

A12 Chelmsford to A120 widening scheme TR010060

6.3 ENVIRONMENTAL STATEMENT APPENDIX 9.12 WINTERING BIRD SURVEY REPORT

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ENVIRONMENTAL STATEMENT

APPENDIX 9.12 WINTERING BIRD SURVEY REPORT

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LIST OF CONTENTS

1	Executive summary	3
2	Introduction	4
2.1	Background	4
2.2	Purpose of the report	5
2.1	Survey objectives	5
3	Wintering bird ecology	7
4	Legislation and policy	8
4.1	Legislation	8
4.2	National Networks National Policy Statement	8
4.3	Priority species	8
4.4	Birds of Conservation Concern (BoCC)	8
4.5	Essex Biodiversity Action Plan and Red List	9
5	Methodology	10
5.1	Desk study	10
5.2	Field study	10
5.3	Limitations	16
6	Results	18
6.1	Desk study	18
6.2	Field survey	18
7	Discussion	22
8	References	24
9	Glossary	25
	Annex A Essex Red Data List	26
	Annex B Figures	28
	Annex C Desk study results	29
	Annex D Survey metadata	32
	Annex E Summary of results	38

LIST OF FIGURES

Figure 1 Wintering birds survey area

Figure 2 Wintering birds survey results 2017-2020

LIST OF TABLES

Table 5.1 Qualifying species of nearby SPA and Ramsar sites	11
Table 5.2 Target winter farmland bird species after Gillings, <i>et al.</i> (2008)	15
Table 6.1 Summary of wintering birds survey results. Rows in bold face are qualifying species of SPAs within 30km of the proposed scheme	19
Table A.1 Bird species listed on the Essex Red Data List (Essex Field Club, 2020)	26
Table B.1 British Trust of Ornithology species codes used in Figure 2	28
Table C.1 Historic records of wintering birds between 2010 and 2020	29
Table D.1 Survey dates and weather conditions. Weather data not recorded during the survey were obtained from Weather Underground (2020) using the nearest weather station	32
Table E.1 Summary of wintering birds survey results from the first winter of survey (January to February 2017)	38
Table E.2 Summary of wintering birds survey results, November 2017 to February 2018	41
Table E.3 Summary of wintering birds survey results, November 2019 to February 2020	43

1 Executive summary

- 1.1.1 This is an appendix of the A12 Chelmsford to A120 Widening Scheme Environmental Statement (ES). This report presents an evaluation of wintering birds based on recent surveys. It also presents the policy and legislative context within which the Environmental Impact Assessment (EIA) process is being carried out. Likely significant effects on, and mitigation for wintering birds, are considered in Chapter 9 of the ES.
- 1.1.2 Wintering birds were surveyed using guidance in British Trust for Ornithology Winter Farmland Bird Survey (Gillings *et al.*, 2008).
- 1.1.3 Species of wintering birds recorded within the study area from desktop and field surveys undertaken during 2017 to 2020 include coot (*Fulica atra*), cormorant (*Phalacrocorax carbo*), golden plover (*Pluvialis apricaria*), great crested grebe (*Podiceps cristatus*), lapwing (*Vanellus vanellus*), mute swan (*Cygnus olor*), shoveler (*Anas clypeata*), tufted duck (*Aythya fuligula*) and wigeon (*Mareca Penelope*).
- 1.1.4 The survey recorded a diversity of birds from the large area sampled over three years. However, the diversity of species was uniform across most of the area sampled, and diversity and numbers of birds were generally very low across smaller areas. Arable land, the predominant land use across the area sampled and mostly cropped for winter wheat (Jacobs, 2020), often supported very few birds. Less extensive and more localised habitats appeared to be more important for birds.
- 1.1.5 More diverse assemblages of birds were also associated with the lakes around Witham, such as Coleman's Reservoir. Most of the records of waterfowl species listed as qualifying species of nearby Special Protection Area (SPA) were recorded from this area.
- 1.1.6 Many of the rarer species were likely to have been chance records of birds passing through the area surveyed.
- 1.1.7 Wintering birds within the study area have been evaluated as of **local** value.

2 Introduction

2.1 Background

- 2.1.1 The A12 Chelmsford to A120 Widening Scheme (the 'proposed scheme') comprises improvements to the A12 between junction 19 (Boreham) at TL 741094, and junction 25 (Marks Tey) at TL 917238, a distance of approximately 24km, or 15 miles. The proposed scheme involves widening the A12 to three lanes throughout. It also includes safety improvements, including closing of existing at grade accesses, and reducing access to cyclists along the dual carriageway by providing an alternative route for walkers, cyclists and horse riders.
- 2.1.2 The proposed scheme would require new crossings of watercourses and potential improvements to existing culvert and bridge crossings. There are eight crossings of main rivers, six of which comprise existing crossings and two of which comprise new crossings on proposed offline sections of road. Three of the crossings would require minor realignments at the crossing points.
- 2.1.3 Land would be required both temporarily and permanently to construct, operate and maintain the proposed scheme. Permanent land-take requirements include the footprint of all the proposed highway infrastructure and associated earthworks, drainage works and access roads, together with environmental mitigation areas such as landscape planting and biodiversity habitat creation.
- 2.1.4 The proposed scheme is classed as a Nationally Significant Infrastructure Project (NSIP) under the Planning Act (2008), triggering the need to apply for a Development Consent Order (DCO).
- 2.1.5 The selection criteria in the Infrastructure Planning Environmental Impact Assessment (EIA) Regulations 2017 have been used to screen the proposed scheme and identified the potential for significant effects. The proposed scheme is therefore required to be accompanied by an Environmental Statement (ES) to provide information on likely significant effects.
- 2.1.6 The Scoping Report (Highways England, 2020a) (informed by an Extended Phase 1 Habitat Survey (National Highways, 2022)) identified a number of ecological receptors which have the potential to be impacted by construction or operation of the proposed scheme. Surveys are therefore required to establish an accurate baseline against which the impacts of the proposed scheme could be assessed in accordance with the Chartered Institute of Ecology and Environmental Management (CIEEM) guidance for Ecological Impact Assessment (EclA) (CIEEM, 2019) and DMRB LA 108 – Biodiversity (Highways England, 2020b). Scoping opinions received from statutory and non-statutory consultees during this process were also taken into consideration (refer to Chapter 9 of the Environmental Statement (ES)).
- 2.1.7 The Extended Phase 1 Habitat Survey confirmed the requirement to undertake the following suite of ecological surveys for the scheme as follows:
- Botanical surveys of potential UK BAP priority habitats
 - Hedgerow

- c. Freshwater macro-invertebrates
- d. Freshwater fish
- e. Freshwater macrophytes
- f. White-clawed crayfish
- g. River Habitat Survey (RHS)
- h. Pond habitat survey (PSYM)
- i. Terrestrial invertebrates
- j. Birds (breeding and wintering)
- k. Barn owls
- l. Bats (bat activity, bat roost potential, and roost characterisation surveys)
- m. Dormice
- n. Water vole
- o. Otter
- p. Badger

2.2 Purpose of the report

- 2.2.1 This report is an appendix of the A12 Chelmsford to A120 Widening Scheme ES. It presents an evaluation of the status of wintering birds based on a desk-based review of records and field surveys. It also presents the policy and legislative context within which the EIA is carried out. Likely significant effects on, and mitigation for wintering birds, are considered in Chapter 9 of the ES.
- 2.2.2 This report presents the results of the surveys undertaken during 2017/2018 and 2019/2020.

2.1 Survey objectives

- 2.1.1 The key objectives of this survey were to:
 - a. determine the presence or absence of wintering birds within the study area
 - b. identify wintering bird distribution and status in the study area
 - c. identify habitats of importance to wintering birds within the study area
 - d. provide an evaluation for the wintering bird population in the study area
 - e. inform the assessment of potential impacts on wintering birds associated with the proposed scheme (as detailed within the ES)

- f. provide sufficient field data for the development of appropriate mitigation if necessary (as detailed in the ES).

3 Wintering bird ecology

- 3.1.1 Approximately 50 species leave the UK to migrate south every winter. However, many resident bird species remain in the UK, joined by migrant birds arrive in autumn from the north and east to spend winter in the UK as the weather is milder and food is easier to find. Winter visitors include fieldfare (*Turdus pilaris*), redwing (*Turdus iliacus*) and many waterfowl.
- 3.1.2 Britain holds internationally important populations of wintering waterfowl such as golden plover (*Pluvialis apricaria*) and lapwing (*Vanellus vanellus*) which are potentially present in the study area.

4 Legislation and policy

4.1 Legislation

- 4.1.1 Many bird populations within the UK, including those that are resident, overwintering and migratory are legally protected under the Conservation of Habitats and Species Regulations 2017 which requires the designation of Special Protection Areas (SPAs) for rare or vulnerable species, as well as for all regularly occurring migratory species, paying particular attention to the protection of wetlands of international importance.
- 4.1.2 Section 40 of the Natural Environment and Rural Communities Act 2006 (NERC) places a duty on all public bodies to have regard to the conservation of biodiversity in England, when carrying out their normal functions (the biodiversity duty).

4.2 National Networks National Policy Statement

- 4.2.1 The National Networks National Policy Statement (NNNPS) sets out the Government's policies to deliver the development of NSIP on the national road and rail networks in England. The Secretary of State (SoS) uses the NNNPS as the primary basis for making decisions on DCO applications.
- 4.2.2 Paragraph 5.22 of the NNNPS states that the applicant's assessment should describe any likely significant effects on internationally, nationally and locally designated sites of ecological conservation importance; protected species; habitats (including irreplaceable habitats such as ancient woodland and veteran trees); and other species identified as being of principal importance for the conservation of biodiversity. The surveys described in this report will inform the assessment of significant effects within the ES.
- 4.2.3 In addition to the national policy set out in the NNNPS, the proposed scheme has had regard to relevant legislation and local plans and policy.

4.3 Priority species

- 4.3.1 The *Natural Environment and Rural Communities (NERC) Act 2006* places a responsibility on local authorities and government departments in England to consider the conservation of biodiversity in a manner consistent with their normal duties, such as policy and decision-making. This Act ties together wildlife legislation and planning policies.
- 4.3.2 Section 41 of the Act requires the SoS to maintain a list of habitat and species that are principle importance for the conservation of biodiversity. The lists are published by Natural England. Forty-nine species of bird are listed, referred to as priority species hereafter (abbreviated to S41 species).

4.4 Birds of Conservation Concern (BoCC)

- 4.4.1 In 1996, the UK's leading non-governmental bird conservation organisations reviewed the status of all bird species regularly found in Britain. On the basis of several criteria relating to population status and relative importance to global conservation, all regular breeding and wintering species were placed on one of

three lists - 'red' (highest conservation concern), 'amber' (medium conservation concern) and 'green' (lowest conservation concern). The lists are reviewed every five years and used to inform conservation policy decisions, referred to hereafter as the BoCC lists. The most recent review was undertaken in 2015 (Eaton *et al.*, 2015).

4.5 Essex Biodiversity Action Plan and Red List

- 4.5.1 The Essex Field Club maintains a list of taxa of conservation concern in the county, and list species from the former Essex Biodiversity Action Plan (BAP) (Essex Field Club, 2020). There are 49 bird species on the Essex Red List, listed in Annex A. There are five birds listed on the Essex BAP: bittern (*Botaurus stellaris*); grey partridge (*Perdix perdix*); skylark (*Alauda arvensis*); song thrush (*Turdus philomelos*); and stone curlew (*Burhinus oedicnemus*).

5 Methodology

5.1 Desk study

- 5.1.1 A desk study was undertaken to identify records of wintering birds in the study area and surrounding landscape. Records were requested from Essex Wildlife Trust and Essex Field Club, supplied in July and December 2020, respectively. The Essex Wildlife Trust bird records provided covered the years 2006-2019 and Essex Field Club 2016-2019. From these, records were identified that were:
- a. within 2km of the proposed scheme
 - b. made during the months November, December, January or February during the period 2010-2020
 - c. of species listed in Table 5.2
- 5.1.2 Essex Field Club records could not be used as only the year of most recent record for a locality was provided.

5.2 Field study

- 5.2.1 A wintering bird survey was conducted over three winters from 2017 to 2020; January to February 2017 (referred to as 2017), November 2017 to February 2018 (referred to as 2017/18) and November 2019 to February 2020 (referred to as 2019/20). This is within the optimal winter survey season for wintering birds (British Trust for Ornithology Winter Farmland Bird Survey (Gillings, *et al.*, 2008)). Habitats within the study area were subject to survey in accordance with best practice guidance (Gillings *et al.*, 2008).
- 5.2.2 The purpose of the survey was to identify the importance of habitats around the proposed scheme for target bird species, defined as:
- a. species listed as qualifying features of nearby SPA and Ramsar sites that could be affected by the proposed scheme (Table 5.1)
 - b. winter farmland birds (Table 5.2; Gillings, *et al.*, 2008)
 - c. waders and waterfowl
 - d. uncommon bird species, using professional judgement
- 5.2.3 The survey used a series of walked transects up to four times during each winter to sample populations of target bird species within 500m of the proposed route and is hereafter referred to as 'the study area' (see Figure 1).
- 5.2.4 The transects were chosen to cover habitats potentially important for the target bird species, e.g. arable fields, hedgerows, large waterbodies and watercourses, determined from Phase 1 habitat survey for the proposed scheme (Jacobs, 2020). The survey used 18 transects in the first winter, 20 in the second and six in the third. The third winter sampled a shorter length of the proposed scheme, covering land around the northern end of the scheme that

had previously not been sampled, and used longer transects. Due to land access permissions between the first and subsequent visits during the third winter, the first visit used a different set of transects to subsequent visits, although similar areas were covered.

- 5.2.5 Each visit was undertaken in daylight hours, mostly between 0900 and 1600, and as much as possible during weather conditions favourable for bird activity. Survey visits were carried out by teams of two, at least one of whom was an experienced ornithologist. Transects were walked at a constant, slow pace, and the order and direction of transects was varied between visits to reduce bias. For each transect the start and end time, and the cloud cover, wind on the Beaufort scale and precipitation at the start of the transect were recorded. The timings and weather conditions of each survey visit are provided in Annex C.
- 5.2.6 Target species observed by sight (with the aid of Nikon Prostaff 7s 10x42 binoculars) or vocalisations while walking a transect (a 'registration') were recorded on a map in the *Collector for ArcGIS* app on an iPad®. Uncommon species additional to the target species and larger groups of gull species were also recorded.
- 5.2.7 Registrations recorded the species, number of individuals and their behaviour using the categories 'foraging', 'resting', 'flying' and 'unknown'. For birds in flight, the direction of flight was also recorded using a compass direction if birds appeared to be undertaking longer-distance flights, rather than for example circling above a field.
- 5.2.8 Larger flocks of gull species were also recorded. Common resident species were not recorded.
- 5.2.9 Bird species nomenclature for the survey and throughout this report follows the British Ornithologists' Union British List (British Ornithologists' Union, 2018).

