively)

Green List

- Species that occur regularly in the UK but do not qualify under any or the above criteria

Although the lists confer no legal status in themselves, they are useful in evaluating the conservation significance of bird assemblages, and for assessing the potential significance of impacts and informing appropriate levels of mitigation with respect to bird populations.



5.0 Summary

A total of 55 bird species were recorded from the surveyed area including:

- six species listed on Schedule 1 of the WCA Act 1981 (as amended),
- 11 species listed on NERC S41,
- 14 species BoCC Red Listed,
- ten species BoCC Amber Listed and
- 29 species included on the BoCC Green list.

Please note, that some species appear on multiple lists.



6.0 References

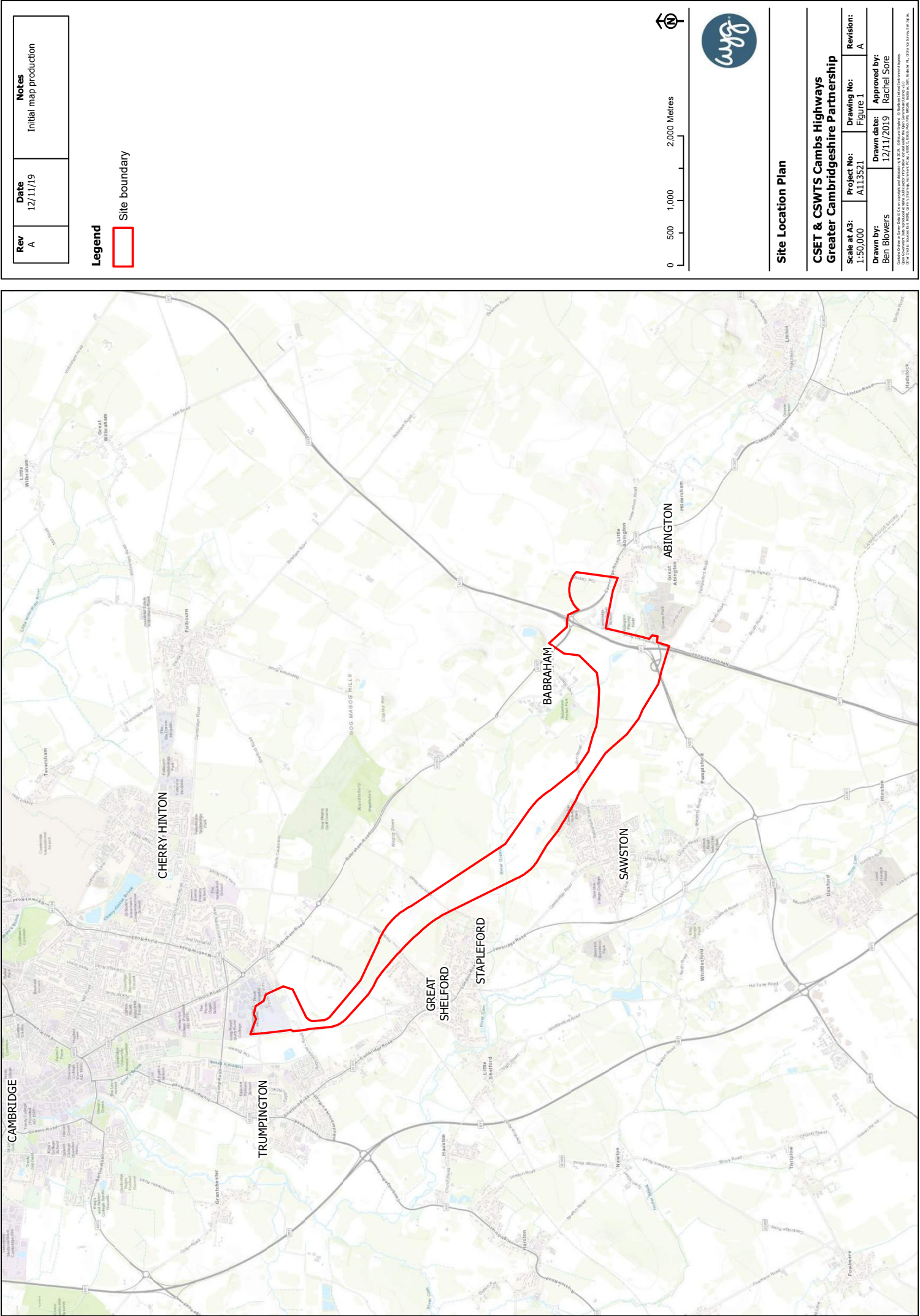
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Please note that the legislation which is relevant to this report is not included in the list above, but details are included in Appendix B below.



FIGURES

- Figure 1 – Site Location Plan
- Figure 2 – Access Restrictions
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- Figure 4 - W&CA Schedule 1, BoCC Red and BoCC Amber Listed Species Winter Bird Survey Results Survey 2 – 03/12/19 and 04/12/19
- Figure 5 - W&CA Schedule 1, BoCC Red and BoCC Amber Listed Species Winter Bird Survey Results Survey 3 – 16/01/2020 and 17/01/2020
- Figure 6 - W&CA Schedule 1, BoCC Red and BoCC Amber Listed Species Winter Bird Survey Results Survey 4 – 05/02/2020 and 06/02/2020
- Figure 6 – BoCC BoCC Green Listed Species Winter Bird Survey Results Survey 1 – 26/11/19 and 27/11/19
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- Figure 9 - BoCC Green Listed Species Winter Bird Survey Results Survey 4 – 05/02/2020 and 06/02/2020





Rev	Date	Notes
A	03/06/20	Initial map production

Legend

- Site boundary
- Permanent

0 62.5 125 250 Metres

Wyg

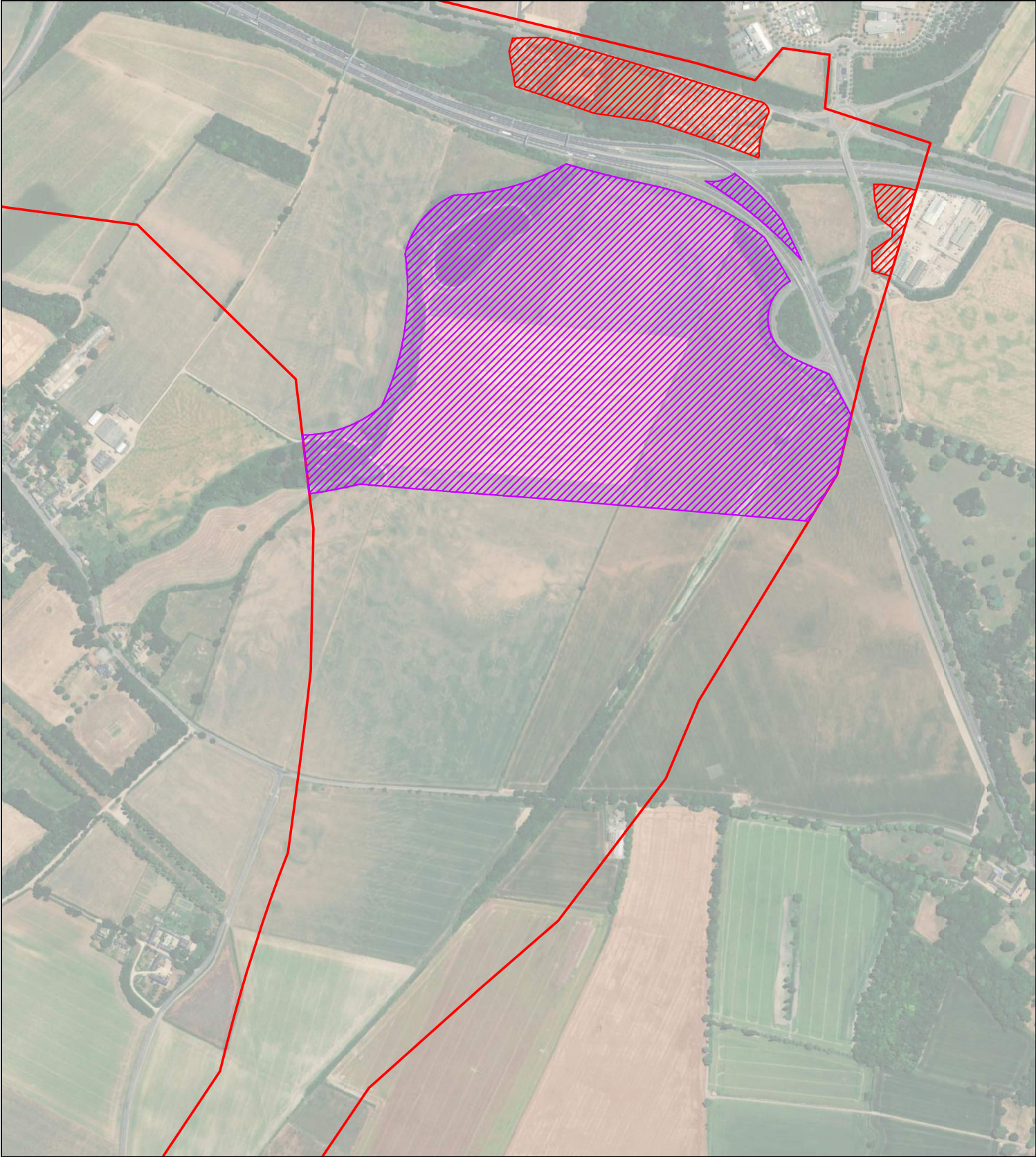
Access Restrictions

CSET
Greater Cambridge Partnership

Scale at A3:	Project No:	Drawing No:	Revision:
1:6,400	A113521	Figure 1a	A

Drawn by:	Drawn date:	Approved by:
Maddie Errington	03/06/2020	Thomas Cumberland

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Rev	Date	Notes
A	03/06/20	Initial map production

Legend

- Site boundary
- Permanent
- Temporary

0 62.5 125 250 Metres

Wyg

Access Restrictions

CSET
Greater Cambridge Partnership

Scale at A3:	Project No:	Drawing No:	Revision:
1:6,400	A113521	Figure 1b	A

Drawn by:	Drawn date:	Approved by:
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Rev	Date	Notes
A	03/06/20	Initial map production

Legend

- Site boundary
- W&CA Schedule 1 Listed flight line
- BoCC Red Listed flight line
- BoCC Amber Listed flight line
- W&CA Schedule 1 listed species
- RE - Redwing
- BoCC Red listed species
- S - Skylark
- SG - Starling
- ST - Song Thrush
- BoCC Amber listed species
- BH - Black-headed Gull
- D - Dunnock
- K - Kestrel

W&CA Schedule 1, BoCC Red and BoCC Amber Listed Species Winter Bird Survey Results Survey 1 – 26/11/19 and 27/11/19

CSET Greater Cambridge Partnership

Scale at A3:	Project No:	Drawing No:	Revision:
1:6,400	A113521	Figure 2b	A

Drawn by: Maddle Errington
Drawn date: 03/06/2020
Approved by: Thomas Cumberland

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Rev	Date	Notes
A	03/06/20	Initial map production

Legend

- Site boundary
- BoCC Red Listed flight line
- BoCC Amber Listed flight line
- W&CA Schedule 1 listed species
- FF - Fieldfare
- BoCC Red listed species
- HG - Herring Gull
- LI - Linnet
- SG - Starling
- BoCC Amber listed species
- BH - Black-headed Gull
- K - Kestrel
- LB - Lesser Black-backed Gull
- MP - Meadow Pipit

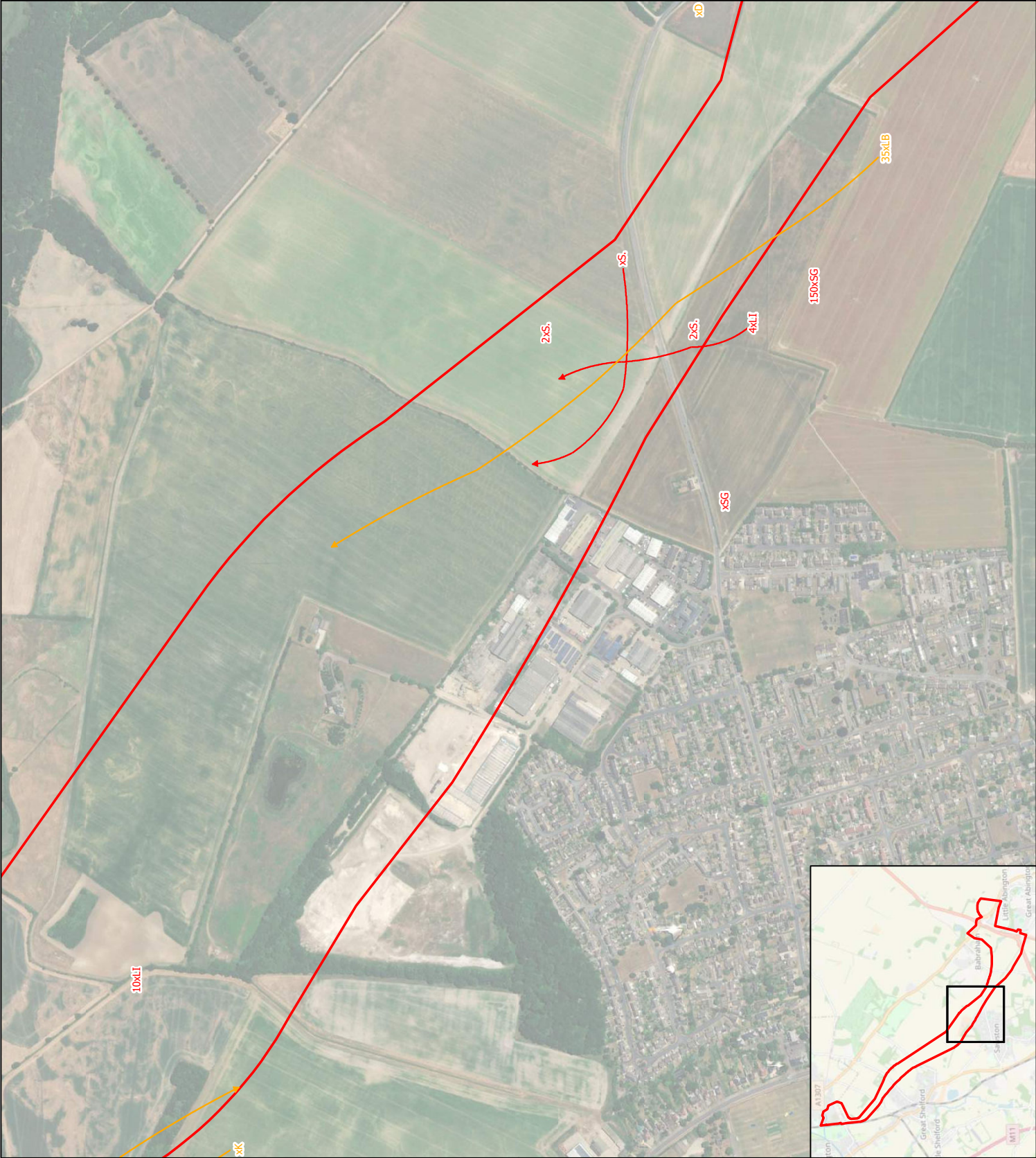
W&CA Schedule 1, BoCC Red and BoCC Amber Listed Species Winter Bird Survey Results Survey 1 – 26/11/19 and 27/11/19

CSET Greater Cambridge Partnership

Scale at A3:	Project No:	Drawing No:	Revision:
1:6,400	A113521	Figure 2c	A

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Rev	Date	Notes
A	03/06/20	Initial map production

Legend

- Site boundary
- BoCC Red Listed flight line
- BoCC Amber Listed flight line

BoCC Red listed species

- HG - Herring Gull
- M - Mistle Thrush
- RP - Ringed Plover
- SG - Starling
- ST - Song Thrush

BoCC Amber listed species

- BH - Black-headed Gull
- D - Dunnock
- LB - Lesser Black-backed Gull
- MA - Mallard
- MP - Meadow Pipit

0 50 100 200 Metres

W&CA Schedule 1, BoCC Red and BoCC Amber Listed Species Winter Bird Survey Results
Survey 1 – 26/11/19 and 27/11/19

CSET
Greater Cambridge Partnership

Project No:	Drawing No:	Revision:
A113521	Figure 2f	A

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Rev	Date	Notes
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Legend

- Site boundary
- W&CA Schedule 1 Listed flight line
- BoCC Red Listed flight line
- BoCC Amber Listed flight line

W&CA Schedule 1 listed species

- FF - Fieldfare
- RE - Redwing

BoCC Red listed species

- LI - Linnet
- S - Skylark
- SG - Starling
- Y - Yellowhammer

BoCC Amber listed species

- BH - Black-headed Gull
- D - Dunnock
- K - Kestrel
- MP - Meadow Pipit

0 50 100 200 Metres

W&CA Schedule 1, BoCC Red and BoCC Amber Listed Species Winter Bird Survey Results
Survey 2 – 03/12/19 and 04/12/19

CSET
Greater Cambridge Partnership

Project No:	Drawing No:	Revision:
A113521	Figure 3a	A

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Rev	Date	Notes
A	03/06/20	Initial map production

Legend

- Site boundary
- BoCC Red Listed flight line
- BoCC Amber Listed flight line

BoCC Red listed species

- SG - Starling
- ST - Song Thrush

BoCC Amber listed species

- BH - Black-headed Gull
- BY - Barnacle Goose
- D -Dunnoch
- K - Kestrel
- MA - Mallard
- MP - Meadow Pipit
- SD - Stock Dove

0 50 100 200 Metres

W&CA Schedule 1, BoCC Red and BoCC Amber Listed Species Winter Bird Survey Results Survey 2 – 03/12/19 and 04/12/19

CSET Greater Cambridge Partnership

Scale at A3:	Project No:	Drawing No:	Revision:
1:6,400	A113521	Figure 3f	A

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Rev	Date	Notes
A	18/06/20	Initial map production

Legend

- Site boundary
- BoCC Red Listed flight line
- BoCC Amber Listed flight line

BoCC Red listed species

- HG - Herring Gull
- LI - Linnet
- S - Skylark
- ST - Song Thrush
- Y - Yellowhammer

BoCC Amber listed species

- BH - Black-headed Gull
- D -Dunnoch
- GB - Great Black-backed Gull
- MP - Meadow Pipit

0 50 100 200 Metres

W&CA Schedule 1, BoCC Red and BoCC Amber Listed Species Winter Bird Survey Results Survey 3 – 16/01/20 and 17/01/20

CSET Greater Cambridge Partnership

Scale at A3:	Project No:	Drawing No:	Revision:
1:6,600	A113521	Figure 4a	A

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Rev	Date	Notes
A	18/06/20	Initial map production

Legend

- Site boundary
- BoCC Amber Listed flight line

W&CA Schedule 1 listed species

RE - Redwing

BoCC Red listed species

LI - Linnet

S - Skylark

ST - Song Thrush

Y - Yellowhammer

BoCC Amber listed species

GJ - Greylag Goose

K - Kestrel

MA - Mallard

CSET

Greater Cambridge Partnership

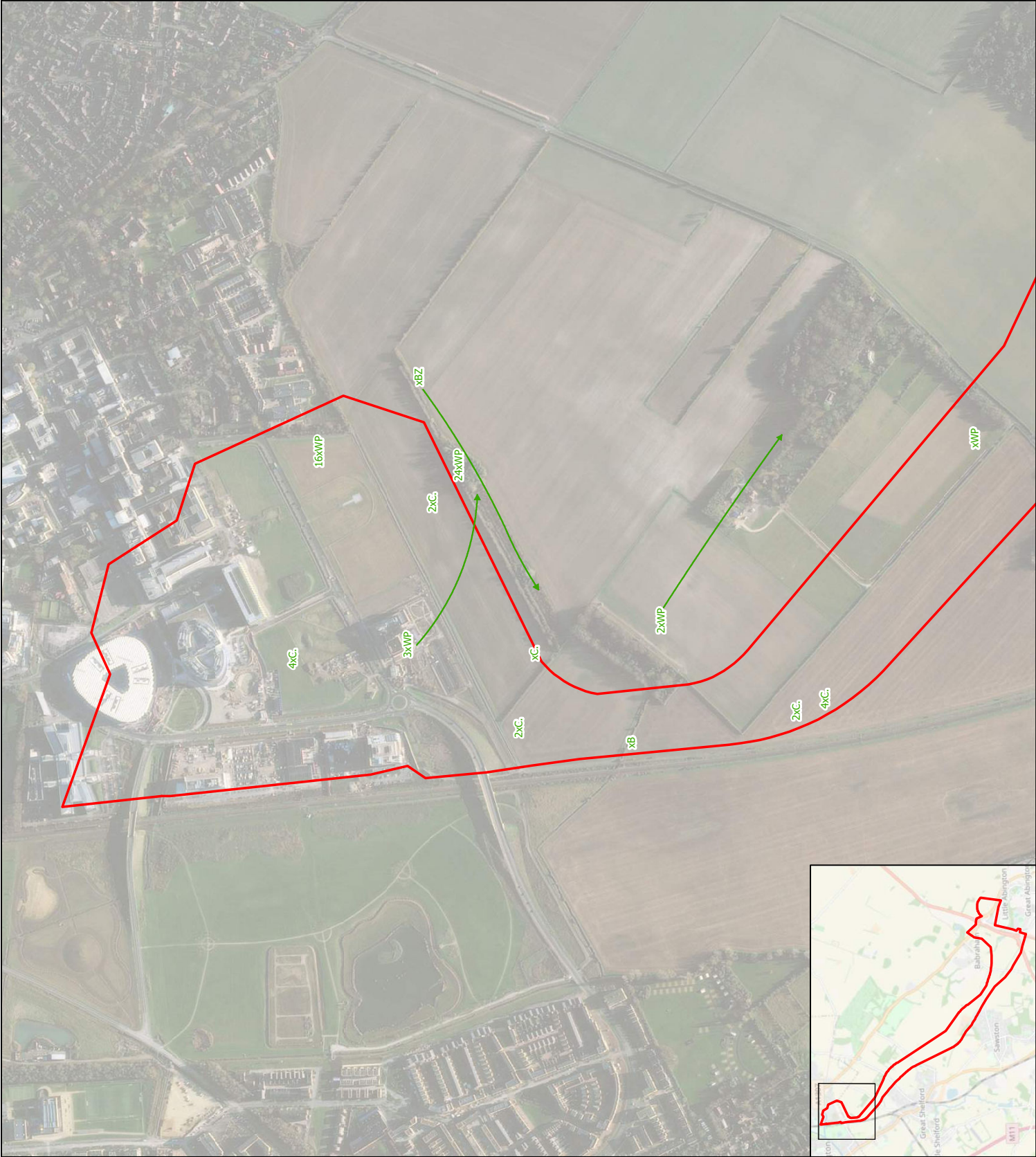
Scale at A3:	Project No:	Drawing No:	Revision:
1:6,600	AI13521	Figure 5f	A

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Drawn date: 18/06/2020

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Rev	Date	Notes
A	18/06/20	Initial map production

Legend

- Site boundary
- BoCC Green Listed flight line

BoCC Green listed species

B - Blackbird

BZ - Buzzard

C - Carrion Crow

WP - Woodpigeon

CSET

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Scale at A3:	Project No:	Drawing No:	Revision:
1:6,600	AI13521	Figure 6a	A

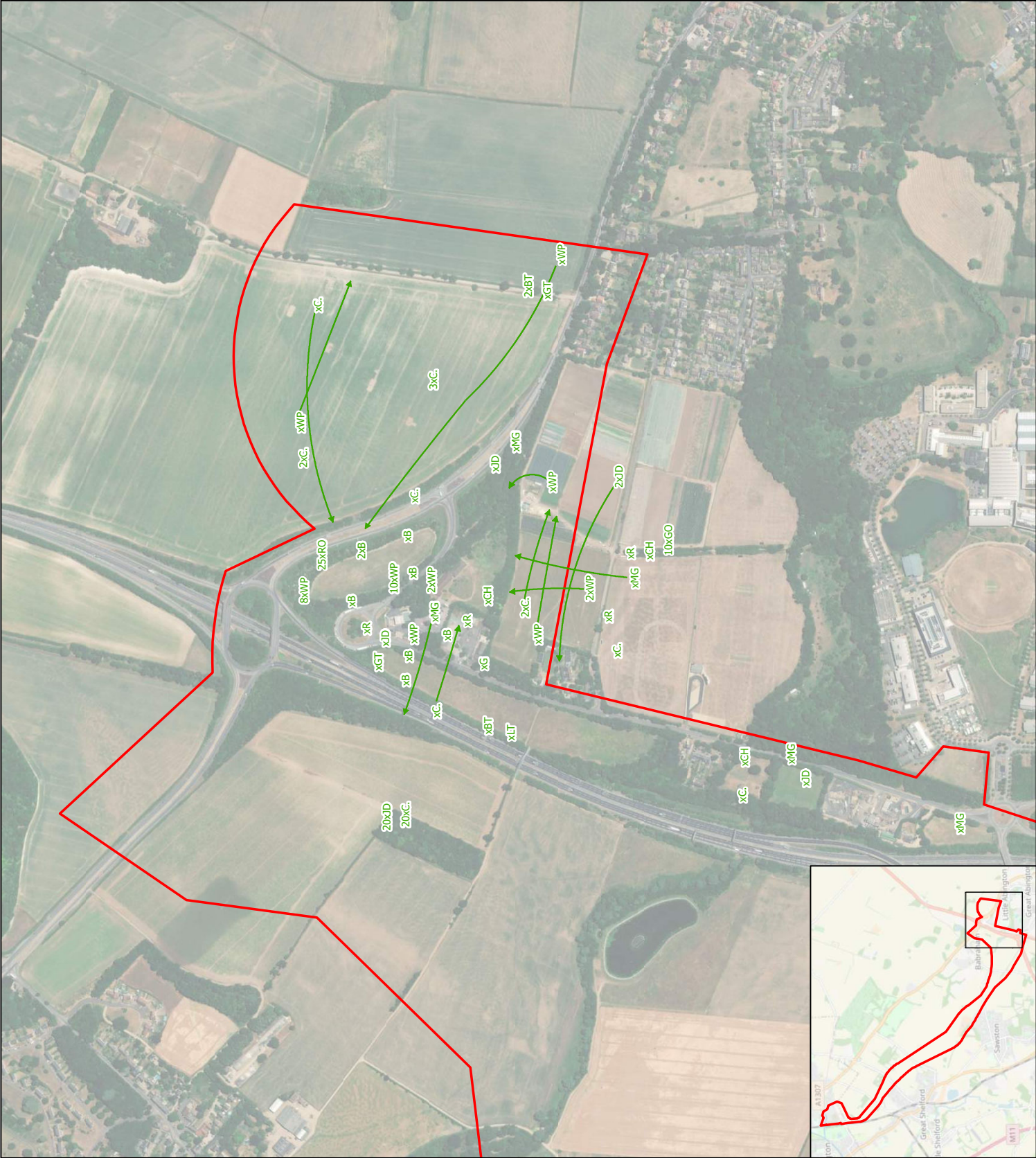
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Rev	Date	Notes
A	18/06/20	Initial map production

Legend

- Site boundary
- BoCC Green Listed flight line
- BoCC Green listed species

B - Blackbird
BT - Blue Tit
C - Carrion Crow
CH - Chaffinch
G - Green Woodpecker
GO - Goldfinch
GT - Great Tit
JD - Jackdaw
LT - Long-tailed Tit
MG - Magpie
R - Robin
RO - Rook
WP - Woodpigeon

0 50 100 200 Metres

BoCC Green Listed Species Winter Bird Survey Results for Survey 1
26/11/19 and 27/11/19

CSET Greater Cambridge Partnership

Scale at A3:	Project No:	Drawing No:	Revision:
1:6,600	A113521	Figure 6f	A

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Maddie Errington	18/06/2020	Thomas Cumberland

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Rev	Date	Notes
A	18/06/20	Initial map production

Legend

- Site boundary
- BoCC Green Listed flight line
- BoCC Green listed species

B - Blackbird
BZ - Buzzard
C - Carrion Crow
FP - Feral Pigeon
GO - Goldfinch
JD - Jackdaw
MG - Magpie
PW - Pied Wagtail
R - Robin
RO - Rook
WP - Woodpigeon
WR - Wren

0 50 100 200 Metres

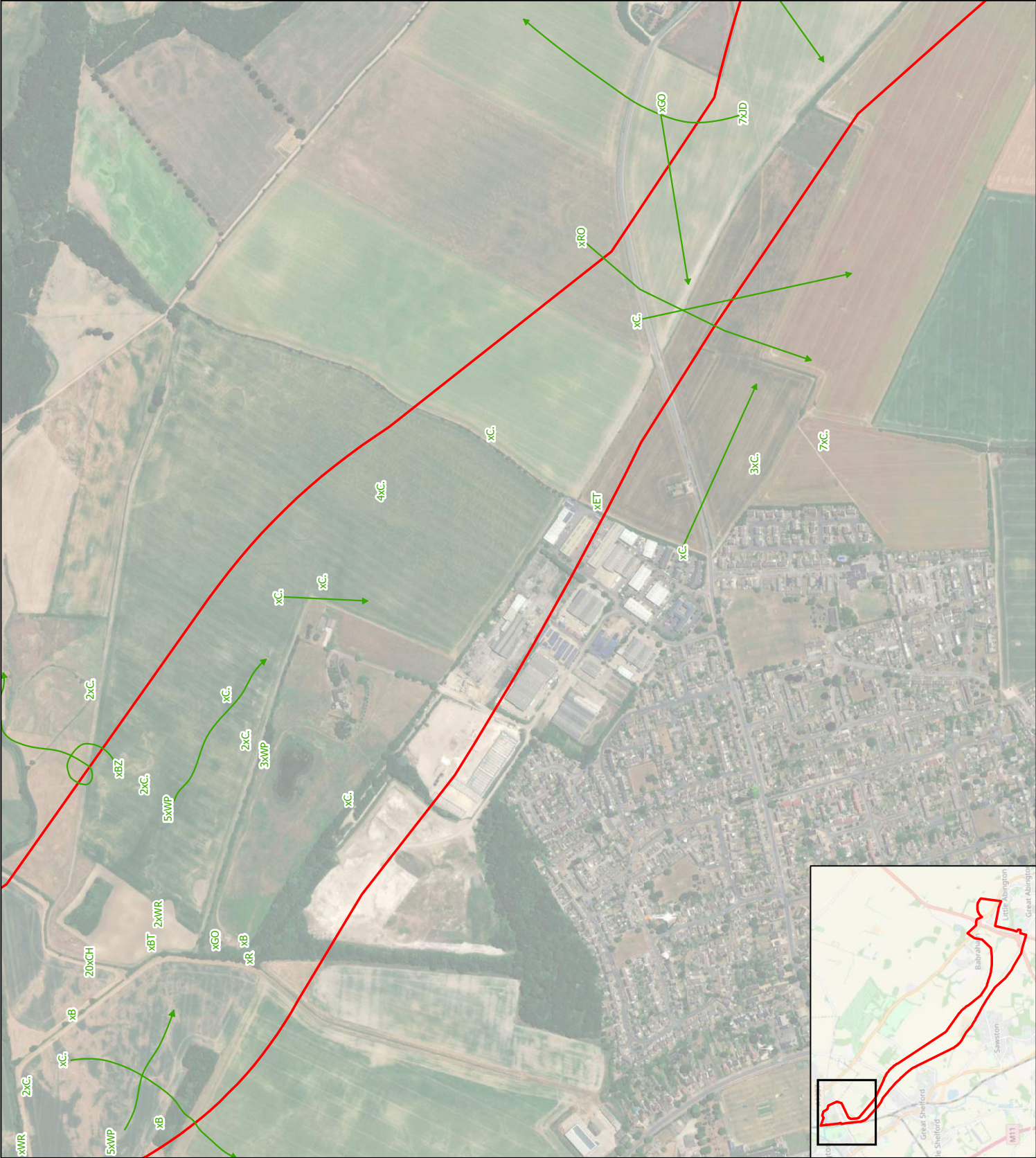
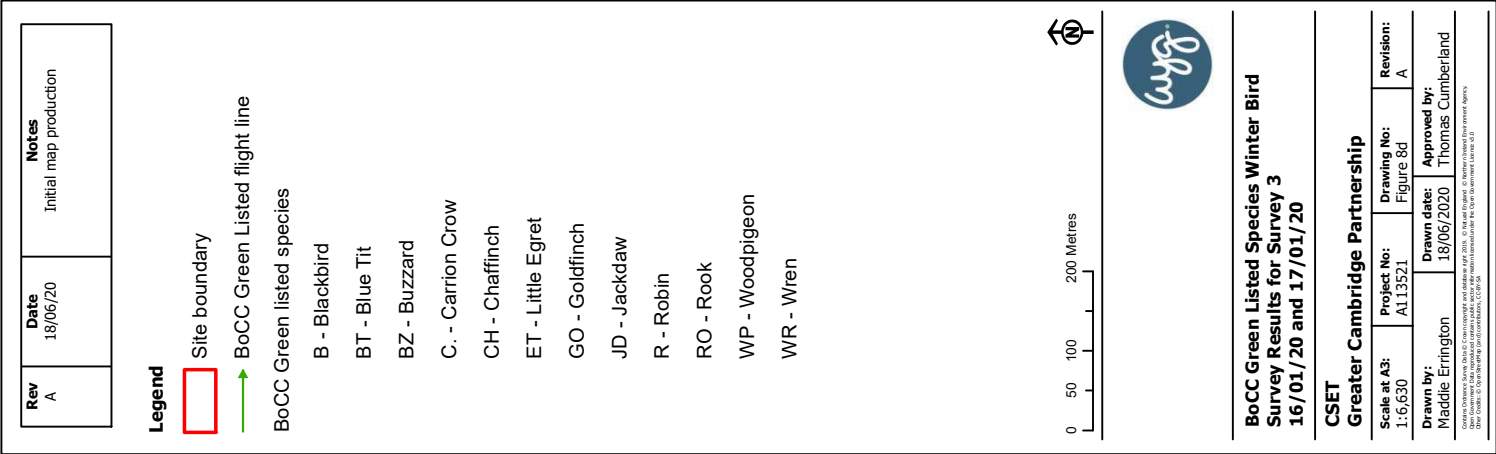
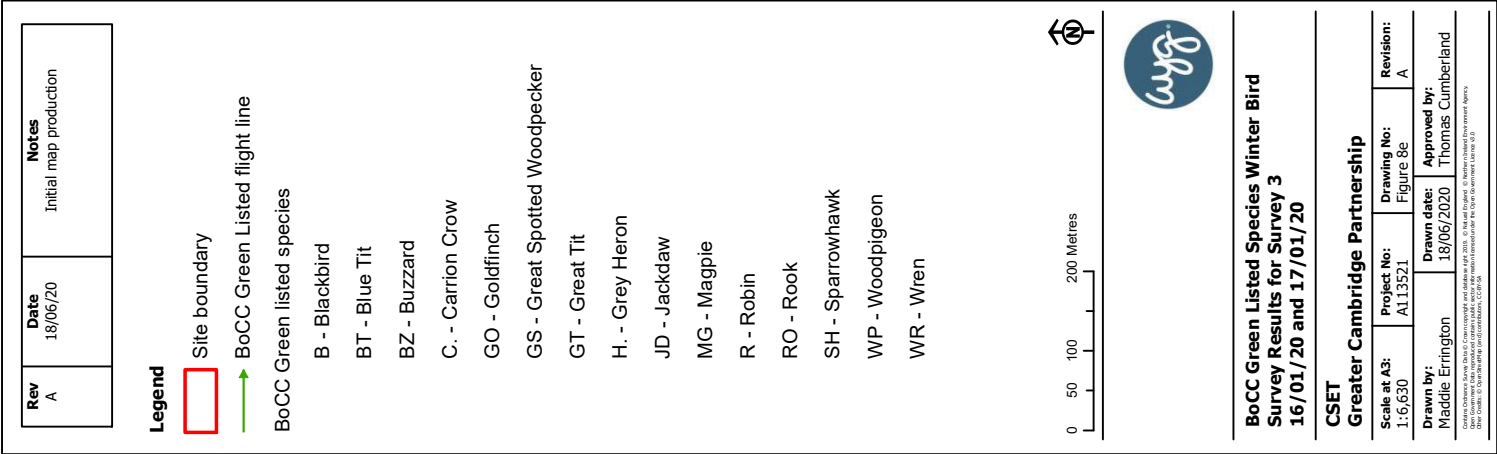
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03/12/19 and 04/12/19

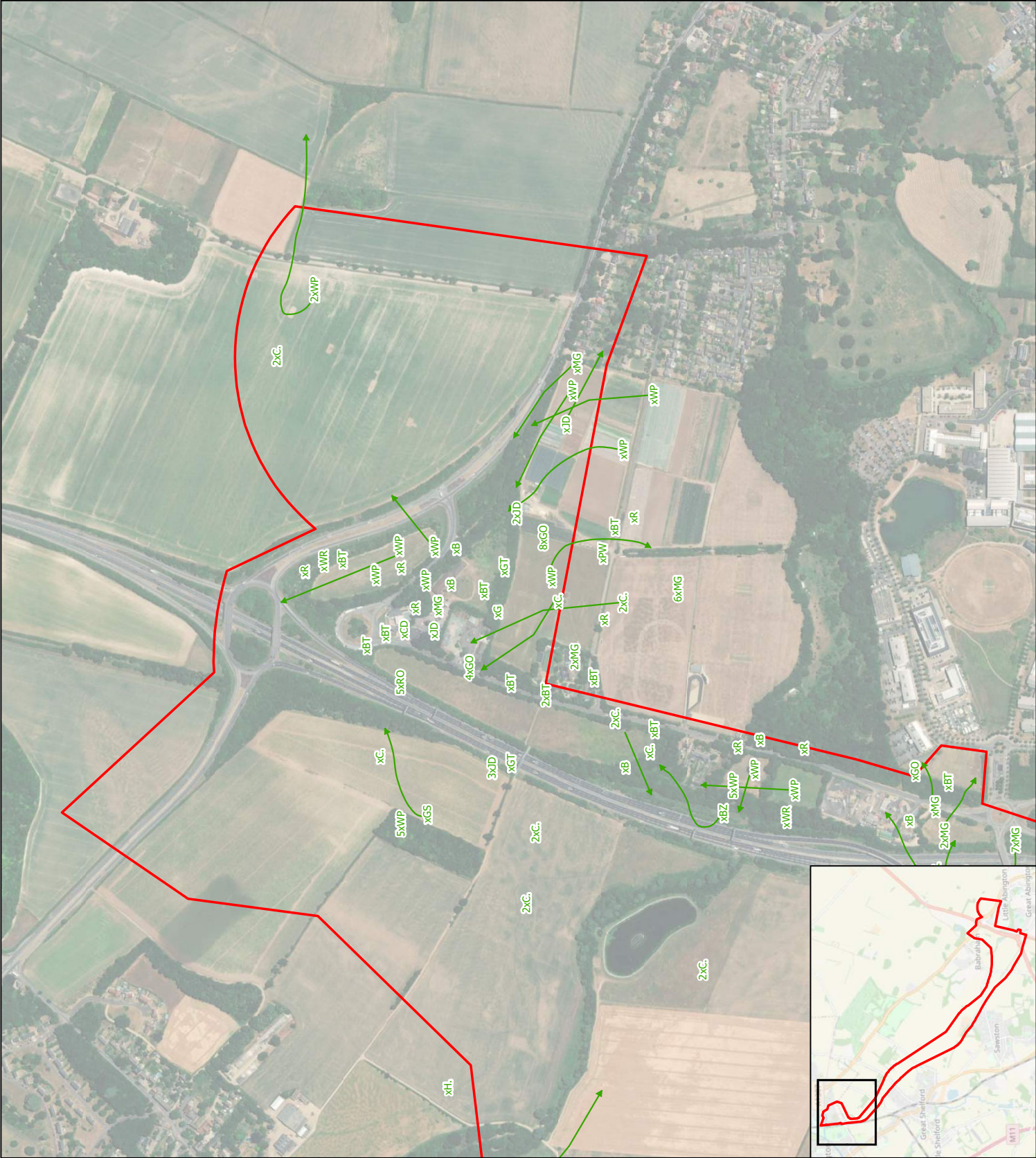
CSET Greater Cambridge Partnership

Scale at A3:	Project No:	Drawing No:	Revision:
1:6,600	A113521	Figure 7a	A

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Rev	Date	Notes
A	18/06/20	Initial map production

Legend

- Site boundary
- BoCC Green Listed flight line
- BoCC Green listed species

B - Blackbird
BT - Blue Tit
BZ - Buzzard
C - Carrion Crow
CD - Collared Dove
G - Green Woodpecker
GO - Goldfinch
GS - Great Spotted Woodpecker
GT - Great Tit
H - Grey Heron
JD - Jackdaw
MG - Magpie
PW - Pied Wagtail
R - Robin
RO - Rook
SH - Sparrowhawk
WP - Woodpigeon
WR - Wren

0 50 100 200 Metres

BoCC Green Listed Species Winter Bird Survey Results for Survey 3
16/01/20 and 17/01/20

CSET
Greater Cambridge Partnership

Scale at A3:	Project No:	Drawing No:	Revision:
1:6,630	AL13521	Figure 8f	A

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Rev	Date	Notes
A	18/06/20	Initial map production

Legend

- Site boundary
- BoCC Green Listed flight line
- BoCC Green listed species

B - Blackbird
BT - Blue Tit
C - Carrion Crow
G - Green Woodpecker
GP - Golden Plover
GT - Great Tit
JD - Jackdaw
LT - Long-tailed Tit
MG - Magpie
PW - Pied Wagtail
R - Robin
RO - Rook
WP - Woodpigeon
WR - Wren

