

Great Yarmouth Third River Crossing

Application for Development Consent Order

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**Breeding Bird Survey and Vantage Point Survey of a site in Great
Yarmouth, Norfolk, associated with the catchment area for a potential
new road crossing over the River Yare.**

2018

FINAL REPORT

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To achieve the study objectives stated in this report, we were required to base our conclusions on the best information available during the period of the investigation and within the limits prescribed by our client in the agreement.

No investigative method can completely eliminate the possibility of obtaining partially imprecise or incomplete information. Thus, we cannot guarantee that the investigations completely defined the degree or extent of e.g. species abundances or habitat management efficacy described in the report.

This report is only valid for external use in its final issued version.

Document Information

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0 EXECUTIVE SUMMARY

- 0.1 On behalf of their client, Cambridge Ecology Ltd was commissioned by WSP to carry out a Breeding Bird Survey and Vantage Point Survey on land in Great Yarmouth, Norfolk, associated with the catchment area for a potential new road crossing over the River Yare.
- 0.2 The information gathered from the Breeding Bird and Vantage Point Survey visits was considered to provide a robust and valid indication of the breeding bird assemblage, population size of breeding bird species and bird activity in the survey area at the time of the survey visits.
- 0.3 Four Breeding Bird Survey visits were conducted between mid-May and mid-June. These survey visits recorded a total of 35 bird species. The species recorded reflect an assemblage typical of the habitat present at the site.
- 0.4 Observations of bird activity during the Breeding Bird Survey indicated that 33 species recorded were confirmed and/or considered to be probable/possible breeding species. Two species were not considered to be breeding in the survey area, but were seen flying over the site.
- 0.5 Black Redstart, a Schedule 1 species of the Wildlife & Countryside Act 1981 (as amended), was observed during the first survey visit. It was considered that 2-3 territories were present in the survey area.
- 0.6 Of the other breeding/probable/possible breeding species, the survey area supported six bird species (14 pairs of Herring Gull, 4 Starling nesting sites, 1 Song Thrush territory, 7 pairs of House Sparrow, 5 Dunnock territories and 1 pair of Linnet) that are recognised for their conservation value by being UK BAP listed species and Principal Species of Importance (Section 41 NERC Act 2006). As such, national species action plans have been created for these species to safeguard current populations and reverse population declines.
- 0.7 All the species mentioned here are listed on recognised conservation criteria and therefore are of some conservation importance. The presence of these species should be of material consideration when the proposals for the site.
- 0.8 A total of 33 hours of Vantage Point survey visits were carried out between mid May and July. These surveys recorded a total of seven bird species (Cormorant, Sparrowhawk, Oystercatcher, Black-headed Gull, Lesser Black-backed Gull, Herring Gull and Hobby). It was considered that the survey results presented an accurate reflection of the bird species present during the survey visits.
- 0.9 There were no observations made of the Common Tern, the main target species of the survey. There were also no observations of any other waterbirds that qualify as features of the Breydon Water SPA.
- 0.10 Of the species, recorded (Herring Gull, and Hobby) are recognised for their conservation value by being either listed on the BoCC Red List in recognition

of their significant population decline (>50%) and consequently of conservation concern and Schedule 1 species of the Wildlife & Countryside Act 1981 (as amended), respectively.

- 0.11 A single Hobby, a species listed on Schedule 1 of the Wildlife & Countryside Act 1981 (as amended), was recorded on the 19th July for 125 seconds in the 35-125m height band.
- 0.12 Herring Gull and Lesser Black-backed Gull and Kestrel were breeding in the study area they were recorded during all eleven survey visits, throughout the 3-hour survey periods, at all three height bands and all directions.
- 0.13 The presence of these species should be of material consideration when assessing the potential impact of the scheme proposals on birds.
- 0.14 Without mitigation, the development proposals would likely result in a number of direct adverse impacts on breeding birds. These direct impacts would include, (i) habitat loss through land-take and (ii) direct mortality.
- 0.15 There were no observations made of the Common Tern, which was the main target species of the Vantage Point survey. There were also no observations of any other waterbirds that qualify as features of the Breydon Water SPA. Therefore, within the limitations of the survey and based on the survey findings, the integrity of the Breydon Water SPA and waterbirds that qualify as features of the Breydon Water SPA would not appear to be a constraint to the development.
- 0.16 Based on the findings of this Breeding Bird and Vantage Point Survey, a number of measures can be recommended that should be incorporated into the scheme proposals that would limit the impact of the scheme on the existing local bird assemblage.