Table 5.1 Qualifying species of nearby SPA and Ramsar sites

Common name	Scientific name	Conservation status	SPA and Ramsar sites
Avocet	<i>Recurvirostra avosetta</i>	BoCC Amber, Essex Red List	<ul style="list-style-type: none"> Alde-Ore Estuary SPA / Ramsar Stour and Orwell Estuaries SPA / Ramsar
Bar-tailed godwit	<i>Limosa lapponica</i>	BoCC Amber	<ul style="list-style-type: none"> Dengie (Mid-Essex Coast Phase 1) SPA / Ramsar
Black-tailed godwit	<i>Limosa limosa</i>	BoCC Red	<ul style="list-style-type: none"> Blackwater Estuary (Mid-Essex Coast Phase 4) SPA / Ramsar Colne Estuary (Mid-Essex Coast Phase 2) SPA / Ramsar Stour and Orwell Estuaries SPA / Ramsar

Common name	Scientific name	Conservation status	SPA and Ramsar sites
Common tern	<i>Sterna hirundo</i>	BoCC Amber	<ul style="list-style-type: none"> Outer Thames Estuary SPA
Coot	<i>Fulica atra</i>	BoCC Green	<ul style="list-style-type: none"> Abberton Reservoir SPA / Ramsar
Cormorant	<i>Phalacrocorax carbo</i>	BoCC Green	<ul style="list-style-type: none"> Abberton Reservoir SPA / Ramsar Stour and Orwell Estuaries SPA / Ramsar
Curlew	<i>Numenius arquata</i>	BoCC Red, S41	<ul style="list-style-type: none"> Stour and Orwell Estuaries SPA / Ramsar
Brent goose	<i>Branta bernicla</i>	BoCC Amber, S41, Essex Red List	<ul style="list-style-type: none"> Blackwater Estuary (Mid-Essex Coast Phase 4) SPA / Ramsar Colne Estuary (Mid-Essex Coast Phase 2) SPA / Ramsar Colne Estuary (Mid-Essex Coast Phase 2) SPA / Ramsar Dengie (Mid-Essex Coast Phase 1) SPA / Ramsar Stour and Orwell Estuaries SPA / Ramsar
Dunlin	<i>Calidris alpina</i>	BoCC Amber	<ul style="list-style-type: none"> Blackwater Estuary (Mid-Essex Coast Phase 4) SPA / Ramsar Stour and Orwell Estuaries SPA / Ramsar
Gadwall	<i>Mareca strepera</i>	BoCC Amber, Essex Red List	<ul style="list-style-type: none"> Abberton Reservoir SPA / Ramsar Stour and Orwell Estuaries SPA / Ramsar
Golden plover	<i>Pluvialis apricaria</i>	BoCC Green	<ul style="list-style-type: none"> Blackwater Estuary (Mid-Essex Coast Phase 4) SPA / Ramsar Stour and Orwell Estuaries SPA / Ramsar
Goldeneye	<i>Bucephala clangula</i>	BoCC Amber	<ul style="list-style-type: none"> Abberton Reservoir SPA / Ramsar Stour and Orwell Estuaries SPA / Ramsar

Common name	Scientific name	Conservation status	SPA and Ramsar sites
Great crested grebe	<i>Podiceps cristatus</i>	BoCC Green	<ul style="list-style-type: none"> • Abberton Reservoir SPA / Ramsar • Stour and Orwell Estuaries SPA / Ramsar
Grey plover	<i>Pluvialis squatarola</i>	BoCC Amber	<ul style="list-style-type: none"> • Blackwater Estuary (Mid-Essex Coast Phase 4) SPA / Ramsar • Dengie (Mid-Essex Coast Phase 1) SPA / Ramsar • Stour and Orwell Estuaries SPA / Ramsar
Hen harrier	<i>Circus cyaneus</i>	BoCC Red, S41, Essex Red List	<ul style="list-style-type: none"> • Blackwater Estuary (Mid-Essex Coast Phase 4) SPA / Ramsar • Colne Estuary (Mid-Essex Coast Phase 2) SPA / Ramsar • Dengie (Mid-Essex Coast Phase 1) SPA / Ramsar
Knot	<i>Calidris canutus</i>	BoCC Amber	<ul style="list-style-type: none"> • Dengie (Mid-Essex Coast Phase 1) SPA / Ramsar • Stour and Orwell Estuaries SPA / Ramsar
Lapwing	<i>Vanellus vanellus</i>	BoCC Red, S41, Essex Red List	<ul style="list-style-type: none"> • Stour and Orwell Estuaries SPA / Ramsar
Lesser black-backed gull	<i>Larus fuscus</i>	BoCC Amber	<ul style="list-style-type: none"> • Alde-Ore Estuary SPA / Ramsar
Little tern	<i>Sternula albifrons</i>	BoCC Amber, Essex Red List	<ul style="list-style-type: none"> • Alde-Ore Estuary SPA / Ramsar • Blackwater Estuary (Mid-Essex Coast Phase 4) SPA / Ramsar • Colne Estuary (Mid-Essex Coast Phase 2) SPA / Ramsar • Outer Thames Estuary SPA
Marsh harrier	<i>Circus aeruginosus</i>	BoCC Amber, Essex Red List	<ul style="list-style-type: none"> • Alde-Ore Estuary SPA / Ramsar

Common name	Scientific name	Conservation status	SPA and Ramsar sites
Mute swan	<i>Cygnus olor</i>	BoCC Amber	<ul style="list-style-type: none"> • Abberton Reservoir SPA / Ramsar • Stour and Orwell Estuaries SPA / Ramsar
Pintail	<i>Anas acuta</i>	BoCC Amber	<ul style="list-style-type: none"> • Stour and Orwell Estuaries SPA / Ramsar
Pochard	<i>Aythya ferina</i>	BoCC Red, Essex Red List	<ul style="list-style-type: none"> • Abberton Reservoir SPA / Ramsar • Blackwater Estuary (Mid-Essex Coast Phase 4) SPA / Ramsar • Colne Estuary (Mid-Essex Coast Phase 2) SPA / Ramsar
Redshank	<i>Tringa totanus</i>	BoCC Amber, Essex Red List	<ul style="list-style-type: none"> • Alde-Ore Estuary SPA / Ramsar • Blackwater Estuary (Mid-Essex Coast Phase 4) SPA / Ramsar • Colne Estuary (Mid-Essex Coast Phase 2) SPA / Ramsar • Stour and Orwell Estuaries SPA / Ramsar
Red-throated diver	<i>Gavia stellata</i>	BoCC Green	<ul style="list-style-type: none"> • Outer Thames Estuary SPA
Ringed plover	<i>Charadrius hiaticula</i>	BoCC Red, Essex Red List	<ul style="list-style-type: none"> • Blackwater Estuary (Mid-Essex Coast Phase 4) SPA / Ramsar • Colne Estuary (Mid-Essex Coast Phase 2) SPA / Ramsar • Stour and Orwell Estuaries SPA / Ramsar
Ruff	<i>Calidris pugnax</i>	BoCC Red	<ul style="list-style-type: none"> • Alde-Ore Estuary SPA / Ramsar
Sandwich tern	<i>Thalasseus sandvicensis</i>	BoCC Amber	<ul style="list-style-type: none"> • Alde-Ore Estuary SPA / Ramsar
Scaup	<i>Aythya marila</i>	BoCC Red	<ul style="list-style-type: none"> • Stour and Orwell Estuaries SPA / Ramsar

Common name	Scientific name	Conservation status	SPA and Ramsar sites
Shelduck	<i>Tadorna tadorna</i>	BoCC Amber	<ul style="list-style-type: none"> Blackwater Estuary (Mid-Essex Coast Phase 4) SPA / Ramsar Stour and Orwell Estuaries SPA / Ramsar
Shoveler	<i>Spatula clypeata</i>	BoCC Amber, Essex Red List	<ul style="list-style-type: none"> Abberton Reservoir SPA / Ramsar
Teal	<i>Anas crecca</i>	BoCC Amber, Essex Red List	<ul style="list-style-type: none"> Abberton Reservoir SPA / Ramsar
Tufted duck	<i>Aythya fuligula</i>	BoCC Green	<ul style="list-style-type: none"> Abberton Reservoir SPA / Ramsar

Table 5.2 Target winter farmland bird species after Gillings, *et al.* (2008)

Common name	Scientific name	Conservation status
Brambling	<i>Fringilla montifringilla</i>	BoCC Green
Bullfinch	<i>Pyrrhula pyrrhula</i>	BoCC Amber, Essex Red List, S41
Chaffinch	<i>Fringilla coelebs</i>	BoCC Green
Corn bunting	<i>Emberiza calandra</i>	Essex Red List, BoCC Red, S41
Curlew	<i>Numenius arquata</i>	BoCC Red, S41
Fieldfare	<i>Turdus pilaris</i>	BoCC Red
Golden plover	<i>Pluvialis apricaria</i>	BoCC Green
Goldfinch	<i>Carduelis carduelis</i>	BoCC Green
Greenfinch	<i>Chloris chloris</i>	BoCC Red
Grey partridge	<i>Perdix perdix</i>	Essex BAP, Essex Red List, BoCC Red, S41
House sparrow	<i>Passer domesticus</i>	BoCC Red, S41
Lapwing	<i>Vanellus vanellus</i>	Essex Red List, BoCC Red, S41
Lesser redpoll	<i>Carduelis cabaret</i>	BoCC Red, S41
Linnet	<i>Linaria cannabina</i>	Essex Red List, BoCC Red, S41
Meadow pipit	<i>Anthus pratensis</i>	BoCC Amber
Mistle thrush	<i>Turdus viscivorus</i>	BoCC Red
Pied wagtail	<i>Motacilla alba</i>	BoCC Green
Redwing	<i>Turdus iliacus</i>	BoCC Amber
Reed bunting	<i>Emberiza schoeniclus</i>	BoCC Amber, Essex Red List, S41
Skylark	<i>Alauda arvensis</i>	Essex BAP, Essex Red List, BoCC Red, S41
Snipe	<i>Gallinago gallinago</i>	BoCC Amber, Essex Red List

Common name	Scientific name	Conservation status
Song Thrush	<i>Turdus philomelos</i>	Essex BAP, Essex Red List, BoCC Amber, S41
Starling	<i>Sturnus vulgaris</i>	BoCC Red, S41
Stock dove	<i>Columba oenas</i>	BoCC Amber
Stonechat	<i>Saxicola torquatus</i>	Essex Red List
Tree sparrow	<i>Passer montanus</i>	Essex Red List, BoCC Red, S41
Woodlark	<i>Lullula arborea</i>	S41
Yellowhammer	<i>Emberiza citrinella</i>	Essex Red List, BoCC Red, S41

5.3 Limitations

- 5.3.1 In general, dwelling houses and associated gardens were not surveyed for wintering birds.
- 5.3.2 The findings of this report represent the professional opinion of qualified ecologists and do not constitute professional legal advice. The client may wish to seek professional legal interpretation of the relevant wildlife legislation cited in this document.
- 5.3.3 This report should be read in full and excerpts may not be representative of the findings.
- 5.3.4 This report has been prepared exclusively for Jacobs' client and no liability is accepted for any use or reliance on the report by third parties.
- 5.3.5 The land accessible for survey varied through the survey period due to land access restrictions. The majority of transects were across private land and were visited with the permission of the landowner. However, for several large farms and many smaller parcels, access permission was denied for one or more winters or for parts of a winter, or no landowner details were available, resulting in gaps in coverage. As much as possible, it was attempted to cover significant gaps when permission became available or by using public rights of way.
- 5.3.6 Due to the similarity in habitats across the proposed scheme, the mobility of many of the target species, the sample of populations of target species recorded is considered to be representative. Gaps in survey coverage are therefore not considered a significant limitation on the survey results.
- 5.3.7 The number of transects between survey years varies, this was due to access restrictions, changes in scheme design and the need to survey different areas.
- 5.3.8 The first winter of the survey (2017) was undertaken during the second half of the winter, so that the results represent the diversity and behaviour of birds only within a limited part of the season, especially for more mobile species.
- 5.3.9 During the first winter (2017), the latter part of the third and final week was undertaken in largely unsuitable weather conditions (Storm Doris, 23rd February 2017). However, the bird activity recorded was comparable with that of the second week in respect to several of the target species for the survey

(e.g. golden plover, lapwing). This is therefore not considered a significant limitation on the results of the survey.

- 5.3.10 During the second winter (2017/2018), due to restricted land access permissions during the fourth survey for transects 1-9, these surveys were not carried out.
- 5.3.11 During the third winter (2019/20), due to restricted land access permissions during the first visit, a different set of transects was walked to subsequent visits, when further access was available.
- 5.3.12 During the third winter (2019/20), land access permission was not available to complete the third visit to transect four.

6 Results

6.1 Desk study

- 6.1.1 The desk study identified 35 records of eleven wintering bird species. Full records are provided in Annex C. The bird species recorded are small passerine species, with the exception of lapwing, grey partridge and mute swan (*Cygnus olor*). There was one record of lapwing, from a field south of junction 26 of the A12 in Stanway.

6.2 Field survey

- 6.2.1 A total of 42 target species was recorded over the three winters surveyed, listed with the maximum monthly total number of each species counted during each of the three winters of survey in Table 6.1¹. Figure 2 shows the location, species and number of birds of registrations recorded. Summaries of results by winter and transect are provided in Annex E.
- 6.2.2 Most of the species recorded comprised passerines found to be widely distributed across the area sampled by the survey, such as the common farmland species chaffinch (*Fringilla coelebs*), linnet (*Linaria cannabina*), skylark (*Alauda arvensis*), and winter thrushes fieldfare (*Turdus pilaris*) and redwing (*T. iliacus*). Numbers of these species varied across the area and period sampled. Concentrations of finches and reed bunting (*Emberiza schoeniclus*) and yellowhammer (*E. citrinella*) were often associated with maize (*Zea mays*) crops sown for gamebirds, but large mixed flocks of finches and other species were occasionally recorded in ploughed fields and stubble. The largest mixed flocks recorded were seen near Marks Tey, along transect 4 in the third winter of survey (November 2019 to February 2020), comprising several hundred chaffinch, greenfinch (*Chloris chloris*), linnet, skylark and stock dove (*Columba oenas*). Numbers of thrushes recorded varied within and between winters but appeared to be greater in the colder winter of 2017/2018.
- 6.2.3 More localised species comprised waterfowl associated with lakes and rivers, predominantly around Witham and not surveyed during the third winter (November 2019 to February 2020), and those with very few registrations such as great white egret (*Ardea alba*), grey partridge and hawfinch (*Coccothraustes coccothraustes*). Grey partridge was recorded in December 2017, with two birds recorded along transect 6, south-west of Kelveden, and in February 2020, and two birds along transect 1, south of Prested Hall, Feering.
- 6.2.4 Nine species of waterfowl were recorded: coot (*Fulica atra*); great crested grebe (*Podiceps cristatus*); mallard (*Anas platyrhynchos*); mute swan; pochard (*Aythya ferina*); shoveler (*Anas clypeata*); tufted duck (*Aythya fuligula*); water rail (*Rallus aquaticus*); and wigeon (*Marcea penelope*). Cormorant (*Phalacrocorax carbo*) was also recorded. The most widespread and frequently recorded species was mallard. Cormorant was occasionally seen flying over. The other waterfowl species were associated with lakes, less often with rivers.

¹ Calculated for a given winter by taking the maximum number of each species each month (i.e. the total number of birds recorded across all transects for a particular month). For a given winter, the maximum monthly total provides a minimum size of the population in the study area.

The greatest numbers of birds and diversity of species was recorded from Coleman's Reservoir, Witham, surveyed in the first and second winters.

- 6.2.5 Six species of gull were recorded: black-headed gull (*Chroicocephalus ridibundus*); common gull (*Larus canus*); great black-backed gull (*Larus marinus*); herring gull (*Larus argentatus*); lesser black-backed gull (*Larus fuscus*); and Mediterranean gull (*Larus melanocephalus*). Single species flocks of black-headed gull and mixed flocks were recorded from arable land across the survey area. The highest numbers of gulls were recorded when survey visits coincided with the ploughing of fields, such as in February 2020.
- 6.2.6 Six species of wader were recorded: curlew (*Numenius arquata*); golden plover (*Pluvialis apricaria*); green sandpiper (*Tringa ochropus*); lapwing; snipe (*Gallinago gallinago*); and woodcock (*Scolopax rusticola*). The most numerous of these were lapwing, with 16 registrations of small flocks in fields (maximum of 50 birds recorded) and flying over (maximum of 160 birds). There were seven registrations of golden plover, scattered across the area surveyed, with small flocks in fields (maximum of 17 birds recorded) or flying over (maximum of 50 birds recorded). The other wader species registrations comprised rare records of single birds.