0 50 100 200 Metres

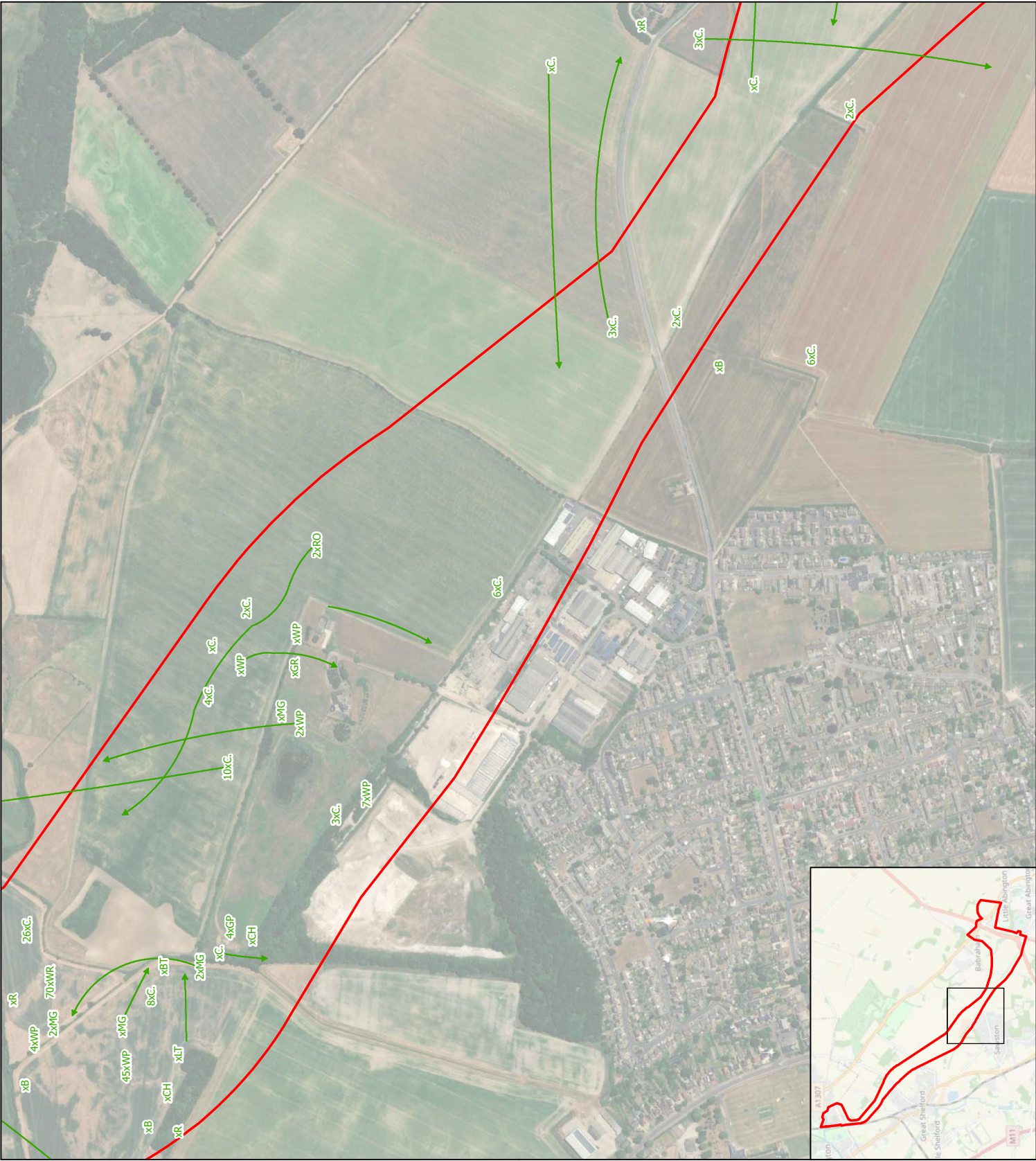
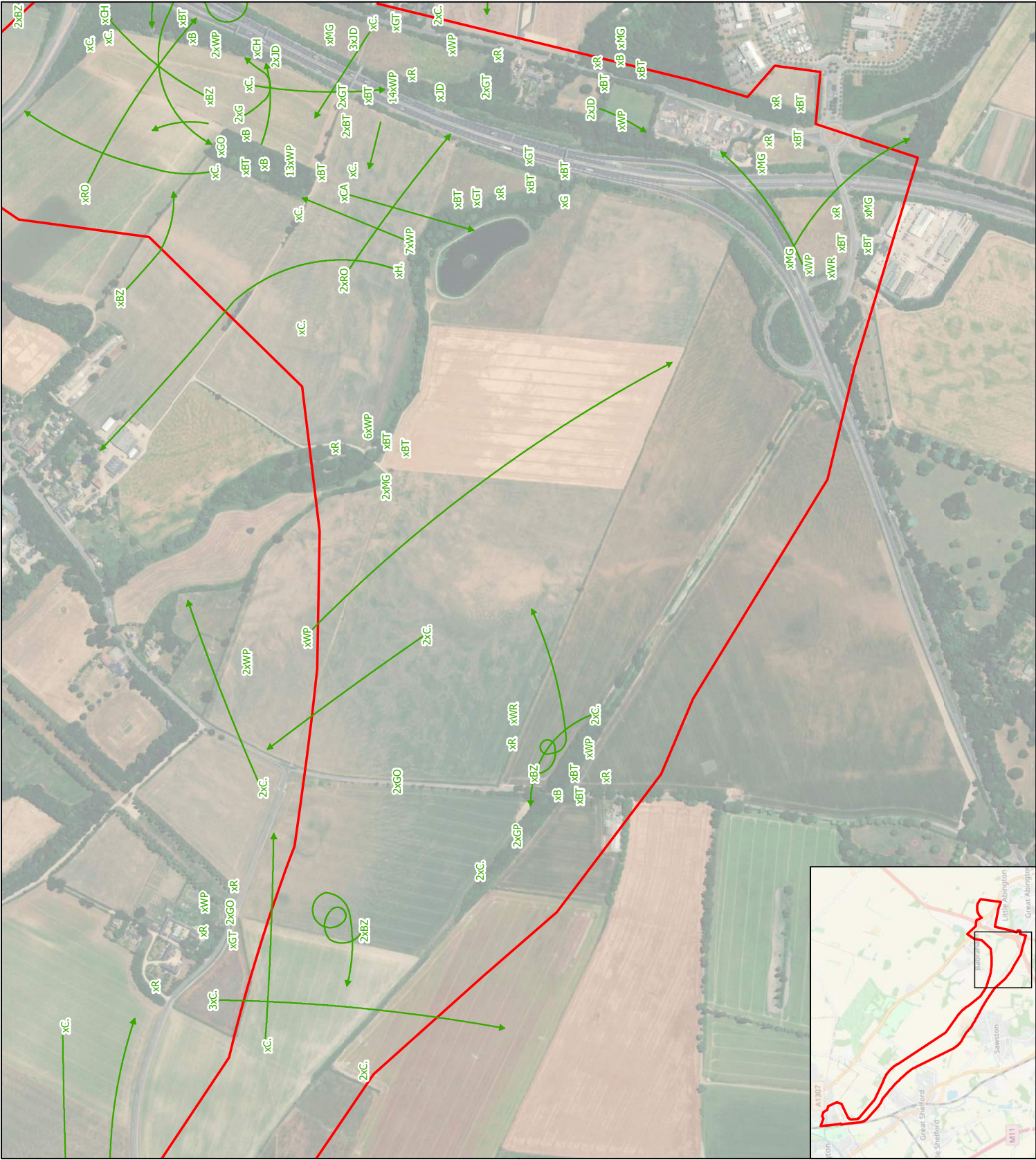
BoCC Green Listed Species Winter Bird Survey Results for Survey 4
05/02/20 and 06/02/20

CSET
Greater Cambridge Partnership

Scale at A3:	Project No:	Drawing No:	Revision:
1:6,600	AL13521	Figure 9a	A

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Appendix B – Key Legislation

Bern Convention
<p>The <i>Convention on the Conservation of European Wildlife and Natural Habitats</i> (the <i>Bern Convention</i>) was adopted in Bern, Switzerland in 1979, and was ratified in 1982. Its aims are to protect wild plants and animals and their habitats listed in Appendices 1 and 2 of the Convention, and regulate the exploitation of species listed in Appendix 3. The regulation imposes legal obligations on participating countries to protect over 500 plant species and more than 1000 animals.</p> <p>To meet its obligations imposed by the Convention, the European Community adopted the <i>EC Birds Directive</i> (1979) and the <i>EC Habitats Directive</i> (1992 – see below). Since the Lisbon Treaty, in force since 1st December 2009, European legislation has been adopted by the European Union.</p>
Bonn Convention
<p>The Convention on the Conservation of Migratory Species of Wild Animals or ‘Bonn Convention’ was adopted in Bonn, Germany in 1979 and came into force in 1985. Participating states agree to work together to preserve migratory species and their habitats by providing strict protection to species listed in Appendix I of the Convention. It also establishes agreements for the conservation and management of migratory species listed in Appendix II.</p> <p>In the UK, the requirements of the convention are implemented via the Wildlife & Countryside Act 1981 (as amended), Wildlife (Northern Ireland) Order 1985 (as amended), Nature Conservation and Amenity Lands (Northern Ireland) Order 1985 and the Countryside and Rights of Way Act 2000 (CROW).</p>
Habitats Directive
<p>The Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora, or the ‘Habitats Directive’, is a European Union directive adopted in 1992 in response to the Bern Convention. Its aims are to protect approximately 220 habitats and 1,000 species listed in its several Annexes.</p> <p>In the UK, the Habitats Directive is transposed into national law via the Conservation of Habitats and Species Regulations 2017 (as amended) in England and Wales, and via the Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995 (as amended) in Northern Ireland.</p>
Birds Directive
<p>The EC Directive on the Conservation of Wild Birds (79/1409/EEC) or ‘Birds Directive’ was introduced to achieve favourable conservation status of all wild bird species across their distribution range. In this context, the most important provision is the identification and classification of Special Protection Areas (SPAs) for rare or vulnerable species listed in Annex 1 of the Directive, as well as for all regularly occurring migratory species, paying particular attention to the protection of wetlands of international importance.</p>
Wildlife & Countryside Act 1981 (as amended)
<p>This is the principal mechanism for the legislative protection of wildlife in the UK. This legislation is the chief means by which the ‘Bern Convention’ and the Birds Directive are implemented in the UK. Since it was first introduced, the Act has been amended several times.</p> <p>The Act makes it an offence to (with exception to species listed in Schedule 2) intentionally:</p> <ul style="list-style-type: none">kill, injure, or take any wild bird;



- take, damage or destroy the nest of any wild bird while that nest is in use; or
- take or destroy an egg of any wild bird.

Or to intentionally do the following to a wild bird listed in Schedule 1:

- disturbs any wild bird while it is building a nest or is in, on or near a nest containing eggs or young; or
- disturbs dependent young of such a bird.

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, or intentionally disturbing animals occupying such places; and
- The Act also prohibits certain methods of killing, injuring, or taking wild animals.

Finally, the Act also makes it an offence (subject to exceptions) to:

- intentionally pick, uproot or destroy any wild plant listed in Schedule 8, or any seed or spore attached to any such wild plant;
- unless an authorised person, intentionally uproot any wild plant not included in Schedule 8; or
- sell, offer or expose for sale, or possess (for the purposes of trade), any live or dead wild plant included in Schedule 8, or any part of, or anything derived from, such a plant.

Following all amendments to the Act, Schedule 5 'Animals which are Protected' contains a total of 154 species of animal, including several mammals, reptiles, amphibians, fish and invertebrates. Schedule 8 'Plants which are Protected' of the Act, contains 185 species, including higher plants, bryophytes and fungi and lichens. A comprehensive and up-to-date list of these species can be obtained from the Joint Nature Conservation Committee (JNCC) website.

Part 14 of the Act makes unlawful to plant or otherwise cause to grow in the wild any plant which is listed in Part II of Schedule 9.

It is recommended that plant material of these species is disposed of as bio-hazardous waste, and these plants should not be used in planting schemes.

Schedule 1 - Birds which are protected by special penalties			
Avocet	<i>Recurvirostra avosetta</i>	Osprey	<i>Pandion haliaetus</i>
Bee-eater	<i>Merops apiaster</i>	Owl, Barn	<i>Tyto alba</i>
Bittern	<i>Botaurus stellaris</i>	Owl, Snowy	<i>Nyctea scandiaca</i>
Bittern, Little	<i>Ixobrychus minutus</i>	Peregrine	<i>Falco peregrinus</i>
Bluethroat	<i>Luscinia svecica</i>	Petrel, Leach's	<i>Oceanodroma leucorhoa</i>
Brambling	<i>Fringilla montifringilla</i>	Phalarope, Red-necked	<i>Phalaropus lobatus</i>
Bunting, Cirl	<i>Emberiza cirlus</i>	Plover, Kentish	<i>Charadrius alexandrinus</i>
Bunting, Lapland	<i>Calcarius lapponicus</i>	Plover, Little Ringed	<i>Charadrius dubius</i>
Bunting, Snow	<i>Plectrophenax nivalis</i>	Quail, Common	<i>Coturnix coturnix</i>
Buzzard, Honey	<i>Pernis apivorus</i>	Redstart, Black	<i>Phoenicurus ochruros</i>
Capercaillie	<i>Tetrao urogallus</i>	Redwing	<i>Turdus iliacus</i>
Chough	<i>Pyrrhocorax pyrrhocorax</i>	Rosefinch, Scarlet	<i>Carpodacus erythrinus</i>
Corncrake	<i>Crex crex</i>	Ruff	<i>Philomachus pugnax</i>
Crake, Spotted	<i>Porzana porzana</i>	Sandpiper, Green	<i>Tringa ochropus</i>
Crossbills (all species)	<i>Loxia</i>	Sandpiper, Purple	<i>Calidris maritima</i>
Curlew, Stone	<i>Burhinus oedicnemus</i>	Sandpiper, Wood	<i>Tringa glareola</i>
Divers (all species)	<i>Gavia</i>	Scaup	<i>Aythya marila</i>
Dotterel	<i>Charadrius morinellus</i>	Scoter, Common	<i>Melanitta nigra</i>



Duck, Long-tailed	<i>Clangula hyemalis</i>	Scoter, Velvet	<i>Melanitta fusca</i>
Eagle, Golden	<i>Aquila chrysaetos</i>	Serin	<i>Serinus serinus</i>
Eagle, White-tailed	<i>Haliaeetus albicilla</i>	Shorelark	<i>Eremophila alpestris</i>
Falcon, Gyr	<i>Falco rusticolus</i>	Shrike, Red-backed	<i>Lanius collurio</i>
Fieldfare	<i>Turdus pilaris</i>	Spoonbill	<i>Platalea leucorodia</i>
Firecrest	<i>Regulus ignicapillus</i>	Stilt, Black-winged	<i>Himantopus himantopus</i>
Garganey	<i>Anas querquedula</i>	Stint, Temminck's	<i>Calidris temminckii</i>
Godwit, Black-tailed	<i>Limosa limosa</i>	Swan, Bewick's	<i>Cygnus bewickii</i>
Goshawk	<i>Accipiter gentilis</i>	Swan, Whooper	<i>Cygnus cygnus</i>
Grebe, Black-necked	<i>Podiceps nigricollis</i>	Tern, Black	<i>Chlidonias niger</i>
Grebe, Slavonian	<i>Podiceps auritus</i>	Tern, Little	<i>Sterna albifrons</i>
Greenshank	<i>Tringa nebularia</i>	Tern, Roseate	<i>Sterna dougallii</i>
Gull, Little	<i>Larus minutus</i>	Tit, Bearded	<i>Panurus biarmicus</i>
Gull, Mediterranean	<i>Larus melanocephalus</i>	Tit, Crested	<i>Parus cristatus</i>
Harriers (all species)	<i>Circus</i>	Tree-creeper, Short-toed	<i>Certhia brachydactyla</i>
Heron, Purple	<i>Ardea purpurea</i>	Warbler, Cetti's	<i>Cettia cetti</i>
Hobby	<i>Falco subbuteo</i>	Warbler, Dartford	<i>Sylvia undata</i>
Hoopoe	<i>Upupa epops</i>	Warbler, Marsh	<i>Acrocephalus palustris</i>
Kingfisher	<i>Alcedo atthis</i>	Warbler, Savi's	<i>Locustella luscinioides</i>
Kite, Red	<i>Milvus milvus</i>	Whimbrel	<i>Numenius phaeopus</i>
Merlin	<i>Falco columbarius</i>	Woodlark	<i>Lullula arborea</i>
Oriole, Golden	<i>Oriolus oriolus</i>	Wryneck	<i>Jynx torquilla</i>

Natural Environment and Rural Communities Act 2006

Section 41 (S41) of this Act requires the Secretary of State to publish a list (in consultation with Natural England) of Habitats and Species which are of Principal Importance for the conservation of biodiversity in England. The S41 list is used to guide decision-makers such as public bodies including local and regional authorities, in implementing their duty under Section 40 of the Natural Environment and Rural Communities (NERC) Act 2006, to have regard to the conservation of biodiversity in England, when carrying out their normal (e.g. planning) functions. The S41 list includes 65 Habitats of Principal Importance and 1,150 Species of Principal Importance.

Birds of Conservation Concern

This is a review of the status of all birds occurring regularly in the United Kingdom. It is regularly updated and is prepared by leading bird conservation organisations, including the British Trust for Ornithology (BTO), Joint Nature Conservation Committee (JNCC) and The Royal Society for the Protection of Birds (RSPB).

The latest report was produced in 2015 (Eaton *et al*, 2015) and identified 67 red list species, 96 amber species, and 81 green species. The criteria are complex, but generally:

- **Red list** species are those that have shown a decline of the breeding population, non-breeding population or breeding range of more than 50% in the last 25 years.
- **Amber list** species are those that have shown a decline of the breeding population, non-breeding population or breeding range of between 25% and 50% in the last 25 years. Species that have a UK breeding population of less than 300 or a non-breeding population of less than 900 individuals are also included, together with those whose 50% of the population is localised in 10 sites or fewer and those whose 20% of the European population is found in the UK.
- **Green list** species are all regularly occurring species that do not qualify under any of the red or amber criteria are green listed

Global IUCN Red List
<p>The International Union for Conservation of Nature (IUCN) Threatened Species was devised to provide a list of those species that are most at risk of becoming extinct globally. It provides taxonomic, conservation status and distribution information about threatened taxa around the globe.</p> <p>The system catalogues threatened species into groups of varying levels of threat, which are: Extinct (EX), Extinct in the Wild (EW), Critically Endangered (CE), Endangered (EN), Vulnerable (VU), Near Threatened (NT), Least Concern (LC), Data Deficient (DD), Not Evaluated (NE). Criteria for designation into each of the categories is complex, and consider several principles.</p>
Local Biodiversity Action Plan (LBAP)
<p>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.</p> <p>Some LBAP's may also include Habitat Action Plans (HAP) and/or Species Action Plans (SAP), which are used to guide and inform the local decision making process.</p>

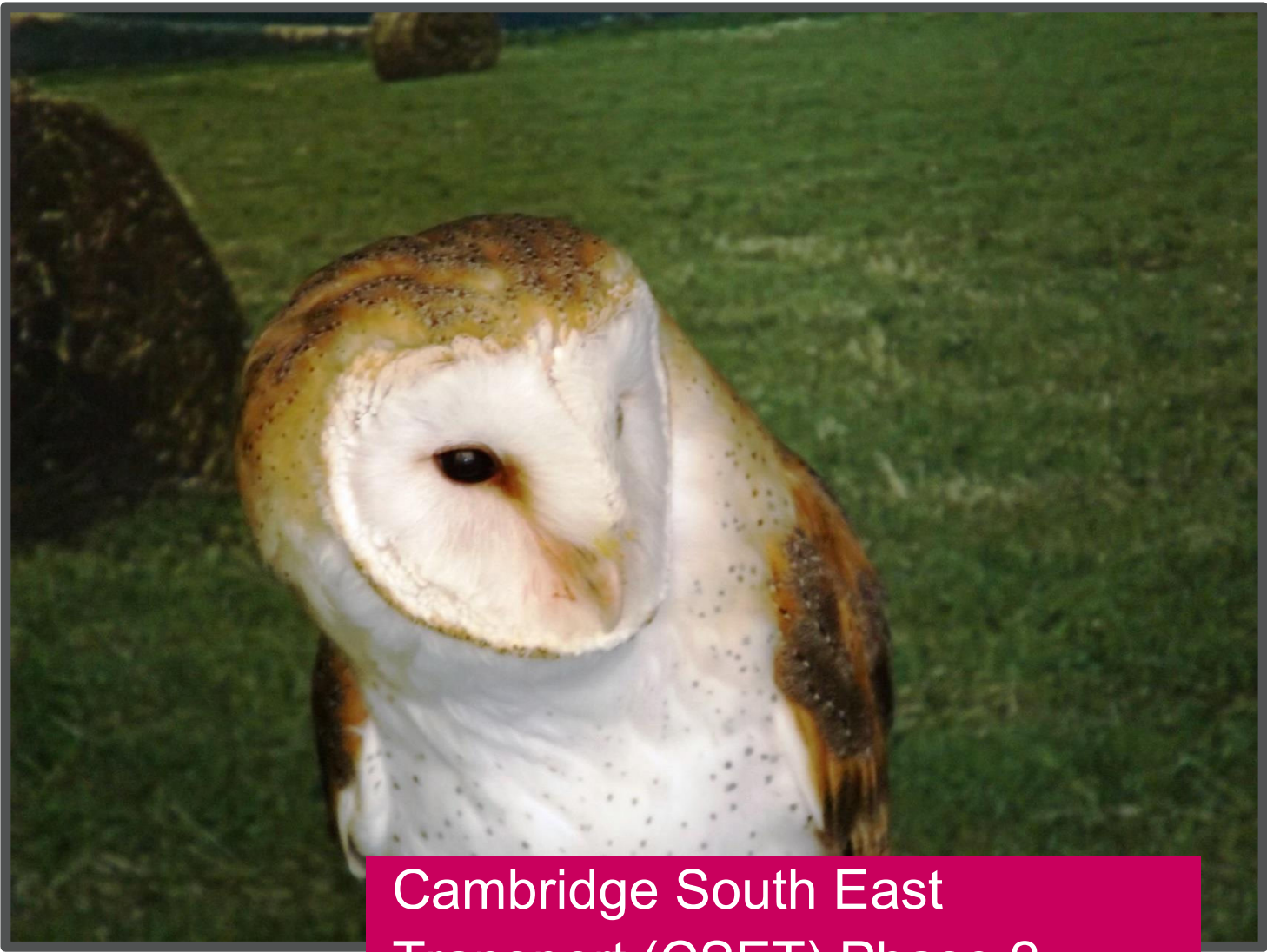


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Cambridge South East
Transport (CSET) Phase 2
Barn Owl Survey Report

May 2021

Quality Management

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1 Summary

Capita Real Estate & Infrastructure's Ecologists was commissioned by Cambridgeshire County Council to undertake studies of barn owl *Tyto alba* to inform the Cambridgeshire South East Transport Scheme (CSET). The surveys have been carried out to provide baseline ecological information for the CSET Project to inform the design and environmental assessment of the proposals.

This report details the surveys which have been undertaken in respect of barn owl between May and June 2020. The surveys focussed on the proposed areas of land affected by the preferred route of CSET Phase 2.

A desk study was undertaken to identify habitats suitable for this species within the area of the Scheme options. Inspection of aerial photography identified habitat features including 30 properties with agricultural buildings potentially suitable for use by this species.

Stage 1 and 2 barn owl surveys were undertaken in May 2020. Stage 3 verification surveys were carried out in June 2020. Stage 1 surveys assessed habitat suitability, indicating that approximately 10% of the field survey area located within the scheme could potentially provide suitable foraging and nesting or roosting habitat for barn owls.

Stage 2 surveys identified sixteen potential nesting and roosting sites. Three of these were nesting sites, three were active roosting sites and three were Temporary Rest Sites (TRS). Adult barn owls were observed at three of these locations. Field surveys identified three occupied breeding sites in the field survey area, these will need further verification nearer the time of construction.

Three occupied barn owl nesting sites were recorded at (OBS 01) Nether Hall Farm nest box, (OBS 02) Granary Bury Farm nest box (CB383158) and (OBS 03) Reedbed Farm nest box (CB351799). White Farm Barn (CB241427) showed previous habitation (PNS 01) but evidence suggests nesting occurred prior to its use as a livery yard (through old nest debris and dried pellets) within the last 2 years+.

An ARS has been identified in a tree cavity at Bury Farm (ARS 02) and an ARS at Chalkhill Farm was also identified (ARS 03). A TRS (TRS 01) was identified within a modern barn on Bury Farm (not used within the last 12 months).

Further surveys are recommended at two land parcels that could not be accessed these being the Uplands (CB226938) and Dales Manor Farm (CB272621) and lay within proximity of the route.

Twelve other sites within the survey area were recorded as potential nesting sites, but access limitations prevented assess for surveys.

2 Introduction

2.1 Background

- 2.1.1. Capita Real Estate & Infrastructure's Ecologists were commissioned by the Greater Cambridgeshire Partnership in March 2020 to undertake barn owl surveys. These surveys were undertaken in relation to the development of Phase 2 of the Cambridge South East Transport (CSET) Project, (the 'Scheme').
- 2.1.2. The aim of the barn owl report is to summarise the results of the baseline surveys conducted between May and June 2020 to inform the design of the Scheme.

2.2 Project Description and Purpose of the Scheme

- 2.2.1. The Cambridge South East Transport (CSET) Project aims to create a vital link to ease congestion, offer sustainable travel choices, connect communities, and support growth in the in the South East of Cambridge. CSET will form part of the Cambridgeshire Autonomous Metro, providing high quality, frequent and affordable public transport.
- 2.2.2. CSET Phase 2 comprises a segregated public transport route from the A11 (near Brabham) to the Cambridge Biomedical Campus (CBC). This bus route would include new walking, cycling and equestrian links.
- 2.2.3. The preferred route (brown route and travel hub B) largely crosses open arable land.

2.3 Legislation and Policy

- 2.3.1. The barn owl receives protection in the UK as a result of both legislation and planning policies. This section outlines the primary legislation protecting barn owls. All of the information below is relevant to this report and to the work proposed at the development site.

Legislation

Conservation of Habitats and Species Regulations - Duties in Relation to Wild Bird Habitat

- 2.3.2. Under section 9A – Duties in relation to wild bird habitat - of the Conservation of Habitats and Species Regulations 2017 (as amended) “*without prejudice to regulation of 9(1), the appropriate authority, the nature conservation bodies and, in relation to the marine area, a competent authority **must take such steps in the exercise of their functions as they consider appropriate to secure the objective in paragraph (3), so far as lies within their powers.***
- 2.3.3. (3) The objective is the preservation, maintenance and re-establishment of a sufficient diversity and area of habitat for wild birds in the United Kingdom, including by any means of the upkeep, management and creation of such habitat, as appropriate, having regard to the requirements of Article 2 of the new Wild Birds Directive.
- 2.3.4. (8) So far as lies within their powers, a competent authority in exercising any function in, or in relation to the United Kingdom, must use all reasonable endeavours to **avoid any pollution or deterioration of habitats of wild birds except habitats beyond the outer limits of the area to which the Wild Birds Directive applies**’

Wildlife & Countryside Act 1981 (as amended)

- 2.3.5. The Wildlife & Countryside Act 1981 (as amended) provides protection for barn owls and most other wild bird species in Britain. Under the Wildlife and Countryside Act 1981 (as amended) it is an offence to:
 - Kill, injure, or take any wild bird (subject to certain exceptions)
 - Take, damage, or destroy a nest while it is being used or being built; and
 - Take or destroy the egg of any wild bird.
- 2.3.6. Barn owls are included within Schedule 1 of the Wildlife and Countryside Act 1981 (as amended), which gives additional protection to the species from disturbance. under which it is an offence to disturb a barn owl intentionally or recklessly:
 - While it is nest building
 - At a nest containing eggs
 - While the young of any such bird are still dependent.

- 2.3.7. Barn owls do not ‘build’ a nest and so their protection against disturbance is generally considered to start as soon as the first egg is laid and ends when the last young becomes independent (or dies).

Purpose of the Legislation

- 2.3.8. The purpose of the legislation is to maintain and restore barn owl populations within their natural range. This implies that the habitats on which they rely to breed, and the ecology of their life cycles should not be compromised by human activities. Where activities have the potential to compromise barn owl breeding sites, measures are required to be put in place to avoid impacts or compensate and mitigate for those impacts.

Natural Environment and Rural Communities (NERC) Act 2006

- Section 40 of the NERC Act places a statutory duty on public bodies, such as local authorities, that “every public body must, in exercising its functions have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity”.
- Section 41 of the NERC Act requires the Secretary of State to draw up a list of Habitats and Species of Principal Importance which should be used to guide decision makers (which include local authorities) in implementing their duty under Section 40.

Planning Policy

- 2.3.9. National Planning Policy is set out by the National Planning Policy Framework (NPPF February 2019) combined with the guidance document Planning for Biodiversity and Geological Conservation: A Guide to Good Practice” (ODPM 2005).
- 2.3.10. Biodiversity net gains are referenced strongly in terms of developing local planning policy and decision-making for development applications. The environmental test of sustainable development requires planning policy and planning decisions to help to ‘improve biodiversity’ (paragraph 8c).

- 2.3.11. References to biodiversity net gain elsewhere in the new NPPF (such as paragraph 175d) support the delivery of biodiversity net gain through sustainable development. Net gain for biodiversity is far more prominent than in the previous NPPF and considers a holistic landscape approach to protect, and enhance biodiversity promoting conservation, restoration and enhancement of Priority Habitats (also listed as Habitats of Principal Importance) identified under the NERC Act 2006), ecological networks and the protection and recovery of Priority Species (also listed as Species of Principal Importance) identified under the NERC Act 2006). The NPPF includes requirements for planning authorities to identifying and pursuing opportunities for securing measurable net gains for biodiversity (paragraph 174b).

- 2.3.12. Protected sites and species are a material consideration in determining planning applications and therefore all information relating to protected sites and species must be submitted with planning submissions for determination of the whole application. The NPPF (paragraph 175) which promotes Local Planning Authorities to assess if significant harm would occur to biodiversity and decide accordingly.

Biodiversity Policy

- 2.3.13. Barn owls are listed under the Cambridgeshire and Peterborough Biodiversity Action Plan (CPBAP 2020), and therefore actively promote enhancement and recovery for this species.

2.4 Personnel and Quality Assurance

- 2.3.14. All ecologists employed by Capita adopt best practice working methods in undertaking surveys including the Chartered Institute of Ecology and Environmental Management’s (CIEEM) code of professional and all fieldwork is carried out in accordance with current best practice guidelines and under the supervision of senior staff and appropriately licensed ecologists.
- 2.3.15. The barn owl surveys were led by Senior Ecologist, Neil Page and assisted by Principal Ecologist, Andrea Sarkissian.
- 2.3.16. Neil is a Full Member of CIEEM and has been an Ecological Consultant for over eight years. Neil has a broad range of professional experience in consulting services, including ecosystem management, design, planning, protected species mitigation and environmental research projects. Neil is an experienced surveyor for barn owl and holds a survey licence [CL29/00089] throughout England (all Counties).

2.3.17. Andrea Sarkissian is a Principal Ecologist and an Associate member of CIEEM with over six years' experience in ecological consultancy. She has been involved in a range of projects from road and rail schemes to school developments and flood alleviation schemes. Her experience spans a range of ecological receptors and key skills which include Phase 1 Habitat surveys, protected species surveys (newts, birds, bats, and reptiles) with subsequent impact assessment and mitigation. She has specialised in breeding, migratory and wintering bird surveys and she is developing her experience to obtain a Schedule 1 licence to survey for barn owls.

3 Methods

3.1 Survey and Report Objectives

3.1.1. The surveys and report were carried out to fulfil the following objectives.

1. To present a summary of local barn owl records
2. To identify locations of suitable foraging habitat and breeding/roosting sites up to 1.5km of the survey area
3. To provide an assessment of the likely importance of the site for barn owl.

3.2 Desk-Based Study

3.2.1. Biological Records obtained from Cambridgeshire and Peterborough Environmental Records Centre (CPERC) in July 2020 covering a 2km radius of the scheme and other third-party records relating to 5km radius of the scheme were reviewed.

3.2.2. A desk-based study was undertaken prior to the field survey to obtain additional information relevant to barn owl recorded within 1.5km of the Scheme. The following online resources were consulted:

- Google Earth
- Cambridge City Council's Planning Portal.

3.3 Field Survey

3.3.1. Surveys were undertaken to identify the location of suitable foraging habitat and breeding/roosting sites within 1.5km of the survey area. Surveys followed the three-step approach outlined in the barn owl *Tyto alba* Survey Methodology and Techniques for use in Ecological Assessment (Shawyer, 2011). The three steps are as follows:

- Stage One – Desk study and field scoping survey to identify suitable areas of foraging habitat as undertaken within the scoping report (Table 1). This reviewed in May 2020 as part of the assessment process.

- Stage Two and Three – Comprise investigative and nest verification surveys respectively and are informed by the previous stage. Stage Two aims to identify Occupied Breeding Sites (OBS), Active Roost Sites (ARS), Temporary Rest Sites (TRS), Potential Nesting Sites (PNS) and potential feeding and dispersal habitat (Table 2). Stage 3 is to verify nesting sites identified in Stage 2.

- 3.3.2. Landowners were questioned to ascertain if they were aware of barn owls utilising their property at any time of year, but particularly during the breeding season.
- 3.3.3. Barn owl surveys included a broad visual assessment of buildings and other features present within the survey area that were identified as having potential to support barn owls.
- 3.3.4. Those buildings identified as requiring further assessment were subject to internal survey first (Stage 3), Locations within buildings with the highest suitability for supporting barn owls were surveyed first in order to reduce disturbance (as the highest possible likelihood of the species nesting). If no nest was found surveyors then checked the next most likely place for nesting, gradually working towards least likely nesting place. Whilst moving through the site surveyor makes a note of any signs of occupation including feathers, pellets (which are aged), and droppings.
- 3.3.5. Suitable access features to buildings or other structures were taken to be those with a minimum of 75 x 75 millimetres (mm) and an unobstructed approach (Ramsden 1995).

Habitat Assessment

- 3.3.6. Patches of Potential Foraging Habitat (PFH), primarily rough grassland, were assessed according to their ability to support populations of small mammals, in particular, field vole *Microtus agrestis* on which barn owl feed. Grassland was recorded as identified in Appendix A.

Table 1: Habitat Potential Categories (Shawyer. 2011)

Potential	Qualifying Characteristics
Type 1	Habitat was considered to be ideal foraging habitat where it was characterised by tall tussocky grass with a thick (70-100 millimetres) litter layer within which small mammals and reptiles could burrow
Type 2	Habitats are sub-optimal for field voles but of value to barn owls in areas with sporadic Type 1 habitats. This type of semi-improved grassland is characterised by having a more even-height sward, but provides some potential for foraging owls

Potential	Qualifying Characteristics
Type 3	Poorer habitat for field voles and as such is of lower value to barn owls. These improved grasslands are characterised by having a homogeneous sward and being heavily grazed by sheep, horses or cattle or used for public amenity.

Table 2: Roost and Nesting Site Potential Characteristics

Potential	Qualifying Characteristics
Negligible	Built structures - No features that could be used by barn owl as roosts or nesting sites. Trees - No features that could be used by roosting barn owl (i.e. an immature tree and no crevices). Landscape character - Lack of suitable foraging habitat within vicinity of the site and no connections to semi-natural habitats. Site located in a highly urbanised environment.
Low	Built structures - Small number of potential roosting features that could be used by barn owl. Trees - No visible features within tree structure (such as crevices, holes in trunk, hollow limbs, and splits). However, it may have hollows or hidden features. Landscape character - Small amount of isolated habitat on site providing a potential foraging resource i.e. a single tree or rock faces. Maybe linked to small amount of adjacent semi-natural habitat surrounding site, however there are no distinct links to habitat further away.
Moderate	Built structures- Several potential roosting features within built structure. Trees - Several potential roosting features that could be used by roosting barn owl (such as crevices, holes in trunk, cavities, and split trunks). Landscape character - Suitable foraging habitat on site (such as pasture and hedgerows) with linear links to wider landscape.
High	Built structures - Building offers a significant number of roosting features including holes in the wall and gaps in vents, open doors and hatches, access points into large roof void, potential roosting features (such as exposed ledges and beams) Trees - Several potential roosting features that could be used by roosting barn owl including, large cavities, crevices, hollow limbs, sheltered holes with obvious droppings, pellets and feathers around or under features. Landscape character - The site habitat is of high quality for foraging and includes features (such as pasture, woodland edge, field margins, hedgerows, and rough grassland) with high prey presence. The site is well connected within the landscape to surrounding habitats and has strong linear features (such as watercourses, hedgerows and tree lines extending from the site to the wider landscape).

- 3.3.7. The population of barn owl habitation within the study area has been evaluated using a method consistent with the most recently published Best Practice Guidelines (Shawyer 2011). The Good Practice Guidelines (Shawyer 2011) are used as a basis to evaluate the site features for their potential to support barn owl. The potential rating is a guide and can alter depending on site location, disturbance, and distribution.
- 3.3.8. Table 3 summarises the categories of potential roosting or nesting locations for barn owl and is used as a reference in the building and tree inspections in Appendix B of this report.

Table 3: Roosts and nest sites categories (Shawyer. 2011).

Roost Definition	Qualifying Characteristics
Active Roost Site (ARS)	An Active Roost Site is defined as a place at which breeding does not occur, but where the bird is seen or heard regularly, or its current or recent presence is known to have occurred in last 12 months.
Potential Nest Sites (PNS)	A Potential Nest Site typically includes buildings which provide features suitable for nesting and may have historically provided this within the last 50 years. This also includes features which have been specifically implemented to encourage barn owls (such as appropriate nest boxes).
Temporary Rest Sites (TRS)	Small amount of field signs that can often be seen underneath a tree, in a building or on a fence post and which are sometimes accompanied by an occasional pellet or body feather, which indicate a temporary night-time stopping-off place of a barn owl. Although this level of observation is not an essential requirement of a barn owl survey, when these signs are identified they are best described and recorded as a Temporary Rest Site (TRS) rather than an ARS.
Occupied Breeding Site (OBS)	Where breeding is taking place or where it has done so in the recent past. This has the presence of adult barn owls, their moulted feathers, pellets, eggs, eggshells, chicks or down are present or found.

3.4 Evaluation Methods

- 3.4.1. Barn owls' sites were evaluated using the most recently published best practice guidance: Barn owl *Tyto alba* Survey Methodology and Techniques for use in Ecological Assessment: Developing Best Practice in Survey and Reporting, (Shawyer, 2011). These guidelines are used as a basis to evaluate the site features for their potential to support barn owl, Table 2 and Table 3 summarise how potential roosting and nesting sites are categorised.

- 3.4.2. The Stage 2 surveys characterise buildings and other structure based on their likelihood to support barn owls this is shown in Table 2, whereas Stage 3 defines the use of the site by barn owls based on characteristics shown in Table 3.
- 3.4.3. Mature trees located in open fields, hedgerows, and woodland edges, that might support barn owls were also inspected. Survey focused on trees in suitable habitat within the Survey Area defined within Appendix B, which were considered to be of sufficient age and girth to contain a cavity, along with trees that showed signs of damage, die-back and decay these were inspected by ladder with the assistance of torches for a visual signs of occupation.

3.5 Limitations and Assumptions

- 3.5.1. At the point of commencement of the surveys in March/April 2020 measures relating to the management of the coronavirus pandemic came into force which caused a delay to the start of surveys. This occurred as it was determined between the client and Capita how work could be carried out safely. This led to a delay in starting the surveys until May 2020. Therefore, the usual methodology of conducting barn owl surveys from March could not be achieved. However, surveys were carried out from May 2020 and this constraint is not considered to have affected the reliability of the results outlined in this report.
- 3.5.2. Observations have been limited to surveys within the months of May to June 2020 in line with the scope of the commission.
- 3.5.3. Access was not permissible at the following properties in Table 4.

Table 4: Access Restricted

Land Reference	Location	Distance from Scheme
CB303470	Babraham Hall, Babraham, Cambridge CB22 3AT	0.88 Km
CB303470	St Peters was assigned moderate potential based on external survey alone, based on Covid restrictions the diocese was not comfortable with internal inspection of the bell tower and therefore assessment is based on external assessment	0.88 Km
CB366757	Grahams Farm, 13, Garnham's Road, Great Shelford, South Cambridgeshire, Cambridgeshire, East of England, England, CB22 5JX, United Kingdom	0.68 Km
CB363695	Green Hedge Farm Bar Lane, Stapleford, South Cambridgeshire, Cambridgeshire, CB22 5BP	0.5 Km
CB224411	Netherhall Farm (Newbury Farm), Babraham Road, Cherry Hinton, Cambridge, Cambridgeshire, East of England, England, CB22 3AY, United Kingdom	1.13 Km
CB224411	Magog Farm Cottages (New Heath Farm), Babraham Road, Cherry Hinton, Cambridge, Cambridgeshire, East of England, England, CB22 3AY, United Kingdom	1.13 Km

Land Reference	Location	Distance from Scheme
CB420042	Magog Downs Magog Trust, Haverhill Road, Stapleford, South Cambridgeshire, Cambridgeshire, East of England, England, CB22 5BX, United Kingdom	0.6 Km
CB420042	Magog Farm Cottages Wandlebury Country Park, The Roman Road, Babraham, South Cambridgeshire, Cambridgeshire, East of England, England, CB22 3AX, United Kingdom	1.0 Km
No Ref	Sawston Water Treatment Works. Cambridge Road, Sawston, South Cambridgeshire, Cambridgeshire, East of England, England, CB22 3DG, United Kingdom	0.34 Km
No Ref	Manor Farm. Beech Lane, Pampisford, South Cambridgeshire, Cambridgeshire, East of England, England, CB22 3EU, United Kingdom	1.48 Km
No Ref	College Farm. Beech Lane, Pampisford, South Cambridgeshire, Cambridgeshire, East of England, England, CB22 3EU, United Kingdom	1.16 Km
No Ref	Home Farm. Beech Lane, Pampisford, South Cambridgeshire, Cambridgeshire, East of England, England, CB22 3EU, United Kingdom	1.1 Km
No Ref	Ley Rectory Farm. Hildersham Road, Hildersham, South Cambridgeshire, Cambridgeshire, East of England, England, CB21 6DB, United Kingdom	1.06 km
CB226938	Uplands No Access granted due to derelict and unsafe nature of the building	0.3 Km

- 3.5.1 Where access was not permitted, potentially suitable habitat and roosting potential was surveyed with the aid of binoculars from public rights of way or adjacent land parcels where possible. Where access was not permissible, but the structure showed potential, the property was automatically categorised as a Potential Nest Site (PNS) which could not be surveyed due to safety or access restrictions. During the Stage 3 surveys it remained recorded as PNS as presence/absence could not be confirmed.
- 3.5.2 Nest boxes recorded but not accessed (due to access limitations) were recorded as Occupied Breeding Sites (OBS) when breeding was confirmed by the landowner and/or neighbour.

4 Results

4.1 Desk Study

- 4.1.1. The CPERC data search included 25 records from 2005-2018 within 2km of the Scheme. These records include limited records of nesting; however, the most concentrated records are from Grantchester and a potential roost site in Grantchester meadows approximately 2.5km north west of the scheme. Three records relate directly to the scheme corridor but are associated with foraging behaviour.
- 4.1.2. A further review of third-party data produced four records of breeding activity from 2015-2019 within the 500m buffer. Of these, two were Occupied Breeding Sites, one an Active Roost Site and the other had yet to be monitored. A further four records were within 1.5km of the Scheme. All were nestbox sites except for one being a tree cavity.