1 INTRODUCTION

- 1.1 On behalf of their client, Cambridge Ecology Ltd was commissioned by WSP to carry out a Breeding Bird Survey and Vantage Point Survey on land in Great Yarmouth, Norfolk, associated with the catchment area for a potential new road crossing over the River Yare.
- 1.2 This survey was required to investigate the presence of breeding birds along the proposed route of the river crossing and which could therefore potentially be affected by the development and could cause a constraint to the proposed development. Breeding birds would need to be considered in relation to maintaining compliance with wildlife legislation and planning policy.
- 1.3 Previous survey work (WSP pers. comm.) within the site boundary had highlighted the potential for the area to support breeding birds that are of conservation concern specifically Black Redstart *Phoenicurus ochruros*. Therefore, a breeding bird survey, with particular emphasis on detecting Black Redstart was required.
- 1.4 It is understood (WSP pers. comm.) that the proposed extension to the Breydon Water Special Protected Area (SPA) will include the River Yare, and therefore the catchment area for a potential new road crossing over the River Yare. During the breeding season Common Tern *Sterna hirundo* are a qualifying feature of Breydon Water SPA, with the SPA supporting approximately 1.3% of the Common Tern population within Great Britain (155 breeding pairs) (JNCC 2006). There is potential for the proposed development to impact upon the distribution of Common Tern, which could potentially be in breach of the SPA's conservation objectives (Natural England 2014).
- 1.5 The existing boundary of the Breydon Water SPA lies approximately 2km to the north west of the proposed new river crossing.
- 1.6 Therefore, a Vantage Point (VP) survey with particular emphasis on detecting Common Tern was required to appropriately assess the activity of Common Tern and other waterbird species in the vicinity of the proposed new river crossing.
- 1.7 For clarity in this report the development site (or 'site') refers to land within survey area including the red line boundary of the catchment area for proposed development.

Aims and objectives

- 1.8 Aims of the Breeding Bird Survey and Vantage Point Survey were primarily to inform the planning application process pertaining to the development proposals on the land associated with the catchment area for a potential new road crossing over the River Yare. The survey results would be expected to:
 - highlight the current breeding status of birds that are of conservation concern in the area especially breeding Black Redstart;

- highlight the current usage of the area by waterbird species that are qualifying features of Breydon Water SPA, especially Common Tern;
- provide baseline information on the current assemblage and abundance of breeding birds within the study area;
- identify appropriate mitigation measures, necessary to comply with legal requirements pertaining to breeding bird legislation; and
- identify enhancement opportunities in relation to national planning policy in terms of the National Planning Policy Framework (NPPF). The key principles in the NPPF require that *"the planning system should contribute to and enhance the natural and local environment by minimising impacts on biodiversity and delivering net gains in biodiversity where possible."*

- 1.9 This report summarises the background to the study and details the results and key findings of the 2018 Breeding Bird Survey and Vantage Point Survey. The data may be used to provide guidance on the need and design of any appropriate mitigation measures. These measures may be necessary to minimise any potential adverse effects of the development proposals on breeding birds and waterbird species that are qualifying features of Breydon Water SPA. In addition, the data may also help the design of any appropriate ecological enhancement measures such as habitat creation and site management for the benefit of breeding birds.