Table 6.1 Summary of wintering birds survey results. Rows in bold face are qualifying species of SPAs within 30km of the proposed scheme

Common name	Scientific name	Conservation status	Maximum monthly total		
			Winter 1	Winter 2	Winter 3
Black-headed gull	<i>Chroicocephalus ridibundus</i>	BoCC Amber	732	1508	939
Bullfinch	<i>Pyrrhula pyrrhula</i>	BoCC Amber, S41, Essex Red List	12	9	11
Chaffinch	<i>Fringilla coelebs</i>	BoCC Green	106	165	266
Common gull	<i>Larus canus</i>	BoCC Amber	7	0	32
Coot	<i>Fulica atra</i>	BoCC Green	141	299	0
Cormorant	<i>Phalacrocorax carbo</i>	BoCC Green	49	6	3
Curlew	<i>Numenius arquata</i>	BoCC Red, S41	1	0	0
Fieldfare	<i>Turdus pilaris</i>	BoCC Red, Schedule 1	617	341	115
Golden plover	<i>Pluvialis apricaria</i>	BoCC Green	40	17	50
Goldfinch	<i>Carduelis carduelis</i>	BoCC Green	96	211	106
Great black-backed gull	<i>Larus marinus</i>	BoCC Amber	1	0	1
Great crested grebe	<i>Podiceps cristatus</i>	BoCC Green	10	7	0

Common name	Scientific name	Conservation status	Maximum monthly total		
			Winter 1	Winter 2	Winter 3
Great white egret	<i>Ardea alba</i>	BoCC Green	0	1	0
Green sandpiper	<i>Tringa ochropus</i>	BoCC Amber, Schedule 1	0	1	0
Greenfinch	<i>Chloris chloris</i>	BoCC Red	15	9	59
Grey partridge	<i>Perdix perdix</i>	BoCC Red, S41, Essex Red List, Essex BAP	0	2	2
Hawfinch	<i>Coccothraustes coccothraustes</i>	BoCC Red, S41, Essex Red List	0	1	0
Herring gull	<i>Larus argentatus</i>	BoCC Red, S41	25	32	558
House sparrow	<i>Passer domesticus</i>	BoCC Red, S41	39	177	28
Lapwing	<i>Vanellus vanellus</i>	BoCC Red, S41, Essex Red List	151	160	30
Lesser black-backed gull	<i>Larus fuscus</i>	BoCC Amber	0	10	1
Linnet	<i>Linaria cannabina</i>	BoCC Red	288	325	519
Mallard	<i>Anas platyrhynchos</i>	BoCC Amber	393	379	10
Meadow pipit	<i>Anthus pratensis</i>	BoCC Amber	39	81	34
Mediterranean gull	<i>Larus melanocephalus</i>	BoCC Amber, Schedule 1	0	0	1
Mistle thrush	<i>Turdus viscivorus</i>	BoCC Red	11	19	4
Mute swan	<i>Cygnus olor</i>	BoCC Green	4	18	0
Pied wagtail	<i>Motacilla alba</i>	BoCC Green	210	125	12
Pochard	<i>Aythya ferina</i>	BoCC Red, Essex Red List	2	0	0
Redwing	<i>Turdus iliacus</i>	BoCC Amber, Schedule 1	193	195	50
Reed bunting	<i>Emberiza schoeniclus</i>	BoCC Amber, S41, Essex Red List	11	5	34
Shoveler	<i>Anas clypeata</i>	BoCC Amber, Essex Red List	0	2	0
Skylark	<i>Alauda arvensis</i>	BoCC Red, S41, Essex Red List, Essex BAP	57	97	109
Snipe	<i>Gallinago gallinago</i>	BoCC Amber, Essex Red List	4	0	1

Common name	Scientific name	Conservation status	Maximum monthly total		
			Winter 1	Winter 2	Winter 3
Song thrush	<i>Turdus philomelos</i>	BoCC Amber, S41, Essex Red List, Essex BAP	41	23	9
Starling	<i>Sturnus vulgaris</i>	BoCC Red, S41	58	232	106
Stock dove	<i>Columba oenas</i>	BoCC Amber	5	62	172
Tufted duck	<i>Aythya fuligula</i>	BoCC Green	45	75	0
Water rail	<i>Rallus aquaticus</i>	Essex Red List	1	1	0
Wigeon	<i>Mareca penelope</i>	BoCC Amber	0	10	0
Woodcock	<i>Scolopax rusticola</i>	BoCC Red	1	2	1
Yellowhammer	<i>Emberiza citrinella</i>	BoCC Red, S41, Essex Red List	9	13	84

7 Discussion

- 7.1.1 The survey recorded a diversity of birds from the large area sampled over three years. However, the diversity of species was uniform across most of the area sampled, and diversity and numbers of birds were generally very low across smaller areas.
- 7.1.2 Arable land, the predominant land use across the area sampled and mostly cropped for winter wheat (Jacobs, 2020), often supported very few birds. Larger numbers of birds, including flocks of finches, gulls and thrushes, were occasionally seen foraging in arable fields throughout the survey.
- 7.1.3 Rarely, small flocks of golden plover and lapwing were recorded from arable fields, but in very small numbers compared with the tens of thousands of birds that pass-through Essex during winter (Wood, 2007), and birds were not recorded consistently in particular areas between survey visits or winters.
- 7.1.4 Less extensive and more localised habitats appeared to be more important for birds. Areas of arable land sown with cover crops for gamebirds were frequent in some areas, such as between Kelvedon and Marks Tey, and were found to consistently support larger numbers of finches such as linnet, and reed bunting and yellowhammer, and mixed flocks of these species as well as others such as stock dove were seen locally in over-winter stubble fields. Linnet, reed bunting and yellowhammer are priority species, listed on the BoCC red and amber lists and on the Essex Red List. Some flocking species such as chaffinch, reed bunting and yellowhammer see influxes into Essex during the winter, while flocks of resident finch species may comprise concentrations of the population resident in the local area (Wood, 2007). However, the numbers observed during the survey are not significant in an Essex context (Wood, 2007). These aggregations and the feeding resources supporting them may be important within and immediately around the study area, but these resources are spread across the landscape and change with agricultural cycles, so that the importance of particular locations may shift between years.
- 7.1.5 More diverse assemblages of birds were also associated with the lakes around Witham, such as Coleman's Reservoir (Transect 9). Most of the records of waterfowl, including species listed as qualifying species of nearby SPA, were recorded from this area. During the third winter of the survey, very few waterfowl were recorded as these lakes were not surveyed.
- 7.1.6 Many of the more rarely recorded species were likely to have been chance records of birds passing through the area surveyed, e.g. the record of hawfinch in February 2018 coincided with a large national influx of this species during the winter of 2017/2018 (British Trust for Ornithology, 2017). Grey partridge and woodcock may be more sedentary but occur at very low density, making detection unlikely. Grey partridge is a priority species, and both species are listed on the BoCC red list and on the Essex Red Data List, and grey partridge has declined greatly in Essex (Wood, 2007). Winter feeding resources for both species, such as fallow fields and marginal grassland, are widespread across the surveyed area and wider landscape, so that the particular arable fields and margins in areas where these species were recorded are unlikely to be important for these species in the winter. However, these areas could be

important as breeding territories for grey partridge, which is largely a sedentary species in Essex (Wood, 2007). Both species occur in small numbers across Essex, with the population of woodcock mostly migrating from the Continent (Wood, 2007).

- 7.1.7 In conclusion the range of species and numbers records during the survey are not significant in an Essex context. However, the study area covers a large area, and the range of species and numbers of birds recorded is likely to be significant within the immediate area around the proposed scheme; the value of the wintering bird assemblage is assessed as being of **local** importance.

8 References

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9 Glossary

Aggregation	Form of gathering for birds and other organisms
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Annex A Essex Red Data List

Table A.1 Bird species listed on the Essex Red Data List (Essex Field Club, 2020)

Common name	Scientific name
Barn Owl	<i>Tyto alba</i>
Bearded Tit	<i>Panurus biarmicus</i>
Black Redstart	<i>Phoenicurus ochruros</i>
Brent Goose	<i>Branta bernicla</i>
Bullfinch	<i>Pyrrhula pyrrhula</i>
Grasshopper Warbler	<i>Locustella naevia</i>
Linnet	<i>Carduelis cannabina</i>
Nightingale	<i>Luscinia megarhynchos</i>
Pochard	<i>Aythya ferina</i>
Redshank	<i>Tringa totanus</i>
Snipe	<i>Gallinago gallinago</i>
Corn Bunting	<i>Emberiza calandra</i>
Hobby	<i>Falco subbuteo</i>
Marsh Harrier	<i>Circus aeruginosus</i>
Teal	<i>Anas crecca</i>
Tree Sparrow	<i>Passer montanus</i>
Turtle Dove	<i>Streptopelia turtur</i>
Firecrest	<i>Regulus ignicapilla</i>
Gadwall	<i>Anas strepera</i>
Bittern	<i>Botaurus stellaris</i>
Grey Partridge	<i>Perdix perdix</i>
Hawfinch	<i>Coccothraustes coccothraustes</i>
Hen Harrier	<i>Circus cyaneus</i>
House Martin	<i>Delichon urbicum</i>
Little Ringed-plover	<i>Charadrius dubius</i>
Little Tern	<i>Sterna albifrons</i>
Long-eared Owl	<i>Asio otus</i>
Mandarin Duck	<i>Aix galericulata</i>
Marsh Tit	<i>Parus palustris</i>
Marsh Warbler	<i>Acrocephalus palustris</i>
Mealy Redpoll	<i>Carduelis flammea</i>

Common name	Scientific name
Merlin	<i>Falco columbarius</i>
Lapwing	<i>Vanellus vanellus</i>
Northern Shoveler	<i>Anas clypeata</i>
Avocet	<i>Recurvirostra avosetta</i>
Reed Bunting	<i>Emberiza schoeniclus</i>
Ringed Plover	<i>Charadrius hiaticula</i>
Sand Martin	<i>Riparia riparia</i>
Short-eared Owl	<i>Asio flammeus</i>
Sky Lark	<i>Alauda arvensis</i>
Song Thrush	<i>Turdus philomelos</i>
Spotted Flycatcher	<i>Muscicapa striata</i>
Stonechat	<i>Saxicola torquatus</i>
Tree Pipit	<i>Anthus trivialis</i>
Water Rail	<i>Rallus aquaticus</i>
Willow Tit	<i>Parus montanus</i>
Wood Warbler	<i>Phylloscopus sibilatrix</i>
Yellow Wagtail	<i>Motacilla flava</i>
Yellowhammer	<i>Emberiza citrinella</i>

Annex B Figures

Figure 1 - Wintering birds survey transects

Figure 2 - Wintering birds survey results

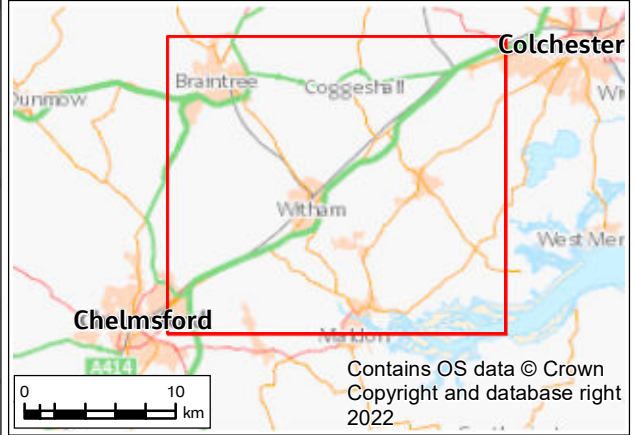
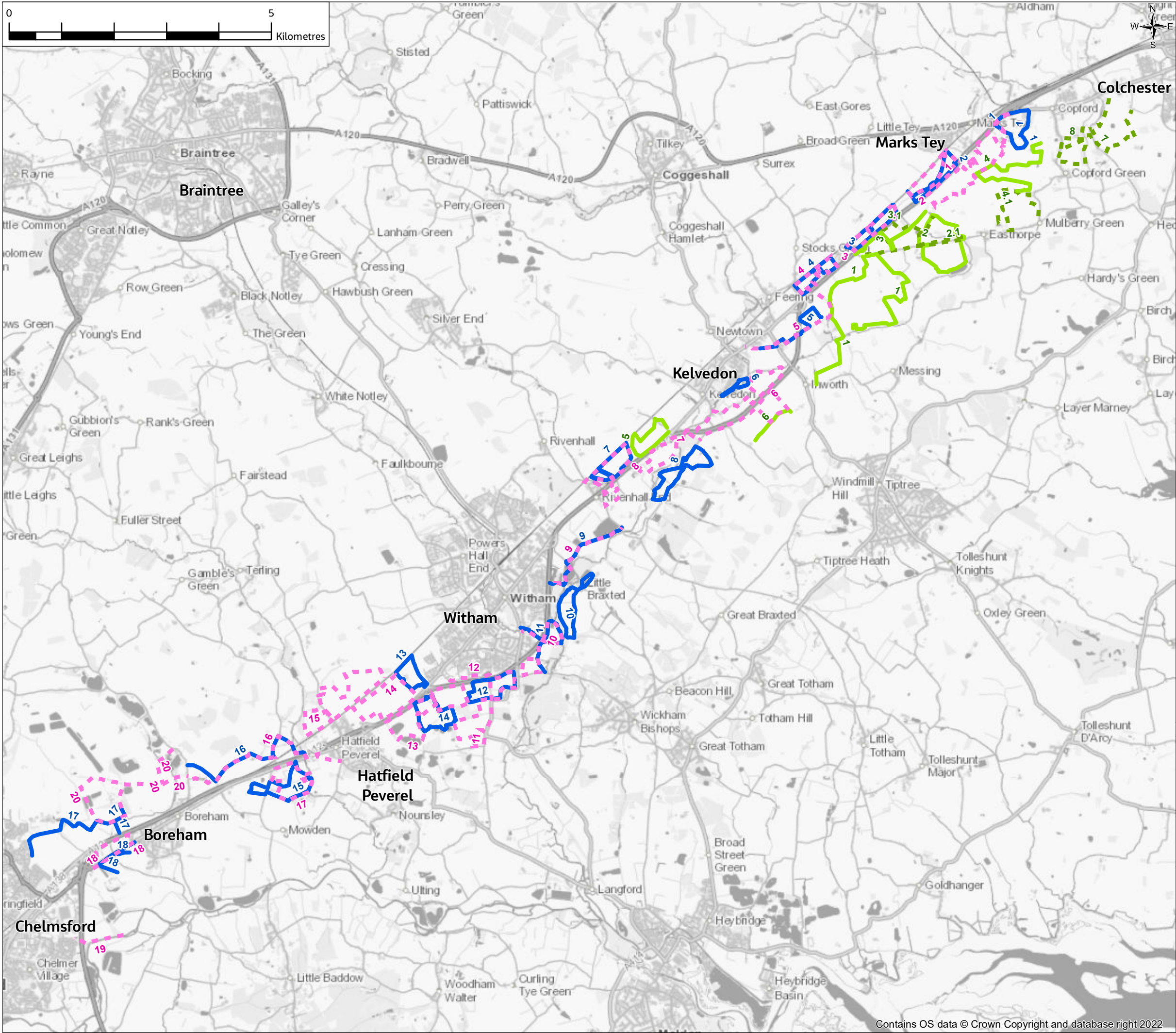
Table B.1 British Trust of Ornithology species codes used in Figure 2


Code	Common name	Code	Common name
BF	Bullfinch	MA	Mallard
BH	Black-headed Gull	MH	Moorhen
CA	Cormorant	MP	Meadow Pipit
CH	Chaffinch	MS	Mute Swan
CM	Common Gull	MU	Mediterranean Gull
CO	Coot	P.	Grey Partridge
CU	Curlew	PO	Pochard
FF	Fieldfare	PW	Pied Wagtail
GB	Great Black-backed Gull	RB	Reed Bunting
GE	Green Sandpiper	RE	Redwing
GG	Great Crested Grebe	S.	Skylark
GL	Grey Wagtail	SD	Stock Dove
GO	Goldfinch	SG	Starling
GP	Golden Plover	SN	Snipe
GR	Greenfinch	ST	Song Thrush
HF	Hawfinch	SV	Shoveler
HG	Herring Gull	TU	Tufted Duck
HS	House Sparrow	WA	Water Rail
L.	Lapwing	WK	Woodcock
LB	Lesser Black-backed Gull	WN	Wigeon
LI	Linnet	Y.	Yellowhammer
M.	Mistle Thrush		



APPENDIX 9.12 - FIGURE 1

- Legend
- First winter (January to February)
 - Second winter (November 2017 to February)
 - Third winter (November 2019 to February)
 - Visited November 2019
 - Repeated



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Project							
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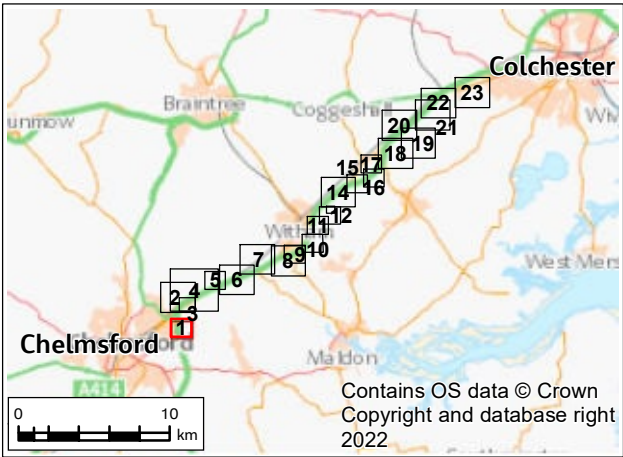
APPENDIX 9.12 - FIGURE 2