4.2 Field Survey

- 4.2.1. Suitable foraging grassland that is identified as Type 1 or 2 is identified on Appendix B.
- 4.2.2. Within the accessible land parcels, it is important to note that a movement corridor along the River Granta Floodplain is present and most field evidence was recorded within this location. A number of isolated, patches of favourable foraging grassland were recorded in the wider extents but have no bearing on the alignment of the scheme; these are also indicated in Appendix B.
- 4.2.3. Table 6 provides details of all barn owl records identified through the field surveys. Full survey results are detailed in Appendix A.
- 4.2.4. Three occupied barn owl nesting sites were recorded at (OBS 01) Nether Hall "The Cart lodge" Farm nest box, (OBS 02) Granary Bury Farm nest box (CB383158) and (OBS 03) Reedbed Farm nest box (CB351799).
- 4.2.5. (CB241427) White Farm Barn showed previous habitation (PNS 01) but evidence suggests nesting occurred prior to its use as a livery yard (through old nest debris and dried pellets) within the last 2 years+. An active roost has been identified in a tree cavity at Bury Farm (ARS 02) and a Temporary Roost Site (TRS 01) within a modern barn on the Farm (not used within the last 12 months) was recorded. An Active Roost Site at Chalkhill Farm was also recorded (ARS 03).
- 4.2.6. All properties within Table 4 have been automatically assessed as Potential Nest Sites (PNS) until access is permissible.

Table 5: Summary of Results Identified Through Field Surveys

Land Ref	Type of Record (Roost, Feeding, Nest Site)	Location	Distance From Scheme
No Ref	Occupied Breeding Site (OBS 01)	Netherhall Farm "The Cartlodge" Worts Causeway	1.5 km
CB224411	Potential Nest Site (PNS) (Land Access refusal), Building of Moderate potential	Netherhall Farm "Newbury Farm" and Magog Farm, Babraham Road, Cherry Hinton, Cambridge, Cambridgeshire, East of England, England, CB22 3AY, United Kingdom	1.3 km
CB224411	(Land Access Refusal), Building of Negligible potential	Magog Farm (New Heath), Babraham Road, Cherry Hinton, Cambridge, Cambridgeshire, East of England, England, CB22 3AY, United Kingdom	1.2 km
CB438369	Building of Negligible potential	The Gog Magog Business Park, Shelford Bottom, Cambridge, CB22 3AB	1.0 Km
CB368204	Building of Negligible potential	The Gog Magog Golf Club, Shelford Bottom, Cambridge, CB22 3AB	1.2 Km
CB241427	Building of Low Potential Nest Site (PNS 01) (Historic)	White Farm, Addenbrookes-Great Shelford Cycleway, Great Shelford, South Cambridgeshire, Cambridgeshire, East of England, England, CB2 0AX, United Kingdom	0.3 Km
CB366757	Building of Negligible Potential Nest Site. Active Construction and conversation of outbuildings. Scoped out from survey and further land requests	Grahams Farm, 13, Garnham's Road, Great Shelford, South Cambridgeshire, Cambridgeshire, East of England, England, CB22 5JX, United Kingdom	0.68 Km
CB226938	Building of Moderate Potential Nest Site (PNS 02) Building condemned and requested by landowner not to survey.	The Uplands, Hinton Way, Stapleford, South Cambridgeshire, Cambridgeshire, East of England, England, CB22 5AN, United Kingdom	0.3 Km

Land Ref	Type of Record (Roost, Feeding, Nest Site)	Location	Distance From Scheme
CB155784	Buildings of Negligible Potential Nest Site	Middlefield Farm, Hinton Way, Stapleford, South Cambridgeshire, Cambridgeshire, East of England, England, CB22 5AN, United Kingdom	0.3 Km
No Ref	Buildings of Negligible Potential Nest Site	Middlefield Manor, Hinton Way, Stapleford, South Cambridgeshire, Cambridgeshire, East of England, England, CB22 5AN, United Kingdom	0.2 Km
CB420042	Magog Downs Potential Nest Site (PNS 03) No Access information available	Magog Trust, Haverhill Road, Stapleford, South Cambridgeshire, Cambridgeshire, East of England, England, CB22 5BX, United Kingdom	0.6 Km
CB420042	Magog Farm Cottages Buildings of Negligible Potential Nest Site	Wandlebury Country Park, The Roman Road, Babraham, South Cambridgeshire, Cambridgeshire, East of England, England, CB22 3AX, United Kingdom	1.0 Km
No Ref	Copley Hill Farm Business Park Buildings of Negligible Potential Nest Site	Wandlebury to Babraham Research Park, Babraham Road, South Cambridgeshire, Cambridgeshire, East of England, England, CB22 3AF, United Kingdom	1.0 Km
CB363695	Green Hedge Farm Buildings of Moderate Potential Roost Site (PNS 04) (Land Access Agreement not available at time of survey)	Green Hedge Farm Bar Lane, Stapleford, South Cambridgeshire, Cambridgeshire, CB22 5BP	0.5 Km
CB383158	Bury Farm, Occupied Breeding Site (OBS 02) in Nest Box/ Temporary Roost and (TRS 01), within a	Bury Farm, Stapleford, South Cambridgeshire, Cambridgeshire, East of England, England, CB22 5BT, United Kingdom	0.5 km

Land Ref	Type of Record (Roost, Feeding, Nest Site)	Location	Distance From Scheme
	modern barn building and an Active Roost Site (ARS 02) in Tree		
No Ref	Sawston Water treatment works Buildings of Moderate Potential Nest Site (PNS 05) Active Sewage works, landowner not known	Cambridge Road, Sawston, South Cambridgeshire, Cambridgeshire, East of England, England, CB22 3DG, United Kingdom	0.34 Km
CB272621	Buildings of Low Potential Nest Site	North Farm West Way, Dales Manor Business Park, Sawston, South Cambridgeshire, Cambridgeshire, East of England, England, CB22 3DA, United Kingdom	0.20 Km
CB351799	Reedbed Farm Occupied Breeding Site (OBS 03) and Potential Nest Site (PNS 06)	Reed bed Farm Cambridge Road, Babraham, South Cambridgeshire, Cambridgeshire, East of England, England, CB22 3FH, United Kingdom	1.90 Km
CB351799	Chalk Hill Granary High Potential Nest Site (PNS 07) and Active Roost Site (ARS 03)	Chalk hill Granary Cambridge Road, Babraham, South Cambridgeshire, Cambridgeshire, East of England, England, CB22 3FH, United Kingdom	1.34 Km
CB303470	Babraham Hall, Babraham, Cambridge CB22 3AT Building of negligible potential assessed at distance	High Street, Babraham, South Cambridgeshire, Cambridgeshire, East of England, England, CB22 3AG, United Kingdom	0.88 Km
CB303470	St Peters Church Buildings of Moderate Potential Nest Site (PNS 08)	St Peter (Babraham Parish Church), High Street, Babraham, South Cambridgeshire, Cambridgeshire, East of England, England, CB22 3AG, United Kingdom	0.88 Km

Land Ref	Type of Record (Roost, Feeding, Nest Site)	Location	Distance From Scheme
	(No Internal Access granted by diocese)		
CB351799	Cheveley Estates Park Farm Buildings of Low Potential Nest Site	Park Farm Honeysuckle Lane, Babraham, Cambridgeshire, East of England, England, CB22 3AL, United Kingdom	0.55 Km
No Ref	Church Farm Buildings of Negligible Potential Nest Site	Sawston Road, Babraham, South Cambridgeshire, Cambridgeshire, East of England, England, CB22 3AP, United Kingdom	0.25 Km
CB351799	Wych Farm Buildings of Negligible Potential Nest Site	The Wych, High Street, Babraham, South Cambridgeshire, Cambridgeshire, East of England, England, CB22 3AS, United Kingdom	0.39 Km
No Ref	Manor Farm Buildings of Moderate Potential Nest Site (PNS 9) (No Contact details available not held in record)	Manor Farm. Beech Lane, Pampisford, South Cambridgeshire, Cambridgeshire, East of England, England, CB22 3EU, United Kingdom	1.48 Km
No Ref	College Farm Buildings of Moderate Potential Nest Site (PNS 10) (No Contact details available not held in record)	College Farm. Beech Lane, Pampisford, South Cambridgeshire, Cambridgeshire, East of England, England, CB22 3EU, United Kingdom	1.16 Km
No Ref	Home Farm Buildings of Moderate Potential Nest Site (PNS 11) (No Contact details available not held in record)	Home Farm. Beech Lane, Pampisford, South Cambridgeshire, Cambridgeshire, East of England, England, CB22 3EU, United Kingdom	1.1 Km

Land Ref	Type of Record (Roost, Feeding, Nest Site)	Location	Distance From Scheme
CB228028	Waste Recycling Centre Buildings of Negligible Potential Roost Site	A11, Great Wilbraham, South Cambridgeshire, Cambridgeshire, East of England, England, CB21 4HQ, United Kingdom	2.0 Km
CB256418	Camps Farm Buildings of Low Potential Nest Site (PNS 12)	Camps Farm, Little Abington, South Cambridgeshire, Cambridgeshire, East of England, England, United Kingdom CB21 6BL	0.8 Km
No Ref	New Barn Buildings of Negligible Potential Roost Site Barn Conversion	New Barn Hildersham Road, Hildersham, South Cambridgeshire, Cambridgeshire, East of England, England, CB21 6DD, United Kingdom	1.9 Km
No Ref	Rectory Farm Buildings of Temporary Roost (TRS 02)	Rectory Farm Hildersham Road, Hildersham, South Cambridgeshire, Cambridgeshire, East of England, England, CB21 6DD, United Kingdom	2.0 Km

4.3 Tree Assessment

- 4.3.1. All trees within 250m of the scheme were subject to tree climbing surveys for bats and any signs of barn owls would also have been noted.
- 4.3.2. Further to this all trees within the wider 1.5km survey area, as indicated in Appendix B, were assessed. Only one tree on Bury Farm (ARS 02) showed current habitation of barn owls.

4.4 Incidental Findings

- 4.4.1. An incidental sighting of a hunting barn owl was recorded during a bat activity transect undertaken near St Peters Church (TL 50719, 49912) and (CB351799) Cheveley Park Farm. The owl was observed on adjacent farmland by the team of surveyors conducting surveys on separate occasions during the months of April, June, and July.
- 4.4.2. Two deceased barn owls have been recorded during our attendance (CB351799) One recorded at Reedbed Farm (Traffic collision) while undertaking Barn Owl Assessments at Babraham Road, and the second in a paddock off High Street, Babraham (CB351799) (TL 50903, 50051).
- 4.4.3. All incidental locations are included on Appendix B.

5 References

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Appendices

Appendix A –Building Inspection Record

Land Ref	Location	Type of Record (Roost, Feeding, Nest Site)	Evidence Recorded
No Ref	Netherhall Farm "The Cartlodge" Worts Causeway	Occupied Breeding Site (OBS) and (ARS)	<div></div> <p>Netherhall Farm is an 18-century farmstead property with a main farmhouse (Netherhall Grange), converted stable block (the Cart house) and series of out building, the Farmhouse and stables represent little opportunity for barn owls. However, the existing stables and barn are a confirmed breeding site for barn owl and act as an ARS during the non-breeding season. The Resident barn owls have successfully breed in a mitigation nest box located to the south west of the property and with three chicks ringed in April 2019 by Aspect Ecology. The site is therefore considered a confirmed breeding site with the resident barn owl female foraging on and perched in the barn during the survey</p>

Figure 1 Cart-house at Netherhall Farm

			 <p>Figure 2 Internal of Cart house with barn owl evidence. Streaking down eaves and piles of fresh pellets.</p>
			 <p>Figure 3 Netherhall Barn</p>

			 <p>Figure 4 Estate surrounded by good quality (PFH Habitat Type 2) pasture with high foraging habitat</p>
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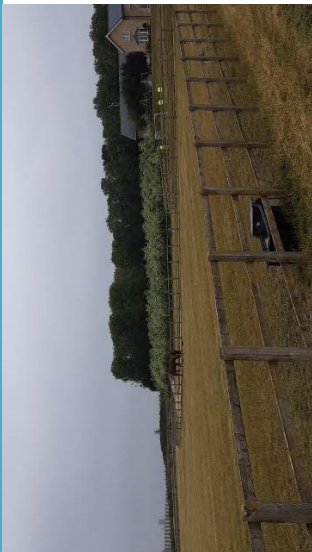
				Figure 5 Barn owl box (OBS) attached to tree on woodland block (TL 47503 55097)
CB224411 No access	Neitherhall Farm "Newbury Farm" and New Heath Magog Farm, Babraham Road, Cherry Hinton, Cambridge, Cambridgeshire, East of England, England, CB22 3AY, United Kingdom	Potential Nest Site (PNS) (No Access), Building of Moderate potential	<u>NO ACCESS</u>	

				<p>Magog Farm has been converted to an upmarket rural shopping complex stocked with fresh local produce plus butchery, delicatessen, and café. Therefore, all the traditional farm buildings have been converted and wholly unsuitable.</p> <p>Figure 6 Converted Agricultural Buildings</p>
CB432544	Magog Farm Shop, Babraham Road, Cherry Hinton, Cambridge, Cambridgeshire, East of England, England, CB22 3AY, United Kingdom	Buildings of Negligible potential		Steel framed building and modern office blocks within former agricultural wooden barns. All newly converted with slate roof and need weather boards.
CB438369	The Gog Magog Business Park, Shelford Bottom, Cambridge, CB22 3AB	Building of Negligible potential		

				Figure 7 Example of newly constructed industrial units
CB368204	The Gog Magog Golf Club, Shelford Bottom, Cambridge, CB22 3AB	Building of Negligible potential		Largely unsuitable habitat with managed lawns and fairway. Only building was the club house a brick-built pan tiled single storey building with not potential features Figure 8 Clubhouse and Fairway

CB241427	White Farm, Addenbrookes-Great Shelford Cycleway, Great Shelford, South Cambridgeshire, Cambridgeshire, East of England, England, CB2 0AX, United Kingdom	Building of Low Potential Nest Site (PNS) (Historic)		Figure 9 Eastern Elevation. A bank barn construction of stone usually used for cattle has been refurbished with a replaced slate roof. With large barn door and hay loft on the eastern elevation. A number of vents present on each elevation but all with intact grills and bar. Barn used as livery for horses within the adjacent paddocks and frequent human use. One of the farmer workers informed the surveyors that barn owls have roosted within the building but not recently
				Figure 10 Gaps to the gable ends where wooden cladding has deteriorated

			 Figure 11 Historic streaking on mid roof truss and beam
			 Figure 12 Old Barn Owl Pellet beneath beam (over +2 years old)

			<p>Figure 13 Suitable Foraging Habitat surrounding the Barns with horse paddocks.</p> <p>No Access</p>	
CB366757 No Access	Grahams Farm, 13, Ganhams Road, Great Shelford, South Cambridgeshire, Cambridgeshire, East of England, England, CB22 5JX, United Kingdom	<p>Building of Negligible Potential Nest Site.</p> <p>Active Construction</p>		<p>Figure 14 Graham's Farm undergoing barn conversion</p>

CB226938 No Access	The Uplands, Hinton Way, Stapleford, South Cambridgeshire, East of England, England, CB22 5AN, United Kingdom	Building of Moderate Potential Nest Site (PNS)	<u>No Access / No Image</u>
CB155784	Middlefield Farm, Hinton Way, Stapleford, South Cambridgeshire, East of England, England, CB22 5AN, United Kingdom	Buildings of Negligible Potential Nest Site	Modern Farm buildings of a prefabricated design with interlocking construction. No Voids or access points 
No Ref	Middlefield Manor, Hinton Way, Stapleford, South Cambridgeshire, East of England, England, CB22 5AN, United Kingdom	Buildings of Negligible Potential Nest Site	Figure 15 Barn on Middlefield Farm No Image Available- Private Residence consisting of large Georgian Manor House, all existing outbuildings converted to separate residential properties
CB420042 No Access	Magog Trust, Haverhill Road, Stapleford, South Cambridgeshire, East of England, England, CB22 5BX, United Kingdom	Magog Downs (Heath Farm)	No Access No Image Available- Private (No Structures or properties)
CB420042	Magog Farm Cottages Wandlebury Country Park, The	Magog Farm Cottages	No Access

No Access	Roman Road, Babraham, South Cambridgeshire, East of England, England, CB22 3AX, United Kingdom	Buildings of Negligible Potential Nest Site	Wooden Clad barns converted to Residential Dwellings, no publicly accessible walkway. Reviewed from Babraham Road Dual Carriageway (significant dispersal Barrier)
No Ref	Babraham Road, South Cambridgeshire, East of England, CB22 3AF, United Kingdom	Copley Hill Farm Business Park Buildings of Negligible Potential Nest Site	The site is dominated by buildings and bare ground associated self-contained business units, all buildings are metal framed prefabricated units with no suitable roosting features and site boarders the main dual carriageway with limited immediate foraging habitat 
CB363695 No Access	Green Hedge Farm Bar Lane, Stapleford, South Cambridgeshire, Cambridgeshire, CB22 5BP	Green Hedge Farm Buildings of Moderate Potential Nest Site (PNS)	Figure 16 Modern Commercial units <u>No Access / No Image</u>
CB383158	Bury Farm, Stapleford, South Cambridgeshire, East of England, England, CB22 5BT, United Kingdom	Bury Farm, Occupied Breeding Site (OBS)/ Active Roost Site (ARS) and (TRS)	The Granary occupies an extensively renovated and extended collection of Victorian farm buildings this was undertaken in 2009 and involve mitigation for barn owls with the exclusion of the existing buildings

			<div><p>Figure 17 Converted Granary Building</p><p>The Bury Farm includes active farm buildings with a number of large metal modern constructed barns and storage units as well as traditional Victorian milking parlour</p></div> <div><p>Figure 18 Open sided milking shed</p><p>One of the modern barns had an open door which must remain open the majority of the summer, this barn showed evidence of roosting with a single pellet under a strut suggesting at least a temporary rest (TRS)</p></div>
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			<div><p>Figure 19 Open Barn to rear of farm</p></div> <div><p>Figure 20 Barn owl pellet within Barn indicating at least TRS</p></div>
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			 <p>Figure 21 Barn owl nest box with active breeding (TL 47550 51507)</p> <p>Resident barn owls have successfully bred in a mitigation nest box located on a mature sycamore on the banks to the rear of the Granary in 2019. The Gamekeeper confirmed current breeding activity as well as an adult barn owl within the box conforming potential breeding on site.</p> <p>Additionally, an active tree roost (ATR) was also identified along the river within a natural cavity on an oak tree at TL 49008 51449</p>
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No Ref			<p>Figure 22 Tree Roost with barn owl roosting within hollow branch</p> <p>Derelict buildings on rear aspect of the sewage works. No access but rear building has open ducts and open roof structure allowing roosting and nesting in these features. Assigned moderate potential for with clear flight lines.</p>
No Access	Cambridge Road, Sawston, South Cambridgeshire, Cambridgeshire, East of England, England, CB22 3DG, United Kingdom	Sawston Water treatment works Buildings of Moderate Potential Nest Site (PNS)	

			 Figure 23 Rear protection of sewage works PFH type 2 is limited to drainage channels and wide margins around the cereal fields
			 Figure 24 Rough grassland along drainage ditch (PFH2)
CB272621	North Farm West Way, Dales Manor Business Park, Sawston, South Cambridgeshire, Cambridgeshire, East of England,	Buildings of Low Potential Roost Site	Modern machinery shed with corrugated steel sections. No roof voids on internal perches. Situated to the north of Manor Business Park in predominately arable / grassland wider landscape.

	England, CB22 3DA, United Kingdom		 Figure 25 Front aspect of North Farm machinery shed
			 Figure 26 Internal view of shed
CB351799	Reed bed Farm Cambridge Road, Babraham, South Cambridgeshire, Cambridgeshire, East of England, England, CB22 3FH, United Kingdom	Reedbed Farm Occupied Breeding Site (OBS 2019)	Late nineteenth century farmsteads buildings reflect more traditional building divide into courtyard plans, focused around focal working yards for cattle, the collection of their manure (extremely important for fertiliser), and other purpose with detached buildings including Linear and L-shaped buildings attached and in-lines.

		<p>Range of buildings include a metal sheet vehicular shed, approximately 12 m in height. Including in this was a tea chest barn owl nest box showing high utilisation.</p>  <p>Figure 27 Previously occupied nest box in 2019</p>  <p>Figure 28 High density of pellets and droppings directly underneath nest box (200+)</p>
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		<p>Additionally, a stable building along the farm road showed current potential as active roost site, this included a dead barn owl (Fig. 29)</p>  <p>Figure 29 Stables used as roost site</p>  <p>Figure 30 Internal view with pellets spread across the floor.</p>
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			<div></div> <div>Figure 31 Dead Juvenile Female (56+ day) and additional chick leg of barn owl found during the inspection of stable building, confirming presence within the building breeding season (concluded to be OBS 2019)</div>
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			<div></div> <div>Figure 32 Managed meadows around property providing immediate foraging habitat</div>
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CB351799	Chalk hill Granary Cambridge Road, Babraham, South Cambridgeshire, East of England, England, CB22 3FH, United Kingdom	Chalk Hill Ganary High Potential Nest Site (PNS)	 <p>Figure 33 Grain Barn at Chalk Hill</p> <p>A traditional Forebay barn with a framed room addition at the gable roof, The Barn has been significantly modernised with a corrugated roof and sheets taking the exterior elevations to rear aspects of the barn. With traditional wooden clad on roadside near grain stores. The stricture is easily accessible by a large open door on both the east and west (Fig. 31).</p> <p>Two barn owls were present and during the building assessment, and considered to be potentially nesting within the grain chute and sift gantry, however, the open nature of the building resulted in a brief view of the barn owls as they exited the open elevations. It was therefore not possible to detect sexual dimorphism by plumage.</p>
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			 <p>Figure 34 Highly abundant droppings and streaking under grain chute</p>
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			 	Figure 35 Fresh pellets under beams (Oily indicating less than a week old) No Access
CB303470 No Access	Babraham Research Campus, Cambridge CB22 3AT	Tudor Manor House Scoped out		

CB303470 (No Internal Access)	St Peter (Babraham Parish Church), High Street, Babraham, South Cambridgeshire, England, CB22 3AG, United Kingdom	St Peters Church Buildings of Moderate Potential Roost Site (PNS)		<p>The church of St Peter is a 12th century fieldstones and rubble-built church which has a chancel, an aisled and clerestoried nave with north and south porches, built around a west tower.</p> <p>The western tower had a number of vents on the Belfry as well as port windows up the staircase.</p> <p>Figure 36 Western belfry</p>
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CB351799	Park Farm Honeysuckle Lane, Babraham, Cambridgeshire, East of England, England, CB22 3AL, United Kingdom	Cheveley Estates Park Farm Buildings of Low Potential Nest Site	Figure 37 Port windows Modern range of drying sheds and grain stores with underfloor drying systems, includes a range of vents and stacks with open sections allowing internal access	

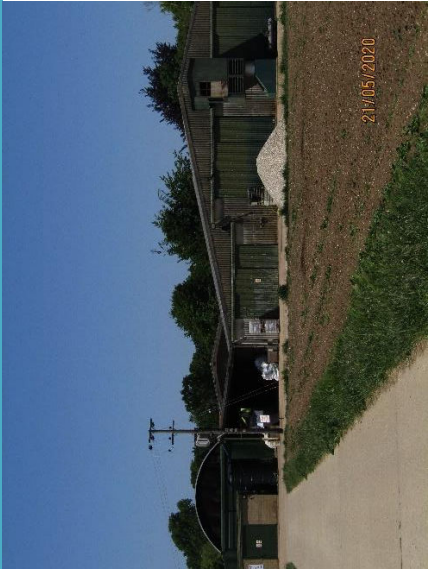
				
			Figure 38 Series of grain driers Features were limited to flume stacks and internal vents for air circulation, no internal beams instead integrated frames are present, but ledges are present to the rear of each building were air flow is ventilated.	

			 Figure 39 Vent stack with exterior flume	
			 Figure 40 Adjacent pasture along river Building converted to modern residential housing	
No Ref	Sawston Road, Babraham, South Cambridgeshire, Cambridgeshire,	Church Farm		

	East of England, England, CB22 3AP, United Kingdom	Buildings of Negligible Potential Nest Site		
CB351799	The Wych, High Street, Babraham, South Cambridgeshire, Cambridgeshire, East of England, England, CB22 3AS, United Kingdom	Wych Farm Buildings of Negligible Potential Nest Site	 Figure 41 Farm Buildings Prefabricated hen house and turkey pens with mid roof duct vents. Tight seems throughout the construction with overlaps and metal sheet.	

				
No Ref No Access	Manor Farm. Beech Lane, Pampisford, South Cambridgeshire, England, CB22 3EU, United Kingdom	Manor Farm Buildings of Moderate Potential Nest Site (PNS) (No Access)	NO ACCESS	
No Ref No Access	College Farm. Beech Lane, Pampisford, South Cambridgeshire, England, CB22 3EU, United Kingdom	College Farm Buildings of Moderate Potential Roost Site (PRS) (No Access)		
No Ref No Access	Home Farm. Beech Lane, Pampisford, South Cambridgeshire, England, CB22 3EU, United Kingdom	Home Farm		

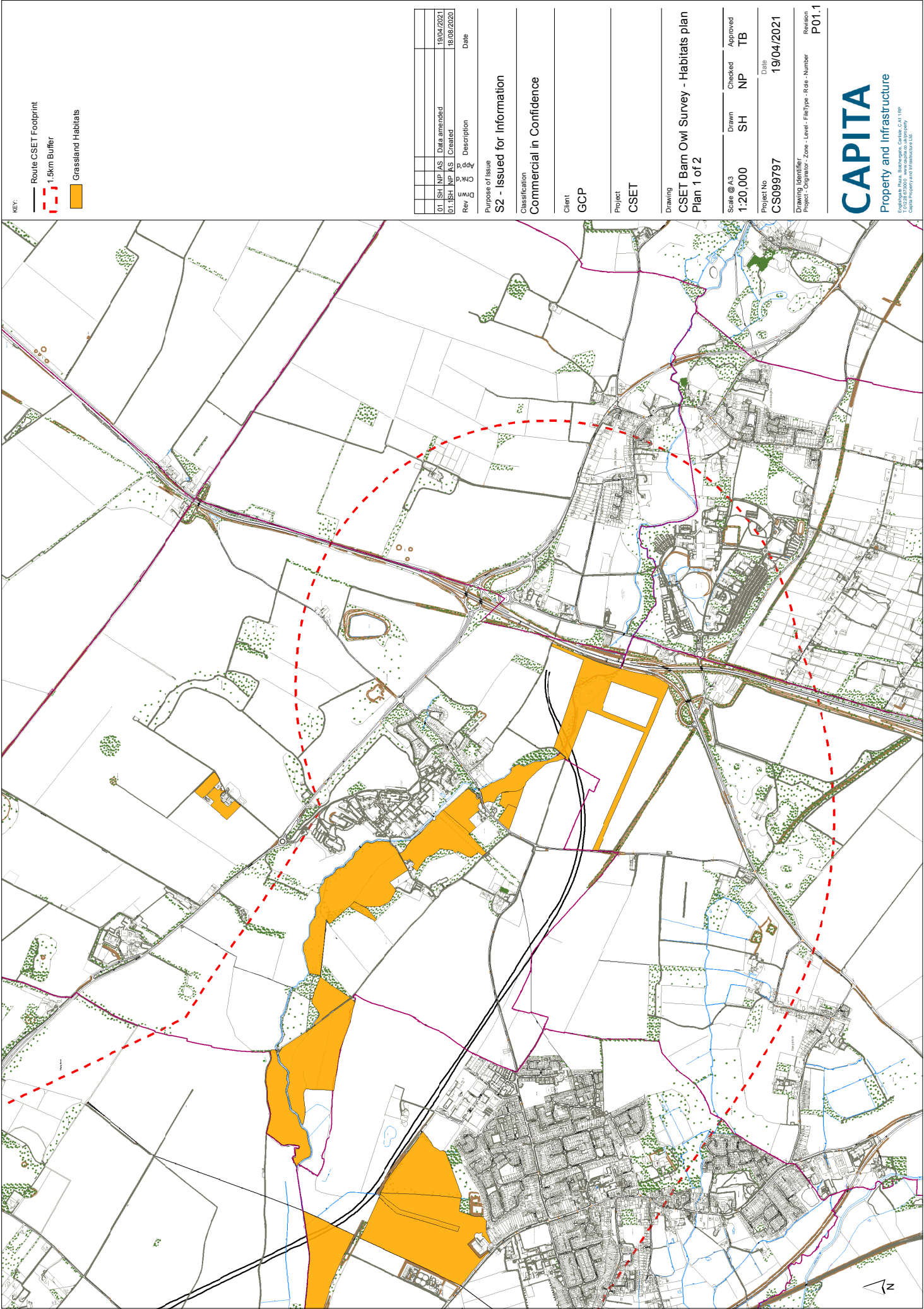
	East of England, England, CB22 3EU, United Kingdom	Buildings of Moderate Potential Nest Site (PNS) (No Access)		
CB228028	A11, Great Wilbraham, South Cambridgeshire, England, CB21 4HQ, United Kingdom	Waste Recycling Centre Buildings of Negligible Potential Roost Site	Large yard with waste segregation and junk yard (no Buildings)	 Figure 42 Waste Centre

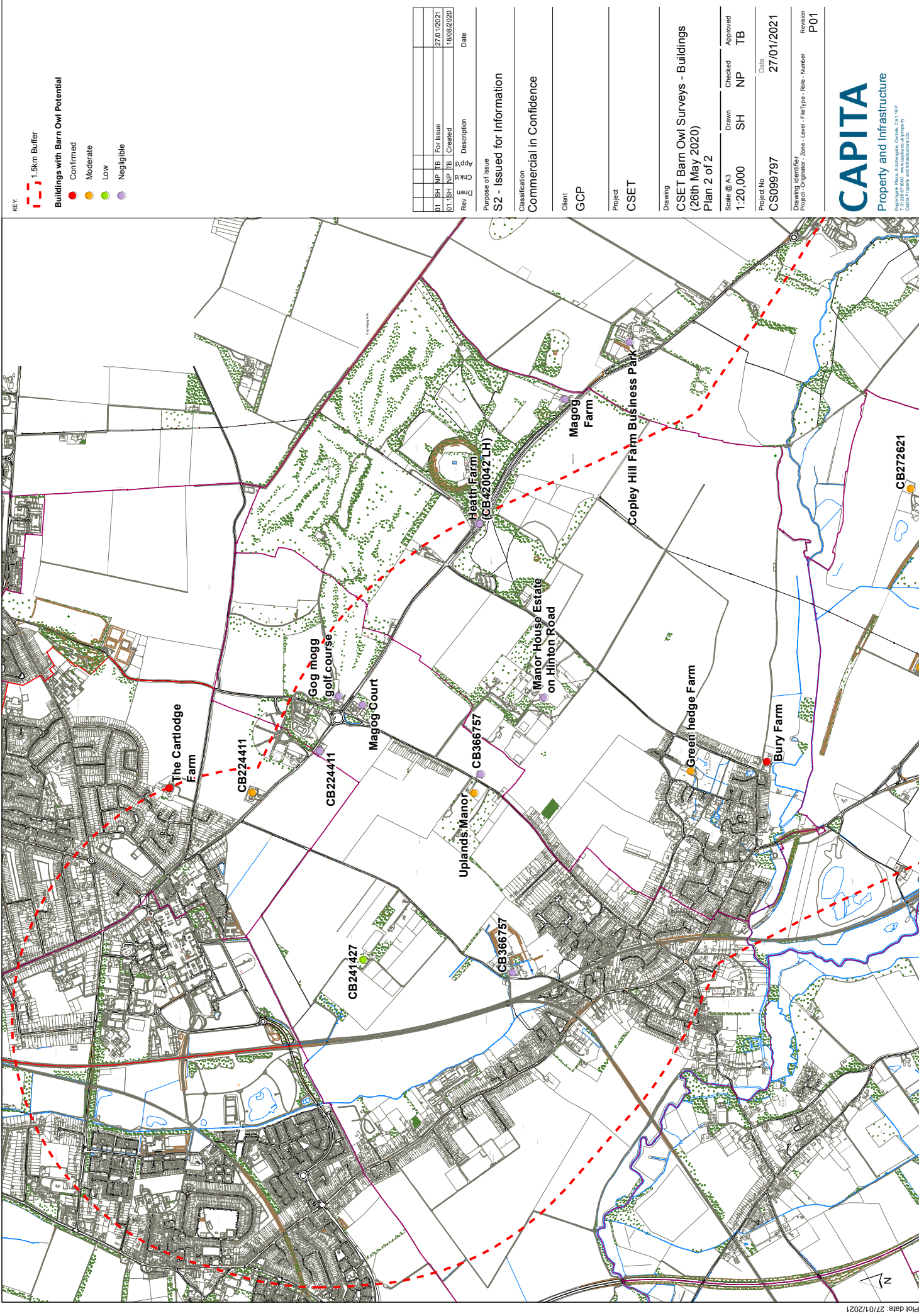
CB256418	Camps Farm, Little Abington, South Cambridgeshire, East of England, England, United Kingdom CB21 6BL	Camps Farm Buildings of Low Potential Nest Site (PNS)		Figure 43 Bay Barn Separation A traditional Forebay barn with a framed room made up of bents and bays. The bay is the space between two bents. A four bent barn forms three bays with a large open door to the yard.
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				The Barn has been totally re-roofed with steel, removing the traditional slate or thatch roofing, mortise and tenon A frame construction suggesting pre 18 th century construction. No evidence of habitation but streaking on beams (age not determined)
No Ref	New Barn Hildersham Road, Hildersham, South Cambridgeshire, Cambridgeshire, East of England, England, CB21 6DD, United Kingdom	New Barn Buildings of Negligible Potential Nest Site Barn Conversion		No Access (residential conversion)

No Ref	Ley Rectory Farm Hildersham Road, Hildersham, South Cambridgeshire, Cambridgeshire, East of England, England, CB21 6DD, United Kingdom	Rectory Farm Buildings of Temporary Roost Site (TRS)	 <p>Figure 44 Modern Farm Buildings Farm estate with number of Residential modifications to 1930 Farmstead. Stone built and timber frames comprise residential properties, each individual land plots with a range of commercial units to the rear. None particularly conducive to barn owl habitation with exterior lighting and metal construction. Only evidence was streaking down post of wooden A farm vehicle store overlooking farmland and walnut orchard (common in Cambridgeshire for wood and oil)</p>
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			 <p>Figure 45 Walnut orchard</p>
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Quality Management

Job No	CS/099797-02		
Project	Cambridgeshire South East Transport (CSET) Phase 2		
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1 Summary

Capita Real Estate & Infrastructure's Ecologists was commissioned by the Greater Cambridgeshire Partnership to undertake studies of kingfisher to inform the Cambridgeshire South East Transport (CSET) Scheme. The surveys have been carried out to provide baseline ecological information for the CSET Project to inform the design and environmental assessment of the proposals.

The kingfisher is a species that is easily missed during general breeding bird and walkover surveys; therefore, a dedicated kingfisher survey was undertaken along the confluence of the River Granta and associated drainage channels. The surveys focussed on the proposed areas of land affected by the five proposed route options of Phase 2 of CSET.

Stage 1 and 2 surveys for kingfisher were undertaken on 26 and 27 May 2020. Stage 1 surveys assess habitat suitability and found two areas (River Granta D2.C and Hobson's Conduit D4) within the scheme that could potentially provide suitable foraging and nesting habitat for kingfisher.

Stage 2 surveys were carried out at the River Granta sections (D1, D2 and D3) on 27 May while Hobson's Conduit (D4) was undertaken on 29 May 2020. All suitable sections were walked on 26 June and 31 July 2020 and identified one potential nesting site and one potential historic nesting site (D4 Hobson's Conduit). Adult kingfishers were observed at one of these locations on at least two occasions throughout May to July.

Evidence would suggest that D1 C/D is part of a breeding territory and works in this section are likely to have a significant effect on continued breeding success. Although no evidence was encountered of nesting it is highly likely within or around these sections.

Other ditches and confluences including D2 and D3 provide foraging habitat and may, with territory expansion, become utilised in future - they are not currently used frequently.

D4, Hobson's Conduit, shows historic potential for nesting, however due to human disturbance, habitation is greatly reduced and limited as part of a wider foraging resource associated with the River Cam and tributaries to the north west through connections with Vicar Brook and Hobson's Brook. Sections of D2.E to J, D3 and D5 are considered unsuitable for kingfisher.

2 Introduction

2.1 Background

- 2.1.1 Capita Real Estate & Infrastructure's Ecologists were commissioned by the Greater Cambridgeshire Partnership in March 2020 to undertake kingfisher surveys. These surveys were undertaken in relation to the development of Phase 2 of the Cambridge South East Transport (CSET) Project, (the 'Scheme').
- 2.1.2 The aim of the report is to summarise the results of the baseline surveys conducted between May to July 2020 to inform the design of the Scheme.

2.2 Project Description and Purpose of the Scheme

- 2.2.1 The Cambridge South East Transport (CSET) Project aims to create a vital link to ease congestion, offer sustainable travel choices, connect communities and support growth in the South East of Cambridge. CSET would form part of the Cambridgeshire Autonomous Metro, providing high quality, frequent and affordable public transport.
- 2.2.2 CSET Phase 2 comprises a segregated public transport route from the A11 (near Brabham) to the Cambridge Biomedical Campus (CBC). This would include new bus route and walking, cycling and equestrian links.

2.3 Legislation and Policy

- 2.3.1 Kingfisher receives protection in the UK as a result of both legislation and planning policies. This section outlines the primary legislation protecting kingfishers. All of the information below is relevant to this report and to the work proposed at the development site.

Legislation

Conservation of Habitats and Species Regulations

- 2.3.2 Under Section 9A – Duties in relation to wild bird habitat - of the Conservation of Habitats and Species Regulations 2017 (as amended) "*without prejudice to regulation of 9(1), the appropriate authority, the nature conservation bodies and, in relation to the marine area, a competent authority must take such steps in the exercise of their functions as they consider appropriate to secure the objective in paragraph (3), so far as lies within their powers*".

2.3.3 (3) The objective is the preservation, maintenance and re-establishment of a sufficient diversity and area of habitat for wild birds in the United Kingdom, including by any means of the upkeep, management and creation of such habitat, as appropriate, having regard to the requirements of Article 2 of the new Wild Birds Directive.

2.3.4 (8) So far as lies within their powers, a competent authority in exercising any function in, or in relation to the United Kingdom, must use all reasonable endeavours to “**avoid any pollution or deterioration of habitats of wild birds except habitats beyond the outer limits of the area to which the Wild Birds Directive applies**”.

Wildlife & Countryside Act 1981 (as amended) Birds and Nesting

2.3.5 The Wildlife & Countryside Act 1981 (as amended) provides protection for kingfishers and most other wild bird species in Britain under which it is an offence to:

- Kill, injure or take any wild bird (subject to certain exceptions)
- Take, damage or destroy a nest while it is being used or being built; and
- Take or destroy the egg of any wild bird.

2.3.6 Kingfishers are also included within Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) under which it is an offence to intentionally or recklessly disturb kingfishers:

- While it is nest building
- At a nest containing eggs
- While the young of any such bird are still dependent.

2.3.7 Kingfishers are found in a wide range of habitat, including moving watercourses such as river's, canals, ditches and still waterbodies such as reservoirs, lakes and ponds. Kingfishers do not 'build' a nest instead a deep tubular burrow is excavated in which eggs are laid between March through to August, typically broods consist of 5-7 eggs with potentially 3 broods throughout the active season, their protection against disturbance is generally considered to start as soon as the first egg is laid and ends when the last young becomes independent at around 37 days.

Purpose of the Legislation

2.3.8 Kingfishers have suffered significant declines due to loss of habitat as well as high mortality rates which has given rise to it being at amber status (Eaton et al. 2009). The habitats on which they rely to breed, and the ecology of their life cycles are compromised by human activities. Engineering and construction activities have the potential to compromise breeding sites, therefore measures are required to be put in place to avoid impacts or compensate and mitigate for those impacts.

Natural Environment and Rural Communities (NERC) Act 2006

2.3.9 Section 40 of the NERC Act places a statutory duty on public bodies, such as local authorities, that “*every public body must, in exercising its functions have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity*”.

Planning Policy

2.3.10 National Planning Policy is set out by the National Planning Policy Framework (NPPF. February 2019) combined with the guidance document Planning for Biodiversity and Geological Conservation: A Guide to Good Practice” (ODPM 2005).

2.3.11 Biodiversity net gains are referenced strongly in terms of developing local planning policy and decision-making for development applications. The environmental test of sustainable development requires planning policy and planning decisions to help to 'improve biodiversity' (paragraph 8c).

2.3.12 References to biodiversity net gain elsewhere in the new NPPF (such as paragraph 175d) support the delivery of biodiversity net gain through sustainable development. Net gain for biodiversity is far more prominent than in the previous NPPF and considers a holistic landscape approach to protect, and enhance biodiversity promoting conservation, restoration and enhancement of Priority Habitats (also listed as Habitats of Principal Importance) identified under the NERC Act 2006), ecological networks and the protection and recovery of Priority Species (also listed as Species of Principal Importance) identified under the NERC Act 2006). The NPPF includes requirements for planning authorities to identifying and pursuing opportunities for securing measurable net gains for biodiversity (paragraph 174b).

2.3.13 Protected sites and species are a material consideration in determining planning applications and therefore all information relating to protected sites and species must be submitted with planning submissions for determination of the whole application. The NPPF 2019 (paragraph 175) which promotes Local Planning Authorities to assess if significant harm would occur to biodiversity and decide accordingly.

Biodiversity Policy

- 2.3.14 Under the Cambridgeshire and Peterborough Biodiversity Group kingfisher are recognised as a Local Biodiversity Action Plan (LBAP) Priority Species.

2.4 Personnel and Quality Assurance

- 2.4.1 All ecologists employed by Capita adopt best practice working methods in undertaking surveys including the Chartered Institute of Ecology and Environmental Management's (CIEEM) code of professional and all fieldwork is carried out in accordance with current best practice guidelines and under the supervision of senior staff and appropriately licensed ecologists.
- 2.4.2 The surveys were led by Senior Ecologist, Neil Page and assisted by Senior Ecologist, Andrea Sarkissian.
- 2.4.3 Neil is a Full Member of CIEEM and has been an Ecological Consultant for over eight years. Neil has a broad range of professional experience in consulting services, including ecosystem management, design, planning, protected species mitigation and environmental research projects this involved surveying and mitigation for kingfisher as part of larger schemes and river improvement works including on the River Ouse, Great Ouse, River Wensum and Yare as well as advising on installation of kingfisher nesting tubes at Catterick Flood Alleviation Scheme for the Environment Agency and Kelham Island Goyt.
- 2.4.4 Andrea Sarkissian is an Associate member of CIEEM and Senior Ecologist with over six years' experience in ecological consultancy. She has been involved in a range of projects from road and rail schemes to school developments and flood alleviation schemes. She has managed, surveyed and reported on a variety of schemes including undertaking kingfisher surveys on The River Caldw as part of the Carlisle Link Road Scheme for Cumbria City Council.