Study Area and Development Proposals

- 1.10 The study area was located towards the northern end of Great Yarmouth.
- 1.11 For the breeding bird survey, the north of the study area was bordered by Tollgate Road on the western side of the River Yare and by Newcastle Road on the eastern side of the River Yare. To the south the study area was bordered by Manor Road on the western side of the River Yare and by Salmon Road on the eastern side of the River Yare. To the west the study area was bordered by the A47 dual carriage way and by Harbord Crescent to the east. Figure 1.1 shows the approximate area covered during the breeding bird survey visits.
- 1.12 For the Vantage Point Survey the study area comprised both banks of the river yare extending from Boundary Road to the north and Queen Anne's Road to the south. Figure 1.2 shows the approximate location of the vantage points and the area covered during the survey visits.
- 1.13 Within the survey area the dominant habitat comprised, urban residential and commercial land, which was centred around the River Yare.
- 1.14 Other habitats included amenity and improved grassland, tall ruderal, dense and scattered scrub, ephemeral/short perennial, broad-leaved lowland deciduous woodland (including plantation woodland) and hedgerows.
- 1.15 The development proposals for the study area comprised the construction of a new road bridge across the River Yare.

Relevant Legislation and Policy

1.16 Relevant legislation and policies relating to the remit of this survey are listed below and outlined in more detail in the proceeding tables, divided into protected habitats and species.

- The Conservation of Habitat and Species Regulations 2017;
- Natural Environment and Rural Communities (NERC) Act 2006 (as amended);
- The Wildlife and Countryside Act 1981 (as amended);
- The Countryside and Rights of Way (CRoW) Act 2000;
- National Planning Policy Framework 2012;
- Government Circular (ODPM 06/2005) Biodiversity and Geological Conservation - Statutory Obligations & Their Impact Within the Planning System;
- The UK and Norfolk Biodiversity Action Plan.

Breeding Bird Legislation

1.17 Under the terms of the Wildlife & Countryside Act 1981 (as amended) - All birds, their nests, eggs and young are protected by law. It is an offence, with certain exceptions, to:

- intentionally kill, injure or take any wild bird.
- intentionally take, damage or destroy the nest of any wild bird while it is in use or being built.
- intentionally take or destroy the egg of any wild bird.
- have in one's possession or control any wild bird (dead or alive), part of a wild bird or egg of a wild bird which has been taken in contravention of the Act, the Protection of Birds Act 1954 or the law of any EU Member State (which implements the EU Birds Directive 1979).
- intentionally or recklessly (revised under the terms of the CRoW Act 2000) disturb any wild bird listed on Schedule 1 while it is nest building or is in, on or near a nest with eggs or young; or disturb the dependent young of such a bird.

1.18 Special penalties are available for offences related to bird species on Schedule 1 of the Act, for which there are additional offences of disturbing these birds at their nests and/or their dependent young.

1.19 Therefore, any activities, such as site clearance work, must avoid contravention of this legislation.

1.20 Various bird species are listed as priority species under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006. This places a duty on all government departments to have regard for the conservation of these species and to promote other stakeholders to further, the conservation of these species.

1.21 The presence of bird species listed as either UKBAP, Species of Principal Importance and/or BoCC Red List species is of material consideration during

the planning process and mitigation measures would be necessary to address their presence.

- 1.22 National Planning Practice Guidance (NPPG) includes the following information in regard to development. "Local planning authorities should consider the opportunities that individual development proposals may provide to enhance biodiversity and contribute to wildlife and habitat connectivity in the wider area