Legend

- First winter (January to February)
- Second winter (November 2017 to February)
- Third winter (November 2019 to February)
- Visited November 2019
- Repeated

Survey Results

Winter			Number of birds counted			
1	2	3				
●	+	■	1	●	+	■
●	+	■	2	●	+	■
●	+	■	3	●	+	■
●	+	■	4	●	+	■
NA	+	■	4	●	+	■

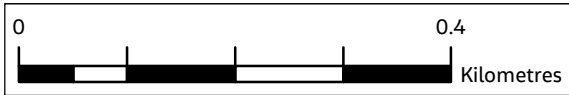


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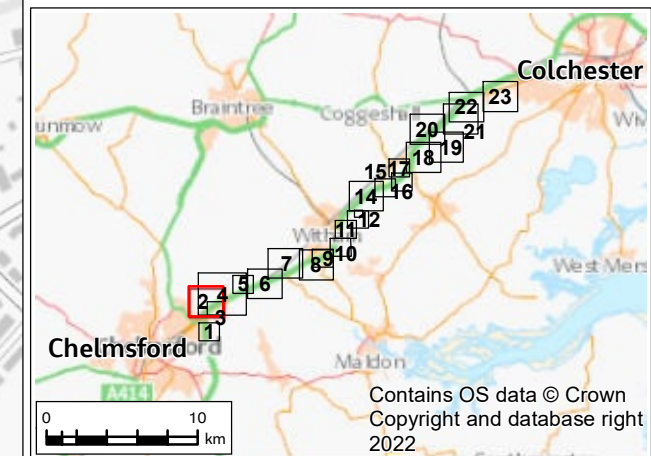
APPENDIX 9.12 - FIGURE 2


Legend

- First winter (January to February 2017)
- Second winter (November 2017 to February 2018)
- Third winter (November 2019 to February 2020)
 - Visited November 2019 only
 - Repeated visits

Survey Results

Winter			Number of birds counted			
1	2	3				
●	+	■	1	●	+	■
●	+	■	2	●	+	■
●	+	■	3	●	+	■
●	+	■	4	●	+	■
NA	+	■	4	●	+	■



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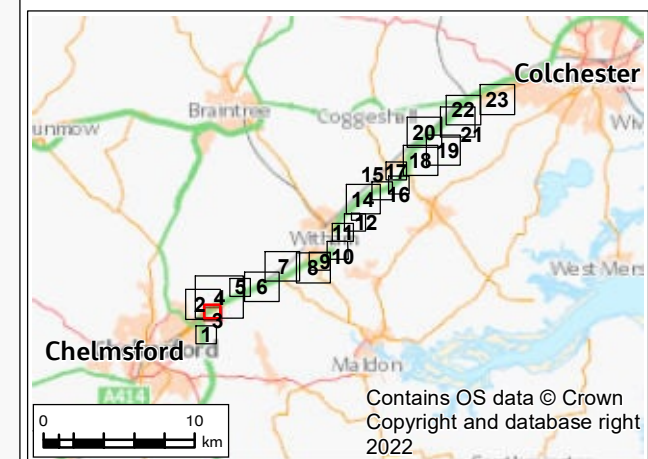
APPENDIX 9.12 - FIGURE 2


Legend

- First winter (January to February 2017)
- Second winter (November 2017 to February 2018)
- Third winter (November 2019 to February 2020)
 - Visited November 2019 only
 - Repeated visits

Survey Results

Winter			Number of birds counted			
1	2	3				
●	+	■	1	●	+	■
●	+	■	2	●	+	■
●	+	■	3	●	+	■
●	+	■	4	●	+	■
NA	+	■	4	●	+	■



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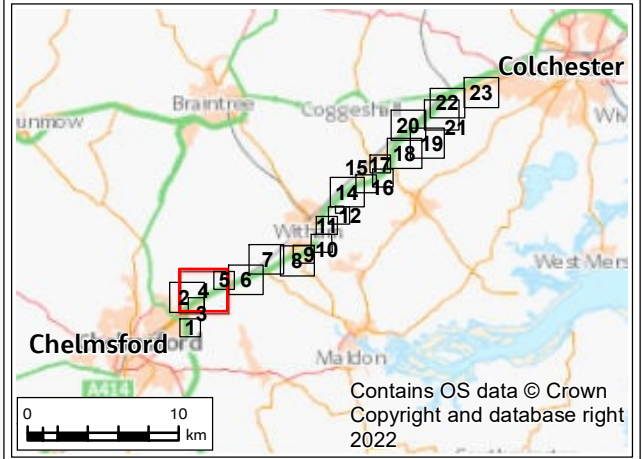
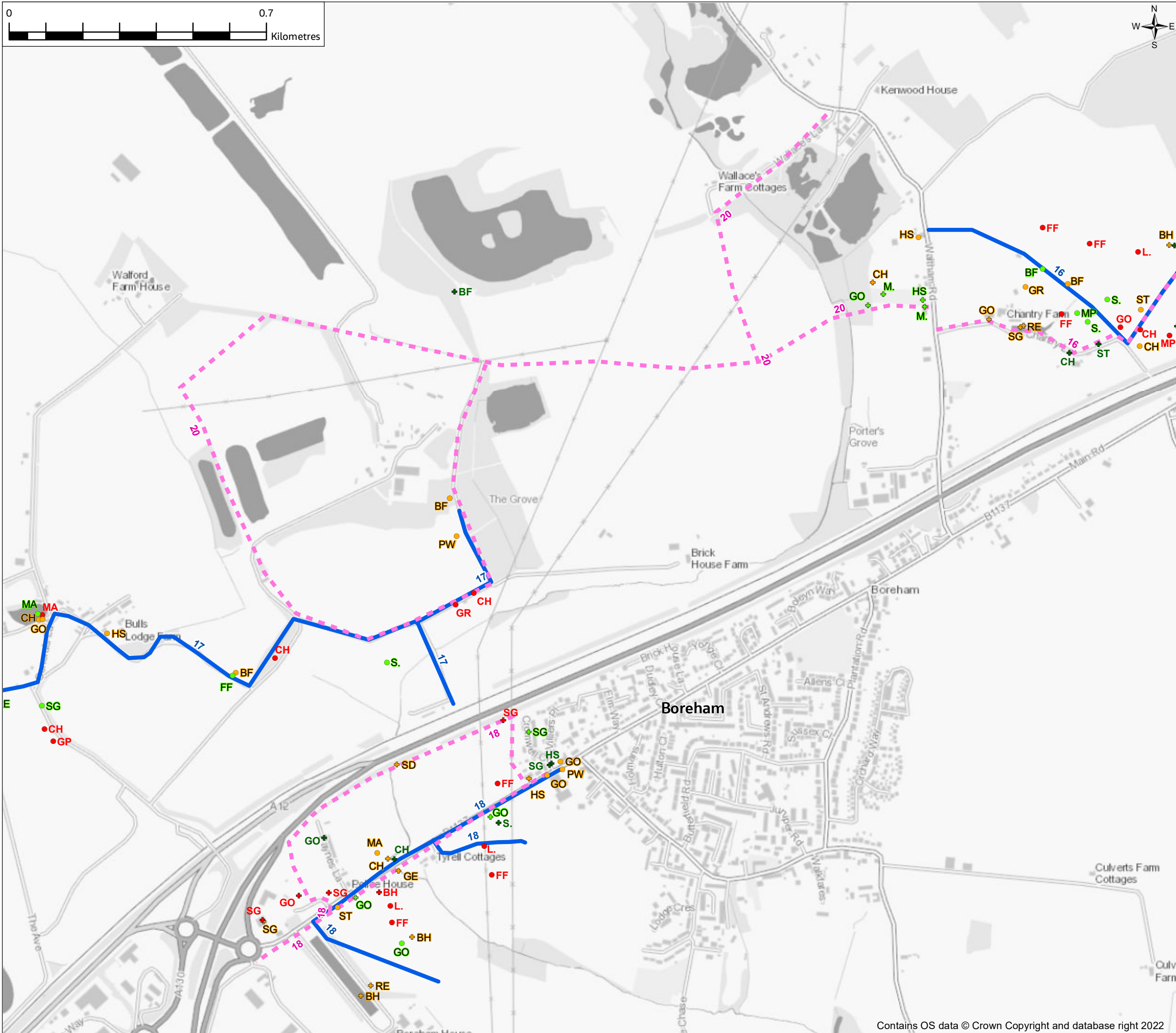
APPENDIX 9.12 - FIGURE 2


Legend

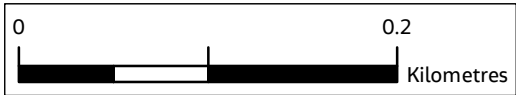
— First winter (January to February 2017)
— Second winter (November 2017 to February 2018)
Third winter (November 2019 to February 2020)
— Visited November 2019 only
— Repeated visits

Survey Results

Winter			Visit	Number of birds counted		
1	2	3		1 - 10	11 - 50	51 - 100
●	+	■	1	●	+	■
●	+	■	2	●	+	■
●	+	■	3	●	+	■
●	+	■	4	●	+	■
●	+	■		●	+	■
●	+	■		●	+	■



P01	31/05/22	For DCO application		ML	LW	NP	SG
Rev.	Rev. Date	Purpose of revision		Drawn	Check'd	Rev'd	Appr'd
Development Consent Order Drawing Number: TR010060/APP/6.3				APFP Regulation: Regulation 5(2)(l)			
Client							
Project							
REGIONAL DELIVERY PARTNERSHIP A12 CHELMSFORD TO A120 WIDENING SCHEME							
Drawing Title				ENVIRONMENTAL STATEMENT WINTERING BIRDS SURVEY RESULTS 2017 - 2020 SHEET 4 OF 23			
Drawing Status				S4 – SUITABLE FOR STAGE APPROVAL			
Scale @ A3		1:10000		DO NOT SCALE		Rev P01	
Jacobs No.		B36601D1					
Client No.		HE551497					
Drawing Number							
HE551497-JAC-LDC-SCHW-SK-GI-0743							
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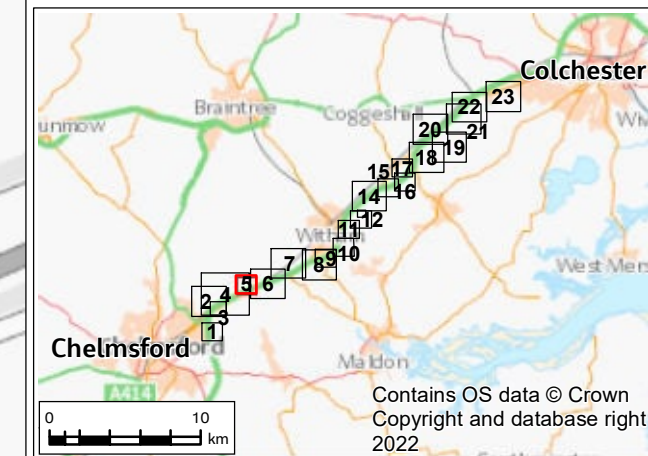
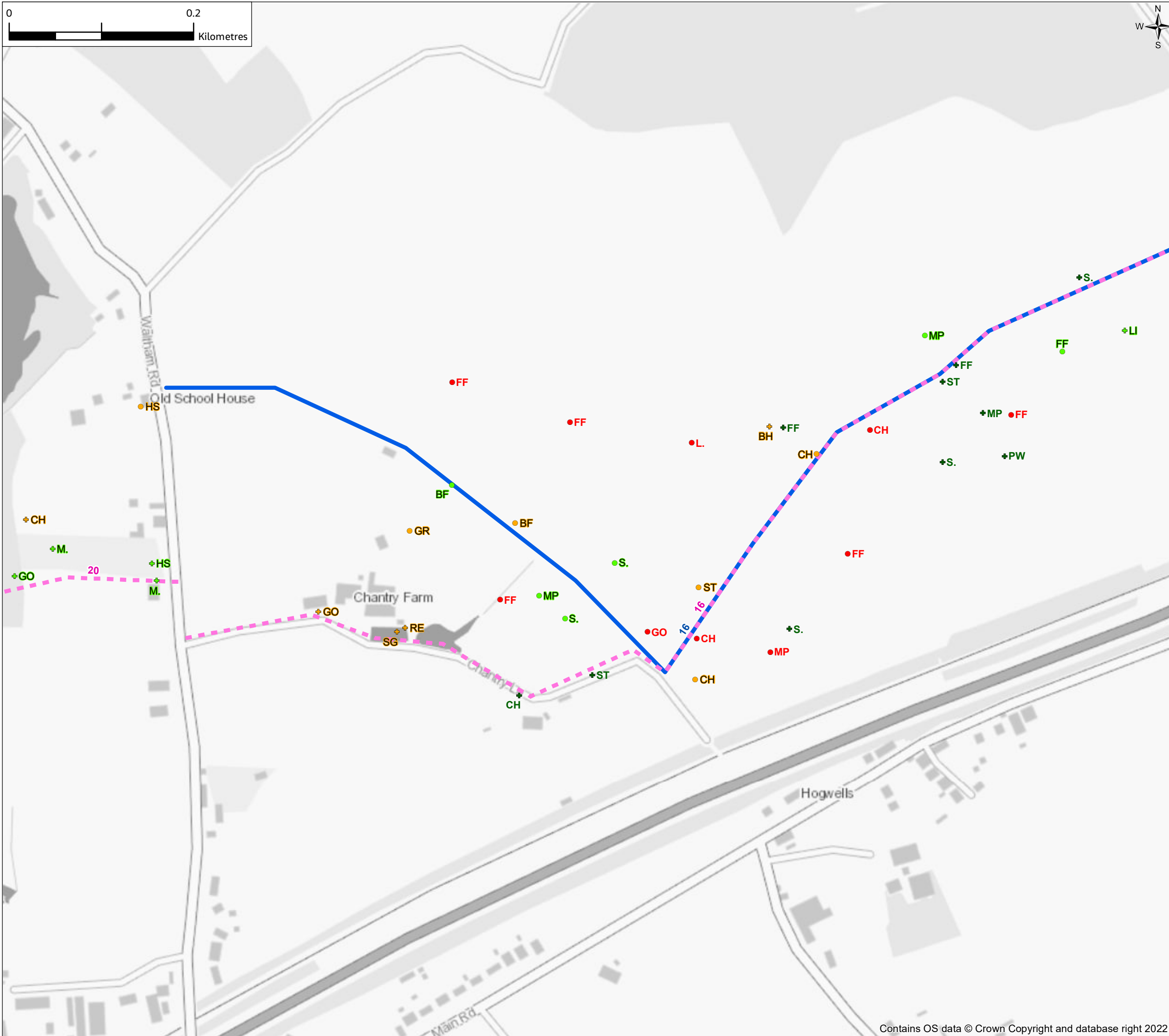
APPENDIX 9.12 - FIGURE 2


Legend

- First winter (January to February 2017)
- Second winter (November 2017 to February 2018)
- Third winter (November 2019 to February 2020)
- Visited November 2019 only
- Repeated visits