3 Methods

3.1 Survey and Report Objectives

- 3.1.1 The surveys and report were carried out to fulfil the following objectives:
- 1) To identify any habitat suitable of supporting kingfishers
 - 2) To provide an assessment of the likely importance of the site for kingfishers
 - 3) To determine the likely importance of the site for kingfisher and their conservation.

3.2 Data Search

- 3.2.1 Cambridgeshire and Peterborough Environmental Records Centre was consulted as part of the desk study exercise undertaken by Mott MacDonald as part of the Preliminary Assessment and returned records for protected and notable species. Records of kingfisher from within 2km of the Proposed Scheme were collated to support the appraisal.

3.3 Field Survey

Stage 1: Habitat Suitability

- 3.3.1 The kingfisher is a difficult species to survey, due to its low population density, therefore the initial part of the assessment is aimed at qualifying the habitat along the watercourses for its suitability for kingfishers.
- 3.3.2 Sections of 200m around the intersections of the route across watercourses and waterbodies within the proposed route were assessed within the spring period according to their ability to support a territory of kingfishers. In particular, attention was made to the following seven criteria favoured by kingfisher (Buckton *et al* 1997):
- *Water Quality – Pollution affects the availability of fish, the prey of the kingfisher, within the watercourse. High levels of sedimentation of the watercourse may have a negative effect upon the kingfisher's ability to see prey, which would negatively impact its hunting ability;*
 - *River Flow – River flow will affect the levels of dissolved oxygen within the water column, which effects the availability of prey;*

- *Bank Features – The kingfisher uses vertical sandy/earth banks in which to excavate its nesting tunnel. Therefore, if this feature is absent it will impact upon the breeding capability of kingfisher;*
- *Angle of the Bank – Gentle sloping banks make nesting sites more liable to flooding and as such the kingfisher prefers vertical banks.*
- *Agricultural Management of Bankside Habitat – Agricultural practices, such as removal of riparian vegetation can negatively affect the kingfisher, as it reduces the number of available perches available.*
- *Availability of Overhanging Branches – kingfishers use perches to watch for fish and act as territorial marker posts to define their territory.*
- *Human (and dog) Disturbance – kingfishers are reclusive and can be susceptible to disturbance by humans and dogs.*

Based on this criteria suitability each section is assigned a scaled value such as negligible to high attributes and this is indicated on Appendix B.

Stage 2: Field Survey

- 3.3.3 The survey was conducted by an experienced ornithologist with experience in a wide range of bird survey techniques and followed a bespoke transect in which both banks, or in some cases the ditch channel, was walked. The survey focused on the fixed section lengths of 200m allowing focus on evidence, however this was determined by visual accessibility and safety constraints.
- 3.3.4 Any sightings of kingfisher and any likely or actual nesting sites were recorded and mapped as shown on the plan at Appendix B.

3.4 Limitations and Assumptions

- 3.4.1 At the point of commencement of the surveys in March/April 2020 measures relating to the management of the coronavirus pandemic came into force which caused a delay to the start of surveys. This occurred as it was determined between the client and Capita how work could be carried out safely. This led to a delay in starting the surveys until May 2020. Therefore, the usual methodology of conducting habitat suitability surveys from March to April could not be achieved and early broods may not have been recorded. Kingfishers hold territories throughout March to October, as surveys were carried out from May 2020 onwards this constraint is not considered to have affected the reliability of the results outlined in this report.

- 3.4.2 It is not always possible to provide definitive assessments of a species' presence/likely absence at a site and so in the absence of direct evidence, assessments and recommendations are based on the presence of suitable habitat within/adjacent to a site.

Physical Access

- 3.4.3 Owing to the modified sections of the River Granta within sections D1.C and D1.D with weirs, pipelines and runs, large deep pools (>1.5m) have developed through normal geophysical process, as such, due to overriding safety concerns, these sections were not walked in channel in the entirety and vantage point surveys were undertaken during the suitability assessment (approximately 40% had to be surveyed in this fashion).

Land Access

- 3.4.4 Other than the following exceptions, all land within the field survey area was subject to habitat survey:
- CB384639 an 80ha residential development site located to the north of Babraham village, which contains approximately 2km of River Granta corridor and associated tributaries identified Appendix B: Plan 2).

4 Results

4.1 Data Search

- 4.1.1 Data obtained from the CPERC identified 138 records of kingfisher within 2km of the Scheme,
- 4.1.2 No records pertain directly to D1; however, 8 records are associated with the upstream section of the River Granta running through Babraham, this includes territorial behaviour with the closest record been 400m upstream of D1:D.
- 4.1.3 Two records are located within the wider area of D2 and D3 on the River Granta records pertain to 2010 and 2013, stipulating flight over the river only.
- 4.1.4 Two records directly relate to Hobson’s Conduit (D4), one within Nine Wells Nature Reserve and one within D4 surrounds. No descriptions were provided with the record concerning D4 (sighting) and overwintering therefore no distinction between sightings can be made with regards to breeding utilisation, however both relate to the early 2000’s.
- 4.1.5 A further 35 records run beyond the northern boundary of the railway line and therefore kingfisher is likely to occupy the River Cam sections for foraging and commuting which offer similar habitats to the river on the Site and use D4 as a minor resource as part of a wider territory.
- 4.1.6 No records have been obtained in relation to D5.
- 4.1.7 The surveyors conducted habitat suitability assessments for kingfishers at five sites within the study area, as shown in Appendix A.
- 4.1.8 The habitats along the section of the River Granta (D1) at Cheveley Park Farm has potential kingfisher nesting habitats. Nesting potential is limited to some minor exposed banks and to mature trees lining the banks, including veteran willows with woodpecker holes and other cavities. The location has little in the way of disturbance to kingfishers and the water quality is considered to be excellent quality with observable shoals of minnows and sticklebacks. Additionally, the overhang on the entire confluence as well as pipes and associated reservoir provides suitable perching sites for kingfishers.
- 4.1.9 The habitat suitability assessment shows that the section of the River Granta (D2) at Bury Farm has limited nesting habitats due to the shallow bank profile and dense vegetation around banks. Nesting potential is limited to mature trees lining the banks, including veteran willows with woodpecker holes and other cavities. However, there is little in the way of disturbance to kingfishers and the water quality is considered to be good quality with observable shoals of small fish. Additionally, the woodland blocks on the right-side bank provides suitable perching sites for kingfishers.

- 4.1.10 The habitat suitability assessment undertaken at (D3) Trumpington Estate shows that the surrounding environment is not considered suitable for kingfisher. The area is being used as SUDS for housing development and includes artificial drainage lagoons, wildlife ponds and soakaways. Perching sites are available in the form of fencing and hedges only, however, human activity in the area is high due to residents and recreational use of the nearby cycleway leading to the hospital.
- 4.1.11 The habitat suitability assessment carried out at Hobson’s Conduit Ditch (D4) shows the surrounding environment is highly suitable for kingfisher and has good foraging potential. Hedgerows situated on the right-hand bank provide limited perching sites. The water quality at this site is good with an abundance of macro invertebrates and fish species present, including minnow. However, high disturbance in the area due to the nearby footpath, cycleway and railway track reduce the likelihood of nesting kingfisher and it is therefore considered to be low potential.
- 4.1.12 The habitat suitability assessment completed at Granham’s Road Ditch (D5) shows that the area is currently not suitable due to limited features and low potential in general. There is no water present at this location and the area has remained dry since May 2020. This is potentially a result of a dry spring. However, there is no evidence of macrophytes suggesting only seasonal inundation. There are high levels of disturbance in the area which is associated Granham’s Road with nearby traffic movement and noise.

4.2 Field Survey

Kingfisher Sightings and Nest Holes During the Breeding Season Survey

Table 1: Date and Weather conditions of the Kingfisher Surveys

Weather conditions		
Surveys		
	27 May	Dry sunny day with minimal chance of rain, temperature recorded as 13°C, at start of the survey reaching 30°C at midday. Good visibility and weather not considered to have hindered survey
	29 May	Dry sunny day with minimal chance of rain, temperature recorded as 10°C, at start of the survey reaching 22c by end of survey. Good visibility. No constraint to survey
	25 June	Dry sunny conditions throughout survey with minimal cloud cover (<10%) high temperatures from start to finish of survey 20°C to 32°C. no constraint to survey
	31 July	Fairly cloudy at first clearing to warm sunny day with temperatures starting at 20c and reaching 27c by midday showers persisting to give some longer periods of rain at times. Good visibility and weather not considered to have hindered survey

- 4.2.1 Details of sightings and signs of kingfishers are shown in Table 2, below.
- 4.2.2 During the surveys four sightings of kingfishers were made at D1 (Locations C/D); two individuals during the May transect (27/05/2020) and two individuals during the June transect (25/06/20). A single individual was recorded at D2 (Locations B/C) during the July transect (31/07/2020). It is probable these are the same bird, likely a male patrolling its breeding territory on D1 (C/D) and D2 (B/C).
- 4.2.3 A single kingfisher was recorded twice during the May and June surveys undertaken at the River Granta (D1 C/D). Both were observed in flight by the team on two separate occasions during the months of May and June suggesting a breeding territory within D1 (C/D).
- 4.2.4 Anecdotal evidence was provided by the Gamekeeper at Cheveley Park who states that kingfishers have used the pump house location for a number of seasons for nesting (D1: Location D).
- 4.2.5 There was a possible old nesting site on the right-hand bank at D4 Hobson's Conduit which was determined to potentially be historic.
- 4.2.6 Plans showing any notable habitat features and sightings and the sections of river surveyed are shown in Appendix B.

Section of watercourse	Description of Section/Habitat Features							Kingfisher Signs recorded During Surveys		Section Suitable For:
	Water Quality	River Flow	Angle of Bank	Bank Substrate	Bankside Agricultural Improvement	Availability of Overhanging Branches	Level of Disturbance	Kingfisher Sighting	Nest	
D1 River Granta	Clear	Medium	Gentle slope of Approx 40° on both banks	Bare earth and natural rocks exposures	Slightly improved/ Arable	Lots	No signs of recreational disturbance – no PRow on this section	Two kingfishers identified during the survey area D1 C/D (TL 51354 49691) and Dipper (C)	based on Anecdotal evidence Potential	Suitable
D2 River Granta	Clear	Medium	Gentle slope of Approx 40° on both banks	Densely vegetated earth and natural rocks exposures	Slightly improved/ Arable	Lots	Recreational disturbance – from PRow on this section	Single kingfisher observed fishing and perching at D2 (c) (TL 48268 51222)	No	Limited
D3 River Granta	Dry	None	Prefabricated banks with shallow u profile	Grassed banks	Residential and recreational	None	High human disturbance	None Recorded	No	No
D4 Hobson's Conduit	Clear	Slow	Gentle slope of Approx 40° on both banks	Densely vegetated earth and natural rocks exposures	Slightly improved/ Arable	Lots	Recreational disturbance – from PRow on this section	None recorded	Historic	Limited
D5 Granham's Road Ditch	Dry	None	Gentle slope of Approx 40° on both banks	Grassed banks	Slightly improved/ Arable	None	No signs of recreational disturbance – no PRow on this section	None recorded	Limited	No

Table 2: Habitat Characteristics and Kingfisher Sightings along the River Granta and other waterbodies during May - July 2020

4.3 Incidental Findings

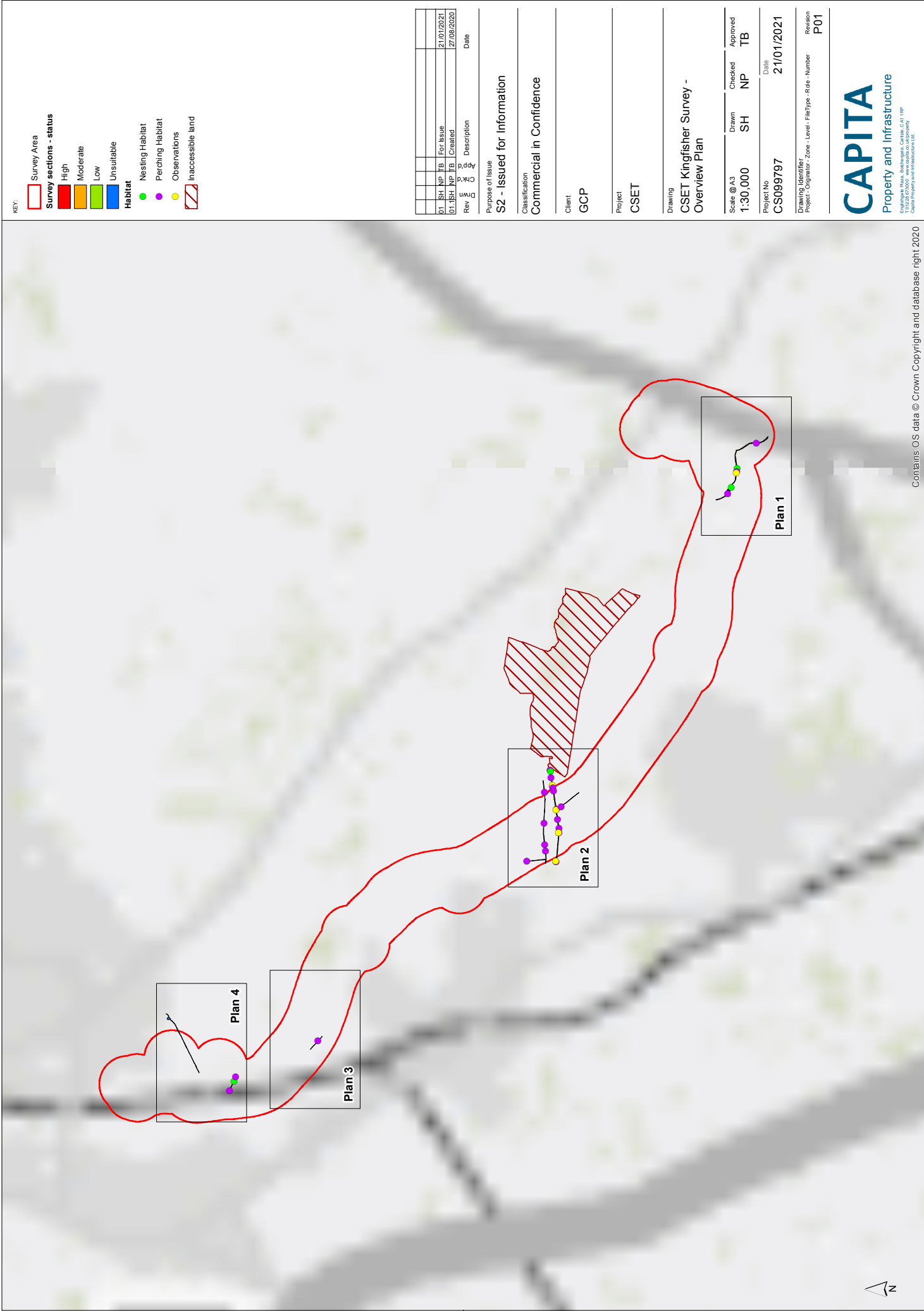
- 4.3.1 A single adult dipper was recorded in flight upstream from the pump station at the River Granta (D1: C) (TL 51354 49691). However, the dipper was not seen again. The dipper was not observed foraging or carrying food.

5 Interpretation of Results

- 5.1.1 Evidence would suggest that D1 C/D on the River Granta is part of a breeding territory and works in this section are likely to have a significant effect on continued breeding success.
- 5.1.2 Although no evidence was observed of nesting it is highly likely within these sections.
- 5.1.3 Other ditches and confluences including D2 and D3 on the River Granta provide foraging habitat and may, with territory expansion, become utilised in future - they are not currently used frequently.
- 5.1.4 D4, Hobson's Conduit, shows historic potential for nesting, however based on human disturbance, habitation is greatly reduced and limited as part of a wider foraging resource associated with the River Cam and tributaries to the north west through connections with Vicar Brook and Hobson's Brook.
- 5.1.5 D5, Graham's Road Ditch is considered unsuitable for kingfisher.

6 References

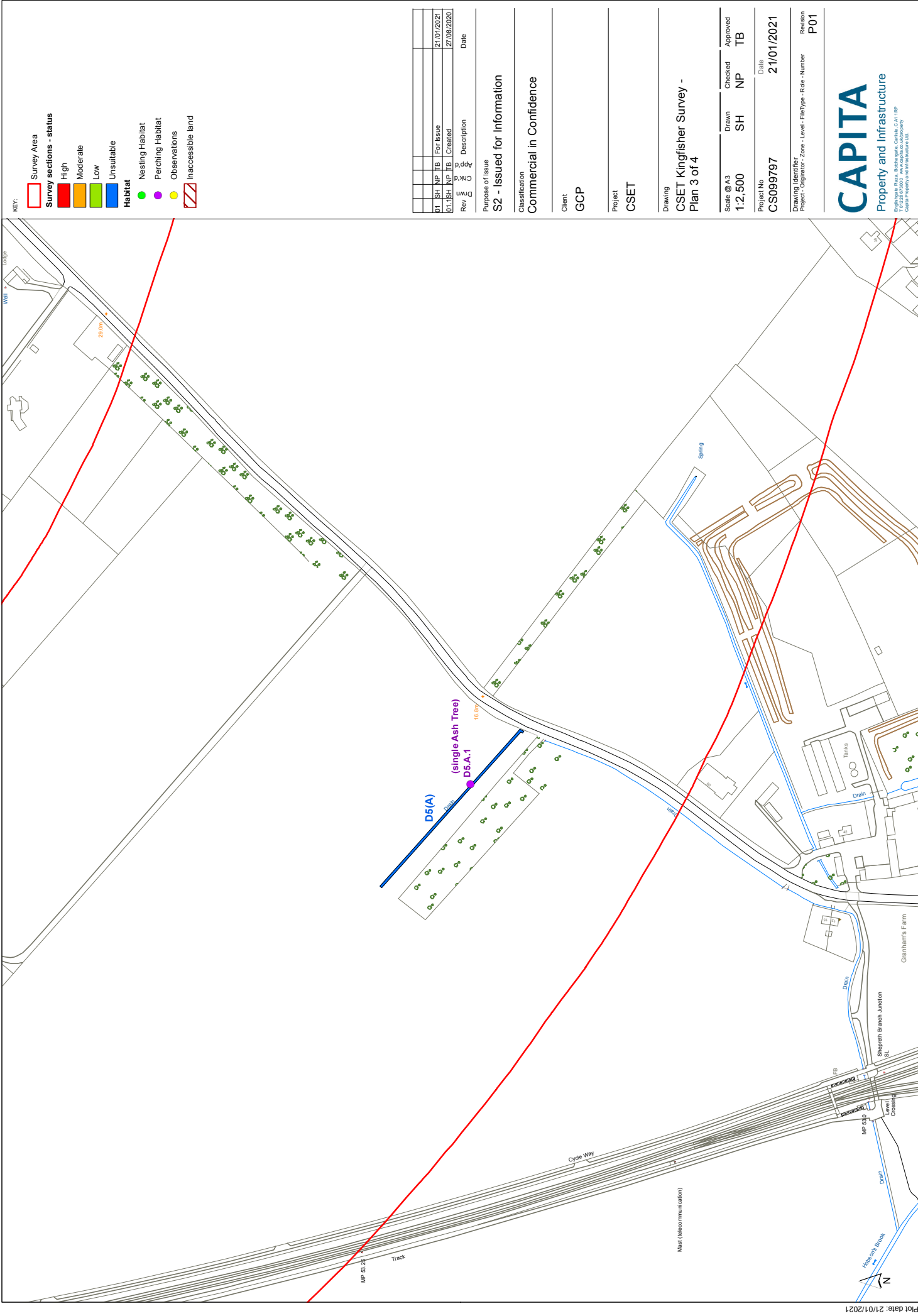
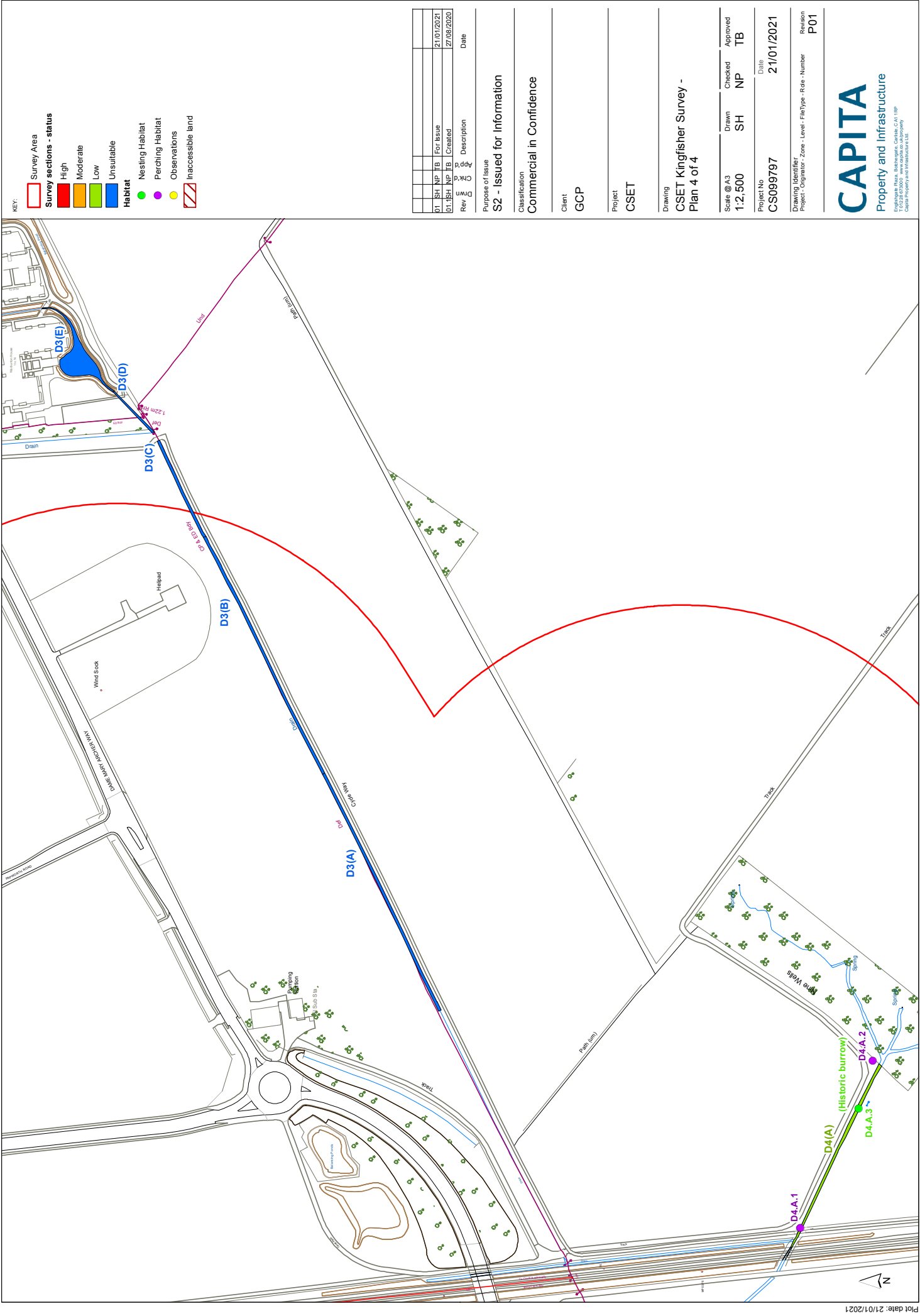
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Plot date: 21/01/2021

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Appendix B – Kingfisher Survey Results



Section D1



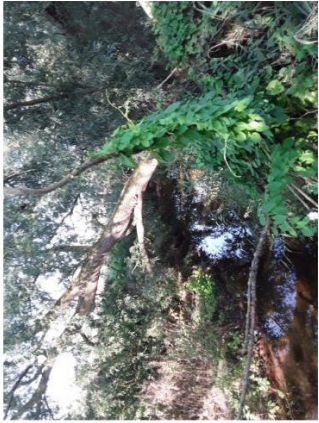
D.1.A Veteran senescence willows at interval spaces along the Left-Hand Bank (LHB), fissures and large limbs (trees up to 3m diameter)



D1.C.1 Woodland block with weirs and dense bank vegetation. Area is optimal habitat for kingfishers with deep pools. No burrows evident but veteran trees and exposed banks with excellent perching habitat



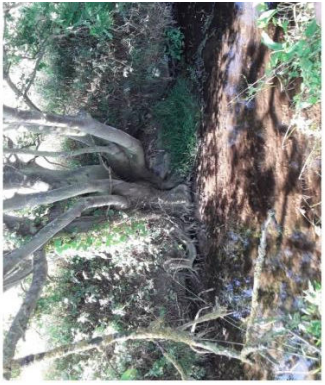
D1.D.1 Same as D1.C.1



D2.A.1: Shallow profiled pool with mature multi-stem willow with overhang over watercourse



D2.A.2. Exposed vertical bank on the Right-Hand Bank(RHB) (High potential nesting habitats) on meander, with bare substrate, no burrows identified



D2.A.3 Exposed root buttress of ash with overhang on shingle run.



D2.A.4 Overhanging mature ash over gravel with kingfisher perched on July transect



D2.A.5: Perch site on large ash on RHB, overhang extends to Left Hand Bank (LHB). Large root buttress at water level for

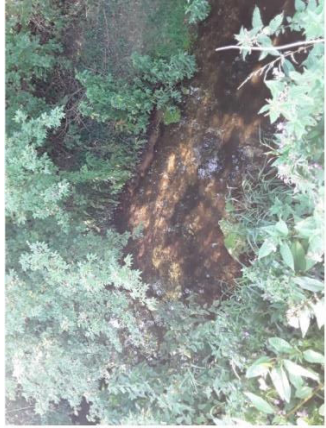


D2.A.6: Perch site on semi mature ash on RHB, overhang extends to LHB.

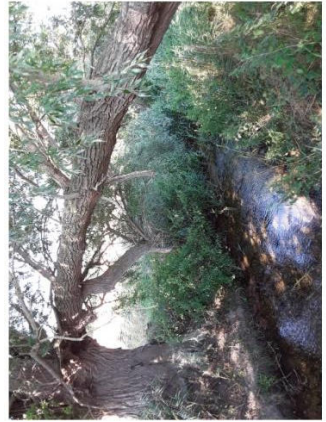
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D2.B.1: Dense overhang of white willow at confluence of River Granta (D2.B and D2.E)



D2.C.1 Field Maple spanning water course from RHB



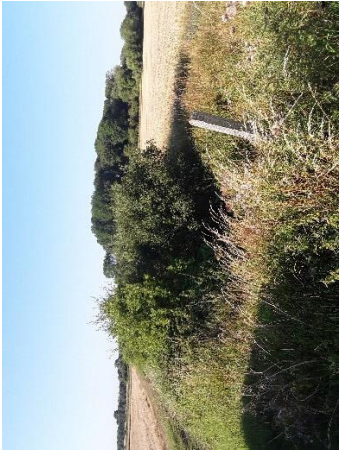
D2.C.2 Large limb of crack willow (kingfisher perched on limb during June Survey)



D2.D.1 Fallen log at the end of transect location (low potential perching platform)



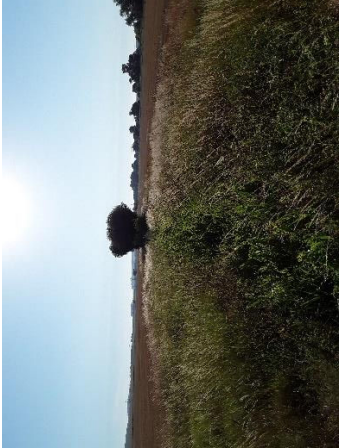
D2.D.1 Early mature multi-stemmed sycamore on RHB



D2.F.1 Fence post on public footpath

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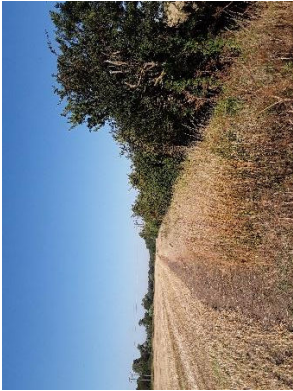
Section D2 (Continued)



D2.G.1: Small stand of willow, offering small perching habitat (limited)



D2.G.2 Small stand, limited perching habitat due to Flailing practice



D2.I.1: Small remnant hedge, offering small perching habitat (limited)



D2.H.1: Small thicket of willow and remnant hedge, offering small perching habitat (limited)

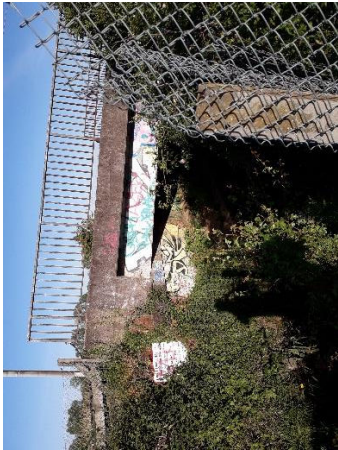
Section D4



D4.A.1 Public foot bridge offering perching habitat



D4.A.2: Burrow on bank (historic)



D4.A.3. Small bridge with handrail offering limited perching habitat

Section D5



D5.A.1 Mature ash on RHB near 100m section

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Greater Cambridgeshire Partnership

Cambridge South East Transport (CSET) Phase 2

Wintering Bird Survey Report



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1 Summary

WSP Real Estate & Infrastructure's (WSP RE&I) Ecologists were commissioned by the Greater Cambridgeshire Partnership (GCP) in August 2022 to undertake wintering bird surveys in relation to the development of the Cambridge South East Transport (CSET) Phase 2.

Four wintering bird surveys (one per month) were undertaken between November 2022 and February 2023 across the proposed scheme areas.

A total of 63 species have been recorded during the surveys including a number of notable species (and some species fall within more than one of the following categories):

- 11 x Red Listed species: corn bunting, fieldfare, greenfinch, grey partridge, house sparrow, lapwing, linnet, mistle thrush, skylark, starling and yellowhammer.
- 21 x Amber Listed species: barnacle goose, black-headed gull, bullfinch, common gull, dunnoek, grey wagtail, kestrel, lesser black-backed gull, mallard, meadow pipit, moorhen, redwing, reed bunting, rook, snipe, song thrush, sparrowhawk, stock dove, teal, woodpigeon and wren.
- 12 x UK Species of Principal Importance: bullfinch, corn bunting, dunnoek, grey partridge, house sparrow, lapwing, linnet, reed bunting, skylark, song thrush, starling and yellowhammer.
- 5 x Schedule 1 species: brambling, fieldfare, kingfisher, red kite and redwing.

The following habitats most notably support wintering birds across the scheme area:

- Arable farmland with varying degrees of field margin, rough uncultivated field corners, mature hedgerows and trees.
- River Granta corridor with flowing water, grassland, scrub and mature and notable veteran willow *Salix* sp. trees.
- The shallow pond, reedbed and grassland in the private estate north of Sawston.
- Pockets and strips of semi-natural and mature plantation woodland and scrub.
- Large reservoir south of the River Granta at the eastern end of the survey area.

Objectives to address impacts to wintering birds should be to avoid wherever possible, and minimise if not, loss of habitats of value to wintering birds. Planting alongside the proposed scheme as well as habitat creation and management in the wider vicinity could provide feeding and sheltering habitat for wintering birds. Further advice can be found in Section 5.4.

2 Introduction

2.1 Background

WSP Real Estate & Infrastructure's (WSP RE&I) Ecologists were commissioned by the Greater Cambridgeshire Partnership (GCP) in August 2022 to undertake wintering bird surveys in relation to the development of the Cambridge South East Transport (CSET) Phase 2.

The aim of the wintering bird surveys is to summarise the results of the surveys conducted between November 2022 and February 2023 to inform the design of the Scheme.

2.2 Project Description and Purpose of the Scheme

The Cambridge South East Transport (CSET) Project aims to create a vital link to ease congestion, offer sustainable travel choices, connect communities, and support growth in the in the South East of Cambridge. CSET will form part of the Cambridgeshire Autonomous Metro, providing high quality, frequent and affordable public transport. CSET Phase 2 comprises a segregated public transport route from the A11 (near Babraham) to the Cambridge Biomedical Campus (CBC). This bus route would include new walking, cycling and equestrian links.

2.3 Legislation and Policy

Duties in Relation to Wild Bird Habitat

Under Section 10 - Duties in relation to wild bird habitat of The Conservation of Habitats and Species Regulations 2017 (as amended), 'without prejudice to regulation 9(1), the appropriate authority, the nature conservation bodies and, in relation to the marine area, a competent authority must take such steps in the exercise of their functions as they consider appropriate to secure the objective in paragraph (3), so far as lies within their powers.

(3) The objective is the preservation, maintenance and re-establishment of a sufficient diversity and area of habitat for wild birds in the United Kingdom, including by means of the upkeep, management and creation of such habitat, as appropriate, having regard to the requirements of Article 2 of the new Wild Birds Directive.

(8) So far as lies within their powers, a competent authority in exercising any function in or in relation to the United Kingdom must use all reasonable endeavours to avoid any pollution or deterioration of habitats of wild birds (except habitats beyond the outer limits of the area to which the new Wild Birds Directive applies)'.

Wild Birds and Nesting

Under the Wildlife & Countryside Act 1981 (as amended) the following are protected.

All wild birds where it is an offence:

- To kill, injure or take any wild bird (subject to certain exceptions)
- To take, damage or destroy a nest whilst it is in use or being built, and
- To take or destroy the egg of any wild bird.

Relating to nesting birds (therefore not directly relating to wintering birds), it is also an offence to disturb any wild bird listed on Schedule 1 of the Wildlife & Countryside Act 1981 (as amended) as follows:

- While it is nest building
- At a nest containing eggs or young, and
- To disturb the dependant young of any such bird.

Natural Environment and Rural Communities (NERC) Act 2006

Section 40 of the NERC Act places a statutory duty on public bodies, such as local authorities, that "every public body must, in exercising its functions have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity".

Section 41 of the NERC Act requires the Secretary of State to draw up a list of Habitats and Species of Principal Importance which should be used to guide decision makers (which include local authorities) in implementing their duty under Section 40. A number of bird species are listed as Species of Principal Importance.

National Planning Policy

National Planning Policy is set out by the National Planning Policy Framework (Ministry of Housing, Communities and Local Government, 2021).

Biodiversity net gains are referenced strongly in terms of developing local planning policy and decision-making for development applications. The environmental test of sustainable development requires planning policy and planning decisions to help to 'improve biodiversity' (paragraph 8c).

References to biodiversity net gain elsewhere in the new NPPF (such as paragraph 174d) support the delivery of biodiversity net gain through sustainable development. Net gain for biodiversity is far more prominent than in the previous NPPF and considers a holistic landscape approach to protect, and enhance biodiversity promoting conservation, restoration and enhancement of Priority Habitats (also listed as Habitats of Principal Importance) identified under the NERC Act 2006), ecological networks and the protection and recovery of Priority Species (also listed as Species of Principal Importance) identified under the NERC Act 2006). The NPPF includes requirements for planning authorities to identifying and pursuing opportunities for securing measurable net gains for biodiversity (paragraph 179b).

Protected sites and species are a material consideration in determining planning applications and therefore all information relating to protected sites and species must be submitted with planning submissions for determination of the whole application. The NPPF (paragraph 180) which promotes Local Planning Authorities to assess if significant harm would occur to biodiversity and decide accordingly.

2.4 Personnel and Quality Assurance

All ecologists employed by WSP REI adopt best practice working methods in undertaking surveys including the Chartered Institute of Ecology and Environmental Management's (CIEEM) code of professional and all fieldwork is carried out in accordance with current best practice guidelines and under the supervision of senior staff and appropriately licensed ecologists where applicable.

The wintering bird surveys were undertaken by Andrea Sarkissian MCIEEM, Principal Ecologist, and Mark Johnson, Ecologist.

Andrea Sarkissian, MCIEEM Principal Ecologist has ten years' experience in bird surveys and is a competent field surveyor. She has undertaken breeding and wintering bird surveys (including WeBS) for a large number of schemes across England and Wales in a variety of habitats including rural farmland, woodland, wetlands, coastal, estuaries and rivers. These projects range from road and rail to housing developments and flood alleviation schemes.

Mark Johnson is an Ecologist with five years' experience in ornithological surveys. He has undertaken a range of bird survey techniques for a range of developments including a flood alleviation scheme in York and on the High Speed Two (HS2) project.

3 Methods

3.1 Survey and Report Objectives

The surveys were carried out to fulfil the following objectives:

1. To provide mapped locations and abundances of wintering birds using the survey area
2. To provide an assessment of the likely importance of the site for wintering birds
3. To identify potential impacts of the Scheme on wintering birds, and
4. To provide initial advice on any necessary mitigation and enhancement proposals which will enable the development to proceed in full compliance with relevant wildlife and nature conservation legislation.

3.2 Desk Study

A previous Factual Wintering Bird Report completed by WYG in 2020 was reviewed as well as the Breeding Bird Survey Report (Capita. 2021), although the latter is not discussed in detail in the interpretation for this report.

A local ecological records search was also obtained from Cambridgeshire and Peterborough Environmental Records Centre (CPERC) on 6 October 2022 relating to protected and notable species and designated sites within a 5km radius of the proposed scheme. Designated sites within 2km are detailed in this report.

Multi-Agency Geographic Information for the Countryside (MAGIC) map was also used to search within 2km for Special Protected Areas and Ramsar sites which are designated largely for the bird species they support.

3.3 Field Survey

The wintering bird surveys detailed in this report were carried out by walking pre-determined transects along the corridor of the proposed scheme and up to approximately 500m either side, broadly following a modified version of Common Bird Census methods (Gillian Gilbert. 2012). The transects were selected to include areas of potential wintering bird habitat which may be impacted by the Scheme based on the design details and access available at the time of commencement.

Four survey visits (one per month) were undertaken between November 2022 and February 2023. All transects were walked once during a survey visit between the hours of sunrise and sunset. High altitude gull migrations were not recorded.

Each transect was walked slowly, scanning (with the aid of binoculars) and listening for birds and recording their locations on large scale maps using standard British Trust for Ornithology (BTO) species codes.

The following information was also recorded:

- Start/finish time
- Weather conditions, and
- Numbers of all birds seen/heard and activity/direction of flight (where appropriate).

A plan showing the survey transect route and red line boundary proposed scheme area used is presented alongside the mapped birds at Appendix A.

3.4 Evaluation Methods

The conservation status of the bird species, as well as its frequency, distribution and abundance are used to evaluate the potential significance of the findings and potential impacts of the Scheme on wintering birds.

3.5 Survey Limitations and Assumptions

Access was not permitted close to the reservoir south of the River Granta during the November and December surveys due to game keeper concerns over the surveyor presence causing game birds to take flight.

Access was also not permitted to the ponds north of Addenbrooke's Road at the northern end of the survey area throughout the surveys and so this area was observed from outside the fence line on the public footpath.

Rain occurred during some surveys which may have affected bird behaviour and distribution during those times. However none of these constraints are deemed significant in terms of affecting subsequent wintering bird survey assessments.

4 Results

4.1 Desk Study

Designated Sites

The statutory and non-statutory designated sites within 2km are shown at Appendix B.

Statutory Sites

One statutory designated site for nature conservation is present within approximately 1km of the central line of the proposed scheme. This is Nine Wells Local Nature Reserve (LNR) which the proposed scheme runs alongside. Nine Wells Local Nature Reserve is a mix of woodland (including mature beech trees), scrub and water east of Trumpington. Its name refers to the number of chalk springs at the site, which are the source of the Hobson's Conduit waterway that flows through Cambridge. The site is used by many migrating birds such as reed warbler *Acrocephalus Scirpaceus*, redwing *Turdus Iliacus*, grey partridge *Perdix perdix*, yellowhammer *Emberiza citrinella*, skylark *Alauda arvensis* and linnet *Linaria cannabina*. Dragonflies and butterflies feed and take shelter in the open grassland areas. Mature spindle *Euonymus europaeus* scrub provides habitat for invertebrates including suitable conditions for the spindle ermine moth *Yponomeuta cagnagella*.

Cambridge City Council manage the woodland and scrub, creating small glades with plenty of regrowth to encourage a diversity of structure and keeping the chalk watercourse clear of shade by regularly cutting back overhanging vegetation. They monitor the water flow all year to ensure levels never reach critical levels, with the aim to eventually reintroduce lost rare invertebrates (Cambridge City Council. 2022).

Further designated sites within approximately 2km are all more than 1km from the proposed scheme, including:

- Cherry Hinton Pit Site of Special Scientific Interest (SSSI)
- Gog Magog Golf Course SSSI
- Sawston Hall Meadows SSSI
- Roman Road SSSI
- Dernford Fen SSSI (citation details '*The area is also noted for its breeding warblers*')
- Sheep's Green and Coe Fen LNR (site information details shrubs and hedges which provide shelter and food for birds), and

- The Beechwoods LNR (*‘A small wood of majestic beeches on a chalk ridge above Cambridge which was planted in the 1840s. Local people planted a new plantation of broad leaved trees in 1992. Wildlife includes white helleborine orchid, beech trees, fungi, great spotted and green woodpeckers, nuthatch, spotted flycatcher. In good beech-mast crop years large flocks of bramblings gather to eat the beech-mast’* (Natural England, 2023)).

Many of the citations and descriptions for these sites do not detail wintering birds specifically, however these and other local habitats are likely to support wintering (and breeding) birds.

Non-Statutory Sites

The following are two non-statutory designated sites present within 2km, which are closest to or within the proposed scheme:

- The River Granta County Wildlife Site which the proposed scheme runs through in the two locations where the river is crossed, is detailed as ‘a major river not grossly modified by pollution or canalisation. Additionally it supports concentrations of mature pollard willows.’ and
- Hobson’s Brook City Wildlife Site which the proposed scheme runs adjacent, detailed as a ‘Chalk stream together with adjacent semi-natural habitat that has not been grossly modified through canalisation and/or poor water quality.’

There are a number of further local/non-statutory designated sites within 2km. The information provided regarding these sites does not include reference to birds, however these and other local habitats are likely to support wintering (and breeding) birds.