2 METHODS

Breeding Bird Survey Registration Mapping

- 2.1 The survey methodology involved standard territory (registration) mapping techniques as detailed in Bird Monitoring Methods (Gilbert *et al.*, 1998) and the national Black Redstart survey methodology (Morgan and Glue, 1981).
- 2.2 This method is based on the observation that many species during the breeding season are territorial. This is found particularly amongst passerines, where territories are often marked by conspicuous song, display, and periodic disputes with neighbouring individuals. Registrations of birds, using standard British Trust for Ornithology (BTO) two letter species codes, were placed onto an appropriate field map (scale 1:5000). Specific codes were also used for singing, calling, movements between areas, flying, carrying food, nest building, aggressive encounters and other behaviour. The expected outcome of this technique is that mapped registrations fall into clusters, approximately coinciding with territories. Where a species has closely packed territories (e.g. Reed Warbler), the mapping of simultaneously singing birds becomes essential. Territory boundaries are taken to be between such birds.
- 2.3 A species was assumed to be breeding if one or more of the following activities were recorded:
- Territorial/Alarm
 - Song
 - Aggressive Encounter
 - Occupied Nest / Nest Box / Sitting on Nest
 - Carrying Nest Material
 - Carrying Food
- 2.4 The study area was defined as the red line boundary of the development site where access was possible (Figure 1.1).
- 2.5 The study area was walked at a slow pace in appropriately fine weather in order to locate and identify all individual birds. All field boundaries and suitable breeding habitats were walked. Visits were undertaken early in the morning from dawn (04:30 – 1100). The whole survey area was covered during each visit, using suitable optical equipment (binoculars x10 magnification, and telescope x20-60 magnification) to observe bird behaviour. Survey routes were alternated on each visit, to ensure that all areas were covered at various times of day across the duration of the survey.
- 2.6 Surveys were undertaken between May and June 2018, with four survey visits taking place. The survey dates were as follows:
1. 18th May
 2. 30th May
 3. 15th June
 4. 29th June

- 2.7 All surveys were undertaken by Darren Frost (holder of a Natural England Schedule 1 Barn Owl Licence: CL29/00166) and Martin Sutherland professional ecologists, each with at least 20 years knowledge and experience of undertaking breeding bird surveys.
- 2.8 The weather conditions encountered during the Breeding Bird Survey visits are detailed in Table 2.1

Table 2.1 Weather conditions during the 2018 Breeding Bird Survey visits

Date	Survey Period	Wind conditions		Temperature (Ave. °C)	Visibility	Cloud %	Rain (mm)
		Direction	Speed (Ave. mph)				
18/05/2018	0500-1100	NW	8	8	>3km	100	Dry
30/05/2018	0450-1100	N	10	13	>3km	60	Dry
15/06/2018	0430-1100	SW	6	12	>3km	50	Dry
29/06/2018	0430-1100	NE	9	13	>3km	50	Dry

<http://www.metoffice.gov.uk> and <http://www.accuweather.com>

- 2.9 Observations of birds made in the field were recorded directly on to handheld computers. These devices displayed Ordnance Survey (OS) base maps and the location of the surveyor - using Global Positioning Systems (GPS) technology. This aided in the accurate recording of the birds' location. Upon completion of the surveys the data were then downloaded and used to create individual species master maps.
- 2.10 The data analyses followed procedures detailed in Gilbert *et al.* (1998). From species master maps, the number of territories for each species was calculated. If there were eight or fewer survey visits (as in this case which comprised four visits) during the period when a species is expected to be present, then only one registration of a bird, in the same area, was required as the minimum number necessary to assume a breeding territory.
- 2.11 For late flying migrants, e.g. Spotted Flycatcher *Muscicapa striata*, for which fewer potential contacts are possible, only one registration is required, this approach was also applied to inconspicuous species, e.g. Grey Partridge *Perdix perdix*.
- 2.12 A number of species are not territorial, e.g. Linnet *Carduelis cannabina*, where data represent aggregations or loose colonies. Therefore, a territory represents a colony of a certain number of pairs of breeding birds.
- 2.13 Species that do not form territories or nest colonially e.g. certain wildfowl, the term territory is replaced by breeding pair and/or brood.
- 2.14 Standard registration mapping techniques were also used to record nonbreeding species.
- 2.15 The criteria set out within the Bird Atlas 2007-2011 (Balmer *et al.*, 2014) would be used to assess the breeding status of each species recorded.