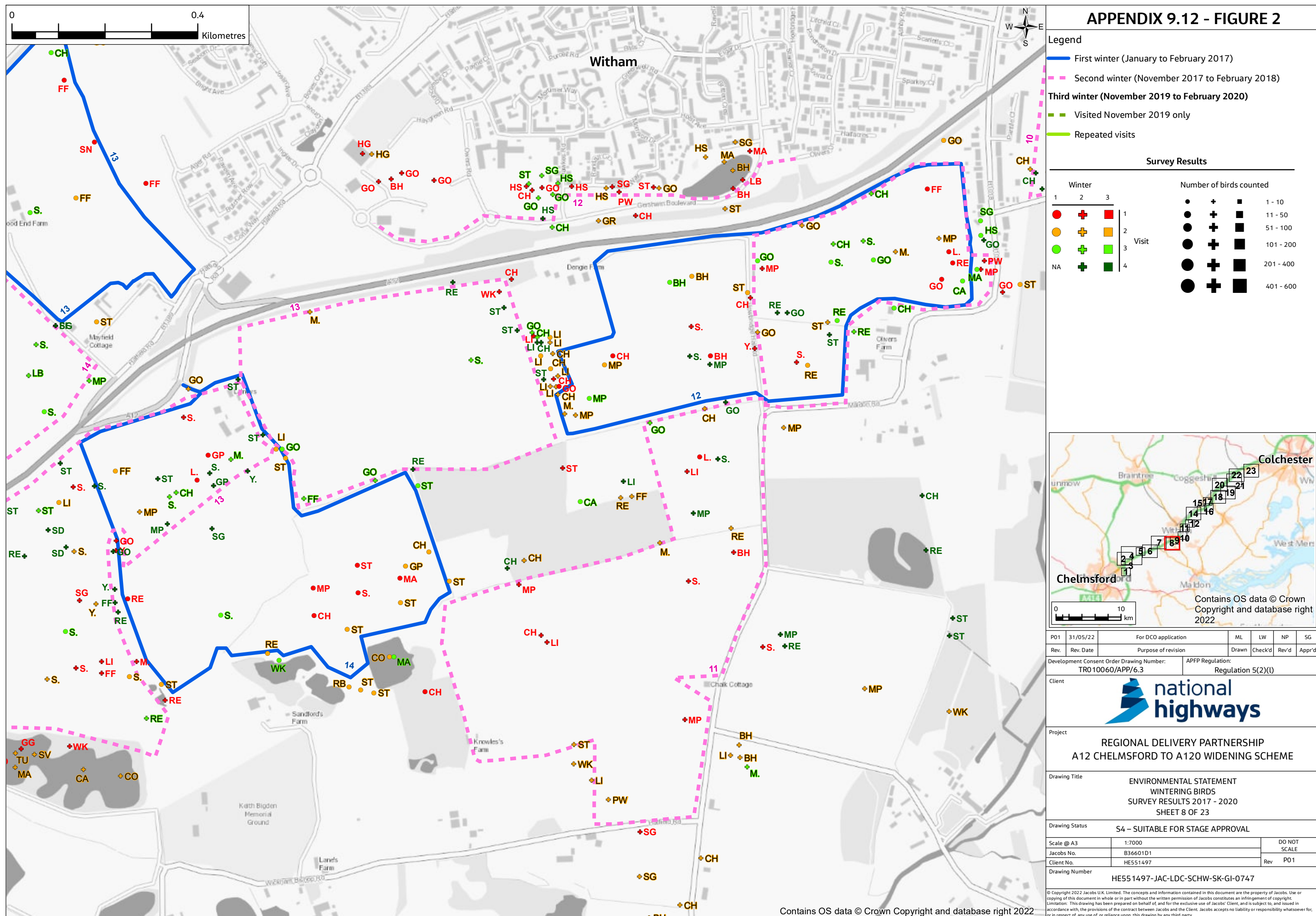
Survey Results

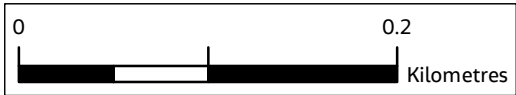
Winter			Number of birds counted			
1	2	3				
●	+	■	1	●	+	■
●	+	■	2	●	+	■
●	+	■	3	●	+	■
●	+	■	4	●	+	■
NA	+	■	4	●	+	■



P01	31/05/22	For DCO application	ML	LW	NP	SG
Rev.	Rev. Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
Development Consent Order Drawing Number: TR010060/APP/6.3			APFP Regulation: Regulation 5(2)(l)			
Client						
Project		REGIONAL DELIVERY PARTNERSHIP A12 CHELMSFORD TO A120 WIDENING SCHEME				
Drawing Title		ENVIRONMENTAL STATEMENT WINTERING BIRDS SURVEY RESULTS 2017 - 2020 SHEET 5 OF 23				
Drawing Status		S4 – SUITABLE FOR STAGE APPROVAL				
Scale @ A3	1:4000				DO NOT SCALE	
Jacobs No.	B36601D1					
Client No.	HE551497				Rev	P01
Drawing Number		HE551497-JAC-LDC-SCHW-SK-GI-0744				
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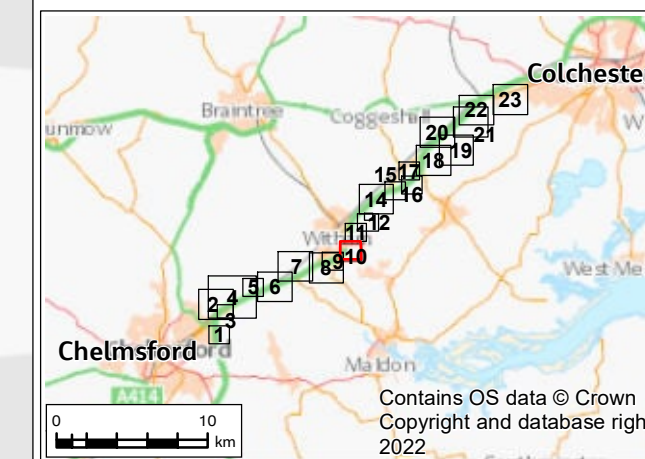
APPENDIX 9.12 - FIGURE 2


Legend

- First winter (January to February 2017)
- Second winter (November 2017 to February 2018)
- Third winter (November 2019 to February 2020)
- Visited November 2019 only
- Repeated visits

Survey Results

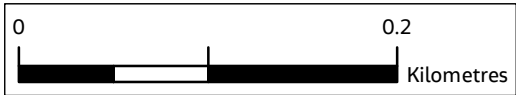
Winter			Number of birds counted			
1	2	3				
●	+	■	1	●	+	■
●	+	■	2	●	+	■
●	+	■	3	●	+	■
●	+	■	4	●	+	■
NA	+	■	Visit	●	+	■
				●	+	■
				●	+	■
				●	+	■
				●	+	■
				●	+	■



P01	31/05/22	For DCO application	ML	LW	NP	SG
Rev.	Rev. Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
Development Consent Order Drawing Number: TR010060/APP/6.3			APFP Regulation: Regulation 5(2)(l)			
Client						
						
Project						
REGIONAL DELIVERY PARTNERSHIP A12 CHELMSFORD TO A120 WIDENING SCHEME						
Drawing Title						
ENVIRONMENTAL STATEMENT WINTERING BIRDS SURVEY RESULTS 2017 - 2020 SHEET 10 OF 23						
Drawing Status						
S4 – SUITABLE FOR STAGE APPROVAL						
Scale @ A3		1:4000			DO NOT SCALE	
Jacobs No.		B36601D1				
Client No.		HE551497			Rev	P01
Drawing Number						
HE551497-JAC-LDC-SCHW-SK-GI-0749						

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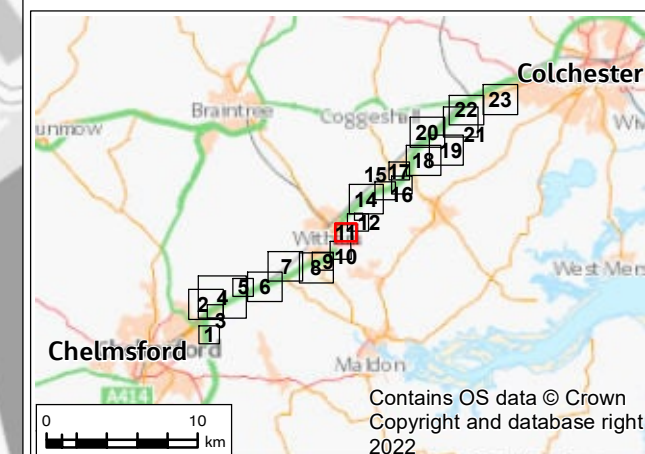
APPENDIX 9.12 - FIGURE 2

Legend

- First winter (January to February 2017)
- Second winter (November 2017 to February 2018)
- Third winter (November 2019 to February 2020)
 - Visited November 2019 only
 - Repeated visits

Survey Results

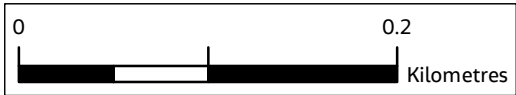
Winter				Number of birds counted			
1	2	3		1	2	3	4
●	+	■	1	●	+	■	1 - 10
●	+	■	2	●	+	■	11 - 50
●	+	■	3	●	+	■	51 - 100
●	+	■	4	●	+	■	101 - 200
●	+	■	4	●	+	■	201 - 400
●	+	■	4	●	+	■	401 - 600



P01	31/05/22	For DCO application	ML	LW	NP	SG
Rev.	Rev. Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
Development Consent Order Drawing Number: TRO10060/APP/6.3			APFP Regulation: Regulation 5(2)(l)			
Client						
						
Project						
REGIONAL DELIVERY PARTNERSHIP A12 CHELMSFORD TO A120 WIDENING SCHEME						
Drawing Title						
ENVIRONMENTAL STATEMENT WINTERING BIRDS SURVEY RESULTS 2017 - 2020 SHEET 11 OF 23						
Drawing Status						
S4 – SUITABLE FOR STAGE APPROVAL						
Scale @ A3		1:4000			DO NOT SCALE	
Jacobs No.		B36601D1			Rev	
Client No.		HE551497			P01	
Drawing Number						
HE551497-JAC-LDC-SCHW-SK-GI-0750						

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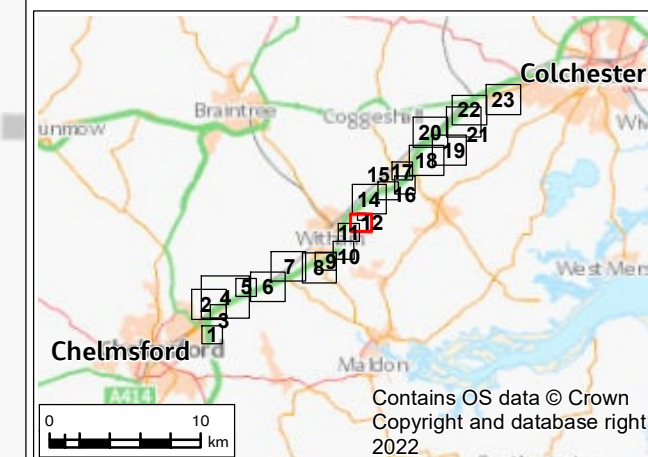
APPENDIX 9.12 - FIGURE 2


Legend

- First winter (January to February 2017)
- Second winter (November 2017 to February 2018)
- Third winter (November 2019 to February 2020)
- Visited November 2019 only
- Repeated visits

Survey Results

Winter			Number of birds counted			
1	2	3				
●	+	■	1	●	+	■
●	+	■	2	●	+	■
●	+	■	3	●	+	■
●	+	■	4	●	+	■
NA	+	■	4	●	+	■



P01	31/05/22	For DCO application			ML	LW	NP	SG
Rev.	Rev. Date	Purpose of revision			Drawn	Check'd	Rev'd	Appr'd
Development Consent Order Drawing Number: TR010060/APP/6.3					APFP Regulation: Regulation 5(2)(l)			
Client								
								
Project								
REGIONAL DELIVERY PARTNERSHIP A12 CHELMSFORD TO A120 WIDENING SCHEME								
Drawing Title								
ENVIRONMENTAL STATEMENT WINTERING BIRDS SURVEY RESULTS 2017 - 2020 SHEET 12 OF 23								
Drawing Status								
S4 – SUITABLE FOR STAGE APPROVAL								
Scale @ A3		1:4000					DO NOT SCALE	
Jacobs No.		B36601D1						
Client No.		HE551497					Rev	P01
Drawing Number								
HE551497-JAC-LDC-SCHW-SK-GI-0751								

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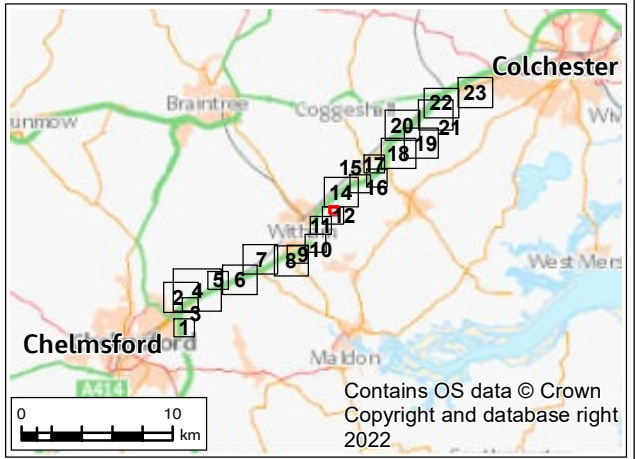



APPENDIX 9.12 - FIGURE 2

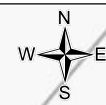
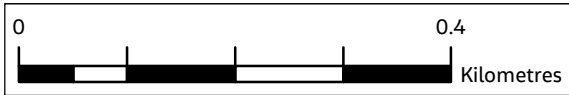
- Legend
- First winter (January to February 2017)
 - Second winter (November 2017 to February 2018)
 - Third winter (November 2019 to February 2020)
 - Visited November 2019 only
 - Repeated visits

Survey Results

Winter			Number of birds counted			
1	2	3				
●	+	■	1	●	+	■
●	+	■	2	●	+	■
●	+	■	3	●	+	■
●	+	■	4	●	+	■
NA	+	■	4	●	+	■
			Visit	●	+	■
				●	+	■
				●	+	■
				●	+	■
				●	+	■
				●	+	■



P01	31/05/22	For DCO application			ML	LW	NP	SG
Rev.	Rev. Date	Purpose of revision			Drawn	Check'd	Rev'd	Appr'd
Development Consent Order Drawing Number: TR010060/APP/6.3					APFP Regulation: Regulation 5(2)(l)			
Client								
Project								
REGIONAL DELIVERY PARTNERSHIP A12 CHELMSFORD TO A120 WIDENING SCHEME								
Drawing Title		ENVIRONMENTAL STATEMENT WINTERING BIRDS SURVEY RESULTS 2017 - 2020 SHEET 13 OF 23						
Drawing Status		S4 – SUITABLE FOR STAGE APPROVAL						
Scale @ A3	1:3000					DO NOT SCALE		
Jacobs No.	B36601D1							
Client No.	HE551497					Rev	P01	
Drawing Number		HE551497-JAC-LDC-SCHW-SK-GI-0752						
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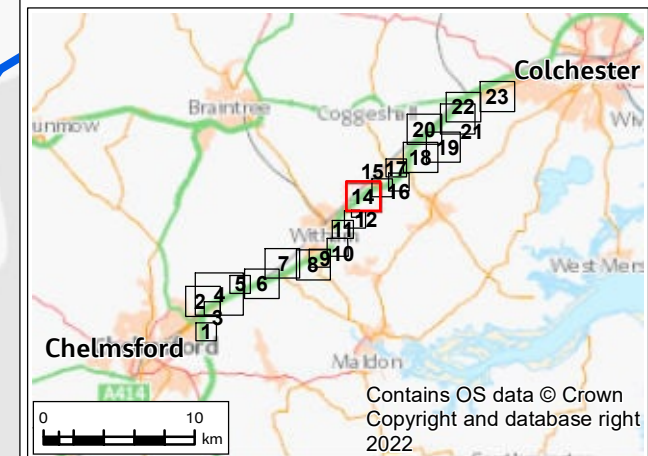
APPENDIX 9.12 - FIGURE 2


Legend

- First winter (January to February 2017)
- Second winter (November 2017 to February 2018)
- Third winter (November 2019 to February 2020)
- Visited November 2019 only
- Repeated visits

Survey Results

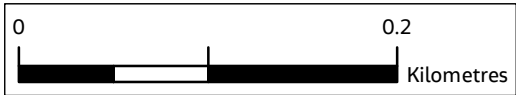
Winter			Number of birds counted			
1	2	3				
●	+	■	1	●	+	■
●	+	■	2	●	+	■
●	+	■	3	●	+	■
●	+	■	4	●	+	■
NA	+	■	NA	●	+	■



P01	31/05/22	For DCO application	ML	LW	NP	SG
Rev.	Rev. Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
Development Consent Order Drawing Number: TR010060/APP/6.3			APFP Regulation: Regulation 5(2)(I)			
Client						
						
Project						
REGIONAL DELIVERY PARTNERSHIP A12 CHELMSFORD TO A120 WIDENING SCHEME						
Drawing Title						
ENVIRONMENTAL STATEMENT WINTERING BIRDS SURVEY RESULTS 2017 - 2020 SHEET 14 OF 23						
Drawing Status						
S4 – SUITABLE FOR STAGE APPROVAL						
Scale @ A3		1:7000			DO NOT SCALE	
Jacobs No.		B36601D1			Rev P01	
Client No.		HE551497				
Drawing Number						
HE551497-JAC-LDC-SCHW-SK-GI-0753						