Local Ecological Records

The following bird relevant species have been recorded within 5km:

- | | |
|--|--|
| • Barn owl <i>Tyto alba</i> | • House sparrow <i>Passer domesticus</i> |
| • Barnacle goose <i>Branta leucopsis</i> | • Kingfisher <i>Alcedo atthis</i> |
| • Bewick's swan <i>Cygnus columbianus bewickii</i> | • Crane <i>Grus grus</i> |
| • Bittern <i>Botaurus stellaris</i> | • Lapwing <i>Vanellus vanellus</i> |
| • Black redstart <i>Phoenicurus ochruros</i> | • Lesser redpoll <i>Acanthis cabaret</i> |
| • Brambling <i>Fringilla montifringilla</i> | • Lesser spotted woodpecker <i>Dryobates minor</i> |
| • Brent goose <i>Branta bernicla</i> | • Marsh tit <i>Poecile palustris</i> |

- | | |
|--|--|
| • Bullfinch <i>Pyrrhula pyrrhula</i> | • Mediterranean gull <i>Ichthyaetus melanocephalus</i> |
| • Cetti's warbler <i>Cettia cetti</i> | • Merlin <i>Falco columbarius</i> |
| • Corn bunting <i>Emberiza calandra</i> | • Marsh harrier <i>Circus aeruginosus</i> |
| • Crossbill <i>Loxia curvirostra</i> | • Osprey <i>Pandion haliaetus</i> |
| • Curlew <i>Numenius arquata</i> | • Pintail <i>Anas acuta</i> |
| • Dunnock <i>Prunella modularis</i> | • Short-eared owl <i>Asio flammeus</i> |
| • Fieldfare <i>Turdus pilaris</i> | • Skylark <i>Alauda arvensis</i> |
| • Golden plover <i>Pluvialis apricaria</i> | • Tree sparrow <i>Passer montanus</i> |
| • Montagu's harrier <i>Circus pygargus</i> | • Serin <i>Serinus serinus</i> |
| • Dartford warbler <i>Curruca undata</i> | • Redwing <i>Turdus iliacus</i> |
| • Goshawk <i>Accipiter gentilis</i> | • Whooper swan <i>Cygnus cygnus</i> |
| • Grey partridge <i>Perdix perdix</i> | • Willow tit <i>Poecile montanus</i> |
| • Honey-buzzard <i>Pernis apivorus</i> | |

Previous Ecology Reports

The WYG Factual Wintering Bird Report (2020) details ‘A total of 55 bird species were recorded from the surveyed area including six species listed on Schedule 1 of the WCA Act 1981 (as amended), 11 species listed on NERC S41, 14 species BoCC Red Listed, ten species BoCC Amber Listed and 29 species included on the BoCC Green list’.

4.2 Field Survey – Wintering Bird Survey

The dates of the surveys and weather conditions during the surveys are shown in Table 1 below.

Table 4-1 - Survey timings and weather

	Survey Date	Timings	Temp	Cloud cover	Wind (Beaufort)	Rain & visibility
Survey 1 Nov 2022	1 Nov	08:56 – 15:20	15-17°C	80%	3-4	Light rain 9:30-10:35 & moderate showers (stormy) 13:00-13:30
	2 Nov	08:25 – 15:45	11-17°C	40%	2-5	Dry, clear
	3 Nov	09:26 – 12:30	10-14°C	70%	1-2	Light rain until 10:30
Survey 2 Dec 2022	6 Dec	09:05 – 15:45	3-5°C	15%	1	Dry, clear
	7 Dec	08:18 – 14:10	-1-3°C	10%	1	Dry, clear
	8 Dec	09:01 – 11:35	-1-1°C	0%	1-2	Dry, clear
Survey 3 Jan 2023	10 Jan	12:10 – 16:06	8-10°C	95%	4	Dry, clear
	11 Jan	08:47 – 14:45	7-10°C	40%	3-5	Dry, clear
	12 Jan	08:40 – 11:15	11-12°C	100%	4	Occasional very light showers
Survey 4 Feb 2023	7 Feb	08:50 – 15:20	0-5°C	100%	1	Dry, clear
	8 Feb	08:52 – 14:15	-2-2°C	10%	1	Dry, clear
	9 Feb	08:42 – 10:55	3-6°C	60%	1-2	Dry, clear

Table 4-2 - Survey results – total counts per species across all survey areas

Species	Nov	Dec	Jan	Feb	¹ BoCC Red or Amber Listed / Sch 1	UK SPI
Barnacle goose <i>Branta leucopsis</i>	5	-	5	-	Amber	-
Blackbird <i>Turdus merula</i>	9	32	19	28	-	-
Black-headed gull <i>Chroicocephalus ridibundus</i>	51	3	8	1	Amber	-
Blue tit <i>Cyanistes caeruleus</i>	12	22	14	40	-	-
Brambling <i>Fringilla montifringilla</i>	-	-	-	1	Schedule 1	-
Bullfinch <i>Pyrrhula pyrrhula</i>	2	-	-	2	Amber	Yes
Buzzard <i>Buteo buteo</i>	6	3	8	5	-	-
Canada goose <i>Branta canadensis</i>	-	-	5	2	-	-
Carrion crow <i>Corvus corone</i>	17	22	17	23	-	-
Chaffinch <i>Fringilla coelebs</i>	6	72	7	14	-	-
Coal tit <i>Periparus ater</i>	-	-	-	2	-	-
Collared dove <i>Streptopelia decaocto</i>	60	-	2	-	-	-

¹ Red/Amber List on Bird of Conservation Concern 5 List or Wildlife and Countryside Act (1981 as amended) Schedule 1

Species	Nov	Dec	Jan	Feb	¹ BoCC Red or Amber Listed / Sch 1	UK SPI
Common gull <i>Larus canus</i>	-	-	1	-	Amber	-
Cormorant <i>Phalacrocorax carbo</i>	-	-	4	-	-	-
Corn bunting <i>Emberiza calandra</i>	-	-	2	-	Red	Yes
Dunnock <i>Prunella modularis</i>	8	19	1	14	Amber	Yes
Fieldfare <i>Turdus pilaris</i>	-	38	61	141	Schedule 1, Red	-
Goldcrest <i>Regulus regulus</i>	4	2	-	2	-	-
Golden plover <i>Pluvialis apricaria</i>	-	13	-	49	- (*)	-
Goldfinch <i>Carduelis carduelis</i>	26	31	11	32	-	-
Great spotted woodpecker <i>Dendrocopos major</i>	-	3	2	1	-	-
Great tit <i>Parus major</i>	4	9	7	19	-	-
Greenfinch <i>Chloris chloris</i>	4	22	1	10	Red	-
Green woodpecker <i>Picus viridis</i>	4	3	3	5	-	-
Grey heron <i>Ardea cinerea</i>	-	1	2	4	-	-
Grey partridge <i>Perdix perdix</i>	26	53	15	33	Red	Yes

Species	Nov	Dec	Jan	Feb	¹ BoCC Red or Amber Listed / Sch 1	UK SPI
Grey wagtail <i>Motacilla cinerea</i>	2	2	1	-	Amber	-
House sparrow <i>Passer domesticus</i>	18	10	2	15	Red	Yes
Jackdaw <i>Coloeus monedula</i>	202+	30	246	19	-	-
Jay <i>Garrulus glandarius</i>	2	-	1	-	-	-
Kestrel <i>Falco tinnunculus</i>	4	4	-	4	Amber	-
Kingfisher <i>Alcedo atthis</i>	1	-	-	-	Schedule 1	-
Lapwing <i>Vanellus vanellus</i>	3	1	20	1	Red	Yes
Lesser black-backed gull <i>Larus fuscus</i>	6	-	-	-	Amber	-
Linnet <i>Linaria cannabina</i>	8	9	-	-	Red	Yes
Little egret <i>Egretta garzetta</i>	1	2	-	1	-	-
Long-tailed tit <i>Aegithalos caudatus</i>	32	4	6	11	-	-
Magpie <i>Pica pica</i>	30	17	23	21	-	-
Mallard <i>Anas platyrhynchos</i>	75	129	149	50	Amber	-
Meadow pipit <i>Anthus pratensis</i>	33	12	7	2	Amber	-

Species	Nov	Dec	Jan	Feb	¹ BoCC Red or Amber Listed / Sch 1	UK SPI
Mistle thrush <i>Turdus viscivorus</i>	-	1	-	-	Red	-
Moorhen <i>Gallinula chloropus</i>	3	1	-	5	Amber	-
Pheasant <i>Phasianus colchicus</i>	30	40	58	14	-	-
Pied wagtail <i>Motacilla alba</i>	27	9	2	4	-	-
Red kite <i>Milvus milvus</i>	5	3	7	3	Schedule 1	-
Red-legged partridge <i>Alectoris rufa</i>	5	17	13	4	-	-
Redwing <i>Turdus iliacus</i>	15	62	65	6	Schedule 1, Amber	-
Reed Bunting <i>Emberiza schoeniclus</i>	5	8	1	2	Amber	Yes
Robin <i>Erithacus rubecula</i>	25	30	8	25	-	-
Rook <i>Corvus frugilegus</i>	263	74	143	42	Amber	-
Siskin <i>Spinus spinus</i>	-	-	2	-	-	-
Skylark <i>Alauda arvensis</i>	88	149	46	133	Red	Yes
Snipe <i>Gallinago gallinago</i>	-	1	-	-	Amber	-
Song thrush <i>Turdus philomelos</i>	3	7	7	4	Amber	Yes

Species	Nov	Dec	Jan	Feb	¹ BoCC Red or Amber Listed / Sch 1	UK SPI
Sparrowhawk <i>Accipiter nisus</i>	-	2	1	1	Amber	-
Starling <i>Sturnus vulgaris</i>	160	39	-	-	Red	Yes
Stock dove <i>Columba oenas</i>	11	4	21	3	Amber	-
Teal <i>Anas crecca</i>	3	10	-	1	Amber	-
Tufted duck <i>Aythya fuligula</i>	-	-	-	1	-	-
Treecreeper <i>Certhia familiaris</i>	-	-	-	1	-	-
Woodpigeon <i>Columba palumbus</i>	448+	344	352	704+	Amber	-
Wren <i>Troglodytes troglodytes</i>	6	14	8	9	Amber	-
Yellowhammer <i>Emberiza citrinella</i>	24	66	35	25	Red	Yes

*Although golden plover are not Red or Amber listed, they are an Annex I species listed under the Directive on the Conservation of Wild Birds 79/409/EEC (the 'Birds Directive') due to their conservation significance relating to factors such as rarity, vulnerability, or risk of decline.

Habitats used by birds within survey area

Photographs 4-1 to 4-6 show a range of habitats across the survey area which are being used by birds during the wintering season.



Photograph 4-1 - View north-east across River Granta ford, tree lined river corridor including veteran willows, Babraham



Photograph 4-2 - View north-west across arable fields and hedgerows, south of A1307 Cambridge Road, west of A11



Photograph 4-3 - North Farm, north of Sawston village - planted trees, grassland and ponds in private estate with a linear strip of woodland along the southern edge



Photograph 4-4 - River Granta with grassland margins between arable fields, east of Great Shelford village



Photograph 4-5 - Woodland and arable fields east of Granham's Road



Photograph 4-6 - Ditch east of the railway line flowing from springs in Nine Wells Local Nature Reserve (visible in the background)

5 Interpretation and Advice

5.1 Species Summary

A total of 63 species have been recorded during the surveys including a number of notable species (some species fall within more than one of the following categories):

- 11 x Red Listed species: corn bunting, fieldfare, greenfinch, grey partridge, house sparrow, lapwing, linnet, mistle thrush, skylark, starling and yellowhammer.
- 21 x Amber Listed species: barnacle goose, black-headed gull, bullfinch, common gull, dunnoek, grey wagtail, kestrel, lesser black-backed gull, mallard, meadow pipit, moorhen, redwing, reed bunting, rook, snipe, song thrush, sparrowhawk, stock dove, teal, woodpigeon and wren.
- 12 x UK Species of Principal Importance: bullfinch, corn bunting, dunnoek, grey partridge, house sparrow, lapwing, linnet, reed bunting, skylark, song thrush, starling and yellowhammer.
- 5 x Schedule 1 species: brambling, fieldfare, kingfisher, red kite and redwing.

5.2 Comparison with Previous Survey

The species recorded in the WYG 2020 report are largely similar to those recorded during the 2022-2023 surveys detailed in this report although in many cases the peak abundance varies greatly. This is likely at least partly attributed to differences in the transect routes and land access issues as well as natural annual fluctuations in populations. Some key comparisons are as follows.

Differences in Red and Amber listed species include presence of grey wagtail (peak count 2), lapwing (peak count 20), reed bunting (peak count 8), teal (peak count 10) and snipe (peak count 1) during the 2022-2023 surveys, as well as kingfisher (peak count 1 and a Schedule 1 species), with greater peak counts of fieldfare, redwing, grey partridge, greenfinch, mallard, red kite, skylark, woodpigeon and yellowhammer also recorded during this latest survey.

The surveys reported by WYG in 2020 including presence of the following species not encountered during these latest surveys: woodcock *Scolopax rusticola* (peak count 1), green sandpiper *Tringa ochropus* (peak count 2), greylag goose *Anser anser* (peak count 3) and marsh tit *Poecile palustris* (peak count 1). Greater peak counts were also recorded of linnet compared to the latest dataset.

5.3 Interpretation of Results

The arable farmland with varying degrees of field margin, mature hedgerows and trees across the scheme supports Red Listed species including skylark, grey partridge, fieldfare and yellowhammer with occasional linnet and corn bunting along with Amber Listed: barnacle goose (in one particular location), fieldfare, kestrel, lapwing, rook, meadow pipit, stock dove and large numbers of woodpigeon. Golden plover which is an Annex I species have also been recorded in winter sown cereal fields on several occasions. Large areas of the survey route encompassed winter sown cereal crops. Fields with wide margins and rough uncultivated field corners such as those south of the River Granta at Stapleford are particularly well used by passerines such as yellowhammer.

The River Granta corridor with flowing water, grassland, scrub and mature and notable veteran willow trees along its banks which runs through the survey area in two locations, supports a range of passerines as well as mallard, teal and little egret. The shallow pond and reedbed in the private estate north of Sawston also support occasional teal, snipe, little egret and regular reed bunting, with regular green woodpecker in surrounding fields.

Pockets and strips of semi-natural and mature plantation woodland and scrub across the survey area additionally support Red Listed bullfinch and Amber Listed: song thrush, dunnock, bullfinch, sparrowhawk and wren.

The large reservoir south of the River Granta at the eastern end of the survey area supports occasional Canada goose, cormorant and tufted duck with regular high numbers of mallard, although anecdotal evidence suggests the number of mallards are inflated by game bird estate practices involving recreational shooting.

5.4 Advice

Avoid wherever possible, and minimise if not, loss of habitats of value to wintering birds including arable farmland with wide field margins, mature hedgerows with trees and rough uncultivated field corners as well as the densely vegetated River Granta corridor including a number of veteran willow trees and areas of woodland, rough grassland and scrub across the scheme area.

Mitigation could include provision of screening vegetation along the proposed scheme and in immediate surrounding areas around the scheme with locally native trees, woodland with understorey planting, hedgerows and orchards/fruit trees (allowed to grow dense and retain fruit through the winter), dense scrub and flower-rich grassland which will minimise noise and lighting effects on wider habitats and provide some potential habitat for birds such as dunnock, bullfinch, wren, song thrush, fieldfare and redwing. Scrub, tree and woodland planting should not take place in areas where birds requiring open landscapes have been recorded wintering or breeding (Capita. 2021).

Wider landowner engagement in areas away from the immediate effects of the scheme could provide wider benefits including to farmland bird species in the vicinity of the scheme,

such as the provision of wider flower-rich grassland margins around arable land which are protected from herbicides or insecticides (cut on a rotational basis in the autumn every one to three years), filling in hedgerow gaps and creating new (ideally laid) native, species-rich hedgerows (in areas not used by ground nesting birds) with wide, undisturbed grassland margins either side, with management to encourage thick hedgerow growth and cutting in late winter on a rotational three yearly cycle. Maintain some as short, thick hedgerows in areas with frequent yellowhammers and grey partridge and taller with hedgerow trees in areas with song thrush.

Provision of cereal crops, or other wild bird seed mixes, left unharvested over winter in arable field pockets and corners and beetle bank grass strips within fields greater than 16 hectares would also provide vital food and shelter for wintering birds, along with creation of new waterbodies in suitable areas with varied deep areas and sloping, shallow margins with wide grassland and flower-rich buffers around them.

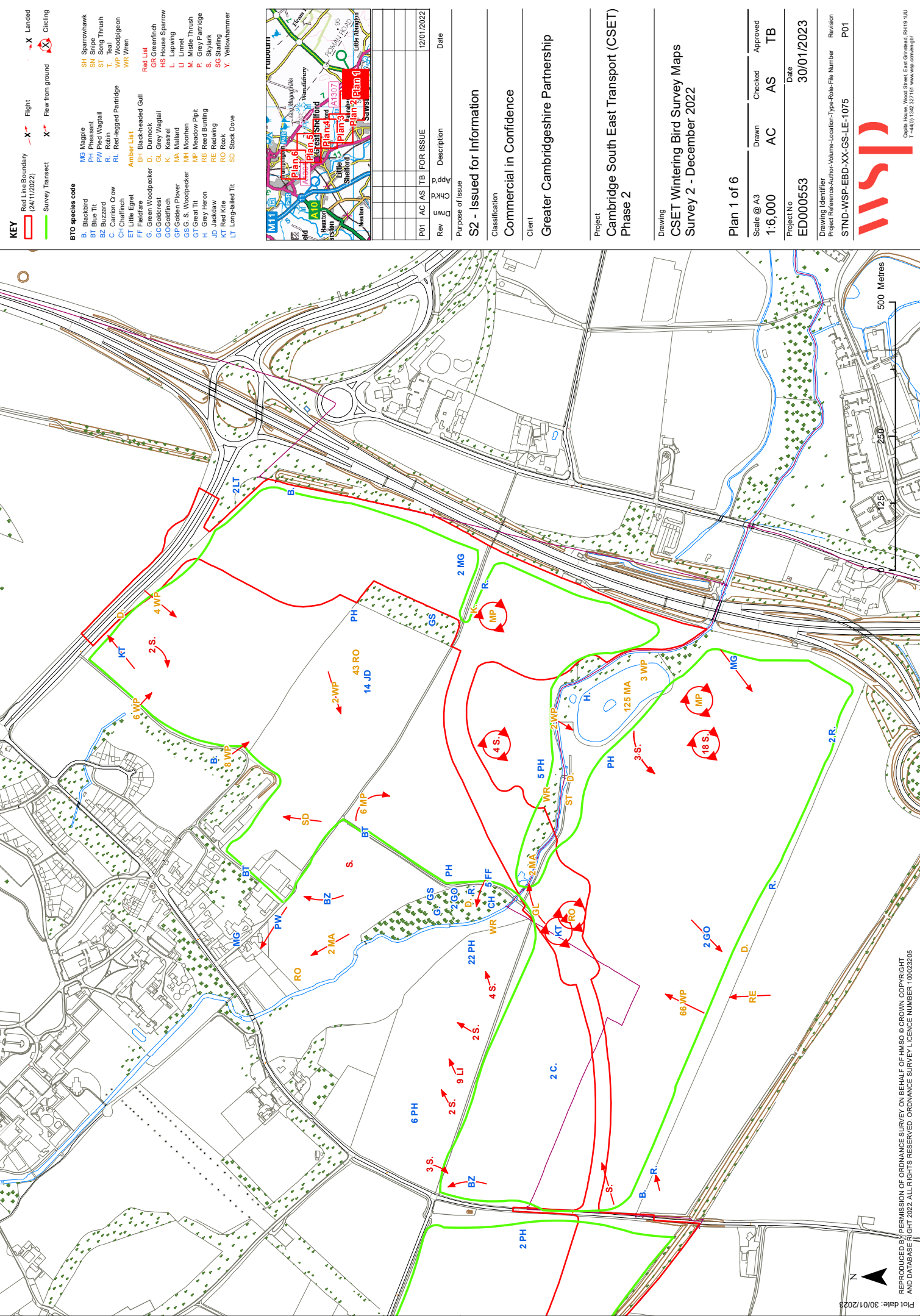
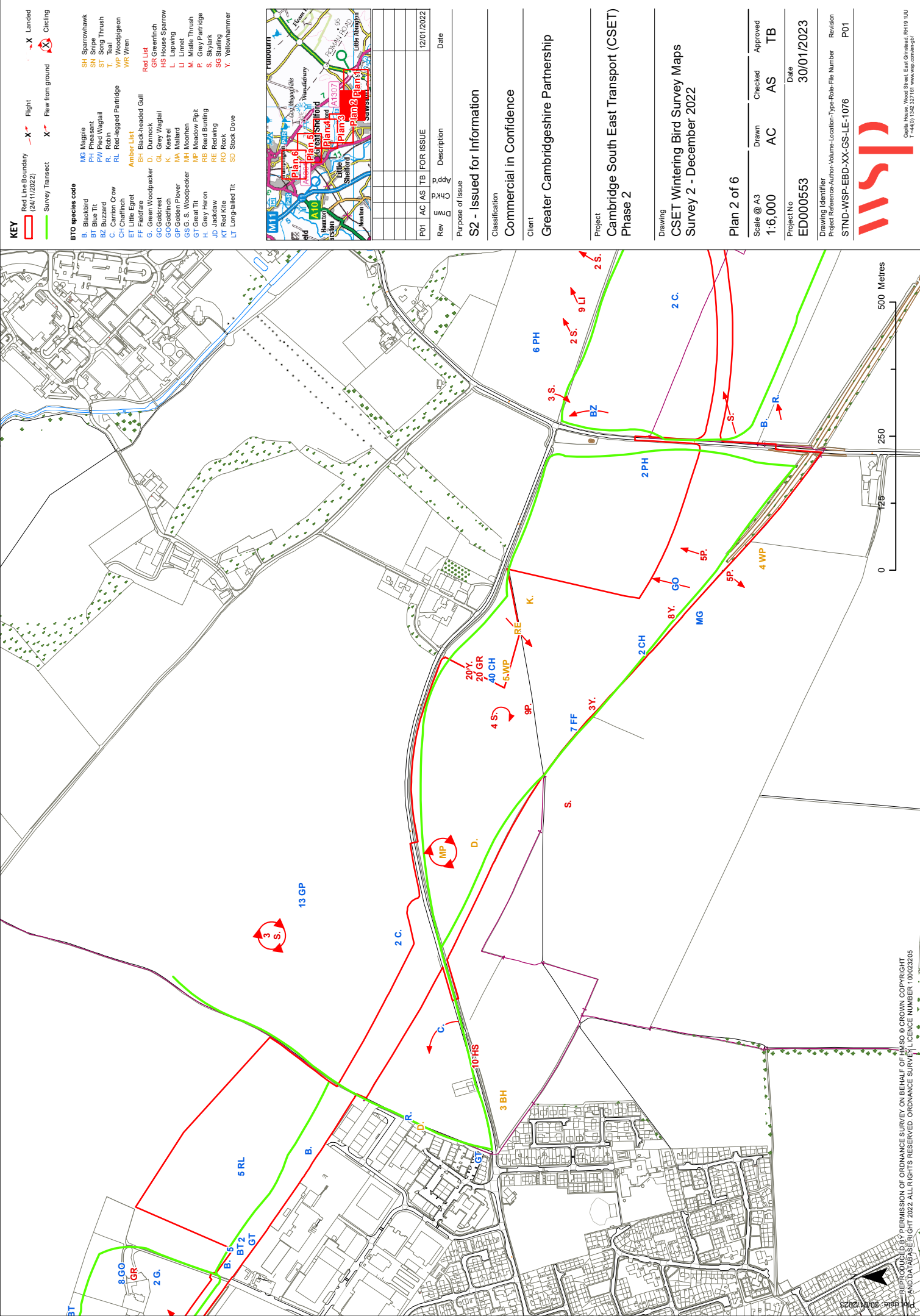
All created habitats should be designed and managed under a management plan created with input from a suitably experienced ecologist, with long term management for biodiversity benefit secured through planning permission.

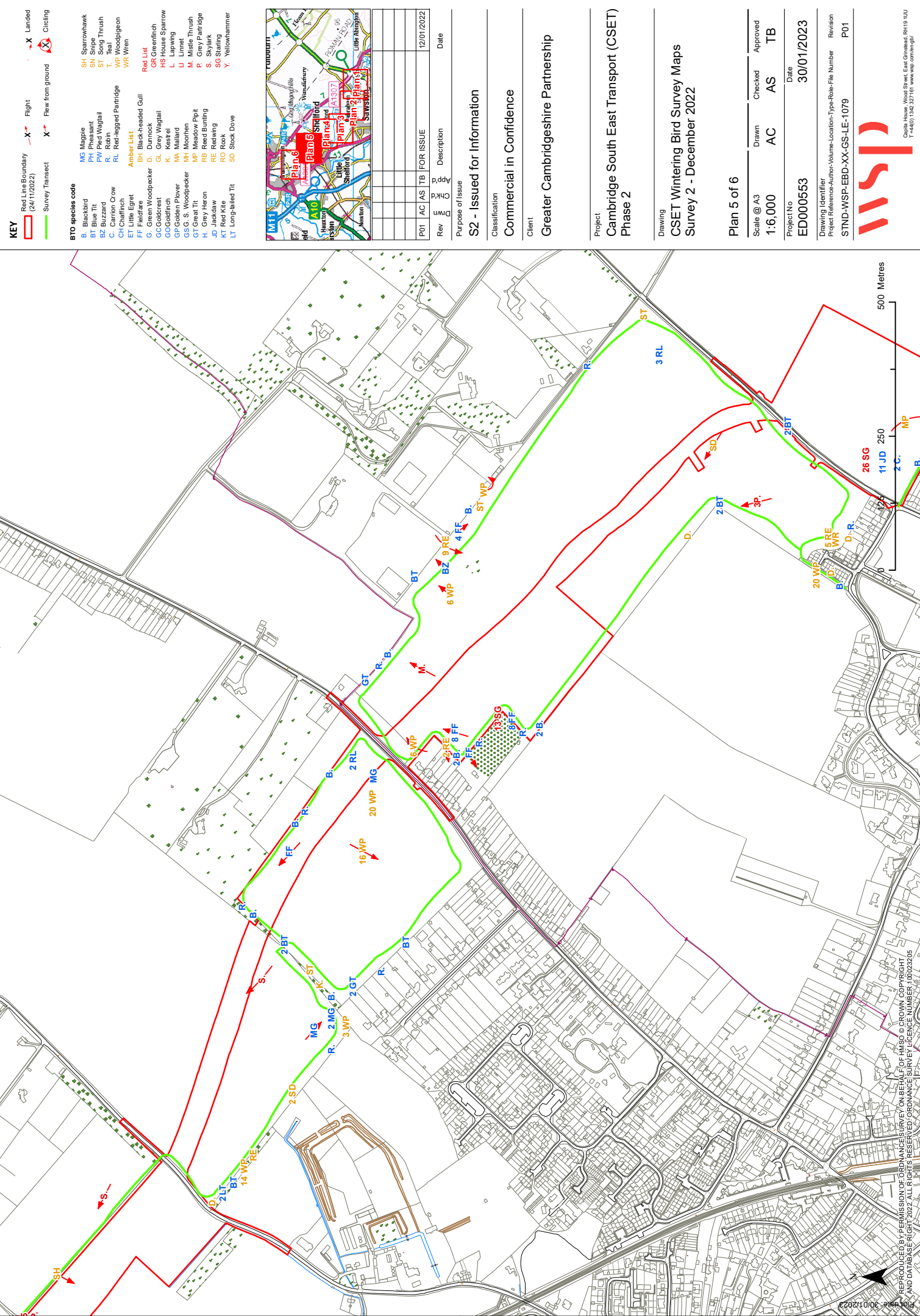
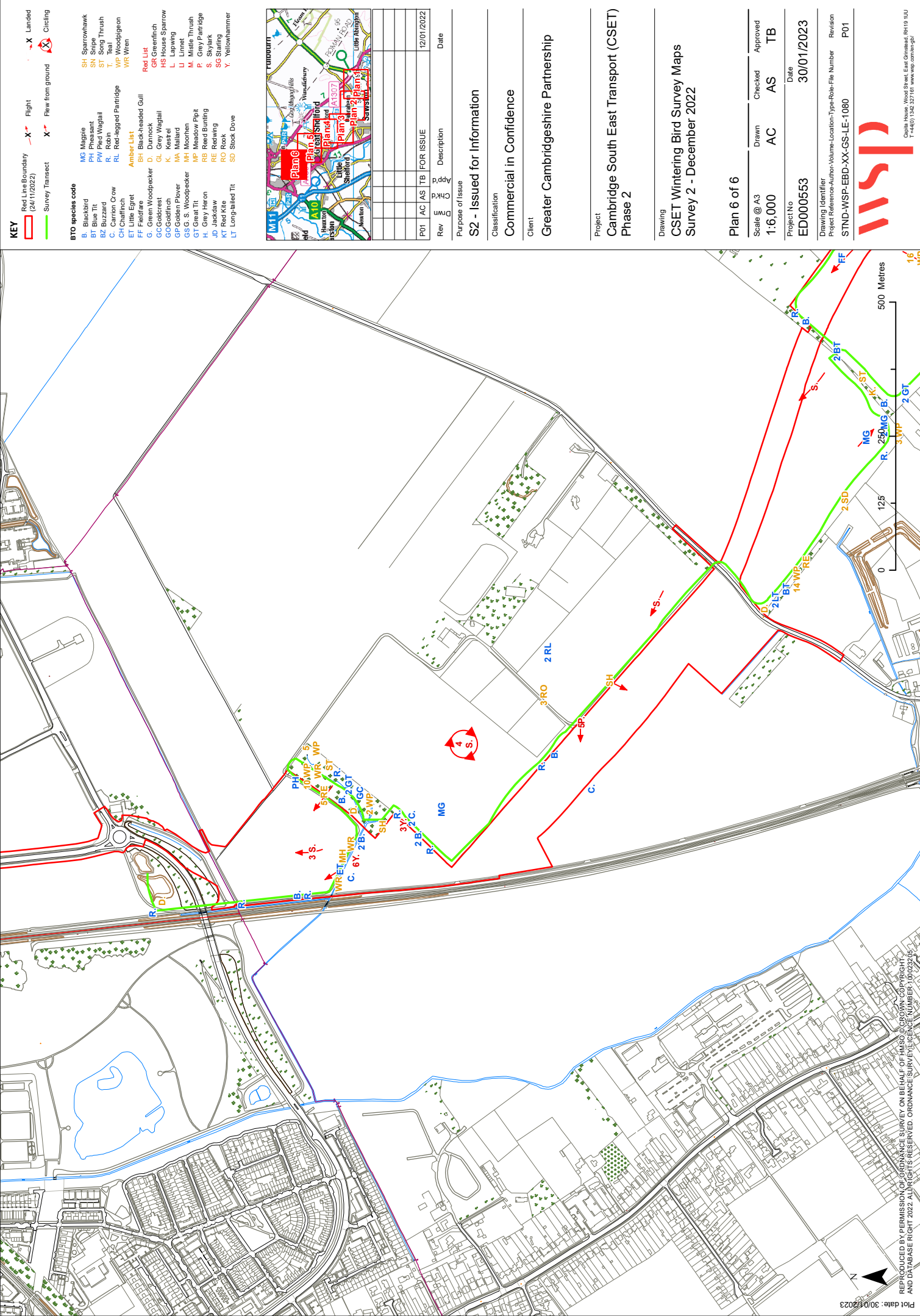
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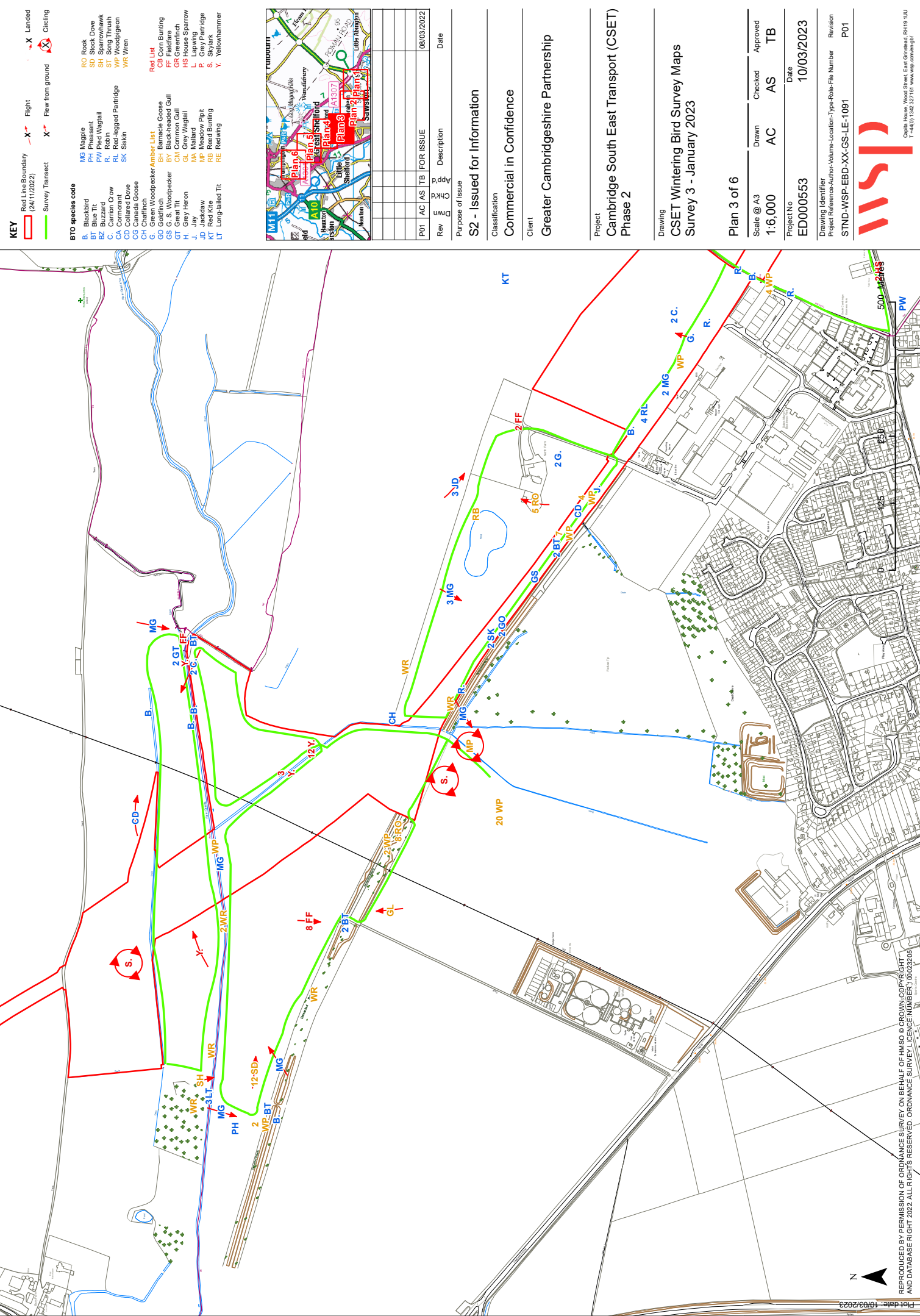
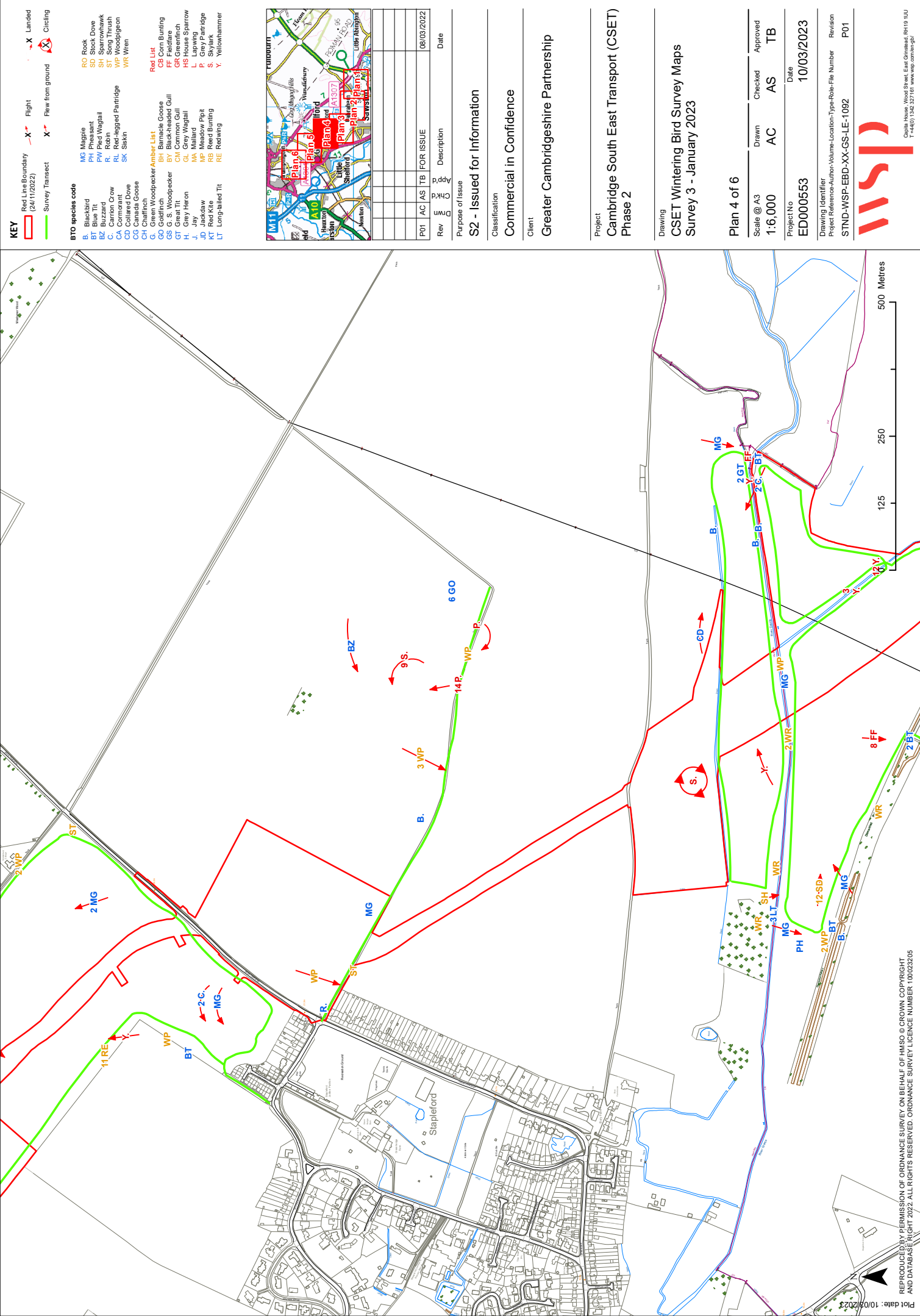
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Appendix A

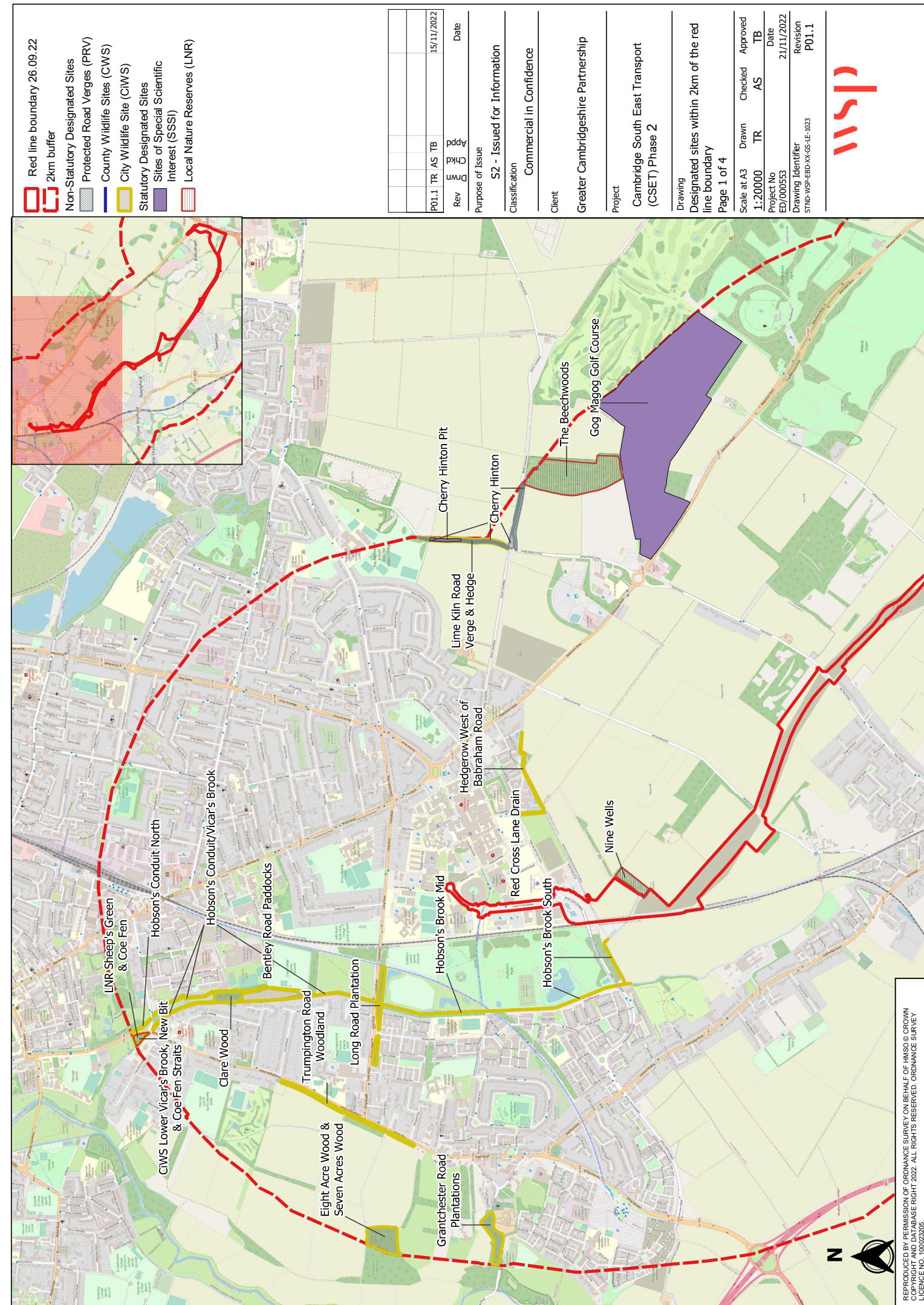
Wintering Bird Survey Results







Designated Sites Within 2km





Greater Cambridgeshire Partnership

Cambridge South East Transport (CSET) Phase 2

Barn Owl Survey Report



Greater Cambridgeshire Partnership

Cambridge South East Transport (CSET) Phase 2

Barn Owl Survey Report

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Summary



1 Summary

WSP Real Estate & Infrastructure's Ecologists were commissioned by the Greater Cambridgeshire Partnership to undertake studies of Barn Owl in order to inform the Cambridgeshire Southeast Transport (CSET) Scheme.