Therefore, the following definitions have been used to identify the breeding status of the species recorded:

- Confirmed Breeding: Includes species for which territories were positively identified as a result of the number of registrations, the location of an active nest, the presence of recently fledged young or downy young.
- Probable Breeding: Includes a pair observed in suitable nesting habitat in breeding season, agitated behaviour or anxiety calls from adults, suggesting probable presence of nest or young nearby. Behaviour was observed on insufficient occasions to confirm the presence of a territory.
- Possible Breeding: Includes species observed in breeding season in suitable nesting habitats, singing male present (or breeding calls heard) in breeding season in suitable breeding habitat.
- Non-Breeding: Fly-over species observed considered to be still on migration. Species present as a summering non-breeder.

2.16 The conservation status of the species recorded as breeding were measured against the following criteria:

- Annex 1 of the EU Birds Directive (Directive 79/409/EEC);
- Schedule 1 of the Wildlife and Countryside Act 1981, (as amended);
- UK Biodiversity Action Plan (UK BAP) priority species (Anon, 2007);
- Species of Principal Importance listed under Section 41 of the Natural Environment & Rural Communities Act (2006), (as amended);
- Birds of Conservation Concern (BoCC) Red List (Hayhow et al., 2017).

2.17 Based on the findings of the survey and bird registrations, species master map production and territory assessment was only undertaken for those species that were considered to be breeding within the survey area and were listed on one or more of the above criteria.

Vantage Point Survey

2.18 The Vantage Point Survey was designed to quantify the level of flight activity of Common Tern and other waterbirds that qualify as features of the Breydon Water SPA and their distribution over the survey area. Focal counts of activity of non-waterbirds that were considered to be of conservation concern was also be undertaken.

2.19 The Vantage Point Survey involved standard counts and activity and height categories as detailed within 'Recommended bird survey methods to inform impact assessment of onshore wind farms' (Scottish Natural Heritage (SNH), 2014), as recommended by Natural England in Guidance Note TIN069 (Natural England, 2010).

2.20 The surveyor was located at a single Vantage Point location to observe the survey area on the River Yare as identified on Figure 1.2.

- 2.21 A view across the whole survey area was covered during each visit, using suitable optical equipment (binoculars x10 magnification, and telescope x20-60 magnification) to observe bird activity and behaviour.
- 2.22 The surveyor collected data on the relative use of the survey area and time spent flying over the defined survey area by target species.
- 2.23 The data collected during the 33 hours of survey included recording:
- the species;
 - the number of birds;
 - the type of behaviour exhibited by the birds in the survey area;
 - the height at which the birds were flying over the survey area in one of three band widths (i.e. water level up to 35m, 35-125m and >125m);
 - the direction of travel; and
 - the time period the birds spent in the survey area.
- 2.24 The weather conditions encountered during the Vantage Point Survey visits are detailed in Table 2.2.

Table 2.2 Weather conditions during the 2018 Vantage Point Survey visits

Date	Start/End Time	Wind conditions		Temperature (Ave. °C)	Visibility	Cloud %	Rain (mm)
		Direction	Speed (Ave. mph)				
17/05/2018	0830-1130	N-NNE	15	11	>3km	50	0
	1430-1730	N	15	12	>3km	50	0
29/05/2018	0800-1100	NE	14	15	>3km	75	0
	1400-1700	NE	17	17	>3km	85	0
14/06/2018	0900-1200	SW	23	18	>3km	100	<2
	1500-1800	W	18	21	>3km	25	0
28/06/2018	1200-1500	NE	10	20	>3km	25	0
29/06/2018	0600-0900	NNE	7	15	>3km	33	0
19/07/2018	1100-1400	E	7	22	>3km	75	0
	1700-2000	SE	10	23	>3km	0	0
20/07/2018	0530-0830	SE	<5	15	>3km	0	0

<http://www.metoffice.gov.uk> and <http://www.accuweather.com>

- 2.25 Surveys were undertaken between May and July 2018, with seven survey visits taking place. A total of 33 hours of observation time was undertaken during the period. These involved eleven three-hour surveys. No more than nine hours of observation was carried out within a single 24-hour period. Surveys were scheduled once every two weeks and hours of observation will range between sunrise and sunset over the survey period.
- 2.26 The survey dates were as follows:
1. 17th May
 2. 29th May
 3. 14th June
 4. 28th June
 5. 29th June

- 6. 19th July
- 7. 20th July

2.27 All surveys were undertaken by Darren Frost (holder of a Natural England Schedule 1 Barn Owl Licence: CL29/00166) and Martin Sutherland professional ecologists, each with at least 20 years knowledge and experience of undertaking breeding bird surveys.