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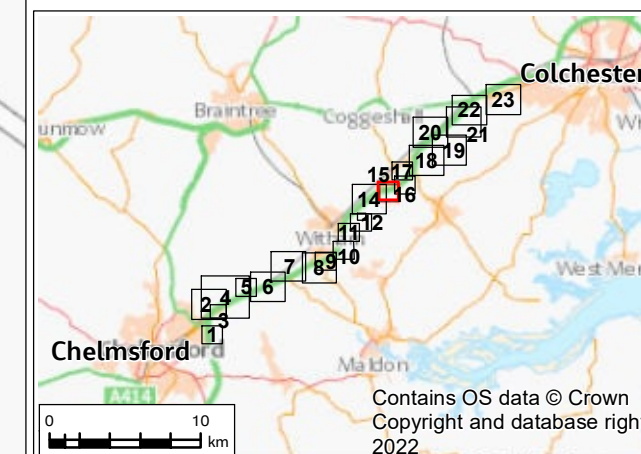
APPENDIX 9.12 - FIGURE 2


Legend

- First winter (January to February 2017)
- Second winter (November 2017 to February 2018)
- Third winter (November 2019 to February 2020)
 - Visited November 2019 only
 - Repeated visits

Survey Results

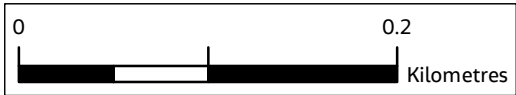
Winter			Number of birds counted			
1	2	3				
●	+	■	1	●	+	■
●	+	■	2	●	+	■
●	+	■	3	●	+	■
●	+	■	4	●	+	■
NA	+	■	4	●	+	■



P01	31/05/22	For DCO application	ML	LW	NP	SG
Rev.	Rev. Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
Development Consent Order Drawing Number: TR010060/APP/6.3			APFP Regulation: Regulation 5(2)(l)			
Client						
						
Project						
REGIONAL DELIVERY PARTNERSHIP A12 CHELMSFORD TO A120 WIDENING SCHEME						
Drawing Title						
ENVIRONMENTAL STATEMENT WINTERING BIRDS SURVEY RESULTS 2017 - 2020 SHEET 15 OF 23						
Drawing Status						
S4 – SUITABLE FOR STAGE APPROVAL						
Scale @ A3	1:4000				DO NOT SCALE	
Jacobs No.	B36601D1					
Client No.	HE551497					
Drawing Number						
HE551497-JAC-LDC-SCHW-SK-GI-0754						

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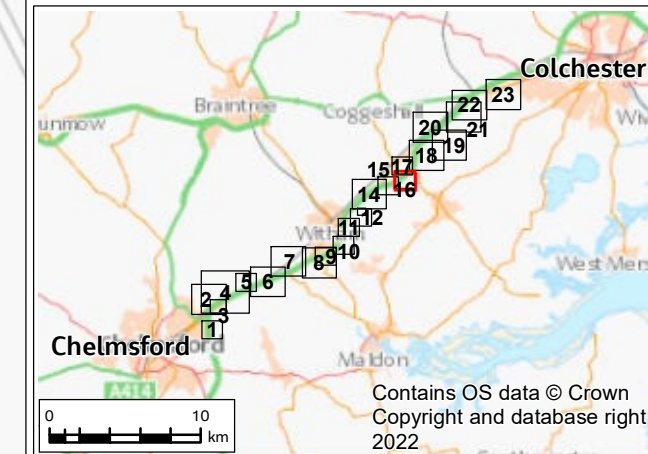
APPENDIX 9.12 - FIGURE 2


Legend

- First winter (January to February 2017)
- Second winter (November 2017 to February 2018)
- Third winter (November 2019 to February 2020)
 - Visited November 2019 only
 - Repeated visits

Survey Results

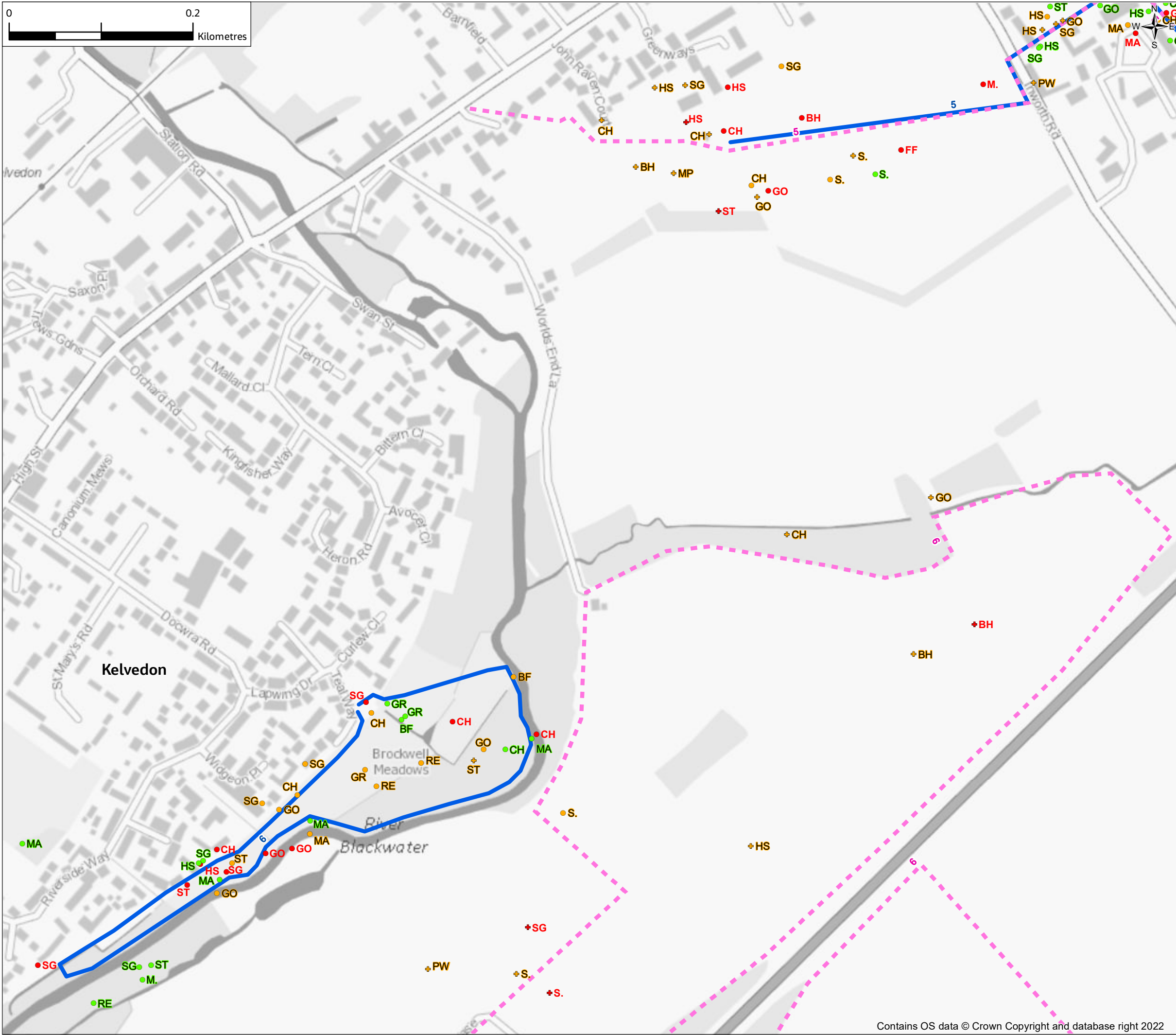
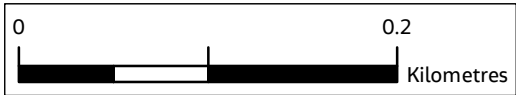
Winter			Number of birds counted			
1	2	3				
●	+	■	1	●	+	■
●	+	■	2	●	+	■
●	+	■	3	●	+	■
●	+	■	4	●	+	■
NA	+	■	1 - 10	●	+	■
			11 - 50	●	+	■
			51 - 100	●	+	■
			101 - 200	●	+	■
			201 - 400	●	+	■
			401 - 600	●	+	■



P01	31/05/22	For DCO application	ML	LW	NP	SG
Rev.	Rev. Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
Development Consent Order Drawing Number: TR010060/APP/6.3			APFP Regulation: Regulation 5(2)(l)			
Client						
						
Project						
REGIONAL DELIVERY PARTNERSHIP A12 CHELMSFORD TO A120 WIDENING SCHEME						
Drawing Title						
ENVIRONMENTAL STATEMENT WINTERING BIRDS SURVEY RESULTS 2017 - 2020 SHEET 16 OF 23						
Drawing Status						
S4 – SUITABLE FOR STAGE APPROVAL						
Scale @ A3		1:4000			DO NOT SCALE	
Jacobs No.		B36601D1				
Client No.		HE551497			Rev P01	
Drawing Number						
HE551497-JAC-LDC-SCHW-SK-GI-0755						

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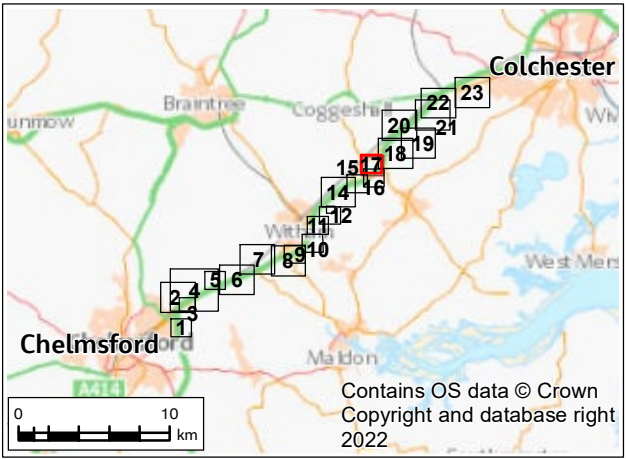
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APPENDIX 9.12 - FIGURE 2

- Legend
- First winter (January to February 2017)
 - Second winter (November 2017 to February 2018)
 - Third winter (November 2019 to February 2020)
 - Visited November 2019 only
 - Repeated visits

Survey Results			
Winter			Number of birds counted
1	2	3	
●	+	■	1 - 10
●	+	■	11 - 50
●	+	■	51 - 100
●	+	■	101 - 200
●	+	■	201 - 400
●	+	■	401 - 600

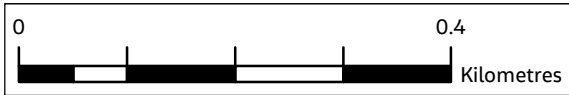


P01	31/05/22	For DCO application		ML	LW	NP	SG
Rev.	Rev. Date	Purpose of revision		Drawn	Check'd	Rev'd	Appr'd
Development Consent Order Drawing Number: TR010060/APP/6.3				APFP Regulation: Regulation 5(2)(I)			
Client							
				national highways			
Project							
REGIONAL DELIVERY PARTNERSHIP A12 CHELMSFORD TO A120 WIDENING SCHEME							
Drawing Title							
ENVIRONMENTAL STATEMENT WINTERING BIRDS SURVEY RESULTS 2017 - 2020 SHEET 17 OF 23							
Drawing Status							
S4 – SUITABLE FOR STAGE APPROVAL							
Scale @ A3		1:4000				DO NOT SCALE	
Jacobs No.		B36601D1				Rev	
Client No.		HE551497				P01	
Drawing Number							
HE551497-JAC-LDC-SCHW-SK-GI-0756							

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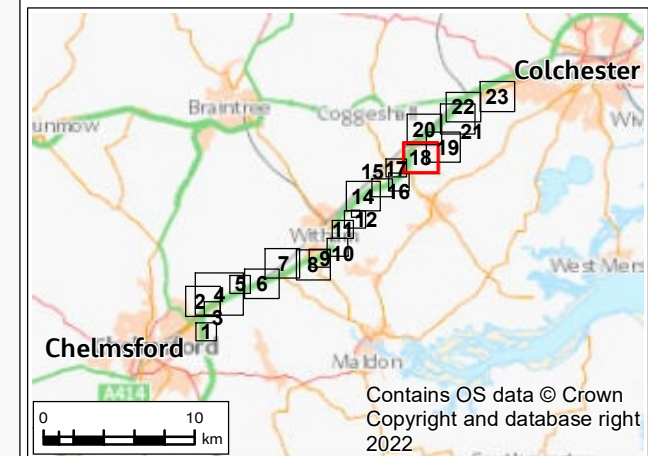
APPENDIX 9.12 - FIGURE 2


Legend

- First winter (January to February 2017)
- Second winter (November 2017 to February 2018)
- Third winter (November 2019 to February 2020)
- Visited November 2019 only
- Repeated visits

Survey Results

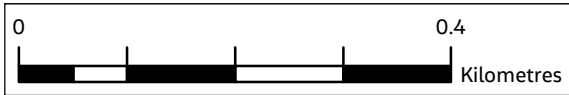
Winter			Number of birds counted			
1	2	3	Visit			
●	+	■	1	●	+	■
●	+	■	2	●	+	■
●	+	■	3	●	+	■
NA	+	■	4	●	+	■
				●	+	■
				●	+	■
				●	+	■
				●	+	■
				●	+	■



P01	31/05/22	For DCO application	ML	LW	NP	SG
Rev.	Rev. Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
Development Consent Order Drawing Number: TR010060/APP/6.3			APFP Regulation: Regulation 5(2)(I)			
Client						
						
Project						
REGIONAL DELIVERY PARTNERSHIP A12 CHELMSFORD TO A120 WIDENING SCHEME						
Drawing Title						
ENVIRONMENTAL STATEMENT WINTERING BIRDS SURVEY RESULTS 2017 - 2020 SHEET 18 OF 23						
Drawing Status						
S4 – SUITABLE FOR STAGE APPROVAL						
Scale @ A3		1:7000			DO NOT SCALE	
Jacobs No.		B36601D1			Rev	
Client No.		HE551497			P01	
Drawing Number						
HE551497-JAC-LDC-SCHW-SK-GI-0757						

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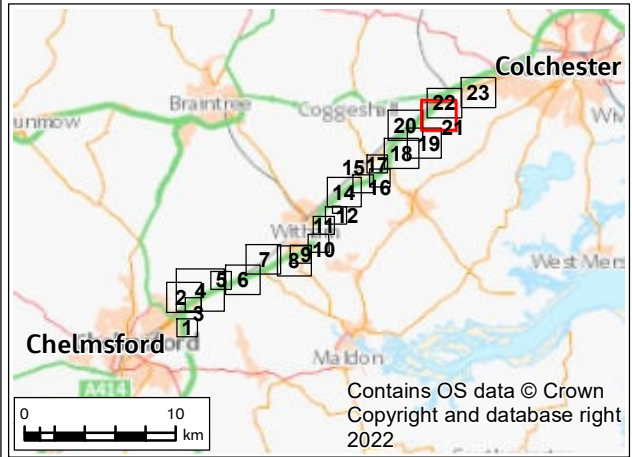
APPENDIX 9.12 - FIGURE 2


Legend

- First winter (January to February 2017)
— Second winter (November 2017 to February 2018)
— Third winter (November 2019 to February 2020)
— Visited November 2019 only
— Repeated visits

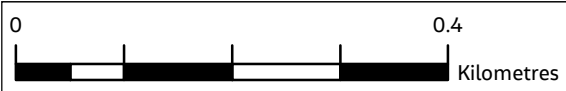
Survey Results

Winter			Number of birds counted			
1	2	3				
●	+	■	1	●	+	■
●	+	■	2	●	+	■
●	+	■	3	●	+	■
●	+	■	4	●	+	■
●	+	■	5	●	+	■
●	+	■	6	●	+	■
●	+	■	7	●	+	■
●	+	■	8	●	+	■
●	+	■	9	●	+	■
●	+	■	10	●	+	■
●	+	■	11	●	+	■
●	+	■	12	●	+	■
●	+	■	13	●	+	■
●	+	■	14	●	+	■
●	+	■	15	●	+	■
●	+	■	16	●	+	■
●	+	■	17	●	+	■
●	+	■	18	●	+	■
●	+	■	19	●	+	■
●	+	■	20	●	+	■
●	+	■	21	●	+	■
●	+	■	22	●	+	■
●	+	■	23	●	+	■
●	+	■	24	●	+	■
●	+	■	25	●	+	■
●	+	■	26	●	+	■
●	+	■	27	●	+	■
●	+	■	28	●	+	■
●	+	■	29	●	+	■
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●	+	■	53	●	+	■
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●	+	■	59	●	+	■
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●	+	■	68	●	+	■
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●	+	■	70	●	+	■
●	+	■	71	●	+	■
●	+	■	72	●	+	■
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●	+	■	75	●	+	■
●	+	■	76	●	+	■
●	+	■	77	●	+	■
●	+	■	78	●	+	■
●	+	■	79	●	+	■
●	+	■	80	●	+	■
●	+	■	81	●	+	■
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●	+	■	85	●	+	■
●	+	■	86	●	+	■
●	+	■	87	●	+	■
●	+	■	88	●	+	■
●	+	■	89	●	+	■
●	+	■	90	●	+	■
●	+	■	91	●	+	■
●	+	■	92	●	+	■
●	+	■	93	●	+	■
●	+	■	94	●	+	■
●	+	■	95	●	+	■
●	+	■	96	●	+	■
●	+	■	97	●	+	■
●	+	■	98	●	+	■
●	+	■	99	●	+	■
●	+	■	100	●	+	■