The surveys have been carried out in 2022 to provide an update of baseline ecological information gathered in 2020, CSET is now moving forward towards planning determination and as such update surveys have been commissioned to supplement information submitted with the planning application to update the baseline.

A desk study was undertaken to identify habitats suitable for barn owl within the area of the preferred option. Inspection of aerial photography identified habitat features including 30 properties with agricultural buildings potentially suitable for use by this species.

Stage 1 and 2 barn owl surveys were previously undertaken between May and June 2020 and identified 12 Potential Nest Sites (PNS). Stage 3 verification surveys were carried out in June 2020 and identified: three Occupied Breeding Sites (OBS), three Active Roost Sites (ARS), two Temporary Roost Sites (TRS) and 12 PNS. Stage 1 habitat suitability assessments and Stage 3 nest verification checks were undertaken in August 2022 provide up-to-date information due to the time elapsed since the initial surveys and a planning submission anticipated to be submitted in 2023.

The Stage 1 reassessment in 2022 noted changes around agricultural management such as land set aside for crop rotation and also the clearance of certain sites for development including CB224411 Netherhall – Newbury Farm and Uplands House which were subject to demolition in early 2021.

Currently it is estimated that the habitats within the scheme provide a foraging resource for at least two pairs of breeding barn owls based on the suitable habitats and size of the scheme.

Stage 2 assessments reviewed areas of previous interest including the high potential buildings or areas not previously accessible.

Stage 3 surveys in 2022 found three ARS, three OBS (two of which are historic) and three TRS. Only six PNS have been identified, as opposed to 12 identified in 2020; the reduction is likely to be due to changes in land use or more access been granted.

2

Introduction

2 Introduction

2.1 Background

WSP Real Estate & Infrastructure's Ecologists were commissioned by the Greater Cambridgeshire Partnership in July 2022 to undertake updated barn owl surveys. These surveys were undertaken in relation to the development of Phase 2 of the Cambridge South East Transport (CSET) Project.

The scheme has previously been surveyed for barn owl in 2020. The aim of this report is to summarise the results of the update surveys conducted in August 2022 and to highlight any changes in condition or likely impacts assessed during the 2020 surveys.

2.2 Project Description and Purpose of the Scheme

- The Scheme forms part of the wider Transport Strategy for Cambridge and South Cambridgeshire (TSCSC) was adopted by Cambridgeshire County Council on 4 March 2014 and ensures that local councils plan together for sustainable growth and continued economic prosperity in the area.
- The strategy will provide a plan to cope with the rising population and increase in demand on our travel network by shifting people from cars to other means of travel including cycling, walking and public transport. The strategy contains details of the major schemes proposed in the short, medium, and longer term. The programme will be regularly reviewed given the extent of growth and development in the area.
- The Cambridge Southeast Transport (CSET) Project aims to create a vital link to ease congestion, offer sustainable travel choices, connect communities, and support growth in the Southeast of Cambridge. CSET would form part of the Cambridgeshire Autonomous Metro, providing high quality, frequent and affordable public transport.
- CSET Phase 2 comprises a segregated public transport route from the A11 (near Brabham) to the Cambridge Biomedical Campus (CBC). This would include new bus route and walking, cycling and equestrian links.
- The CSET project offers better public transport and active travel options for the A1307 and A1301 area. It would improve journey times, reliability and link communities and employment sites in the area southeast of Cambridge.

2.3 Legislation and Policy

The barn owl receives protection in the UK as a result of both legislation and planning policies. This section outlines the primary legislation protecting barn owls. All of the information below is relevant to this report and to the work proposed at the development site.

2.3.1 Legislation

Conservation of Habitats and Species Regulations 2017 (as amended) – Duties in Relation to Wild Bird Habitat

Under section 9A – Duties in relation to wild bird habitat – of the Conservation of Habitats and Species Regulations 2017 (as amended) “*without prejudice to regulation of 9(1), the appropriate authority, the nature conservation bodies and, in relation to the marine area, a competent authority must take such steps in the exercise of their functions as they consider appropriate to secure the objective in paragraph (3), so far as lies within their powers.*

(3) The objective is the preservation, maintenance and re-establishment of a sufficient diversity and area of habitat for wild birds in the United Kingdom, including by any means of the upkeep, management and creation of such habitat, as appropriate, having regard to the requirements of Article 2 of the new Wild Birds Directive.

(8) So far as lies within their powers, a competent authority in exercising any function in, or in relation to the United Kingdom, must use all reasonable endeavours to avoid any pollution or deterioration of habitats of wild birds except habitats beyond the outer limits of the area to which the Wild Birds Directive applies). ”

Wildlife & Countryside Act 1981 (as amended)

The Wildlife & Countryside Act 1981 (as amended) provides protection for barn owls and most other wild bird species in Britain. Under the Wildlife and Countryside Act 1981 (as amended) it is an offence to:

- Kill, injure, or take any wild bird (subject to certain exceptions)
- Take, damage, or destroy a nest while it is being used or being built; and
- Take or destroy the egg of any wild bird.

Barn owls are included within Schedule 1 of the Wildlife and Countryside Act 1981 (as amended), which gives additional protection to the species from disturbance. under which it is an offence to disturb a barn owl intentionally or recklessly:

- While it is nest building
- At a nest containing eggs
- While the young of any such bird are still dependent.

Barn owls do not ‘build’ a nest and so their protection against disturbance is generally considered to start as soon as the first egg is laid and ends when the last young become independent (or dies).

Purpose of the Legislation

The purpose of the legislation is to maintain and restore barn owl populations within their natural range. This implies that the habitats on which they rely to breed, and the ecology of their life cycles should not be compromised by human activities. Where activities have the potential to compromise barn owl breeding sites, measures are required to be put in place to avoid impacts or compensate and mitigate for those impacts.

Natural Environment and Rural Communities (NERC) Act 2006

- Section 40 of the NERC Act places a statutory duty on public bodies, such as local authorities, that “every public body must, in exercising its functions have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity”.
- Section 41 of the NERC Act requires the Secretary of State to draw up a list of Habitats and Species of Principal Importance which should be used to guide decision makers (which include local authorities) in implementing their duty under Section 40.

2.3.2 Planning Policy

National Planning Policy is set out by the National Planning Policy Framework (NPPF February 2019) combined with the guidance document Planning for Biodiversity and Geological Conservation: A Guide to Good Practice” (ODPM 2005).

Biodiversity net gains are referenced strongly in terms of developing local planning policy and decision-making for development applications. The environmental test of sustainable development requires planning policy and planning decisions to help to ‘improve biodiversity’ (paragraph 8c).

References to biodiversity net gain elsewhere in the new NPPF (such as paragraph 175d) support the delivery of biodiversity net gain through sustainable development. Net gain for biodiversity is far more prominent than in the previous NPPF and considers a holistic landscape approach to protect, and enhance biodiversity promoting conservation, restoration and enhancement of Priority Habitats (also listed as Habitats of Principal Importance) identified under the NERC Act 2006, ecological networks and the protection and recovery of Priority Species (also listed as Species of Principal Importance) identified under the NERC Act 2006. The NPPF includes requirements for planning authorities to identifying and pursuing opportunities for securing measurable net gains for biodiversity (paragraph 174b).

Protected sites and species are a material consideration in determining planning applications and therefore all information relating to protected sites and species must be submitted with planning submissions for determination of the whole application. The NPPF (paragraph 175) which promotes Local Planning Authorities to assess if significant harm would occur to biodiversity and decide accordingly.

2.3.3 Biodiversity Policy

Biodiversity 2020 (DEFRA. 2011) is England’s current biodiversity strategy that builds on the Natural Environment White Paper and sets out the strategic direction for biodiversity policy for the next decade on land (including rivers and lakes) and at sea. It has the overarching mission to halt overall biodiversity loss, support healthy well-functioning ecosystems and establish coherent ecological networks, with more and better places for nature for the benefit of wildlife and people.

The UKBAP arose out the initial biodiversity action following the 1992 Convention of Biological Diversity and developed a list of Priority Habitats and Species that required conservation action. The UKBAP has since been superseded by national strategies, but these lists have been given a statutory backing under Section 41 of the NERC Act which requires the Secretary of State to draw up a list of Habitats and Species of Principal Importance which should be used to guide decision-makers (which include local authorities) in implementing their duty under Section 40 of the NERC Act 2006.

Barn owl are not listed as a UK Species of Principal Importance.

Local Biodiversity Policy

Barn owls are listed under the Cambridgeshire and Peterborough Biodiversity Action Plan (CPBAP 2020), this action plan actively promote enhancement and recovery for this species.

2.4 Personnel and Quality Assurance

All ecologists employed by WSP adopt best practice working methods in undertaking surveys including the Chartered Institute of Ecology and Environmental Management’s (CIEEM) code of professional conduct and all fieldwork is carried out in accordance with current best practice guidelines and under the supervision of senior staff and appropriately licensed ecologists.

The barn owl surveys were led by Principal Ecologist, Neil Page and assisted by Ecologist, Mark Johnson.

Neil is a Full Member of CIEEM and has been an Ecological Consultant for over 18 years. Neil has a broad range of professional experience in consulting services, including ecosystem management, design, planning, protected species mitigation and environmental research projects. Neil is an experienced surveyor for barn owl and holds a survey licence [CL29/00089] throughout England (all Counties).



Mark Johnson has five years' experience and is a competent field surveyor specialising in ornithological surveys with him undertaking a range of common bird census techniques for a range of developments including national infrastructure projects (specifically High Speed Two).

3

Methods



3 Methods

3.1 Survey and Report Objectives

The surveys and report were carried out to fulfil the following objectives.

1. To present a summary of local barn owl records
2. To identify locations of suitable foraging habitat and breeding/roosting sites up to 1.5km of the survey area
3. To provide an assessment of the likely importance of the site for barn owl.

3.2 Desk-Based Study

Biological Records obtained from Cambridgeshire and Peterborough Environmental Records Centre (CPERC) in October 2022 covering a 5 km radius of the scheme and other third-party records relating to 5 km radius of the scheme were reviewed.

A desk-based study was undertaken prior to the field survey to obtain additional information relevant to barn owl recorded within 1.5 km of the Scheme. The following online resources were consulted:

- Google Earth
- Cambridge City Council's Planning Portal.

3.3 Field Survey

Surveys were undertaken to identify the location of suitable foraging habitat and breeding/roosting sites within 1.5 km of the survey area. Surveys followed the three-step approach outlined in the barn owl *Tyto alba* Survey Methodology and Techniques for use in Ecological Assessment (Shawyer. 2011). The three steps are as follows:

- Stage 1 – Desk review of previous information from the 2020 desk study and field scoping survey to identify suitable areas of foraging habitat and dispersal habitat (Table 3-1). This was reviewed in 2022 as part of the re-assessment process.
- Stage 2 – Aims to identify Occupied Breeding Sites (OBS), Active Roost Sites (ARS), Temporary Rest Sites (TRS), Potential Nesting Sites (PNS) and potential feeding and dispersal habitat (Table 3-2 and 3-3).
- Stage Three – Aims to verify nesting sites identified in Stage 2. Undertake nest verification surveys within the breeding season to determine if these are actively used by barn owls.

Landowners were questioned to ascertain if they were aware of barn owls utilising their property at any time of year, but particularly during the breeding season.

Barn owl surveys included a broad visual assessment of buildings and other features present within the survey area that were identified as having potential to support barn owls.

Those buildings identified as requiring further assessment were subject to internal survey first (Stage 3). Locations within buildings with the highest suitability for supporting barn owls were surveyed first in order to reduce disturbance (as the highest possible likelihood of the species nesting). If no nest was found, surveyors then checked the next most likely place for nesting, gradually working towards the least likely nesting place. Whilst moving through the site surveyor makes a note of any signs of occupation including feathers, pellets (which are aged), and droppings.

Suitable access features to buildings or other structures were taken to be those with a minimum of 75 x 75 mm and an unobstructed approach (Ramsden.1995).

3.3.1 Habitat Assessment

Patches of Potential Foraging Habitat (PFH), primarily rough grassland, were assessed according to their ability to support populations of small mammals, in particular, field vole *Microtus agrestis* on which barn owl feed. Grassland was recorded as identified in Appendix A.

Table 3-1 – Habitat Potential Categories (Shawyer. 2011)

Potential	Qualifying Characteristics
Type 1	Habitat was considered to be ideal foraging habitat where it was characterised by tall tussocky grass with a thick (70-100 mm) litter laying within which small mammals and reptiles could burrow.
Type 2	Habitats are sub-optimal for field voles but of value to barn owls in areas with sporadic Type 1 habitats. This type of semi-improved grassland is characterised by having a more even-height sward but provides some potential for foraging barn owls.
Type 3	Poorer habitat for field voles and as such is of lower value to barn owls. These improved grasslands are characterised by having a homogeneous sward and being heavily grazed by sheep, horses or cattle or used for public amenity.

Table 3-2 – Roost and Nesting Site Potential Characteristics

Potential	Qualifying Characteristics
Negligible	<p>Built structures – no features that could be used by barn owl as roosts or nesting sites.</p> <p>Trees – no features that could be used by roosting barn owl (i.e., an immature tree with no crevices).</p> <p>Landscape character – lack of suitable foraging habitat within vicinity of the site and no connections to semi-natural habitats. Site located in a highly urbanised environment.</p>
Low	<p>Built structures – small number of potential roosting features that could be used by barn owl.</p> <p>Trees – no visible features within tree structure (such as crevices, holes in trunk, hollow limbs, and splits), however, it may have hollows or hidden features.</p> <p>Landscape character – small amount of isolated habitat on site providing a potential foraging resource, i.e. a single tree or rock faces. May be linked to a small amount of adjacent semi-natural habitat surrounding the site, however, there are no distinct links to habitat further away.</p>
Moderate	<p>Built structures – several potential roosting features within build structure.</p> <p>Trees – several potential roosting features that could be used by roosting barn owl, such as crevices, holes in trunk, cavities, and split trunks.</p> <p>Landscape character – suitable foraging habitat on site (such as pasture and hedgerows) with linear links to wider landscape.</p>
High	<p>Built structures – building offers a significant number of roosting features including holes in the wall, gaps in vents, open doors and hatches, access points into large roof void, and potential roosting features such as exposed ledges and beams.</p> <p>Trees – several potential roosting features that could be used by roosting barn owl including large cavities, crevices, hollow limbs, sheltered holes with obvious droppings, pellets and feathers around or under features.</p> <p>Landscape character – the site habitat is of high quality for foraging and includes features with high prey presence, such as pasture, woodland edge, field margins, hedgerows, and rough grassland. The site is well connected within the landscape to surrounding habitats and has strong linear features (such as watercourses, hedgerows and tree lines extending from the site to the wider landscape).</p>

3.3.2 Tree Assessments

Tree Assessment surveys involve an initial walkover of the site during daylight hours to broadly define those trees of potential value.

Tree surveys are undertaken in early spring, winter, and autumn when trees are devoid of foliage and crevices, voids and cavities can easily be seen and observed. Special note was given to trees of significant age, structure and stature with cavities with a 75 x75 millimetres (mm) aperture, as well as location in prominent open positions or edge of woodland habitat with clear flight lines, or younger specimens which have been subject to windblown damage, lightning strike or significant early onset of decay. Trees with encapsulated hollows and dry sheltered locations were given special consideration as these are highly suitable for barn owls due to their poor insulation and plumage that offer limited water resistance.

3.3.3 Building and Other Structure Assessments

Suitable access features to buildings or other structures were taken to be those with a minimum of 75 x 75 mm and an unobstructed approach (Ramsden.1995). Consideration was given to all structures within the scheme area, particular merit was given to traditional farm structures or features associated with industrial heritage where structures have been a prominent part of the landscape for some time. However, barn owls may adopt unusual dwellings such as water towers, bridges and other infrastructure as long as the barn owl has protection from the elements and a flight zone of around three metres above the ground.

3.4 Evaluation Methods

Barn owls' sites were evaluated using the most recently published best practice guidance: Barn owl *Tyto alba* Survey Methodology and Techniques for use in Ecological Assessment: Developing Best Practice in Survey and Reporting (Shawyer. 2011). These guidelines are used as a basis to evaluate the site features for their potential to support barn owl. Table 3-1 and Table 3-2 summarise how potential roosting and nesting sites are categorised.

The Stage 2 surveys characterise buildings and other structures based on their likelihood to support barn owls. This is shown in Table 3-2, whereas Stage 3 defines the use of the site by barn owls based on characteristics shown in Table 3-3.

Table 3-3 – Roosts and Nest Sites Categories (Shawyer. 2011)

Roost Definition	Qualifying Characteristics
Active Roost Site (ARS)	An Active Roost Site is defined as a place at which breeding does not occur, but where the bird is seen or heard regularly, or its current or recent presence is known to have occurred in last 12 months.
Potential Nest Sites (PNS)	A Potential Nest Site typically includes buildings which provide features suitable for nesting and may have historically provided this within the last 50 years. This also includes features which have been specifically implemented to encourage barn owls (such as appropriate nest boxes).
Temporary Rest Sites (TRS)	Small amount of field signs that can often be seen underneath a tree, in a building or on a fence post and which are sometimes accompanied by an occasional pellet or body feather, which indicate a temporary night-time stopping-off place of a barn owl. Although this level of observation is not an essential requirement of a barn owl survey, when these signs are identified they are best described and recorded as a Temporary Rest Site (TRS) rather than an ARS.
Occupied Breeding Site (OBS)	Where breeding is taking place or where it has done so in the recent past. This has the presence of adult barn owls, their moulted feathers, pellets, eggs, eggshells, chicks or down are present or found.

3.5 Survey Limitations and Assumptions

3.5.1 Limited Data within Desk Study

A desk study including searches for notable/protected sites along with biodiversity data obtained from the local records centre (to identify existing species or habitats on-site or in the surrounding the scheme) is fundamental for understanding the site in relation to known abundance and distribution within the local area. Although every effort is made within the data consultation process to assess the reliability of data it is primarily held and maintained by CPERC, therefore WSP holds no responsibility for accuracy of third-party data. In addition, historic data from the last 20 years was requested due to the records validity period and life span of the species. Some records were limited to a four figure OS grid reference and therefore pertains to a 1 km square meaning a precise location and watercourse could only be interpreted.

3.5.2 Habitat Assessment

Habitat assessments give a snapshot of conditions at the time of survey only; areas and extents may change based on agricultural management and activities. In addition, due to the scale of habitats within the scheme, minor sections or small areas of suitable habitat may have been missed based on assessment intensity as well as access. An assumption is made within calculations and plans that the categorisation of Potential Foraging Habitat (PFH) are indicative only, but are helpful in determining potential carrying capacity of the scheme.

3.5.3 Limitations in Field Identification

Barn owls are a particularly secretive and elusive species to survey and although best effort is always undertaken to survey thoroughly, small undefined habitats or features can be missed during visual inspections of large structures especially when dealing with a species which only requires a 75 x 75 mm access aperture. Also, the behaviour of barn owls to hunker down rather than flee can also be a reason for non-observance even when present.

Trees and buildings were only assessed from the ground or a ladder where safe to do so, therefore, some holes that appeared suitable from vantage points may not actually be of sufficient dimensions on closer inspections; equally some holes may have been missed if they were obscured from view by branches, dense vegetation such as ivy, shading or other features which inhibit visual assessment.

3.5.4 Timing Constraints

Observations have been limited to surveys within the months of July and August 2022 due to the timing of the commission. This may mean that early season breeding and nest sites may have gone unobserved due to clearance and maintenance of buildings, changes in building use or removal of evidence such as carcasses by scavengers.

3.5.5 Access Constraints

Landowners, tenants and those people with a legal interest in the land were contacted to obtain permission for access for surveys, but access to some properties was either withdrawn since 2020 or never permitted.

Where access was not permitted, potentially suitable habitat and roosting potential was surveyed with the aid of binoculars from Public Rights of Way or adjacent land parcels where possible. Where access to features was not permissible, but the structure showed potential, the property was automatically categorised as a PNS, this also included features which could not be surveyed fully due to safety restrictions as well.

Access was not permissible at the following properties in Table 3-4.

Table 3-4 – Access Restricted

Land Reference	Location	Distance from Scheme
No Ref	Sawston Water Treatment Works. Cambridge Road, Sawston, South Cambridgeshire, Cambridgeshire, East of England, England, CB22 3DG, United Kingdom	0.34 km
No Ref	Manor Farm. Beech Lane, Pampisford, South Cambridgeshire, Cambridgeshire, East of England, England, CB22 3EU, United Kingdom	1.48 km
No Ref	College Farm. Beech Lane, Pampisford, South Cambridgeshire, Cambridgeshire, East of England, England, CB22 3EU, United Kingdom	1.16 km
No Ref	Home Farm. Beech Lane, Pampisford, South Cambridgeshire, Cambridgeshire, East of England, England, CB22 3EU, United Kingdom	1.1 km
No Ref	Rectory Farm. Hildersham Road, Hildersham, South Cambridgeshire, Cambridgeshire, East of England, England, CB21 6DB, United Kingdom	1.3 km

Barn owl nest boxes are recorded as PNS due to their intended purpose unless survey confirms them as an OBS when breeding was confirmed either currently or historically (as barn owls show high fidelity to old nesting sites, even when new individuals arrive to a territory).

4

Results

4 Results

4.1 Desk Study

The CPERC data search included 104 records from the past 20 years within 5 km of the Scheme. These records include limited records of nesting; however, the most concentrated records are from Grantchester and a potential roost site in Grantchester meadows, approximately 2.5 km north-west of the scheme. Several nesting records are associated with a farm in Barton, approximately 5 km west of the scheme. Three records relate directly to the scheme corridor, but are associated with foraging behaviour. The most recent record is from 2020 and is located in Trumpington, approximately 2 km west of the scheme.

A further review of third-party data produced four records of breeding activity from 2015-2019 within the 500 m buffer. Of these, two were Occupied Breeding Sites, one an Active Roost Site and the other had yet to be monitored. A further four records were within 1.5 km of the Scheme. All were nest-box sites except for one being a tree cavity.

4.2 Field Survey

4.2.1 Habitat Suitability Assessment

The landscape within the study area is predominantly arable with associated hedgerows and field margins. The majority of the habitats are intensively managed and range from low to moderate suitability (Type 1 to Type 2 habitat). The habitat most widespread within the study area is categorised as of low quality (Type 3) for barn owl foraging (55%).

Moderately suitable foraging grassland that is identified as Type 2 is identified as approximately 8% of the scheme on Appendix A.

The highest value habitat type (Type 1) was not found within the scheme area. (Type 2) mostly consisted of narrow strips of habitat along unmanaged sections of the River Granta, ditches, field hedgerows or road verges (Appendix A).

In total, approximately 319 ha hectares of grassland provides some suitable habitat for barn owl foraging within the scheme. In accordance with research of carrying capacities (Askew, 2006), barn owls in arable landscapes are estimated to require between 14 to 21 ha of rough grassland, therefore, a conservative estimate of two breeding pairs could potentially be associated with the Scheme based on average of 3 to 4 chicks per brood.

Within the accessible land parcels, it is important to note that a movement corridor along the River Granta floodplain is present and most field evidence was recorded within this location. A number of isolated patches of favourable foraging grassland were recorded in the wider extents but have no bearing on the alignment of the scheme; these are also indicated in Appendix A.

4.2.2 Tree Assessment

Trees within or surrounding the scheme had limited value to barn owls. The majority of specimens of significant age were found in small woodland blocks or stands with no clear flight lines. Most within the scheme itself are highly managed due to liability issues surrounding the public footpaths. The landscape in general comprises large open arable fields with limited trees associated with boundary hedgerows and lanes.

4.2.3 Buildings and Other Structures Assessment

Buildings and other structures have been identified by the Stage 1 and Stage 2 assessments in 2020 and 2022 all of which are adjacent to the scheme corridor and the 1.5 km buffer surrounding the scheme. Buildings assessed as having negligible value in 2020 were scoped out from further consideration. When ARS and OBS highlighted through conversations with the landowner were identified, every attempt has been made to verify this during the breeding season throughout July to August.

4.2.3.1 Occupied Breeding Sites and Active Roost Sites

The following OBS and ARS were identified within the scheme and are shown on Appendix B.

Netherhall Farm “The Cart Lodge”

Nether Hall “The Cart Lodge” Farm nest box (OBS 01) was implemented as mitigation for the conversion of the properties to domestic dwellings. It is an Active Roost Site (ARS 01) within a range of derelict stables and barns, with an individual barn owl perched on a cross beam at the gable end of the property in 2020. This property could not be reassessed in August 2022, therefore conclusions remain as previously observed.

Figure 4-1 - Cartlodge Farm



Fig.4.1.1 Netherhall Farm is an 18th century farmstead property with a main farmhouse (Netherhall Grange), converted stable block (the Cart Lodge) and series of out buildings. The Farmhouse and stables represent little opportunity for barn owls. However, the existing stables and barn are a confirmed breeding site for barn owl and act as an ARS during the non-breeding season.



Fig.4.1.2. The resident barn owls have successfully bred in a mitigation nest box located to the south-west of the property, with three chicks ringed in April 2019 by Aspect Ecology. The site is therefore considered a confirmed breeding site with the resident barn owl female foraging on and perched in the barn during the survey in 2020.

Reedbed Farm

Reedbed Farm nest box (OBS 02), (CB351799), shows no occupation in approximately the last 18 months, dated through pellet aging and associated deterioration. The tea chest box is also in poor condition.

It is considered that barn owls are now roosting (ARS 02), and potentially nesting, in the old milking parlour in the roof apex which is accessible through open roof vents. All sections of the 15 cm recess between the roof sarking and voids was difficult to access, however, the floor was covered in pellets ranging in age from 18 months to fresh (maximum three days old). The visible sections showed signs of fresh occupation with a single male flushed during the exploration of roof recess in August 2022. In addition, broken eggshells were found in the roof valley, as well as moult feathers on the floor suggesting nesting and occupation has switched to this building since 2020; potentially due to the more sheltered nature than the barn owl nest box. The building also benefits from being less disturbed by vehicle movements, human entry and exposure than the tractor shed holding the barn owl box (OBS 02).

Figure 4-2 - Reedbed Farm



Fig.4.2.1. Reed Bed Farm Tractor shed including a tea chest barn owl nest box showing high utilisation with over 200+ barn owl pellets below.)



Fig.4.2.2 The resident barn owls using the roof void of the old milking parlour with the resident male barn owl exiting the vent shown in the barn during the survey in 2022.



Fig.4.2.3 Female barn owls primary found within the old milking parlour of the property in 2022.



Fig.4.2.4 A plethora of barn owl evidence including accumulation of pellets, eggshell, and streaking within the old milking parlour of the property in 2022

The Granary at Bury Farm

A barn owl box (OBS 04) is situated to the rear of the Bury Farm Granary Arts, Culture and Education Centre, Stapleford (CB383158) and was established through mitigation of the Granary building conversion, confirmed anecdotally by the landowner. The Gamekeeper confirmed breeding activity as well as an adult barn owl within the box in 2020, however, no evidence was found in 2022. The box entrance has become covered by overhanging vegetation reducing use, therefore, this OBS is considered historic, but still has the potential to be used in the future. Appropriate recommendations have been provided within the Conclusions and Interpretation section of this report.

In addition, a tree cavity at Bury Farm (ARS 04) was recorded in 2020 as being occupied by an individual roosting barn owl. This was reassessed in 2022, however, no fresh evidence of occupation was observed. A single dry pellet, over 15 months old, and nonspecific white feathers were found in the cavity base.

Figure 4-3 - Bury Farm



Fig.4.3.1. Resident barn owls have successfully bred in a mitigation nest box located on a mature sycamore to the rear of the Granary in 2019.

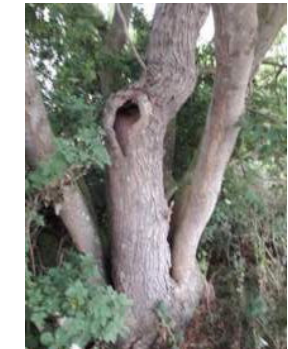


Fig.4.3.2 An active tree roost (ATR) was also identified in 2020 along the river within a natural cavity on an oak tree at TL 49008 51449.

Chalk Hill Granary

Chalk Hill Granary is a traditional forebay barn with a framed room addition at the gable roof. In 2020, two barn owls (undetermined sex), were present. During the building reassessment in 2022, barn owls were considered to be potentially nesting within and around the grain chute and sift gantry. However, due to the unsafe nature of the building a precautionary OBS was assigned. Large amounts of pellets (100+) were present across the floor, most of them looked to be at least 18 months old. The freshest two pellets were found below the sift gantry and ranged from 4 to 6 weeks old. The building is still considered an Active Roost Site (ARS 03) due the large amount of evidence including potential breeding pairs present during the breeding season in 2020 which suggest it may have been used in the past and may be used again in the future as a breeding site.

Figure 4-4 - Chalk Hill Farm



Fig.4.4.1. A traditional forebay barn with a framed room addition at the gable roof. The barn has been significantly modernised with a corrugated roof and sheets taking the exterior elevations to rear aspects of the barn. With traditional wooden cladding on roadside near grain stores. The structure is easily accessible by a large open door on both the east and west.



Fig.4.4.2. Grain chute and sift gantry with fresh pellets beneath.

White Hill Farm

White Farm Barn (CB241427) showed previous habitation (PNS 01) in the 2020 survey, with evidence suggesting roosting had occurred prior to its use as a livery yard due to the presence of old nest debris and dried pellets dating within the previous two years. An active roost (ARS 05) has been identified in this property since, with an individual barn owl observed in the building's roof truss during entry in August 2022. Livery activities have now ceased, and the large barn door remains open aiding in roosting and access for barn owls.

Figure 4-5 - White Hill Farm



Fig.4.5.1. A bank barn construction of stone with large barn door and hay loft on the eastern elevation. A number of vents present on each elevation but all with intact grills. One of the farm workers informed the surveyors that barn owls have roosted within the building but not recently.



Fig.4.5.2. Evidence found on the western gable with fresh pellets and feathers beneath.

Camps Farm/Grange Farm, Little Abington

Camps Farm Buildings (CB256418) was identified as a low PNS in 2020 due to the open roof around the mid-section of the barn with sheet metal in place. In 2022, the property in has been re-roofed with partitions implemented. A large pile of fresh pellets was present in the northern gable during the 2022 survey, with fresh streaking along beams and on the floor surrounding the cross beams. It is therefore now considered to be an Active Roost Site (ARS 06) due to the more favourable conditions in the 2022 survey.

Figure 4-6 - Camps Farm



Fig.4.5.1. The barn has been totally re-roofed with slate since 2020, with mortise and tenon A-frame construction suggesting pre-18th century construction. Evidence of habitation by barn owl with streaking on beams (age not determined).



Fig.4.5.2. Fresh pellets beneath tenon frame on the northern gable.

4.2.3.2 Temporary Roost Sites

Although Temporary Roost Sites (TRS) are not significantly valued or required as part of the assessment process, the presence of these is noted within this study as a means of further assessing locations and establishment of activity and related activity. TRS are difficult to determine and give limited nature, however, are complementary when assessing the landscape in general. The TRS identified within the Scheme are shown on Appendix B.

A TRS is within a modern prefabricated barn of steel sheet construction on Bury Farm Estate (TRS 01). The survey in 2020 found a couple of pellets. The barn is used for storage of farm equipment and the doors looked to have been sealed and locked for some time. No current evidence of use was present in August 2022 (i.e. the building had not been used by barn owls within the last two years).

Another TRS was identified at Rectory Farm, Hildersham Road, Hildersham, South Cambridgeshire in 2020 (TRS 02). A perch site was noted on a lean to building used as a woodshed on the rear of the metal shed units. The perch site was evident due to streaking down a post and a single pellet in the rough grassland adjacent.

TRS 03 is located in a derelict farm building along the River Granta. The building is overgrown with dense scrub and is a partially standing croft structure with only half of the traditional slate roof present. The building consists of a solid oak A frame with timber panelled rear walls present to the south and west. Within the building was numerous patches of streaking on the rafters and cross beams, the open nature overlooked a rough grassland that forms the paddock off High Street, Babraham (CB351799) (TL 50903, 50051) on which a roadkill barn owl specimen was identified in 2020.

4.2.3.3 Properties scoped out from further survey in 2022

An attempt was made during the Stage 1 re-assessment to attend and gain access to sites not previously accessible during the 2020 survey effort. The following sites have been scoped out due to further information or close visual inspection.

The Uplands, Hinton Way, Stapleford (CB226938)

A derelict Georgian manor bequeathed to Trinity College Cambridge in 1914. The property had subsequently been subject to fires and acts of vandalism, and the remaining structure was demolished under planning permission in 2021 to build a hotel and golf course facility. No structure remains on site, with cleared hardstanding, woodland and grassland present where ornamental gardens once stood, therefore the site is unsuitable for barn owl habitation and scoped out from further assessment.

Netherhall Farm “Newbury Farm” and Magog Farm (CB224411), Babraham Road, Cherry Hinton.

Access was not permissible in 2020 or 2022. The land parcel has been subject to planning permission for housing extension and the site has been cleared for development, therefore the property is no longer considered suitable for barn owl habitation.

Green Hedge Farm Bar Lane, Stapleford, (CB363695)

Green Hedge Farm was assigned moderate potential in 2020 due to access restrictions, however, access permission was granted and a survey was undertaken in 2022. The site holds no significant properties, just a number of single storey wooden stable blocks associated with paddocks and livestock facilities, therefore, the property was assigned as having no further value for barn owl.

St Peter’s Church (Babraham Parish Church), High Street, Babraham

St Peter’s Church (CB303470) was assigned moderate value for barn owl habitation in 2020 based on an external survey alone. The church is a 12th century fieldstone and rubble-built church which has a chancel built around a west tower. The western tower has a number of vents on the belfry as well as port windows within the belfry section. In August 2022 the diocese allowed surveyors to assess and undertake internal access to the belfry section. The port windows and vents identified previously were found to be tightly sealed with pigeon exclusion mesh (3 mm) internally. Therefore, although the building holds features of suitable value and orientation the building is found to be of negligible value to barn owls.

Table 4-1 – Summary of Properties Scoped Out in 2022 Through Field Surveys

Land Reference	Description	Location	Distance from Scheme
CB226938	Building condemned and demolished by landowner in early 2021.	The Uplands, Hinton Way, Stapleford, South Cambridgeshire, Cambridgeshire, East of England, England, CB22 5AN, United Kingdom	0.3 km
CB224411	Land Access refusal, Netherhall Farm demolished in 2021 to make room for housing development	Netherhall Farm “Newbury Farm” and Magog Farm, Babraham Road, Cherry Hinton, Cambridge, Cambridgeshire, East of England, England, CB22 3AY, United Kingdom	1.3 km
CB363695	Green Hedge Farm (Land Access Agreement not available at time of survey)	Green Hedge Farm Bar Lane, Stapleford, South Cambridgeshire, Cambridgeshire, CB22 5BP	0.5 km
CB303470	St Peters Church	St Peter (Babraham Parish Church), High Street, Babraham, South Cambridgeshire, Cambridgeshire, East of England, England, CB22 3AG, United Kingdom	0.88 km

4.2.3.4 Potential Nest Sites

North Farm

A survey was undertaken in 2021 and the large metal shed was deemed negligible due to tight seals and use as workshop. A purpose built barn owl box has been installed on a mature walnut tree within the grounds which was inspected in 2022 and showed no current use. The box may be used in the future as a breeding site, and therefore is assigned to be a PNS.

Figure 4-7 - North Farm



Fig.4.6.1. A The barn owl box installed on mature walnut on North Farm

All properties within Table 4-2 have been automatically assessed as PNS where access is not permissible.

Table 4-2 – Properties assessed as PNS where access is not permissible

Land Reference	Name	Location	Distance from Scheme
No Ref	Sawston Water treatment works Active Sewage works, landowner not known	Cambridge Road, Sawston, South Cambridgeshire, Cambridgeshire, East of England, England, CB22 3DG, United Kingdom	0.34 km
No Ref	Manor Farm (No Contact details available not held in record)	Manor Farm. Beech Lane, Pampisford, South Cambridgeshire, Cambridgeshire, East of England, England, CB22 3EU, United Kingdom	1.48 km
No Ref	College Farm (No Contact details available not held in record)	College Farm. Beech Lane, Pampisford, South Cambridgeshire, Cambridgeshire, East of England, England, CB22 3EU, United Kingdom	1.16 km
No Ref	Home Farm (No Contact details available not held in record)	Home Farm. Beech Lane, Pampisford, South Cambridgeshire, Cambridgeshire, East of England, England, CB22 3EU, United Kingdom	1.1 km

4.3 Incidental Findings

No new incidental findings of barn owl have been recorded by surveyors in the 2022 period.

5 Interpretation

5.1 Advice

It is estimated that the scheme area is of particular importance to foraging and roosting of at least two pairs of barn owls. The area surrounding the east of Babraham village, along Cambridge Road, is considered the core territory of a breeding pair of barn owls with associations with three OBS (two historic) and four ARS all in close proximity.

An additional territory with the associated catchment of the River Granta floodplain is identified and most field evidence was recorded within or around its location. Therefore, it is considered that this habitat forms an important foraging resource for the resident barn owls in the highly managed arable landscape.

5.2 Recommendations

The main impact will be the increased disturbance and fragmentation of foraging and dispersal routes around the river corridor resulting from the scheme, therefore, careful consideration will be required to integrate mitigation into the design that limits collision in and around the rough grassland and bus route.

Mitigation to reduce the impact of road mortality and reduce road collision risk should be included within the design, this may include the use of parallel hedges and trees along the new route alignment and would potentially force barn owls to fly higher whilst crossing the carriageway.

Due to the potential crossing of individual barn owls from the barn owl box at Bury Farm (OBS 04) and the Tree Roost (ARS 04), it is considered likely that these features would need excluding and relocating in order to reduce operational impacts of the scheme. It is recommended that this is undertaken in line with licensing requirements and agreement with the County Ecologist. It is recommended that a tower or pole nests as shown in Figure 5-1 for each box is secured within the wider area.

Figure 5-1 - Barn owl nest mitigation



Fig.5.1. Image care of the Barn Owl Trust © (used for illustrative purposes only).



Fig.5.2. Pole mounted nest box (Image care of the Barn Owl Trust © - used for illustrative purposes only).

6

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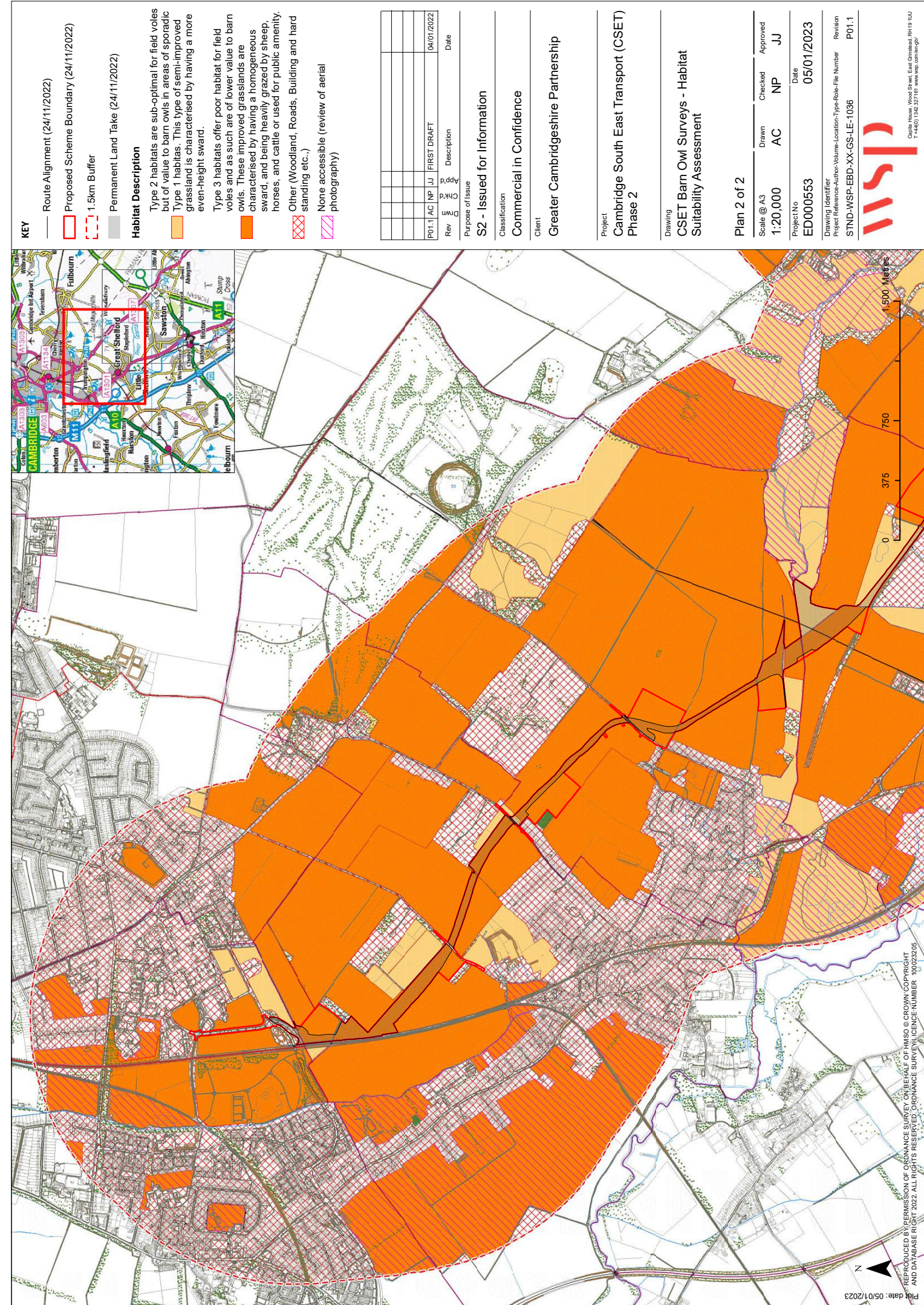
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Habitat Suitability Plan 2022



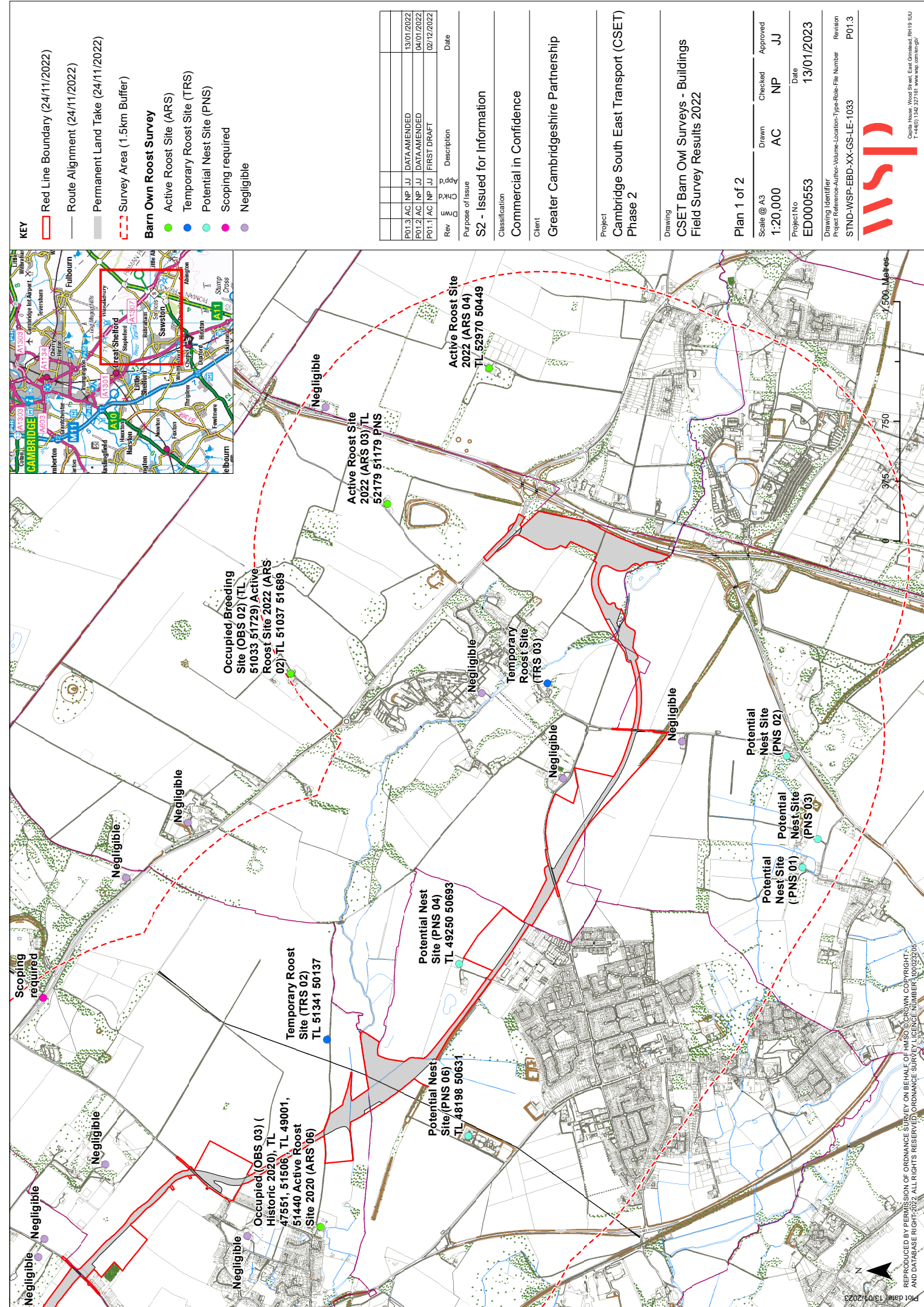
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Survey Plan 2022



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Greater Cambridgeshire Partnership

Cambridgeshire South East Transport (CSET)

CSET: Updated Kingfisher Survey Report



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CSET: Updated Kingfisher Survey Report

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Appendices

Appendix A
Survey Results Plan 2022

1

Summary



1 Summary

WSP Real Estate & Infrastructure's Ecologists were commissioned by the Greater Cambridgeshire Partnership to undertake studies of kingfisher to inform the Cambridgeshire South East Transport (CSET) Scheme.