P01	31/05/22	For DCO application		ML	LW	NP	SG
Rev.	Rev. Date	Purpose of revision		Drawn	Check'd	Rev'd	Appr'd
Development Consent Order Drawing Number: TR010060/APP/6.3				APFP Regulation: Regulation 5(2)(I)			
Client							
Project							
REGIONAL DELIVERY PARTNERSHIP A12 CHELMSFORD TO A120 WIDENING SCHEME							
Drawing Title				ENVIRONMENTAL STATEMENT WINTERING BIRDS SURVEY RESULTS 2017 - 2020 SHEET 21 OF 23			
Drawing Status				S4 – SUITABLE FOR STAGE APPROVAL			
Scale @ A3		1:7000		Rev		DO NOT SCALE P01	
Jacobs No.		B36601D1					
Client No.		HE551497					
Drawing Number				HE551497-JAC-LDC-SCHW-SK-GI-0760			
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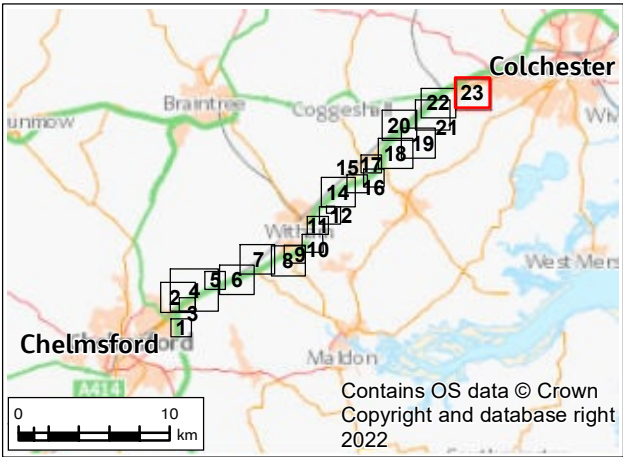
APPENDIX 9.12 - FIGURE 2

Legend

- First winter (January to February 2017)
- Second winter (November 2017 to February 2018)
- Third winter (November 2019 to February 2020)
- Visited November 2019 only
- Repeated visits

Survey Results

Winter			Number of birds counted			
1	2	3	Visit			
●	+	■	1	●	+	■
●	+	■	2	●	+	■
●	+	■	3	●	+	■
NA	+	■	4	●	+	■
				●	+	■
				●	+	■
				●	+	■
				●	+	■
				●	+	■



P01	31/05/22	For DCO application		ML	LW	NP	SG
Rev.	Rev. Date	Purpose of revision		Drawn	Check'd	Rev'd	Appr'd
Development Consent Order Drawing Number: TR010060/APP/6.3				APFP Regulation: Regulation 5(2)(I)			
Client							
<div>national highways</div>							
Project							
REGIONAL DELIVERY PARTNERSHIP A12 CHELMSFORD TO A120 WIDENING SCHEME							
Drawing Title							
ENVIRONMENTAL STATEMENT WINTERING BIRDS SURVEY RESULTS 2017 - 2020 SHEET 23 OF 23							
Drawing Status							
S4 – SUITABLE FOR STAGE APPROVAL							
Scale @ A3		1:7000				DO NOT SCALE	
Jacobs No.		B36601D1					
Client No.		HE551497				Rev P01	
Drawing Number							
HE551497-JAC-LDC-SCHW-SK-GI-0762							
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Annex C Desk study results

Table C.1 Historic records of wintering birds between 2010 and 2020

Common name	Scientific name	Year of record	Grid reference	Distance from proposed scheme (nearest point) (m)	Record source
Bullfinch	<i>Pyrrhula pyrrhula</i>	2017	TL8349213143	683	Essex Wildlife Trust
Bullfinch	<i>Pyrrhula pyrrhula</i>	2018	TL82301555	502	Essex Wildlife Trust
Fieldfare	<i>Turdus pilaris</i>	2015	TL77151105	0	Essex Wildlife Trust
Fieldfare	<i>Turdus pilaris</i>	2016	TL81951612	1,014	Essex Wildlife Trust
Fieldfare	<i>Turdus pilaris</i>	2017	TL89791902	1,704	Essex Wildlife Trust
Goldfinch	<i>Carduelis carduelis</i>	2012	TL8230816263	687	Essex Wildlife Trust
Goldfinch	<i>Carduelis carduelis</i>	2012	TL8230816263	687	Essex Wildlife Trust
Goldfinch	<i>Carduelis carduelis</i>	2012	TL8230816263	687	Essex Wildlife Trust
Goldfinch	<i>Carduelis carduelis</i>	2012	TL8230816263	687	Essex Wildlife Trust
Goldfinch	<i>Carduelis carduelis</i>	2017	TL8349213143	683	Essex Wildlife Trust
Goldfinch	<i>Carduelis carduelis</i>	2018	TL817143	905	Essex Wildlife Trust
Goldfinch	<i>Carduelis carduelis</i>	2018	TL82301555	502	Essex Wildlife Trust
Grey partridge	<i>Perdix perdix</i>	2017	TL873204	410	Essex Wildlife Trust

Common name	Scientific name	Year of record	Grid reference	Distance from proposed scheme (nearest point) (m)	Record source
House sparrow	<i>Passer domesticus</i>	2011	TL8100015000	1,808	Essex Wildlife Trust
House sparrow	<i>Passer domesticus</i>	2017	TL823155	458	Essex Wildlife Trust
House sparrow	<i>Passer domesticus</i>	2017	TL82351560	477	Essex Wildlife Trust
House sparrow	<i>Passer domesticus</i>	2017	TL82301556	505	Essex Wildlife Trust
Lapwing	<i>Vanellus vanellus</i>	2015	TL94622485	698	Essex Wildlife Trust
Mute swan	<i>Cygnus olor</i>	2015	TL9124	588	Essex Wildlife Trust
Mute swan	<i>Cygnus olor</i>	2016	TL81671467	1,150	Essex Wildlife Trust
Mute swan	<i>Cygnus olor</i>	2017	TL816146	1,154	Essex Wildlife Trust
Pied wagtail	<i>Motacilla alba</i>	2017	TL8349213143	683	Essex Wildlife Trust
Skylark	<i>Alauda arvensis</i>	2017	TL73780955	146	Essex Wildlife Trust
Skylark	<i>Alauda arvensis</i>	2017	TL762088	1,593	Essex Wildlife Trust
Song thrush	<i>Turdus philomelos</i>	2018	TL82421569	435	Essex Wildlife Trust
Song thrush	<i>Turdus philomelos</i>	2018	TL82301555	502	Essex Wildlife Trust
Song thrush	<i>Turdus philomelos</i>	2018	TL85661830	477	Essex Wildlife Trust
Starling	<i>Sturnus vulgaris</i>	2012	TL8230816263	687	Essex Wildlife Trust

Common name	Scientific name	Year of record	Grid reference	Distance from proposed scheme (nearest point) (m)	Record source
Starling	<i>Sturnus vulgaris</i>	2012	TL8230816263	687	Essex Wildlife Trust
Starling	<i>Sturnus vulgaris</i>	2012	TL8230816263	687	Essex Wildlife Trust
Starling	<i>Sturnus vulgaris</i>	2013	TL8230816263	687	Essex Wildlife Trust
Starling	<i>Sturnus vulgaris</i>	2013	TL8230816263	687	Essex Wildlife Trust
Starling	<i>Sturnus vulgaris</i>	2013	TL8230816263	687	Essex Wildlife Trust
Starling	<i>Sturnus vulgaris</i>	2016	TL9424	686	Essex Wildlife Trust
Starling	<i>Sturnus vulgaris</i>	2017	TL8349213143	683	Essex Wildlife Trust

Annex D Survey metadata

Table D.1 Survey dates and weather conditions. Weather data not recorded during the survey were obtained from Weather Underground (2020) using the nearest weather station

Transect	Visit number	Date	Start Time	End Time	Cloud cover	Temperature (°C)	Wind (Beaufort)	Precipitation
First Winter (January to February 2017)								
1	1	26/01/2017	1200	1255	Overcast	-2	3	Dry
	2	06/02/2017	1030	1230	Overcast	4	1	Dry
	3	20/02/2017	1200	1245	Clear	16	4	Dry
2	1	24/01/2017	1205	1310	Partly cloudy	5	1	Dry
	2	06/02/2017	1315	1400	Overcast	7	3	Dry
	3	20/02/2017	1315	1350	Overcast	16	4	Dry
3	1	24/01/2017	1045	1145	Partly cloudy	3	1	Dry
	2	06/02/2017	1415	1456	Overcast	7	3	Dry
	3	20/02/2017	1400	1440	Overcast	15	4	Dry
4	1	24/01/2017	0935	1040	Partly cloudy	1	1	Dry
	2	06/02/2017	1605	1645	Overcast	6	3	Dry
	3	20/02/2017	1515	1600	Partly cloudy	15	4	Dry
5	1	25/01/2017	1200	1245	Overcast	2	1	Mist
	2	07/02/2017	0930	1045	Overcast	5	2	Light rain
	3	21/02/2017	0905	0955	Overcast	10	2	Dry
6	1	24/01/2017	0835	0925	Partly cloudy	2	1	Mist
	2	07/02/2017	1105	1150	Overcast	6	2	Dry
	3	20/02/2017	1620	1700	Partly cloudy	14	4	Dry
7	1	24/01/2017	1405	1455	Partly cloudy	5	1	Dry
	2	07/02/2017	1205	1254	Overcast	7	3	Dry
	3	21/02/2017	1025	1120	Overcast	10	3	Dry
8	1	26/01/2017	1340	1450	Overcast	-2	4	Dry
	2	07/02/2017	1335	1515	Overcast	9	3	Dry

Transect	Visit number	Date	Start Time	End Time	Cloud cover	Temperature (°C)	Wind (Beaufort)	Precipitation
	3	21/02/2017	1340	1445	Overcast	12	3	Dry
9	1	24/01/2017	1455	1605	Partly cloudy	5	1	Dry
	2	07/02/2017	1530	1635	Overcast	8	2	Dry
	3	21/02/2017	1125	1220	Clear	11	2	dry
10	1	25/01/2017	1025	1140	Overcast	1	1	Mist
	2	08/02/2017	1145	1330	Mostly cloudy	4	3	Dry
	3	22/02/2017	1500	1605	Overcast	12	3	Light rain
11	1	25/01/2017	0845	0950	Overcast	0	1	Mist
	2	08/02/2017	0925	1110	Overcast	3	2	Dry
	3	21/02/2017	1005	1120	Overcast	12	4	Dry
12	1	25/01/2017	1355	1455	Overcast	2	1	Mist
	2	08/02/2017	1350	1450	Overcast	3	4	Dry
	3	22/02/2017	0845	0930	Overcast	11	4	Dry
13	1	26/01/2017	1045	1125	Overcast	-2	3	Dry
	2	08/02/2017	1510	1552	Overcast	3	3	Dry
	3	22/02/2017	1320	1350	Overcast	13	4	Dry
14	1	25/01/2017	1500	1600	Overcast	2	1	Mist
	2	09/02/2017	0925	1055	Overcast	1	3	Snow grains
	3	22/02/2017	1230	1305	Overcast	13	4	Dry
15	1	26/01/2017	1515	1625	Overcast	-2	4	Dry
	2	09/02/2017	1420	1535	Overcast	1	4	Dry
	3	22/02/2017	1410	1510	Overcast	1	3	Snow grains
16	1	26/01/2017	0825	0945	Overcast	1	2	Dry
	2	09/02/2017	1115	1235	Overcast	1	3	Light rain
	3	23/02/2017	0910	1000	Overcast	9	7	Dry
17	1	23/01/2017	1320	1420	Overcast	2	1	Mist
	2	10/02/2017	0900	1005	Fog	0	3	Snow grains
	3	23/02/2017	1325	1415	Overcast	9	9	Light rain
18	1	23/01/2017	1525	1600	Overcast	0	1	Dry
	2	09/02/2017	1550	1630	Overcast	1	2	Light rain
	3	23/02/2017	1450	1515	Overcast	9	8	Dry
Second winter (November 2017 to February 2018)								

Transect	Visit number	Date	Start Time	End Time	Cloud cover	Temperature (°C)	Wind (Beaufort)	Precipitation
1	1	13/11/2017	1435	1640	30%	7	3	Dry
	2	20/12/2017	0835	1045	100%	8	1	Light rain
	3	*						
	4	N/A – no access						
2	1	14/11/2017	1505	1600	70%	12	2	Dry
	2	08/12/2017	0830	0945	40%	3	3	Dry
	3	*						
	4	N/A – no access						
3	1	14/11/2017	1410	1455	60%	11	3	Dry
	2	21/12/2017	1020	1110	100%	12	2	Dry
	3	*						
	4	N/A – no access						
4	1	14/11/2017	1310	1355	90%	11	2	Dry
	2	05/12/2017	1430	1520	100%	6	3	Dry
	3	*						
	4	N/A – no access						
5	1	21/11/2017	1210	1325	100%	14	3	Dry
	2	05/12/2017	0930	1045	100%	7	1	Dry
	3	*						
	4	N/A – no access						
6	1	16/11/2017	0845	1130	90%	12	3	Dry
	2	07/12/2017	1205	1510	100%	11	4	Heavy shower
	3	*						
	4	N/A – no access						
7	1	16/11/2017	1135	1250	90%	14	3	Dry
	2	07/12/2017	0815	0940	100%	10	4	Light rain
	3	*						
	4	N/A – no access						
8	1	14/11/2017	1045	1215	90%	9	2	Dry
	2	20/12/2017	1150	1305	100%	12	2	Dry
	3	*						
	4	N/A – no access						
9	1	15/11/2017	0845	1115	100%	11	2	Dry

Transect	Visit number	Date	Start Time	End Time	Cloud cover	Temperature (°C)	Wind (Beaufort)	Precipitation
	2	04/12/2017	1315	1510	60%	7	2	Dry
	3	*						
	4	N/A – no access						
10	1	16/11/2017	1330	1515	100%	14	2	Light rain
	2	21/12/2017	0825	0955	100%	12	1	Light rain
	3	08/01/2018	*					
	4	13/02/2018	1141	1252	25%	11	1	Dry
11	1	15/11/2017	1145	1310	100%	11	2	Dry
	2	05/12/2017	1135	1355	100%	7	3	Dry
	3	08/01/2018	*					
	4	13/02/2018	0930	1130	100%	9	4	Dry
12	1	14/11/2017	0930	1030	100%	8.5	3	Dry
	2	07/12/2017	0955	1050	100%	11	4	Dry
	3	08/01/2018	*					
	4	14/02/2018	1421	1449	100%	7	5	Dry
13	1	15/11/2017	1405	1555	90%	11	2	Dry
	2	21/12/2017	1145	1335	100%	14	2	Dry
	3	08/01/2018	*					
	4	13/02/2018	1202	1325	100%	6	5	Dry
14	N/A							
	N/A							
	3	25/01/2018	*					
	4	13/02/2018	1408	1505	100%	4	5	Light rain
15	N/A							
	N/A							
	3	25/01/2018	*					
	4	14/02/2018	0939	1120	95%	8	2	Dry
16	1	22/11/2017	0915	1055	40%	15	5	Dry
	2	19/12/2017	1235	1400	30%	6	1	Dry
	3	08/01/2018	*					
	4	14/02/2018	1148	1303	100%	7	3	Dry
17	1	07/11/2017	0815	0935	10%	3.5	1	Dry
	2	20/12/2017	1320	1505	100%	12	2	Dry

Transect	Visit number	Date	Start Time	End Time	Cloud cover	Temperature (°C)	Wind (Beaufort)	Precipitation
18	3	08/01/2018	*					
	4	12/02/2018	1200	1200	0	7	1	Dry
	1	20/11/2017	155	1605	100%	13	4	Dry
	2	19/12/2017	1040	1210	50%	5	2	Dry
	3	08/01/2018	*					
19	4	15/02/2018	1042	1113	40%	10	2	Dry
	1	21/11/2017	0915	1115	100%	13	3	Dry
	2	19/12/2017	0845	1020	10%	4	1	Dry
	3	08/01/2018	*					
	4	15/02/2018	0938	1014	40%	9	1	Dry
20	1	*						
	2	19/12/2017	1400	1455	70%	6	1	Dry
	3	08/01/2018	*					
	4	12/02/2018	1445	1525	80%	7	1	Dry
Third winter (November 2019 to February 2020)								
1	1	N/A – no access						
	2	16/12/2019	1030	1315	90%	5	1	Dry
	3	24/01/2020	0815	1030	0%	3	1	Light rain
	4	05/02/2020	0850	1150	0-25%	4-10	0	Dry
	1	N/A – replaced by transect 2.1 due to access constraints						
2	2	16/12/2019	1450	1540	100%	9	1	Dry
	3	24/01/2020	1145	1300	0-100%	5	0	Misty
	4	05/02/2020	1325	1425	0-50%	10-12	1	Dry
	1	27/11/2019	1010	1100	80-100%	6-12	1	Light rain
	2	N/A – replaced by transect 3.1 due to access constraints						
3	3	16/12/2019	1410	1455	100%	10	1	Dry
	4	24/01/2020	1110	1140	0-100%	6	0	Misty
	1	05/02/2020	1245	1320	0-35%	12	0-1	Dry
	2	26/11/2019	0900	0940	95%	4	2-3	Light rain
	3	N/A – replaced by transect 4.1 due to access constraints						
3.1	4	18/12/2019	1050	1230	0-80%	5°C	0-1	Dry
	1	N/A – no access permitted						
	2	03/02/2020	1320	1425	0-75%	8-9	1	Dry
	3	N/A – replaced by transect 4.1 due to access constraints						
	4	03/02/2020	1320	1425	0-75%	8-9	1	Dry

Transect	Visit number	Date	Start Time	End Time	Cloud cover	Temperature (°C)	Wind (Beaufort)	Precipitation
4.1	1	28/11/2019	1000	1100	100%	8	1	Dry
5	1	17/12/2019	N/A					
	2	18/12/2019	1050	1140	0-70%	4	4	Dry
	3	22/01/2020	0915	1010	0-100%	4	0	Light rain
	4	04/02/2020	1235	1320	0-100%	6	0-1	Dry
6	1	28/11/2019	1340	1440	0-100%	7	0	Dry
	2	27/11/2019	1150	1230	0-90%	8	3	Dry
	3	22/01/2020	N/A					
	4	03/02/2020	0900	1000	25-30%	3	0-1	Dry
7	1	17/12/2019	*	*	100%	5-6	2-4	Dry
8	1	22/01/2020	*	*	100%	12	1	Heavy rain

* Data not available

Annex E Summary of results

Table E.1 Summary of wintering birds survey results from the first winter of survey (January to February 2017)

Common name	Scientific name	Maximum count of each species per transect (on any on the months surveyed)																		Maximum monthly total across the site
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
Black-headed gull	<i>Chroicocephalus ridibundus</i>	580	0	0	0	2	0	0	0	61	32	40	125	0	0	0	0	0	0	732
Bullfinch	<i>Pyrrhula pyrrhula</i>	0	0	0	0	0	2	0	1	0	2	2	0	0	0	1	2	2	0	12
Chaffinch	<i>Fringilla coelebs</i>	10	1	0	1	8	1	2	14	1	4	5	2	1	2	2	50	2	0	106
Common gull	<i>Larus canus</i>	0	0	0	0	1	0	7	0	0	0	0	0	0	0	0	0	0	0	7
Coot	<i>Fulica atra</i>	0	0	0	0	0	0	0	0	141	3	0	0	0	1	0	0	0	0	141
Cormorant	<i>Phalacrocorax carbo</i>	0	0	0	0	0	0	0	0	23	14	1	2	0	0	1	0	0	0	49
Curlew	<i>Numenius arquata</i>	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Fieldfare	<i>Turdus pilaris</i>	30	3	8	10	5	0	2	40	3	70	4	3	200	200	0	37	1	8	617
Golden plover	<i>Pluvialis apricaria</i>	12	0	0	0	0	0	0	0	0	0	0	0	0	40	0	0	10	0	40
Goldfinch	<i>Carduelis carduelis</i>	2	3	0	6	4	9	0	2	7	2	8	8	3	2	4	2	5	35	96
Great black-backed gull	<i>Larus</i>	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1

Common name	Scientific name	Maximum count of each species per transect (on any on the months surveyed)																		Maximum monthly total across the site
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
	<i>marinus</i>																			
Great crested grebe	<i>Podiceps cristatus</i>	0	0	0	0	0	0	0	0	6	2	0	0	0	0	0	0	0	0	10
Greenfinch	<i>Chloris chloris</i>	0	1	0	0	1	4	1	0	2	3	2	0	0	0	0	1	2	0	15
Herring gull	<i>Larus argentatus</i>	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25
House sparrow	<i>Passer domesticus</i>	3	6	0	1	3	2	2	0	0	11	0	1	0	0	0	1	4	0	39
Lapwing	<i>Vanellus vanellus</i>	9	0	2	1	0	0	0	6	0	16	0	3	0	12	25	5	0	50	151
Linnet	<i>Linaria cannabina</i>	60	0	0	0	40	0	0	6	0	1	0	100	0	30	0	30	0	0	288
Mallard	<i>Anas platyrhynchos</i>	0	2	0	0	3	7	0	10	361	4	3	2	0	3	4	2	6	2	393
Meadow pipit	<i>Anthus pratensis</i>	1	0	0	0	9	0	1	0	0	0	0	12	0	3	0	20	0	0	39
Mistle thrush	<i>Turdus viscivorus</i>	0	0	0	2	1	1	0	3	1	2	0	0	0	0	2	1	0	0	11
Mute swan	<i>Cygnus olor</i>	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	4
Pied wagtail	<i>Motacilla alba</i>	1	0	0	40	0	0	1	0	1	1	200	0	1	0	0	0	1	1	210
Pochard	<i>Aythya</i>	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2

Common name	Scientific name	Maximum count of each species per transect (on any on the months surveyed)																		Maximum monthly total across the site
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
	<i>ferina</i>																			
Redwing	<i>Turdus iliacus</i>	6	1	1	30	14	6	13	20	100	24	11	8	0	3	1	64	6	0	193
Reed bunting	<i>Emberiza schoeniclus</i>	1	0	0	0	0	0	0	2	0	0	0	0	0	1	7	0	3	0	11
Skylark	<i>Alauda arvensis</i>	2	1	35	0	7	1	4	0	2	1	0	1	1	11	1	1	3	0	57
Snipe	<i>Gallinago gallinago</i>	0	2	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	4
Song thrush	<i>Turdus philomelos</i>	1	0	1	1	1	1	1	1	2	2	2	2	5	1	0	1	1	3	41
Starling	<i>Sturnus vulgaris</i>	1	0	0	19	7	4	1	14	0	0	20	2	0	0	0	0	22	0	58
Stock dove	<i>Columba oenas</i>	4	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	5
Tufted duck	<i>Aythya fuligula</i>	0	0	0	0	0	0	0	0	30	1	0	0	0	0	0	0	0	0	45
Water rail	<i>Rallus aquaticus</i>	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
Woodcock	<i>Scolopax rusticola</i>	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
Yellowhammer	<i>Emberiza citrinella</i>	0	1	0	1	0	0	0	1	1	3	1	0	0	0	0	0	6	0	9

Table E.2 Summary of wintering birds survey results, November 2017 to February 2018

Common name	Scientific name	Maximum count of each species per transect (on any on the months surveyed)																				Maximum monthly total across the site
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Black-headed gull	<i>Chroicocephalus ridibundus</i>	400	0	0	0	3	70	35	1	320	35	5	40	15	0	2	30	3	60	60	320	1508
Bullfinch	<i>Pyrrhula pyrrhula</i>	0	2	0	2	0	0	0	0	5	0	0	0	0	0	0	0	2	0	0	2	9
Chaffinch	<i>Fringilla coelebs</i>	20	8	0	1	1	12	3	10	5	4	10	3	30	80	15	2	30	2	2	3	165
Coot	<i>Fulica atra</i>	0	0	0	0	0	0	0	0	280	0	0	0	18	0	0	0	0	0	0	1	299
Cormorant	<i>Phalacrocorax carbo</i>	0	0	0	0	0	0	0	0	1	0	0	0	4	0	0	0	0	0	0	0	6
Fieldfare	<i>Turdus pilaris</i>	20	60	0	0	0	40	0	20	0	2	5	0	250	8	1	100	1	0	0	50	341
Golden plover	<i>Pluvialis apricaria</i>	0	0	0	0	0	0	0	5	0	0	0	0	17	0	0	0	0	0	0	0	17
Goldfinch	<i>Carduelis carduelis</i>	18	15	0	3	4	30	12	40	70	30	4	25	5	10	8	24	1	30	30	10	211
Great crested grebe	<i>Podiceps cristatus</i>	0	0	0	0	0	0	0	0	6	0	0	0	1	0	0	0	0	0	0	0	7
Great white egret	<i>Ardea alba</i>	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
Green sandpiper	<i>Tringa ochropus</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1
Greenfinch	<i>Chloris chloris</i>	0	0	0	0	0	0	0	5	0	1	0	2	0	0	0	1	2	0	0	4	9
Grey partridge	<i>Perdix perdix</i>	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Hawfinch	<i>Coccothraustes coccothraustes</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
Herring gull	<i>Larus argentatus</i>	1	0	1	4	0	0	0	0	8	0	0	4	0	0	0	0	0	0	0	22	32
House sparrow	<i>Passer domesticus</i>	10	15	0	8	20	24	10	0	0	1	0	35	0	5	12	18	0	8	8	25	177
Lapwing	<i>Vanellus vanellus</i>	0	0	160	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	160
Lesser black-backed gull	<i>Larus fuscus</i>	6	0	0	0	0	2	0	0	2	0	0	1	0	1	0	0	0	0	0	0	10

Common name	Scientific name	Maximum count of each species per transect (on any on the months surveyed)																				Maximum monthly total across the site
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Linnet	<i>Linaria cannabina</i>	70	0	2	0	0	25	0	0	0	0	90	0	90	70	8	2	0	0	0	0	325
Mallard	<i>Anas platyrhynchos</i>	0	0	0	0	0	0	0	0	260	0	0	23	15	0	0	0	80	0	0	4	379
Meadow pipit	<i>Anthus pratensis</i>	2	2	0	0	1	25	0	25	1	40	30	0	6	1	0	5	3	0	0	4	81
Mistle thrush	<i>Turdus viscivorus</i>	1	1	0	2	0	1	0	4	4	1	1	0	1	0	3	1	1	0	0	0	19
Mute swan	<i>Cygnus olor</i>	0	0	0	0	0	0	0	0	17	0	0	0	0	0	0	0	0	0	0	2	18
Pied wagtail	<i>Motacilla alba</i>	2	0	4	4	1	38	0	2	2	120	8	4	0	0	0	3	1	0	0	1	125
Redwing	<i>Turdus iliacus</i>	10	9	0	0	0	18	0	1	25	22	40	0	35	0	0	35	3	15	15	1	195
Reed bunting	<i>Emberiza schoeniclus</i>	0	5	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	1	5
Shoveler	<i>Anas clypeata</i>	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2
Skylark	<i>Alauda arvensis</i>	1	0	2	1	12	16	0	8	2	4	6	0	27	2	4	4	20	1	1	1	97
Song thrush	<i>Turdus philomelos</i>	0	0	0	0	1	1	1	0	1	1	1	1	1	2	1	1	1	0	0	2	23
Starling	<i>Sturnus vulgaris</i>	45	4	0	6	20	18	4	13	0	25	30	6	35	10	0	30	0	25	25	5	232
Stock dove	<i>Columba oenas</i>	6	0	0	0	0	0	0	2	0	0	0	0	30	3	3	0	3	3	3	0	62
Tufted duck	<i>Aythya fuligula</i>	0	0	0	0	0	0	0	0	60	0	0	0	25	0	0	0	0	0	0	0	75
Water rail	<i>Rallus aquaticus</i>	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Wigeon	<i>Anas penelope</i>	0	0	0	0	0	0	0	0	10	0	0	0	0	0	0	0	0	0	0	0	10
Woodcock	<i>Scolopax rusticola</i>	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	2
Yellowhammer	<i>Emberiza citrinella</i>	0	0	0	0	0	0	0	1	0	0	1	0	4	5	1	0	8	0	0	1	13

Table E.3 Summary of wintering birds survey results, November 2019 to February 2020

Common name	Scientific name	Maximum count of each species per transect (on any on the months surveyed)											Maximum monthly total across the site
		1	2	2.1	3	3.1	4	4.1	5	6	7	8	
Black-headed Gull	<i>Chroicocephalus ridibundus</i>	400	250	183	1	1	0	400	0	0	153	45	939
Bullfinch	<i>Pyrrhula pyrrhula</i>	4	0	0	0	0	0	0	0	3	0	0	11
Chaffinch	<i>Fringilla coelebs</i>	20	5	0	2	0	100	2	5	20	2	0	266
Common gull	<i>Larus canus</i>	6	30	0	2	0	0	0	0	0	2	0	32
Cormorant	<i>Phalacrocorax carbo</i>	1	0	0	0	0	1	0	0	0	3	0	3
Fieldfare	<i>Turdus pilaris</i>	80	75	37	0	0	35	14	20	0	32	0	115
Golden plover	<i>Pluvialis apricaria</i>	50	0	0	0	0	0	0	0	0	0	0	50
Goldfinch	<i>Carduelis carduelis</i>	20	0	4	1	0	20	0	6	15	43	0	106
Great black-backed gull	<i>Larus marinus</i>	0	0	0	1	0	0	0	0	0	0	0	1
Greenfinch	<i>Chloris chloris</i>	5	2	0	0	0	25	0	3	15	0	0	59
Grey partridge	<i>Perdix perdix</i>	1	0	0	0	0	0	0	0	0	0	0	2
Herring gull	<i>Larus argentatus</i>	7	30	3	6	0	0	100	0	0	260	37	558
House sparrow	<i>Passer domesticus</i>	0	5	23	0	0	0	0	0	20	0	0	28
Lapwing	<i>Vanellus vanellus</i>	0	0	0	0	0	0	0	30	0	0	0	30
Lesser black-backed gull	<i>Larus fuscus</i>	0	1	0	0	0	0	0	0	0	0	0	1
Linnet	<i>Linaria cannabina</i>	100	150	0	15	237	200	0	6	0	0	0	519
Mallard	<i>Anas platyrhynchos</i>	2	5	0	0	0	0	0	0	0	0	0	10

Common name	Scientific name	Maximum count of each species per transect (on any on the months surveyed)											Maximum monthly total across the site
		1	2	2.1	3	3.1	4	4.1	5	6	7	8	
Meadow pipit	<i>Anthus pratensis</i>	1	1	0	30	4	1	7	0	15	0	0	34
Mediterranean gull	<i>Larus melanocephalus</i>	1	0	0	0	0	0	0	0	0	0	0	1
Mistle thrush	<i>Turdus viscivorus</i>	0	0	0	0	0	0	1	1	0	1	2	4
Pied wagtail	<i>Motacilla alba</i>	10	1	0	0	0	1	0	0	1	0	0	12
Redwing	<i>Turdus iliacus</i>	17	50	0	0	0	1	0	20	0	14	0	50
Reed bunting	<i>Emberiza schoeniclus</i>	30	3	0	0	1	4	0	0	1	0	0	34
Skylark	<i>Alauda arvensis</i>	50	15	0	15	3	15	4	3	20	15	0	109
Snipe	<i>Gallinago gallinago</i>	0	0	0	0	0	0	0	1	0	0	0	1
Song thrush	<i>Turdus philomelos</i>	3	4	0	1	0	1	0	2	0	0	0	9
Starling	<i>Sturnus vulgaris</i>	20	0	0	0	45	15	15	10	0	29	5	106
Stock dove	<i>Columba oenas</i>	1	50	0	1	0	100	0	0	30	0	0	172
Woodcock	<i>Scolopax rusticola</i>	0	0	0	0	0	0	0	1	0	0	0	1
Yellowhammer	<i>Emberiza citrinella</i>	30	15	0	2	9	40	0	1	15	0	0	84