Surveys have been carried out in 2022 to provide an update of baseline ecological information that was gathered during surveys in 2020. CSET is now moving forward towards planning submission and as such surveys have been commissioned to supplement information submitted with the planning application to update the baseline information and assess current impacts of the scheme and land take associated with both construction and operation.

The European kingfisher *Alcedo atthis* is a species that is easily under-recorded during general breeding bird and walkover surveys due to its large territorial range. Therefore, a dedicated kingfisher survey was undertaken along the confluence of the River Granta and associated drainage channels to identify if this species is present and whether any nest sites are present that could be impacted by CSET.

The surveys focussed on the proposed areas of land affected by the preferred option of Phase 2 of CSET and up to 500 m upstream and downstream of any crossing point of a watercourse. The update survey was undertaken in August 2022. Although late in the nesting season, surveys at this time are still useful as kingfisher hold territory late into October and therefore surveys can be used to indicate territorial use, patrols by juveniles and male defence of breeding territory. Further information will add to that found in the previous 2020 survey, however, early breeding territory cannot be extrapolated from separate surveys because fledging may occur earlier based on local conditions and the availability of resources. However, the male kingfisher will still defend the breeding territory throughout the season. The information from both surveys (2020 and 2022) can be used to indicate presence of resident individuals and preferred contest territories which may be established as late as mid-September and sustained through the year (although these may change due to the scarcity of prey or depending on local conditions over the winter period).

Although kingfishers showed high dependence on sections D1(C/D) of the River Granta as part of a breeding territory in 2020, no evidence of their presence was confirmed in the 2022 survey. This suggests nesting within these sections have changed due to changes in management for game rearing. Game rearing and pheasant keeping has ceased, leading to the woodland and banks developing a dense bramble scrub understorey reducing nesting suitability for kingfishers. Flow rates within channels of the River Granta may have been affected due to a prolonged drought which may have reduced prey availability, caused drying of deep pools and caused the movement of kingfisher to deeper sections of the river. All sections of the River Granta provide suitable foraging habitat and may, with territory expansion or change, become utilised in future.

D4, Hobson's Conduit, shows historic suitability for nesting with an old burrow found in 2020, however, due to human disturbance, habitation is greatly reduced and limited as part of a wider foraging resource associated with the River Cam and tributaries to the northwest through connections with Vicar Brook and Hobson's Brook.

Sections of D2 (E to J), D3 and D5 are all still considered unsuitable for kingfisher.

There are not currently any established nesting habitats associated with crossing points of the scheme.

2 Introduction

2.1 Background

WSP Real Estate & Infrastructure's Ecologists were commissioned by the Greater Cambridgeshire Partnership in July 2022 to undertake kingfisher surveys. These surveys were undertaken in relation to the development of Phase 2 of the Cambridge South East Transport (CSET) Project.

The CSET route and D1 to D5 have previously been surveyed in 2020. The aim of this report is to summarise the results of surveys conducted in August 2022 to provide an update on the presence of kingfisher and to highlight any changes in conditions or likely impacts assessed during the 2020 surveys.

Stage 1 surveys for kingfisher were undertaken on 18 and 19 August 2022. These surveys re-assessed habitat suitability for kingfisher in regard to nesting and foraging potential comparing the two areas surveyed in 2020: the River Granta sections D1 and D2 and Hobson's Conduit D4. These areas lie within the scheme and were considered to have potential to provide suitable foraging and nesting habitat for kingfisher.

Stage 2 surveys. Evidence from the 2020 surveys suggested that Sections D1 C/D of the River Granta in Babraham is part of a wider breeding territory. Although no evidence was encountered of nesting, it was considered highly likely within or around these sections in 2020.

Other ditches and catchments including D2 and D3 provide foraging habitat and may, with territory expansion, become utilised in future. However, they are not currently used frequently.

D4, Hobson's Conduit, showed historic potential for nesting in 2020, however due to human disturbance, habitation is greatly reduced and limited as part of a wider foraging resource associated with the River Cam and tributaries to the north west through connections with Vicar Brook and Hobson's Brook. Sections of D2 (E-J), D3 and D5 are considered unsuitable for kingfisher.

2

Introduction

2.2 Project Description and Purpose of the Scheme

- The Scheme forms part of the wider Transport Strategy for Cambridge and South Cambridgeshire (TSCSC) was adopted by Cambridgeshire County Council on 4 March 2014 and ensures that local councils plan together for sustainable growth and continued economic prosperity in the area.
- The strategy will provide a plan to cope with the rising population and increase in demand on our travel network by shifting people from cars to other means of travel including cycling, walking and public transport. The strategy contains details of the major schemes proposed in the short, medium, and longer term. The programme will be regularly reviewed given the extent of growth and development in the area.
- The Cambridge South East Transport (CSET) Project aims to create a vital link to ease congestion, offer sustainable travel choices, connect communities, and support growth in the South East of Cambridge. CSET would form part of the Cambridgeshire Autonomous Metro, providing high quality, frequent and affordable public transport.
- CSET Phase 2 comprises a segregated public transport route from the A11 (near Brabham) to the Cambridge Biomedical Campus (CBC). This would include new bus route and walking, cycling and equestrian links.
- The CSET project offers better public transport and active travel options for the A1307 and A1301 area. It would improve journey times, reliability and link communities and employment sites in the area southeast of Cambridge.

2.3 Legislation and Policy

Kingfisher receives protection in the UK as a result of both legislation and planning policies. This section outlines the primary legislation protecting kingfishers. All of the information below is relevant to this report and to the work proposed at the development site.

Legislation

Conservation of Habitats and Species Regulations 2017 (as amended)

Under Section 10 – Duties in relation to wild bird habitat - of the Conservation of Habitats and Species Regulations 2017 (as amended) “without prejudice to regulation of 9(1), the appropriate authority, the nature conservation bodies and, in relation to the marine area, a competent authority must take such steps in the exercise of their functions as they consider appropriate to secure the objective in paragraph (3), so far as lies within their powers”.

(3) The objective is the preservation, maintenance and re-establishment of a sufficient diversity and area of habitat for wild birds in the United Kingdom, including by any means of the upkeep, management, and creation of such habitat, as appropriate, having regard to the requirements of Article 2 of the new Wild Birds Directive.

(8) So far as lies within their powers, a competent authority in exercising any function in, or in relation to the United Kingdom, must use all reasonable endeavours to “avoid any pollution or deterioration of habitats of wild birds except habitats beyond the outer limits of the area to which the Wild Birds Directive applies)”.

Wildlife & Countryside Act 1981 (as amended) Birds and Nesting

The Wildlife & Countryside Act 1981 (as amended) provides protection for kingfishers and most other wild bird species in Britain under which it is an offence to:

- Kill, injure, or take any wild bird (subject to certain exceptions)
- Take, damage, or destroy a nest while it is being used or being built; and
- Take or destroy the egg of any wild bird.

Kingfishers are also included within Schedule 1 of the Wildlife & Countryside Act 1981 (as amended) under which it is an offence to disturb kingfishers intentionally or recklessly:

- While it is nest building
- At a nest containing eggs
- While the young of any such bird are still dependent.

Kingfishers are found in a wide range of habitat, including moving watercourses such as river's, canals, ditches and still waterbodies such as reservoirs, lakes and ponds. Kingfishers do not 'build' a nest instead a deep tubular burrow is excavated in which eggs are laid between March through to August, typically broods consist of 5-7 eggs with potentially 3 broods throughout the active season, their protection against disturbance is generally considered to start as soon as the first egg is laid and ends when the last young become independent at around 37 days (RSPB 2022).

Purpose of the Legislation

Kingfishers have suffered significant declines due to loss of habitat as well as high mortality rates which has given rise to it being at green status (Eaton et al. 2009). The habitats on which they rely to breed, and the ecology of their life cycles are compromised by human activities. Engineering and construction activities have the potential to compromise breeding sites, therefore measures are required to be put in place to avoid impacts or compensate and mitigate for those impacts. The reliance on heavily engineered solutions to bank stabilisation, low survival rates, frequent poisoning and reduction in water quality nationally over the decade has led to a significant decline over the last century (RSPB, 2022).

Natural Environment and Rural Communities (NERC) Act 2006

Section 40 of the NERC Act places a statutory duty on public bodies, such as local authorities, that “every public body must, in exercising its functions have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity”.

National Planning Policy

National Planning Policy is set out by the National Planning Policy Framework (NPPF, March 2022) combined with The Environment Act 2020 and the guidance document Planning for Biodiversity, The, and Geological Conservation: A Guide to Good Practice” (ODPM 2005). Biodiversity net gains are referenced strongly in terms of developing local planning policy and decision-making for development applications. The environmental test of sustainable development requires planning policy and planning decisions to help to ‘improve biodiversity’

Environment Act 2021

The Environment Act makes provisions and opportunities for recovering or enhancing biodiversity, in terms of habitats and species, in the strategy area, the priorities, in terms of habitats and species, for recovering or enhancing biodiversity (considering the contribution that recovering or enhancing biodiversity can also make to other environmental benefits), and proposals as to potential measures relating to those priorities within the local area. No priorities have yet been drafted but referral to priority species and habitats is concurrent with that of the Section 40 of the NERC 2006 Act, in which recovery plans are drawn up and implemented.

NPPF 2022

Section 15. of the National Planning Policy Framework deals with conserving and enhancing the natural environment. Paragraphs 174, 175, 179 180 and 182 are most applicable to the scheme:

References to biodiversity consideration are important aspects within the NPPF (such as paragraph 175d) in supporting the delivery of biodiversity net gain through sustainable development. Net gain for biodiversity is far more prominent than in the previous NPPF and considers a holistic landscape approach to protection, and enhance biodiversity in promoting conservation steppingstones, restoration and enhancement of Priority Habitats (also listed as Habitats of Principal Importance) identified under the NERC Act 2006), ecological networks and the protection and recovery of Priority Species (also listed as Species of Principal Importance) identified under the NERC Act 2006). The NPPF includes requirements for planning authorities to identifying and pursuing opportunities for securing measurable net gains for biodiversity (paragraph 174d).

Protected sites and species are a material consideration in determining planning applications and therefore all information relating to protected sites and species must be submitted with planning submissions for determination of application alone or in combination with other applications

Planning policies and decisions should contribute to and enhance the natural and local environment: under section 180 when determining planning applications,

Under paragraph 182. The presumption in favour of sustainable development does not apply where the plan or project is likely to have a significant effect on a habitats site (either alone or in combination with other plans or projects) unless an appropriate assessment has concluded that the plan or project will not adversely affect the integrity of the habitats site.

Local Biodiversity Policies

Under the Cambridgeshire and Peterborough Biodiversity Group kingfisher are recognised as a Local Biodiversity Action Plan (LBAP) Priority Species.

2.4 Personnel and Quality Assurance

All ecologists employed by WSP adopt best practice working methods in undertaking surveys including the Chartered Institute of Ecology and Environmental Management’s (CIEEM) code of professional and all fieldwork is carried out in accordance with current best practice guidelines and under the supervision of senior staff and appropriately licensed ecologists.

The surveys were led by Principal Ecologist, Neil Page and assisted by Ecologist, Mark Johnson.

Neil is a Principal Ecologist and Full Member of CIEEM. He and has been an ecological consultant for over 16 years and Neil has a broad range of professional experience in consulting services, including ecosystem management, design, planning, protected species mitigation and environmental research projects this involved surveying and mitigation for kingfisher as part of larger schemes and river improvement works including on the River Ouse, Great Ouse, River Wensum and Yare as well as advising on installation of kingfisher nesting tubes at Catterick Flood Alleviation Scheme and Radcliffe and Redvale Flood Alleviation Scheme for the Environment Agency as well as for Kelham Island Goyt on the River Don and undertaking pre-commencement surveys on the River Roach, West Yorkshire.

Mark Johnson has five years’ experience and competent field surveyor specialising in ornithological surveys with undertaking a range of common bird census techniques for a range of developments including kingfisher surveys on higher Foss Flood Alleviation Scheme (FAS).

3

Methodology

3 Methodology

3.1 Data Search

A local records search was obtained from The Cambridgeshire and Peterborough Environmental Records Centre (CPERC) in October 2022 to obtain information on protected or notable species within a 5 km radius of the alignment. This updated the previous data search obtained in 2020.

3.2 Field Surveys

3.2.1 Stage 1: Habitat Assessment

The kingfisher is a difficult species to survey due to its low population density, therefore the initial part of the assessment is aimed at qualifying the habitat and making a high-level assessment of the impacted watercourses for its suitability to provide both nesting and foraging habitat for kingfishers

The watercourses with potential to be impacted by the scheme equate to 4.2 km of watercourse, which was divided into 200 m sections for surveying purposes where the proposed route crosses these watercourses and waterbodies.

These sections are as follows:

- River Granta (D1) – four 200 m sections (A – D)
- River Granta (D2) – ten 200 m sections (A – J)
- Trumpington Estate (D3) – five 200 m sections (A – E)
- Hobson's Conduit (D4) – one 200 m section (A)
- Granham's Road Ditch (D5) – one 200 m section (A).

Three assessments were undertaken in the spring/summer 2020 breeding season and one late summer season survey was undertaken in 2022 to update and determine the current suitability of the watercourse and its habitats to support a territory of kingfishers. In particular, the surveys considered the following seven criteria favoured by kingfisher (Buckton et al. 1997):

- Water Quality – Pollution affects the availability of fish, the prey of the kingfisher, within the watercourse. High levels of sedimentation of the watercourse may have a negative effect upon the kingfisher's ability to see prey, which would negatively impact its hunting ability.
- River Flow – River flow will affect the levels of dissolved oxygen within the water column, which effects the availability of prey.

- Bank Features – The kingfisher uses vertical sandy/earth banks in which to excavate its nesting tunnel. Therefore, if this feature is absent it will impact upon the breeding capability of kingfisher.
- Angle of the Bank – Gentle sloping banks make nesting sites more liable to flooding and as such the kingfisher prefers vertical banks.
- Agricultural Management of Bankside Habitat – Agricultural practices, such as removal of riparian vegetation can negatively affect the kingfisher, as it reduces the number of available perches available.
- Availability of Overhanging Branches – kingfishers use perches to watch for fish and act as territorial marker posts to define their territory.
- Human (and dog) Disturbance – kingfishers are reclusive and can be susceptible to disturbance by humans and dogs.

Based on this criteria, each section is assigned a scaled value from negligible to high attributes and this is indicated on the plan at Appendix A.

3.2.2 Stage 2: Ornithological Transect

Terrestrial transects were conducted along the banks of all suitable sections of watercourse as identified during the habitat suitability assessment.

Assessment surveys involve a walkover of the site during daylight hours to broadly define habitat features of potential value. Special attention was paid to sections with dense overhanging vegetation and banks with steep slopes and exposed substrates, with entrance holes (nesting burrows), as well as locations in prominent open positions or edge of woodland habitat with clear flight lines. Opticron™ Discovery Waterproof 8 x 32 binoculars were used to assist the surveyors during the survey.

The survey was led by an ornithologist with experience in a wide range of bird survey techniques who followed a bespoke transect in which both banks and the river channel were walked. The survey focused on the fixed section lengths of 200 m which allowed for a highly focused survey.

Approximately 45 minutes was spent on each 200 m section to ensure adequate coverage and effort were applied; however, this did vary with the ease of accessibility and channel condition underfoot.

Any sightings of kingfisher and any likely or actual nesting sites were recorded and mapped as shown on the plan at Appendix A.

3.3 Survey Limitations and Constraints

3.3.1 Data Consultation

A desk study including information for notable and protected sites along with biodiversity data to identify existing species or habitats on-site or in the surrounding the scheme is fundamental for understanding the site in relation to known abundance and distribution of habitats and species within the local area. The data held is maintained by Cambridgeshire and Peterborough Environmental Records Centre (CPERC) and therefore WSP REI holds no responsibility for accuracy of third-party data.

In addition, only historic data from the last 20 years was requested due to the records' validity period and life span of the species. Some records were limited to a four figure OS grid reference and therefore pertains to a 1 km square meaning a precise location and watercourse could not be interpreted.

3.3.2 Habitat Assessment

The positions of habitats included on the plans in the Appendices have been plotted as part of a land survey. These locations have been positioned with the use of commercially available GPS or using local landmarks as a reference. An accuracy of +/- 2 m has been assumed to allow for measurement inaccuracies.

3.3.3 Ornithological Transect

Surveys were carried out in August which is within the period when kingfishers hold territories (March to October) but breeding activity may have ceased. This is late in the season. However, this limitation has been countered by the 2022 survey being an update survey and, where possible, the results of the previous 2020 surveys have been cross-referenced and reviewed in order to substantiate conclusions, interpretation and recommendations for mitigation design.

3.3.4 Access

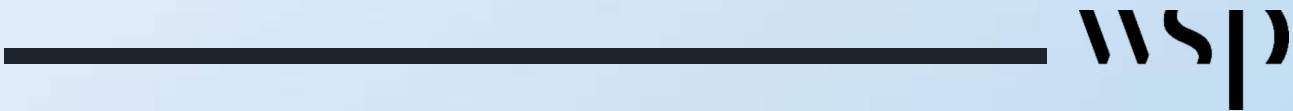
Where access was not permitted, potentially suitable habitat and nesting potential was surveyed with the aid of binoculars from adjacent land parcels where possible. Where access was not permitted, but the section showed potential, the section was automatically categorised as a suitable. Only one section of the River Granta (D1:C) was not accessible due to gamekeeping activities. This was the large abstraction pond on Cheveley Parks Farm Estate at New Home Farm where duck were being bred for shooting activity later in the month. However, the pond was lined with bitumen and therefore considered unsuitable for nesting and determined to be unsuitable for kingfisher.

3.3.5 General Survey Constraints

Weather conditions in August 2022 included a prolonged drought which caused some watercourses to dry out. Kingfisher foraging distributions may have changed based on increased scarcity of foraging habitat due to lower water levels and reduced flow rates in pools and riffles.

4

Results



4 Results

4.1 Data Search

Data obtained from the CPERC identified 414 records of kingfisher within 5 km of the Scheme.

No records were related directly to the River Granta D1, however, eight records are associated with the upstream section of the River Granta running through Babraham Village. This includes territorial behaviour with the closest record located 425 m upstream of D1:D.

Two records are located within the wider area of D2 and D3 on the River Granta. These records are from 2010 and 2013, and stipulate flight over the river only.

Nine records directly relate to Hobson's Conduit D4, one within Nine Wells Nature Reserve and one within D4 surrounds. No descriptions were provided with the record concerning D4. Therefore, no distinction between sightings can be made with regards to breeding utilisation, however, both are old records relating to the early 2000's.

A further 35 records are located beyond the northern boundary of the railway line indicating that kingfisher is likely to occupy the River Cam, to which the River Granta and Hobson Conduit form a tributary, for foraging and commuting. The River Cam offers similar habitats to the River Granta on the site and kingfishers may use D4 as a minor resource as part of a wider territory within the River Cam.

No records have been obtained in relation to D5.

4.2 Habitat Assessment

The surveyors conducted habitat suitability assessments for kingfishers at five sites within the study area, as shown in Appendix A.

Due to changes in land management access to assess banks, a direct comparison was made between the habitat suitability assessments conducted in 2020 and in 2022.

4.2.1 River Granta D1

The habitats along the section of the River Granta at Cheveley Park Farm (D1) have reduced in quality to support nesting since 2020. Although some limited exposed sections of the banks are still present, dense bramble scrub is rapidly establishing which has diminished the value of banks from high to moderate value in D1(B-D) and further reduced area D1:A to low due to the already existing impact of the A11 bank modifications.

This section of the River Granta still has little in the way of disturbance to kingfishers and the water quality is considered to be excellent, with observable shoals of minnows and sticklebacks present along the reaches within pools and riffles. Additionally, the catchment still provides high value perching habitat with overhangs along the entire confluence as well as pipes and an associated reservoir which provide suitable perching sites for kingfishers.

4.2.2 River Granta D2

The habitat suitability assessment undertaken on the section of the River Granta at Bury Farm (D2) finds that habitat remains consistent with the 2020 survey. The section of the River Granta has limited nesting habitats due to the shallow bank profile and dense vegetation around banks remains. However, there is little in the way of disturbance to kingfishers and the water quality is considered to be good, with shoals of small fish observed and lengths with large quantities of insect larvae. Additionally, sections of the river are bordered by hedgerow, scattered scrub, and woodland on the right-side bank which provides suitable perching sites for kingfishers.

Overall, the section provides low to moderate potential for foraging and is considered to be low for nesting potential.

Sections and tributaries of the river in this section include agricultural land drains (D2 E-J) which were dry and had no aquatic macrophytes at the time of survey suggesting only winter inundation. Therefore, these ditches are considered unsuitable and not subject to further ornithological survey during the transects.

4.2.3 Trumpington Estate D3

The habitat suitability assessment undertaken at Trumpington Estate (D3) finds that habitat remains consistent with the 2020 survey. The ditch forms part of a Sustainable Urban Drainage System (SUDS) for housing development and includes artificial drainage lagoons, wildlife ponds and soakaways with artificial beds and banks. It is therefore considered unsuitable for kingfisher nesting. The area also forms part of the public footpaths and recreation green space of Trumpington Estate, and therefore is highly disturbed by the public. Perching sites are available in the form of fencing and hedges, however, human activity and the lack of constant water within the watercourse is likely to make the ditch unsuitable for kingfisher and it is therefore eliminated from further assessment.

4.2.4 Hobson's Conduit D4

The habitat suitability assessment carried out at Hobson's Conduit Ditch (D4) finds that habitat is consistent with the 2020 survey in being of Moderate potential. The ditch represents good foraging potential with some perching sites, such as defunct hedgerows, woodland overhang from Nine Wells and numerous artificial perches in the form of fence posts, signs and culverts. The water quality at this site is high, as it is aquifer fed, with an abundance of macro invertebrates and fish including minnow species present. However, the area is highly impacted by recreational disturbance due to the nearby footpath, cycleway and railway track which reduce the likelihood for nesting. This site is therefore considered to be lower suitability than D1 and D2.

4.2.5 Granham's Road Ditch D5

The habitat suitability assessment completed at Granham's Road Ditch (D5) finds that the habitat remains unsuitable. There is no water present at this location and the ditch remains as it was in May 2020. The site is also highly disturbed by traffic movements associated with Granham's Road.

4.3 Ornithological Transect

Terrestrial transects were conducted along the banks of all suitable sections of watercourse as identified during the habitat suitability assessment (D1, D2, and D4). This involved two surveyors walking along the banks and recording kingfisher activity including visual and audible signs as well as scanning banks and vegetation for perching and nesting burrows.

The updated 2022 survey was undertaken on 18 and 19 August 2022. Weather conditions on that day were considered optimal with good visibility with light showers in the morning and temperatures reaching 27°C by midday, therefore, weather was not considered to have hindered the survey effort in any way.

Details of sightings and signs of kingfishers along the river and associated drainage channels during the August survey were limited to a single kingfisher (D2:B) (OS grid ref: TL 48563 51260) and an incidental sighting during the water vole survey in September at Hobson Conduit (D4:A) (OS Grid Ref: TL 45946 54187). It cannot be confirmed that these sightings were of the same bird due to the time and distance between sightings, however, based on the previous surveys and the data search it is likely that two separate territories exist within the scheme. One located to the north of D2 as part of the River Cam catchment and one along the River Granta (D2) catchment.

The late presence suggest these sightings are most likely males are patrolling two separate breeding territories by flying up and down the watercourse between the limits of their respective territorial ranges.

5

Interpretation and Recommendations

5 Interpretation and Recommendations

5.1 Interpretation

The River Granta sections and associated drainage ditches within the scheme provide suitable foraging habitat for kingfishers due to the large and varied habitat associated with the catchment including shallow pools, riffles and runs. This is further enhanced by the mature woodland surrounding the river catchment providing perching sites through overhanging branches and limbs, and the limited human disturbance associated with D1 and D2 and to a lesser extent to D4, which is also beneficial as additional foraging habitat.

There are limited nesting opportunities at D1:A, D1:B, and D2:D due to dense vegetation on the banksides, the developing thicket understorey to the woodland on the bank, and sections of banks having shallow profile.

Although the sections of D1:C, D2:A, D2:E, and D4 have a suitable V-shaped profile, unvegetated exposed banks are limited to a few sections, therefore it is considered that the banks within the sections impacted by the scheme have limited potential for nesting habitat. However, these sections form a wider foraging territory for at least two breeding pairs of kingfisher; one in the north of the scheme associated with the River Cam and one around the River Granta at Babraham.

No nesting habitat has been identified in the scheme footprint, however, territorial changes may occur in the interim between design and build. Although every effort has been taken to identify nesting behaviour in the scheme, it must be recognised that kingfishers are a widely adaptable species and may find unusual means of nesting in unsuitable habitats which are not always easily identifiable through survey.

As a result, the design and construction team must be aware of the potential for kingfishers to utilise working areas at any time and be briefed on potential consequences of creating exposed vertical banks within the February to March period when kingfishers patrol territories in search of new nesting sites.

5.2 Recommendations

5.2.1 Potential Impacts during Construction

It is not currently considered that the scheme will have a direct impact on kingfishers within the catchment, however, given the territorial nature of kingfishers and the population densities being determined by resource availability (fish, suitable banks and perching sites), the result of construction and operation of the scheme will have a local effect on the kingfisher population. If the following measures of compensatory habitat or enhancement are incorporated, the scheme could have a beneficial impact on the endemic kingfisher population.

Temporary loss of bank habitat

Due to the river and ditch crossing points being long established, a local level of impact is likely to be associated with the scheme if some level of site clearance and engineering structure is required.

It is recommended that a pre-construction survey of the riverbanks of any areas to be affected by site clearance and construction activities is undertaken immediately prior to clearance and that temporary deflective measures are installed if exposed banks are to be left available for a significant period of time. This is especially important during the February-March period when territories are explored for breeding/nesting potential by males.

Works in areas of high kingfisher suitability will require a watching brief during clearance and construction.

Noise and visual disturbance

Clearance required to facilitate construction and operation of the scheme should be undertaken outside of the breeding season (i.e. not within the March to September period). Where possible, screening vegetation should be incorporated into the construction phase to reduce displacement due to human disturbance and where bank stabilisation or piling activity is required. This should take account potential territorial displacement of both kingfisher and prey species such as fish.

Loss of foraging habitat

The scheme may result in temporary displacement of territories within and outside the scheme corridor and potentially lead to increased competition. Therefore, consideration should be given to the management of the wider catchment to create improved resources for kingfisher ahead of the construction period and during the operational phase to ensure continued additional foraging resource is provided in the local area through either sustainable urban drainage scheme provision or additional habitat such as pond habitat. A management plan detailing measures to improve the catchment area, working with key partners such as the Environment Agency and Wildlife Trust would also be a positive tool for ongoing management post-construction.

5.2.2 Potential Operational Impacts

Increased traffic collision risk

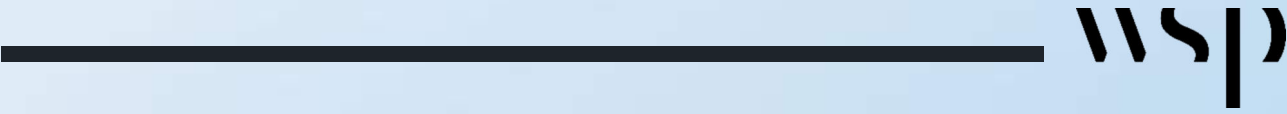
Kingfishers are less susceptible to collision risk due to the high visual response as a predatory species, however, fledglings are more susceptible until learned avoidance behaviour is established. This is an important consideration at road crossing points near breeding and nesting sites and consideration of reducing collision risk should be incorporated into mitigation design through creation of artificial perches around the crossing points and incorporating buffering on crossing points through sympathetic planting of marginal vegetation to reduce flight of individual kingfishers in proximity to the scheme.

5.2.3 Enhancements

There are significant opportunities to enhance and strengthen kingfisher nesting features and breeding success within the scheme. One of the key limiting factors surrounding the scheme is the lack of suitable nesting habitat and the existing management of the catchment. It is therefore considered that the scheme can influence the management of the catchment within the local area and potentially enhance the banks with artificial nesting habitat. If enhancement is incorporated into an area outside of the construction or operation of the scheme such as D2:A would be of great benefit to kingfishers within and surrounding the scheme.

6

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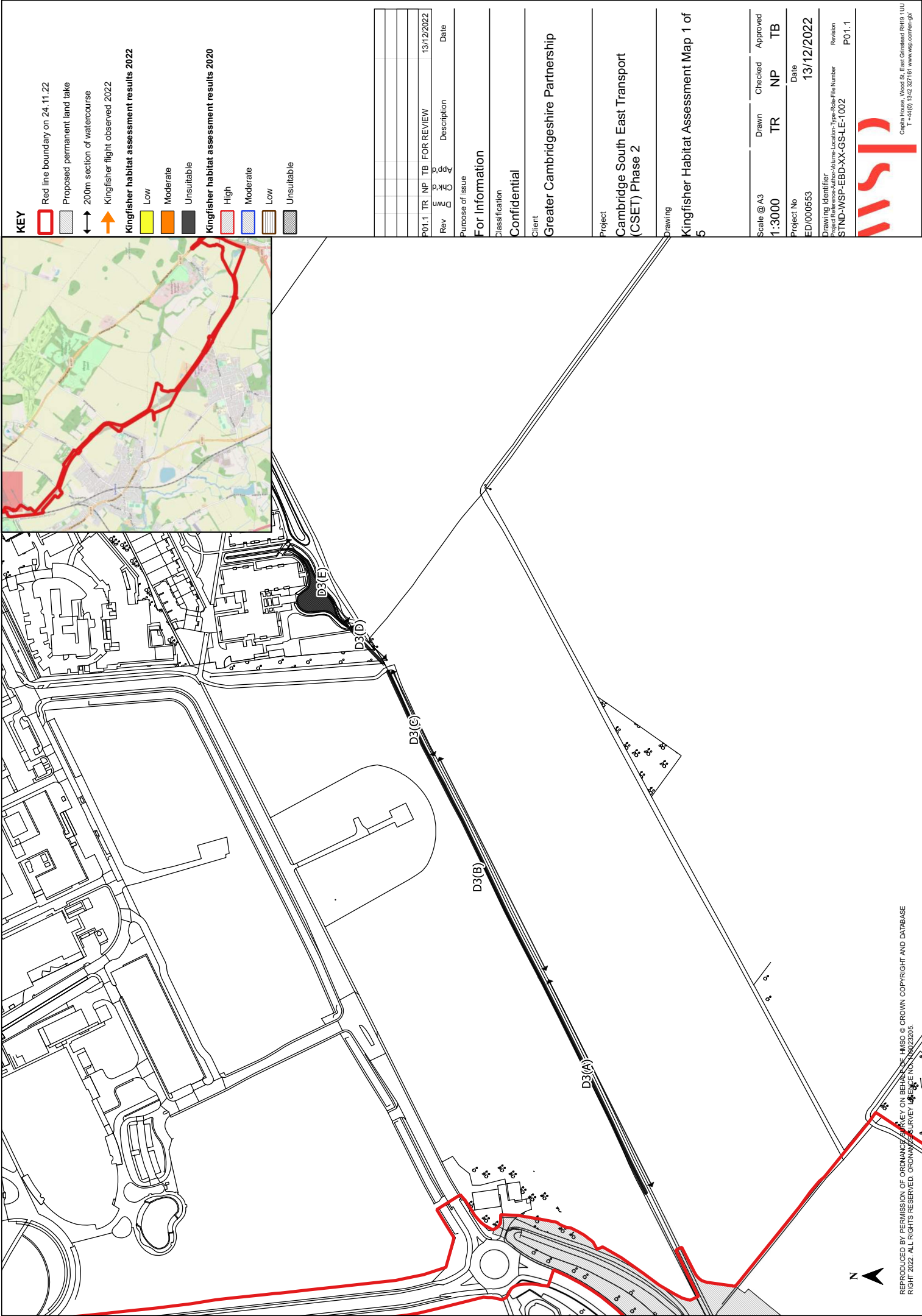
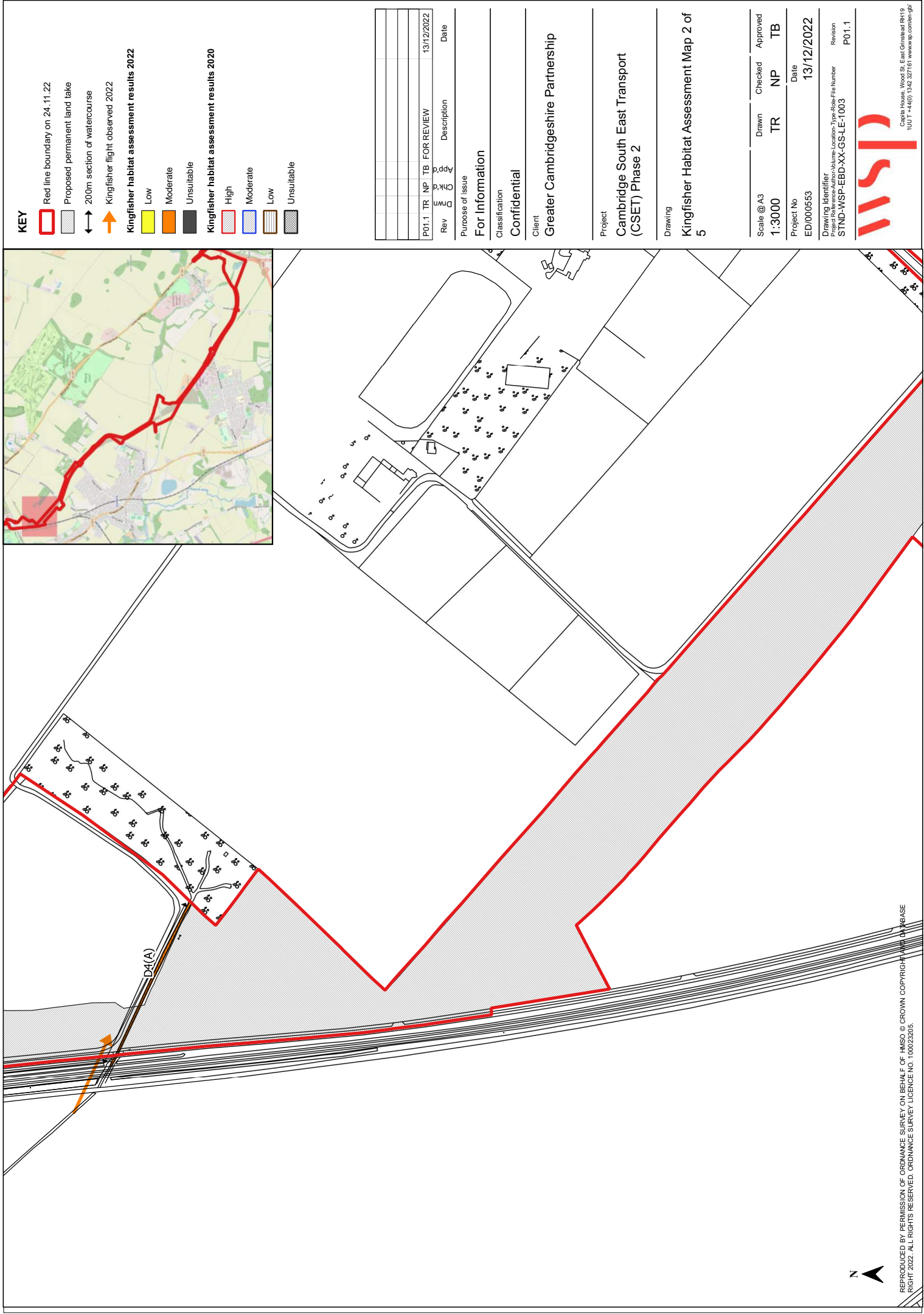


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Appendix A

Survey Results Plan 2022



The value of the green belt south of Addenbrookes, Cambridge to populations of farmland birds (2018)

Report of a survey of grid square TL4654

John Meed, January 2019

Introduction

For the last seven years I have surveyed breeding populations of farmland birds on a square kilometre of green belt south of Addenbrooke's Hospital in Cambridge to assess the levels of the biodiversity of an area close to the city.

The area studied is largely arable land, with 2.5km of mature hedgerows, 1km of streams/ditches, and 4+ha of scrub and woodland, including the Nine Wells nature reserve (right). It includes a cycle path and footpath, and land management has created several permissive footpaths, flower-rich field margins and additional woodland (see Appendix 1). It is widely used by walkers, cyclists, families and dog owners.



Why do farmland birds matter?

Farmland birds have suffered major declines in recent decades.

- Grey partridge declined by 92% between 1970 and 2015 and corn bunting (right) by 89% while yellow wagtail declined by 67%, skylark by 59%, yellowhammer by 56% and linnet by 55% (1).
- Farmland birds are indicators for the UK Government Sustainable Development Strategy (2) and 9 of the 18 indicator species are 'red list' birds of 'high conservation concern' (3).
- The city council's local plan identifies skylark (and brown hare) as 'priority species'.



Birds are indicator species because of their place as consumers in the ecosystem, and declines in bird populations indicate wider problems: the *State of Nature 2016* report (4) states that 'the indicator of butterfly species of the wider countryside has declined by 41% since 1976'.

Methodology

I monitored the area throughout 2018, using a combination of methods. I adopted the British Trust for Ornithology (BTO) Breeding Bird Survey methodology (5), which involves a habitat survey and walking two parallel transects, each of 1 km, on 2–3 occasions early and later in the breeding season; this approach gives a good snapshot of the species present in an area. I did my transect walks on April 20, May 26 and June 20.

I carried out 32 further visits over the year. Between April and July I built up a more accurate picture of the number of breeding pairs, drawing on my experience as a surveyor for the Royal Society for the Protection of Birds (RSPB) Volunteer and Farmer Alliance (6). In these visits I focused on other areas in the square and on specific breeding signs such as singing males, territorial behaviour and calls, courtship displays, nest building and juvenile birds. I also carried out a more formal survey of butterfly species.

I also visited the site regularly in the early spring, autumn and winter, monitoring winter visitors and in particular grey partridge populations.

Findings

Appendices 2 – 4 show the 73 species recorded on the three transect walks and other visits:

- On the first transect walk: 35 species and 204 individuals
- On the second transect walk: 39 species and 226 individuals
- On the third transect walk: 36 species and 226 individuals



The 73 species recorded included 17 of the 18 farmland bird indicator species for the Sustainable Development Strategy, of which 14 bred (Appendix 5). In total I recorded 15 red list species and 24 amber list species as follows:

Breeding red list species (9)	Breeding amber list species (8)
<ul style="list-style-type: none">45 pairs of skylarks15 pairs of linnets14 pairs of grey partridge10 pairs of yellowhammers (above)11 pairs of corn buntings1 pair of yellow wagtails2 pairs of starlings2 pairs each of song and mistle thrush	<ul style="list-style-type: none">16 pairs of whitethroats12 pairs of dunnocks7 pairs of reed buntings, 2 pairs of swallows and 2 pairs green woodpecker1 pair each of stock dove, and probably tawny owl and bullfinchKestrels, swifts and house martins nest nearby and visit regularly

Red list visitors include herring gull, house sparrow, and in winter lapwing, fieldfare and redwing. One young turtle dove passed through in late August.

Amber list visitors include common tern, mallard, marsh harrier, black-headed, great and lesser black-backed gull and in winter little egret, snipe, golden plover and meadow pipit.

I will go on now to look in more detail at my findings about the populations between 2014 and 2018 of two key red list species that do unusually well in the fields around Nine Wells:

- Grey partridge
- Corn bunting

I will then go on to examine my findings for other species.

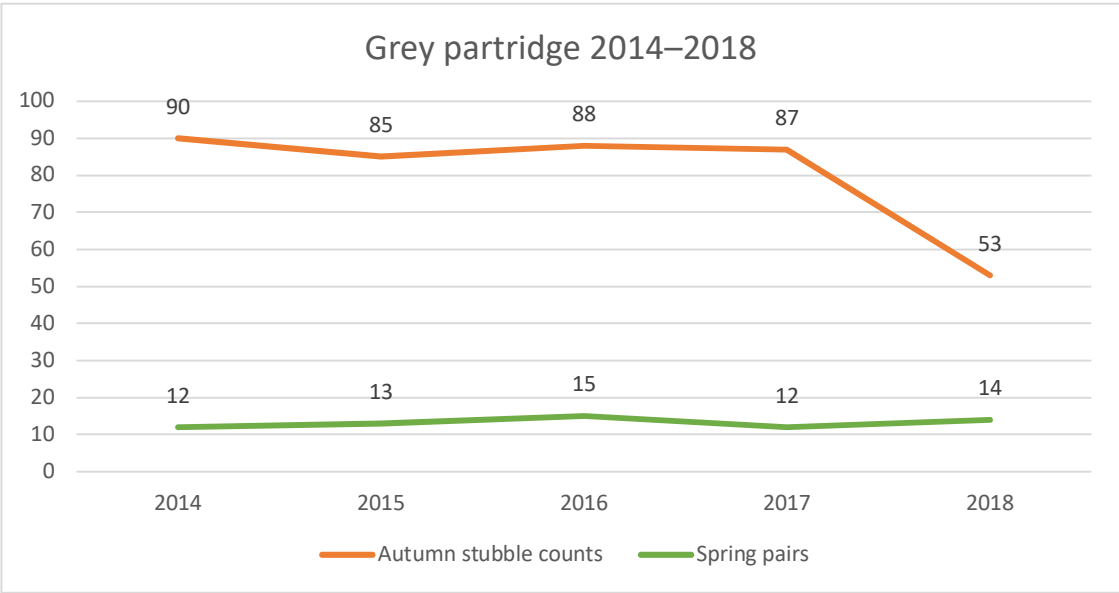
Grey partridge 2014–18

Grey partridge numbers have been remarkably high over the last five years.

- Between 2014 and 2017 autumn counts consistently revealed between 80 and 90 individuals. However the autumn count for 2018 was significantly lower, at 53 birds.
- Pairs have varied between 12 and 15.



The following chart shows numbers for the last five years.



These counts are high compared to other studies which suggest that the arable farms typical of Cambridgeshire support between 0–5 pairs/km² in spring and 0–20 birds/km² in the autumn. Only with high levels of management aimed at the species do numbers approach those at Nine Wells. For example, the GWCT’s Grey Partridge Demonstration Project near Royston saw the density of grey partridge pairs rise from under 3 pairs/km² before management to around 15 pairs/km², while autumn densities increased from 8 birds/km² to around 80 birds/km² (8). The RSPB’s Hope Farm had 7 pairs in 2017 in 1.8km² (9).

Autumn and winter coveys

Grey partridge have large broods and in the autumn families form groups known as ‘coveys’. Numbers are at their highest in November and December, once youngsters have matured but before spring pairing starts. Prior to 2018, most coveys ranged between 7 and 13 birds, though I recorded one covey of 16 in 2014 and one of 14 in 2016.

However, the fall in autumn numbers in 2018 represents a cause for concern. In earlier years the number of autumn coveys reflected the number of spring pairs, suggesting that most pairs reared young successfully. In 2018 14 pairs produced just 8 coveys and the 2018 coveys were smaller – the largest had 10 birds, while half the coveys (four) had just 4–6 birds each. Possible factors may include the loss of habitat and disruption from Biomedical campus development (and other work on the site), and the relatively hot, dry summer.

My autumn counts over the last five years have shown that:

- Coveys tend to move relatively little between fields and if undisturbed stay for much of the autumn in the same area – as for example in grassy areas such as fields awaiting Biomedical campus development. However, they show a distinct preference for stubbles over freshly ploughed land; when a field is ploughed they may move to an adjoining field. They seem more comfortable in fields where winter wheat is starting to grow.
- Partridge generally feed in the early morning and in the time before dusk, probably to avoid predation. They roost during the day in areas of longer grass, hedge bottoms or patchy scrub. However they generally avoid woodland and I have never recorded them near to the wood at the top of White Hill (though red-legged partridge do use this area). They emerge in the hour or so before dark; some emerge later than others. When feeding one or two birds typically keep watch for predators while the rest of the covey eats.
- These two factors – cropping and access to cover – have a major influence over where coveys spend their autumn. In late 2016 Field 4 remained unploughed, and the four coveys here moved very little, roosting along the hedge bottom. In autumn 2016 four coveys were regularly present in Field 2 but moved to Field 1 after ploughing. The largest field (Field 6) had only two regular coveys in 2014 and 2016, but at least four in 2015 between winter wheat and sugar beet; in both 2017 and 2018 two areas close to Granham's Road which remained unploughed and close to cover held four coveys.
- There can be interaction between coveys – normally calling, but sometimes two coveys move closer together and may even intermingle. I have not witnessed aggression between coveys. I have observed red-legged partridge coveys close to greys, and on a couple of occasions individual red-legs have joined a covey of greys, though probably temporarily.
- The weather appears to influence partridge behaviour, and I generally recorded fewer birds on windy or wet days.



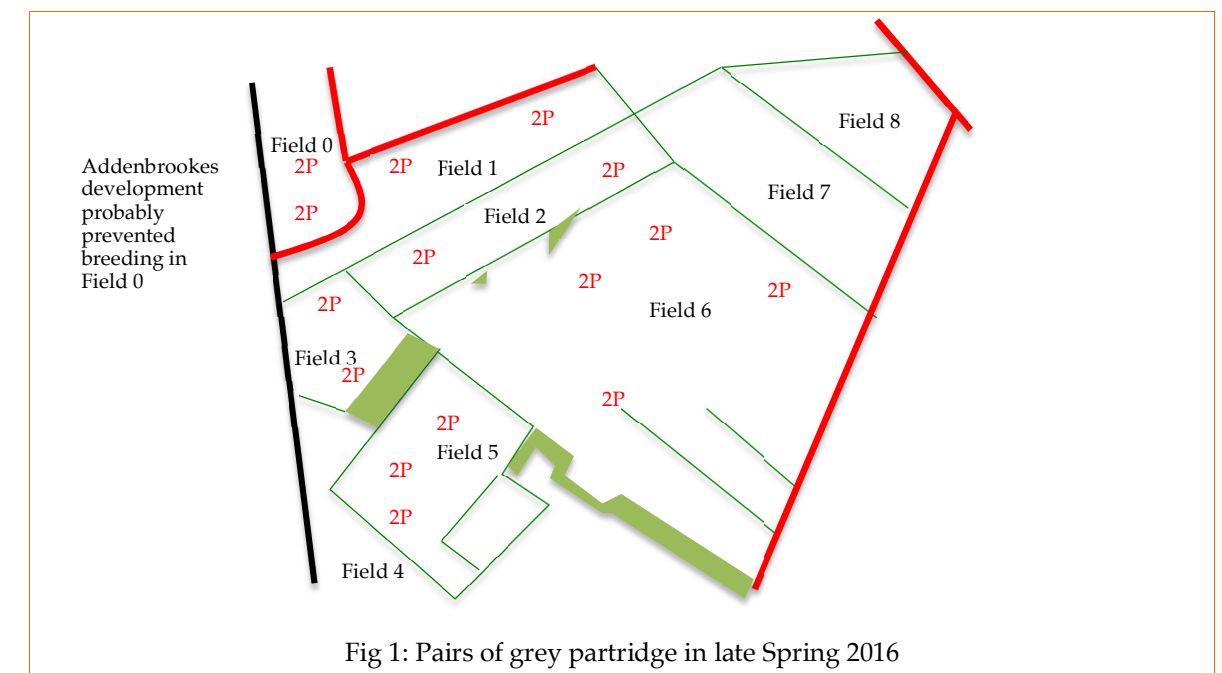
The autumn coveys appear to suffer little loss from predators. While I often record fewer birds from mid November onwards, I have the impression that this results from changing covey habits or location, rather than a reduction in the size of coveys. I generally record fewer birds after spring pairing than during the previous autumn – I am unclear as to whether this results from predation, greater crop cover or dispersal.

Several aspects of the habitat may help to explain the success of grey partridge around Nine Wells. The birds feed at dawn and dusk in open fields, but need suitable cover during the day and the Nine Wells nature reserve together with the hedge, margin and copses running north-west from the reserve appear ideal. Grassy margins also provide food for chicks while autumn stubbles provide foraging for the coveys.

Spring pairs

Pairs begin to form in the new year, though timing varies from year to year. In 2015 birds remained in coveys until mid-February, whereas in 2017 pairing began in mid-January. Pairing can vary from field to field: in 2017 the partridge in Field 6 were paired on January 18th, whereas those in Field 4 paired a week later.

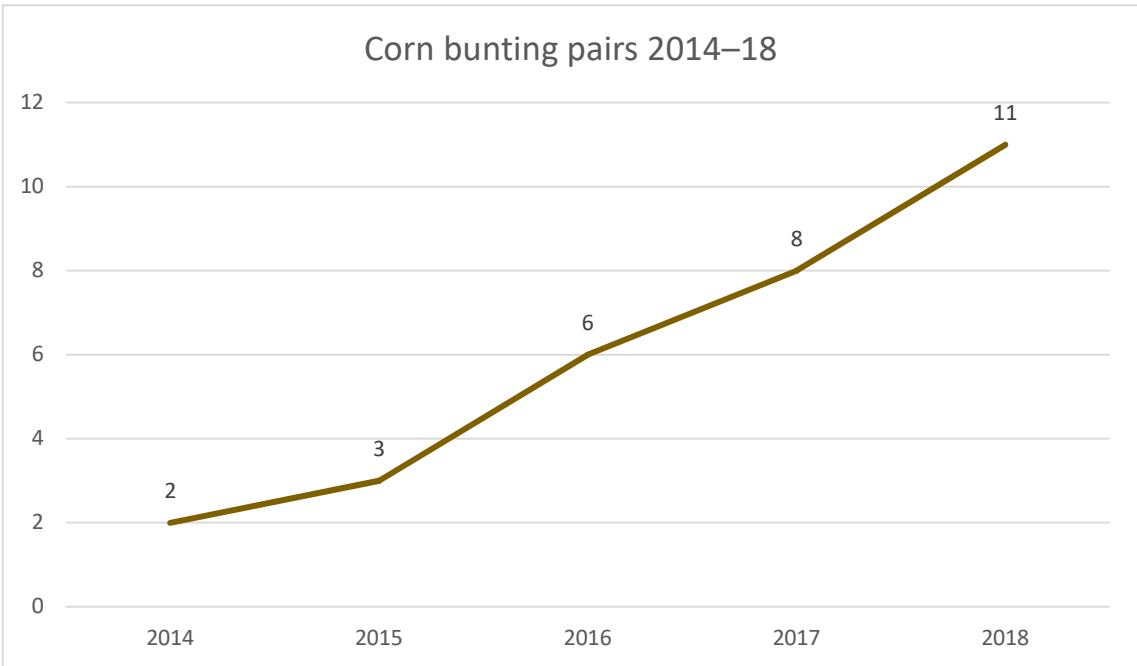
- Initial pairing is often concentrated in specific fields. In early 2015 and 2017 I recorded at least 8 pairs in Field 6, almost two thirds of the total. By contrast, in early 2016 there were 12 pairs (out of 15) in Fields 1 and 2. Jenkins found that pairs come from different coveys, except when last year's pair reforms (9).
- Following pairing, the pairs disperse more widely across the area. Figure 1 shows how the 2016 pairs, originally concentrated in Fields 1 and 2, spread out later in the Spring.



- Partridge behaviour changes during pairing. In the process of seeking a mate birds would call repeatedly – one bird calling could spark off others – and display their breast patches much more obviously. Birds will run and on occasion chase each other, which can end in flying to another spot. On one occasion in 2018 behaviour in the Field 6 stubble recalled a lek with 3 males displaying.
- Paired birds resume their normal placid behaviour, even if the above activity carries on in the same field, though they sometimes call. Interaction between pairs, even when close together, is also usually calm, with occasional breast patch display. As the spring develops and crop cover increases the pairs become increasingly discrete.
- However some unpaired male birds remain (most noticeably in 2018). Unpaired males call and display breast patch more than those in pairs. Jenkins observed an excess of males which would sometimes pair later in the year with a female whose partner had died, or whose original pair bond was weak (9).

Corn bunting 2014–18

11 pairs of corn bunting bred in 2018, three more than the previous year. This continues an upward trend across the five-year period:



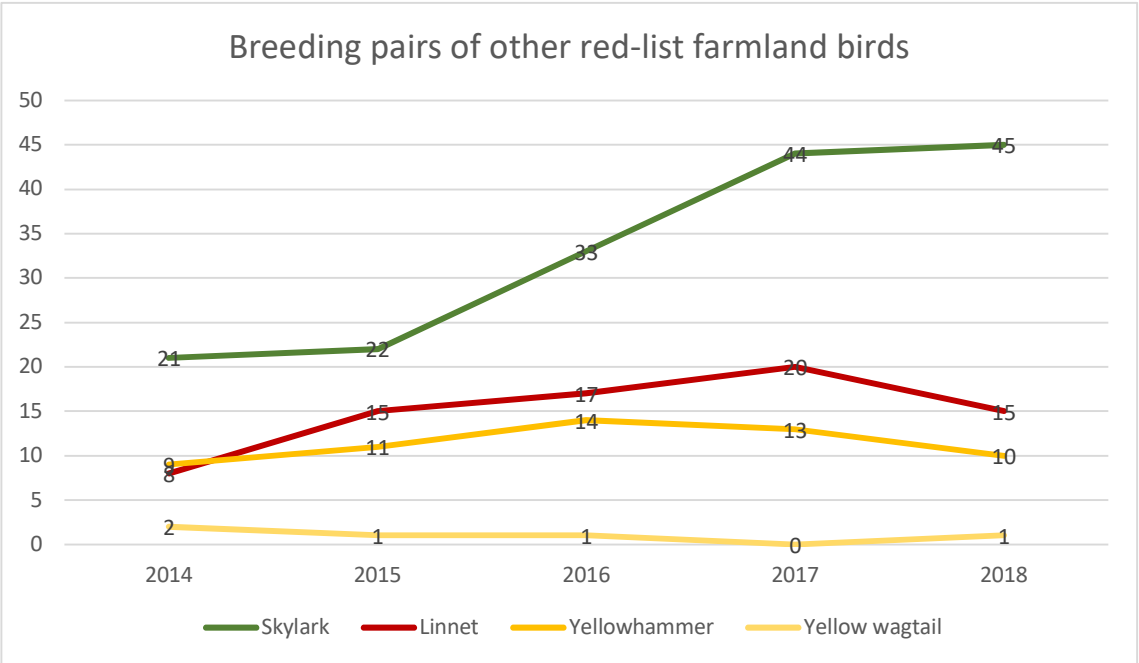
Corn bunting populations in the UK declined by 89% between 1970 and 2015 and that trend continues. There are now only 11,000 birds in the UK and the BTO’s Breeding Birds Survey recorded corn buntings in just 145 of the 3,941 squares surveyed in 2017. The species’ recent extinction in Ireland risks being repeated in large parts of Britain if its breeding sites are not protected. I asked a fellow surveyor about this who commented that ‘corn buntings are generally absent in the fens/Brecks where I usually go’.

So both the number of birds recorded in this study, and the upward trend, are important. This importance increases when added to the population across the railway line in Hobson’s Park – the 2018 Bioblitz there recorded 8 singing males. For comparison, the RSPB’s Hope Farm had 2 pairs in 2017 in 1.8km² (9).

I also recorded some interesting behaviour – which could only be observed because of the good numbers of populations. On both May 7 and 9 I recorded a group of over 10 corn buntings on the corner of the hedge between Fields 4 and 5. This was too late to be a winter flock, and too early to be a family group. Males had been singing for some weeks by then across the site, but fewer did so at this time.

I have searched the literature for any accounts of similar gatherings. The only one I have been able to find was from a century ago (long before the major crash in numbers), when John Walpole-Bond reported singing ‘conducted by many males together in a flock, generally from some bush or stunted hedge’ (British Birds, Vol 25, No 10, pages 292-300). My group was not singing, however.

Other red-list farmland birds



- **Skylark** populations (right), with around 45 breeding pairs, are similar to 2017. The increase between 2015 and 2017 may result from better recording – I now base estimates of skylark numbers on singing males observed (greatest on May 26th). This population density is higher than the mean recorded for similar crops in the BTO’s skylark survey (10). Winter flocks regularly numbered 50–70 birds.
- The **linnet** population, estimated at 15 pairs, was lower than in 2017; linnets are less territorial and more communal than some other species (11) so this estimate is based on the number of regularly used song posts; from April onwards I regularly recorded 10–20 birds. Winter flocks were also smaller in 2018 than in earlier years.
- **Yellowhammer** populations, at around 10 breeding pairs, are lower than the 13 recorded last year – possibly through loss of breeding habitat to the Biomedical campus. Nonetheless 2.5 pairs per km of hedgerow compares well with populations found by Bradbury et al (12). Densities were again highest in the hedges close to Nine Wells and along Granhams Road. Birds were also present in winter.
- A pair of **yellow wagtail** was also present, and appeared to breed successfully.



At least two pairs of **starlings** bred; large flocks were present in the autumn with 200 on January 18th. Two pairs of **song thrush** and **mistle thrush** also bred. **Lapwing** occasionally visited the area, but do not breed on the site. **Herring gull** visit regularly and **fieldfare** and **redwing** in the winter. One juvenile **turtle dove** stopped off during its autumn migration.

Amber list farmland birds

For the amber list farmland bird indicator species present:

- **Whitethroat** populations, with 16 breeding pairs, were lower than last year. Densities were highest along the hedges around Nine Wells and in the hedges along Granham's Road. The most birds on one occasion was 9, on May 9th.
- Around 12 pairs of **dunnock** bred, slightly lower than 2017.
- **Reed bunting** (right) again did well with 7 pairs. A pair of **stock dove** also breed.
- **Kestrel** are present and breed nearby.



Other notable amber list breeding species include **green woodpecker**, and **swallow** (though their favourite breeding site had been demolished) and probably **bullfinch** and **tawny owl**. In winter the site provides habitat for **meadow pipit** and **golden plover** while the water courses are used by **little egret** and **snipe**. **Mallard**, **black-headed**, **great** and **lesser black-backed gull** also visit and **common tern** occasionally fly over.

Other records

The remaining green list indicator species are all present as well as breeding lesser whitethroat, greater-spotted woodpecker, pied wagtail (with large flocks in the autumn) and moorhen. Buzzards bred in the woods on White Hill. A pair of stonechat wintered on the site in 2017/18.

The habitat survey showed 10 mature, species rich hedgerows with thick growth and good variety; 2 important watercourses (though one has been damaged by recent Biomedical campus work) and extensive grassy and flower-rich margins; and 3 small areas of scrub and woodland, plus the Nine Wells nature reserve.

Other species of wildlife present include::

- good numbers of **water vole** in Hobson's Brook; water vole numbers in Britain have fallen disastrously so this population is important; however damage to the ditch beside the cycle path by Biomedical campus development may have made this a less attractive habitat for the species.
- regular spring counts of 20+ **brown hare**, a city council 'priority species'; Hutchings and Harris (13) recorded 7.12 hares /km² on arable land; I have also recorded muntjac and roe deer, badger, fox, stoat, rabbit, mole, bank vole and wood mouse
- good populations of butterflies including brimstone, comma, common blue, Essex skipper, gatekeeper, green-veined white, holly blue, large skipper, large white, meadow brown, orange tip, painted lady, peacock, red admiral, ringlet, small heath, small tortoiseshell, small white, speckled wood as well as dragonflies and other invertebrates
- threatened arable flowers, including chamomile, cornflower, furmitory, mallow, poppy, speedwell and viper's bugloss.

Conclusions

The data I have gathered over the last seven years – and particularly between 2014 and 2018 – provide a picture of an area of green belt arable land on the outskirts of the city of Cambridge that supports important breeding populations of threatened farmland birds, as well as water vole, brown hare and other mammals, plants, butterflies and other invertebrates.

- 1 Over the period between 2014 and 2018 the site has supported exceptional populations of grey partridge and corn bunting (species that have declined by around 90% since 1970) and the site may well be among the best in Cambridgeshire for these species.
- 2 Habitat variety and land management contribute to the richness of the area. The combination of arable crops with margins and areas of bare earth benefit grey partridge, skylark, corn bunting and yellow wagtail; the ditches benefit yellowhammer and reed bunting, as well as water vole, while hedges are well used by linnet, yellowhammer, whitethroat and dunnock, and by grey partridge for cover. In particular, the hedge, margin and copses running north-west from the Nine Wells nature reserve provide excellent habitat for grey partridge, linnet and yellowhammer and must be conserved.
- 3 There are nonetheless warning signs in the 2018 data for red-listed species. While corn bunting continued to thrive, linnet and yellowhammer numbers declined and grey partridge numbers in the autumn showed a sharp reduction from earlier years. While several factors including the weather may have contributed, it seems probable that the expansion of the Biomedical campus and associated construction work has been important, and the construction work may also have damaged water vole habitat. Further disturbance is likely to reduce breeding sites for corn bunting and yellow wagtail and the proposed development of Field 2 would have a further detrimental effect on populations.
- 4 The area provides an important green space and area for walking, cycling and relaxation for local residents who are clearly able to co-exist with nature; the land also forms part of that covered by the Gog Magog Countryside Project proposed in the Cambridgeshire Green Infrastructure Strategy.

John Meed, January 2019

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- 2 HMSO (2005) *Securing the Future: Delivering UK Sustainable Development Strategy*, London, The Stationery Office
- 3 Eaton M A, Aebischer N J, Brown A F, Hearn R D, Lock L, Musgrove A J, Noble D G, Stroud D A and Gregory R D (2015) Birds of Conservation Concern 4: the population status of birds in the United Kingdom, Channel Islands and the Isle of Man. *British Birds* 108, 708–746

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5 BTO/JNCC/RSPB (2015) *Breeding Bird Survey Instructions*

6 RSPB (2012) *RSPB Volunteer and Farmer Alliance Training Manual*

7 Aebischer, N J and Ewald, J A (2012) The grey partridge in the UK: population status, research, policy and prospects. *Animal Biodiversity and Conservation*, 35.2: 353–362. (Other comparisons: the RSPB's Hope Farm Project, also nearby, recorded no grey partridge prior to management. Following management changes the population rose to 3 pairs/km² in 2011. The largest UK partridge study, the Sussex Study, recorded under 2 pairs/km² with typically 5 birds/km² in the autumn. Major changes in management – including game keeping and predator control – on one area of the Sussex Study led to autumn densities of 64 birds/km² by 2008 with around 20 breeding pairs/km² by 2014.)

8 Ceci, Chiari (2017) *Record highs for Hope Farm monitoring*, RSPB (at <https://ww2.rspb.org.uk/community/ourwork/b/biodiversity/archive/2017/10/02/record-highs-hope-farm-monitoring-blog-summer-2017.aspx>). The Hope Farm before and after management figures provide useful comparisons but it is important to recognise that the Hope Farm bird-friendly management measures are more extensive than those on the Nine Wells site.

9 Jenkins, D (1961) 'Social behaviour in the partridge *Perdix perdix*, The Ibis, Vol 103a, No 2 – a 3-year study of partridge on 640 acres (260 ha or 2.6km²) of downland near Winchester

10 Browne, S, Vickery, J and Chamberlain, D (2000) Densities and population estimates of breeding skylarks *Alauda arvensis* in Britain in 1997, *Bird Study* 47, 52-56 (Density for spring cereals: just over 12 per km²; for root crops was under 10. The RSPB's Hope Farm skylark density was 6 per km² before management and 19 per km² after management – see 12 below)

11 Moorcroft, D and Wilson, J (2000) The ecology of linnets *Carduelis cannabina* on lowland farmland, in Aebischer, N J et al, *Ecology and conservation of lowland farmland birds*, British Ornithologists' Union, pp 173–181. The RSPB's Hope Farm density was 3 before and 11 per km² after management.

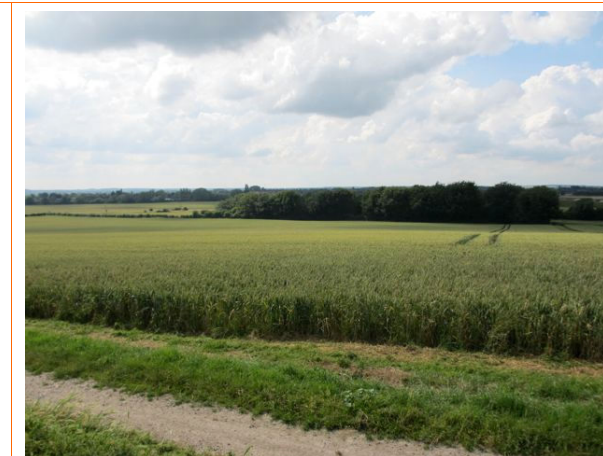
12 Bradbury, R et al (2000) Habitat associations and breeding success of yellowhammers in lowland farmland, *Journal of Applied Ecology*, 37, 789-805 (The density of breeding yellowhammers varied between 0.5 and 3 pairs per km of hedgerow, and two thirds of hedges surveyed in 1997 held fewer than 2 pairs per km. The RSPB's Hope Farm density was 8 before and 17 per km² after management)

13 Hutchings, M.R. and Harris, S., (1996), *The current status of the brown hare (*Lepus europaeus*) in Britain* (out of print)

Appendix 1: The area covered



Looking towards White Hill



Nine wells from White Hill



Mature hedge and permissive path



Cycle path and flower-rich margin



Grey partridge on Field 2, autumn 2016



Yellowhammer on Field 2 ditch, spring 2016

Appendix 2: Species recorded (2013–18)

This list shows the 88 species recorded over the last 6 years, organised in order of 18 red list birds, 27 amber list birds, and 43 green list species (*italic* = not recorded in 2018).

Red list species	1 st transect	2 nd transect	3 rd transect	Other visits	Estimated pairs
Corn bunting	6	6	9	x	11
<i>Cuckoo</i>				–	–
Fieldfare				x	–
Grey partridge	13	7	4	x	14
Herring gull		2		x	–
<i>House sparrow</i>				–	–
Lapwing				x	–
Linnet	10	13	19	x	15
<i>Merlin</i>				–	–
Mistle thrush				x	2
Redwing				x	–
Skylark	30	41	16	x	43
Song thrush	1	3		x	2
Starling		1		x	2
Turtle dove				x	–
<i>Whinchat</i>				–	–
Yellowhammer	7	8	5	x	10
Yellow wagtail		2		x	1
Amber list species	1 st transect	2 nd transect	3 rd transect	Other visits	Estimated pairs
Black-headed gull		3	5	x	–
Bullfinch			1	x	?
Common gull				x	–
Common tern				x	–
Dunnock	5	3	4	x	12
Golden plover				x	–
Green woodpecker	2	1		x	2
Great b-b gull				x	–
House martin			5	x	–
Kestrel				x	–
<i>Kingfisher</i>				–	–
Lesser b-b gull				x	–
Little egret				x	–
Mallard	9	-	1	x	–
<i>Marsh harrier</i>				–	–
Meadow pipit				x	–
<i>Mute swan</i>				–	–
Red kite				x	–
<i>Redstart</i>				–	–
Reed bunting	2	3	2	x	7
Snipe				–	–
Stock dove			1	x	1
Swallow	1	7	3	x	2
Swift		2	2	x	–
Tawny owl				x	–
Whitethroat		5	6	x	16
<i>Willow warbler</i>				–	–

Green list species	1 st transect	2 nd transect	3 rd transect	Other visits	Estimated pairs
Blackbird	5	5	9	x	8
Blackcap	4	4	5	x	6
Blue tit	11	5	4	x	6
Buzzard			2	x	1
Canada goose				x	–
Carrion crow	9	7	10	x	Not counted
Chaffinch	2	4	2	x	4
Chiffchaff	3	2	1	x	6
<i>Coal tit</i>				–	–
<i>Collared dove</i>				–	–
Cormorant				x	–
<i>Egyptian goose</i>				–	–
Feral pigeon			1	x	–
Garden warbler		1	1	x	2
Goldcrest	1			x	1
Goldfinch	2	8	9	x	4
Gt-sp woodpecker	1	1		x	1
Great tit	2	4	4	x	5
Greenfinch	2	2	4	x	5
Grey heron				x	–
Greylag goose	1	4		x	–
Hobby				x	–
Jackdaw	1	3	2	x	Not counted
<i>Jack snipe</i>				–	–
Jay	2	1		x	1
Lesser whitethroat	3		1	x	4
Long-tailed tit	2	1	7	x	5
Magpie	3	4	9	x	Not counted
Moorhen	1	1	1	x	1
Peregrine				x	–
Pheasant	2	1		x	3
Pied wagtail		1		x	2
R-L partridge	2			x	2
<i>Reed warbler</i>				–	–
Robin	6	5	3	x	12
Rook	4	17	24	x	–
<i>Sedge warbler</i>				–	–
<i>Siskin</i>				–	–
Sparrowhawk				x	–
Stonechat				x	–
<i>Wheatear</i>				–	–
Wood pigeon	42	27	38	x	Not counted
Wren	7	3	6	x	9

Appendix 3: Evidence of breeding populations

This table shows breeding signs recorded for the red and amber list species on the site:

Species	Estimated pairs*	Breeding signs
Skylark	45 (44)	Singing males; pairs; fledged young
Yellowhammer	10 (13)	Singing males; pairs; nest sites; fledged young
Linnet	15 (20)	Singing males; pairs; nest sites; fledged young
Grey partridge	14 (12)	Courtship behaviour; pairs; fledged young
Corn bunting	11 (8)	Singing males; pairs; fledged young
Yellow wagtail	1 (?)	Singing male only
Mistle thrush	2 (2)	Singing males; pairs
Song thrush	2 (2)	Singing males; pairs; fledged young
Starling	2 (2)	Pairs; nest sites; fledged young
Whitethroat	16 (22)	Singing males; pairs; nest sites; fledged young
Dunnock	12 (16)	Singing males; pairs; nest sites; fledged young
Green woodpecker	2 (2)	Pairs
Reed bunting	7 (8)	Singing males; pairs; nest sites; fledged young
Stock dove	1 (1)	Pair
Swallow	2 (4)	Singing males; pairs; nest sites; fledged young
Bullfinch	? (1)	Pair
Tawny owl	? (1)	Recorded: fledged young in previous year

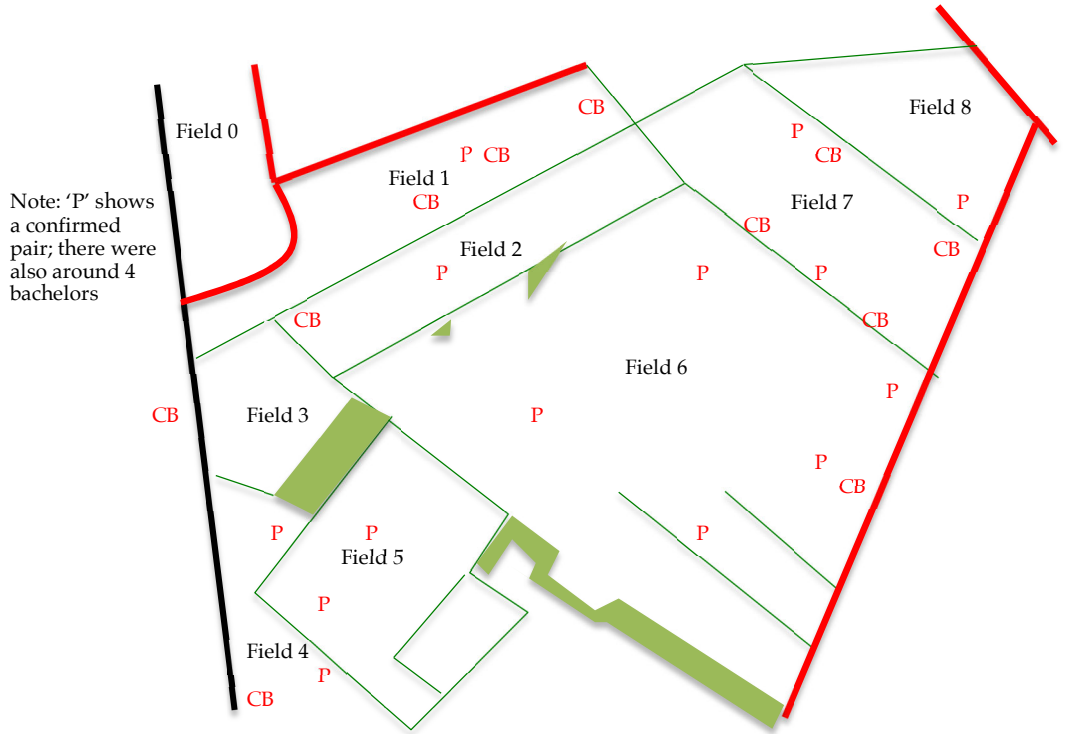
* Figures in brackets show estimates for 2017

For other red and amber species: no breeding signs were observed for **herring gull**, **lapwing**, **black-headed gull**, **common gull**, **kestrel**, **house martin**, **swift**, **mallard** and **mute swan**: these species visit to feed. The **red kite**, **common tern** and **lesser-black-backed gull** were flying over. The **fieldfare**, **redwing**, **little egret**, **kingfisher**, **golden plover**, **great-black-backed gull** and **meadow pipit** were winter visitors, all using the site to feed. The **turtle dove** was on autumn passage.

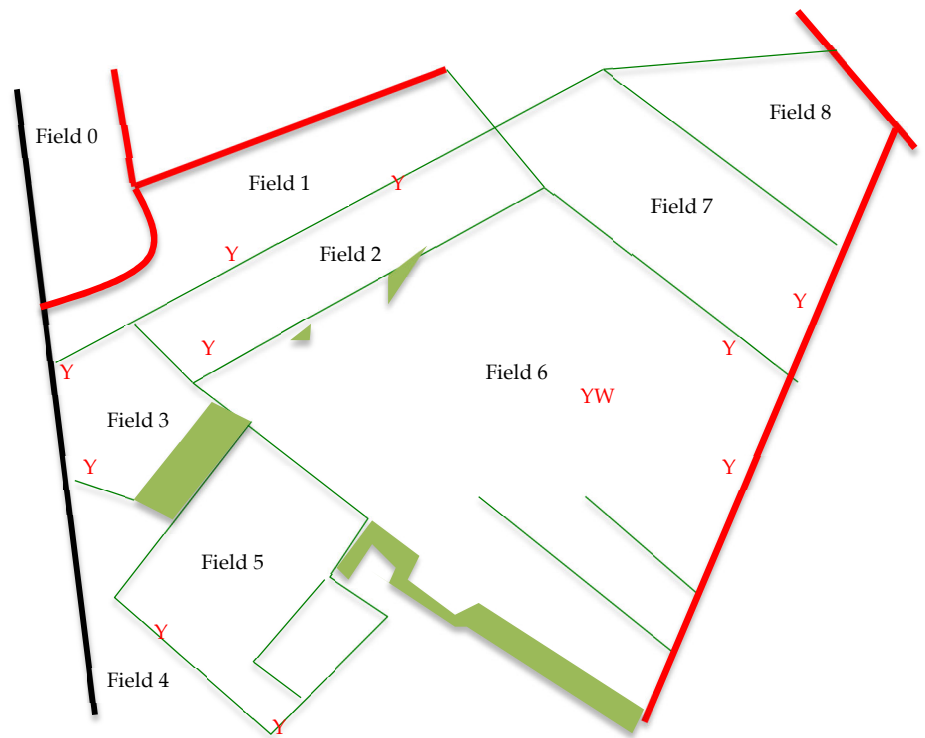
Appendix 4: Maps showing breeding pairs

These maps show estimated breeding pairs in 2018 of the red- or amber-listed farmland bird indicator species breeding in the one kilometre square:

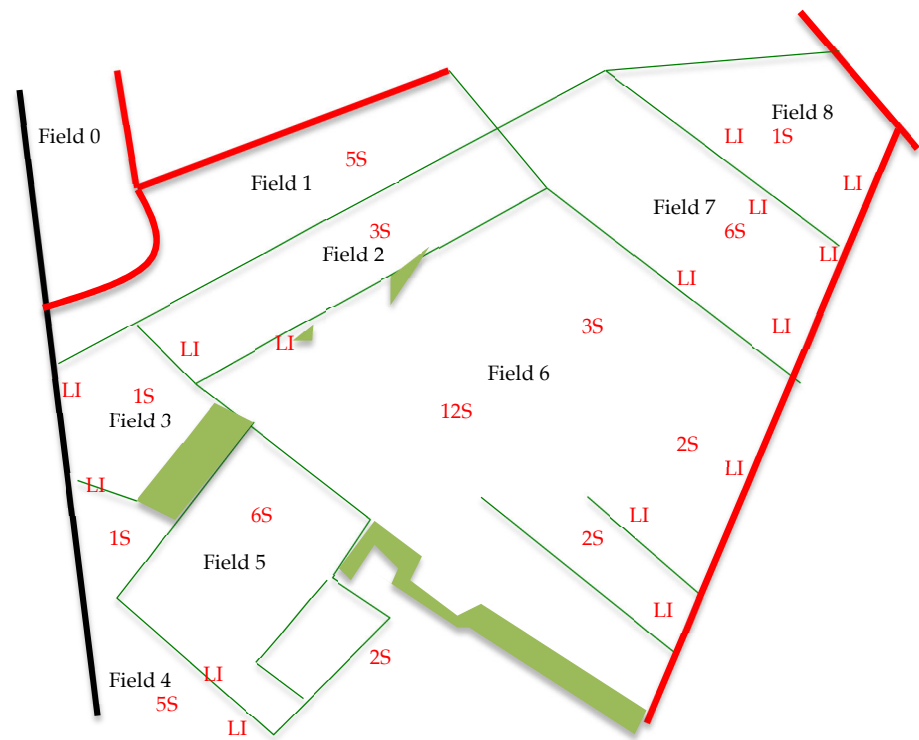
Grey partridge (P) and corn bunting (CB)



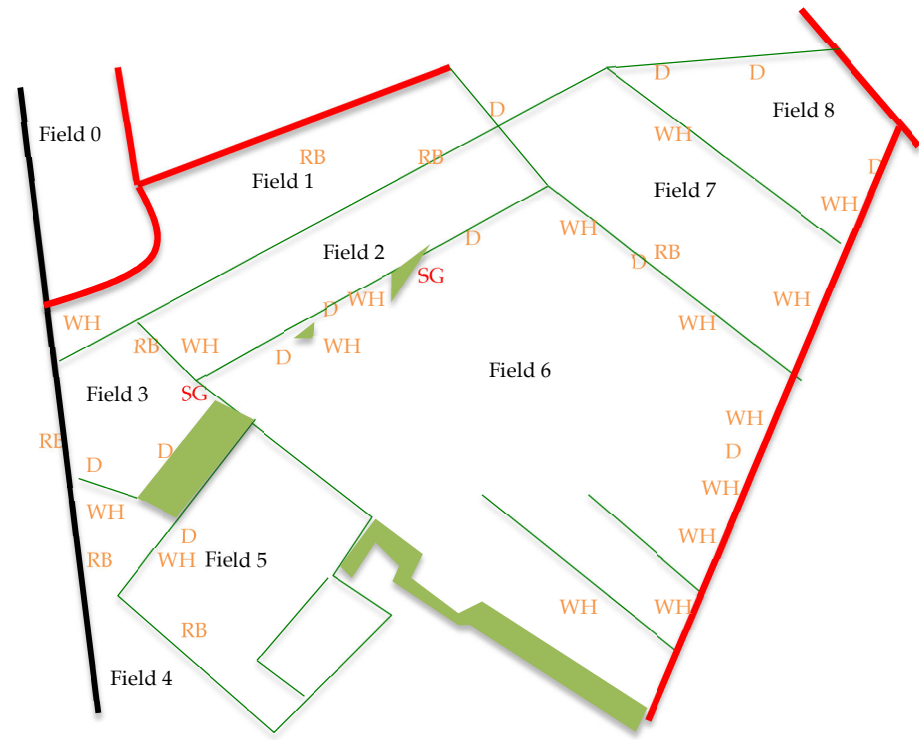
Yellowhammer (Y) and yellow wagtail (YW)



Linnet (LI) and skylark (S)



Whitethroat (WH), dunnock (D), reed bunting (RB) and starling (SG)



Appendix 5: Farmland bird indicator species

This table shows the 18 species on the UK Farmland Bird Indicator; the per cent change shows their population trends for the period 1970-2015:

Species	Present?	Breeding?	Per cent change*
Turtle dove	☒	–	-98%
Grey partridge	☒	☒	-92%
Corn bunting	☒	☒	-89%
Tree sparrow	–	–	-90%
Starling	☒	☒	-81%
Yellow wagtail	☒	☒	-67%
Skylark	☒	☒	-59%
Yellowhammer	☒	☒	-56%
Linnet	☒	☒	-55%
Kestrel	☒	–	-50%
Reed bunting	☒	☒	-31%
Greenfinch	☒	☒	-46%
Whitethroat	☒	☒	+6%
Stock dove	☒	☒	+113%
Woodpigeon	☒	☒	+123%
Jackdaw	☒	☒	+149%
Goldfinch	☒	☒	+159%
Rook	☒	–	n/a

Skylark is also a priority species in Policy 70 of the Cambridge Local Plan

• Source: Hayhow D.B., Ausden M.A., Bradbury R.B., Burnell D., Copeland A.I., Crick H.Q.P., Eaton M.A., Frost T., Grice P.V., Hall C., Harris S.J., Morecroft M.D., Noble D.G., Pearce-Higgins J.W., Watts O., Williams J.M. (2017) *The state of the UK’s birds 2017*. RSPB, BTO, WWT, DAEFRA, JNCC, NE and NRW, Sandy

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See: johnmeed.net/john-meed/nine-wells/