Survey Constraints

2.28 The Breeding Bird Survey followed the standard method described in Bird Monitoring Methods (Gilbert *et al.*, 1998) and the national Black Redstart survey methodology (Morgan and Glue, 1981).

2.29 It was considered that the Breeding Bird Survey provided a robust and valid indication of the species present, their abundance, territory location and their usage of the site between May and June 2018.

2.30 The surveys were carried out in suitable weather conditions and at a time of day when birds would likely be most active and visible to surveyors.

2.31 Access to some commercial and residential areas as well certain habitats was not possible. Therefore, the status of breeding birds and the assemblage present could not be determined. These areas are however limited in area and quality for breeding birds.

2.32 It was recognised that the breeding bird survey was commenced in mid-May rather than in March - April as recommended by Gilbert *et al.* (1998). Therefore, there is some potential for early breeding bird species and their territories to have been overlooked. However, considering the site was located in an urban environment, early breeding species of conservation interest, such as owl species, would not be present. In addition, widespread breeding bird activity was observed during the survey visits and the species observed was thought to be representative of the assemblage present.

2.33 It was also recognised that the Black Redstart survey was commenced in mid-May rather than in mid-April as recommended by Morgan and Glue (1981). Therefore, some early breeding activity and territories may have been overlooked. However, the surveys did record the presence of Black Redstart, so their presence was detected and the precautionary assumption made that all three territories detected were active.

2.34 The Vantage Point Survey followed the methodologies described by SNH (2014) and Natural England (2010).

2.35 It was considered that the Vantage Point Survey provided robust and valid indication of the species present, their abundance and usage of the site between May and July 2018.

2.36 The survey comprised 33 hours of observations, covering all periods of daylight hours.

- 2.37 It was recognised that no nocturnal vantage point surveys were carried out. Therefore, conclusions cannot be drawn about nocturnal bird activity from this survey.
- 2.38 In addition, both surveys took place over one season, therefore conclusion about other seasons or variations in bird activity from year to year cannot be drawn from this survey.

3 RESULTS AND EVALUATION

Breeding Bird Survey

3.1 During the breeding bird survey, a total of 35 species were recorded between 18th May and 29th June 2018. Of these 35 species and based on the criteria set out in para 2.15, 28 species were confirmed as breeding within the study area, while another was probably breeding and four possibly breeding. Two species were considered to be non-breeding species. All species recorded during the breeding bird surveys, their breeding status in the study area, together with their conservation status are detailed in Table 3.1.

3.2 The English and Latin names of all the species recorded during the breeding bird survey detailed in this report can be found in Appendix A.

Table 3.1 Bird species recorded in the survey area during the breeding bird survey

Species	Likely breeding status	Annex 1 EU Birds Directive ¹	Schedule 1 Wildlife & Countryside Act 1981 ²	Birds of Conservation Concern ³	UK BAP Priority Species ⁴	Species of Principle Importance ⁵
Mallard	Possible			Amber		
Sparrowhawk	Possible					
Moorhen	Breeding					
Oystercatcher	Non-breeding			Amber		
Herring Gull	Breeding			Red		
Lesser Black-backed Gull	Breeding			Amber		
Woodpigeon	Breeding					
Collared Dove	Breeding					
Swift	Possible			Amber		
Great Spotted Woodpecker	Probable					
Green Woodpecker	Possible					
Kestrel	Breeding			Amber		42
Hobby	Non-breeding		X			
Magpie	Breeding					
Carrion Crow	Breeding					
Blue Tit	Breeding					
Great Tit	Breeding					
Long-tailed Tit	Breeding					
Chiffchaff	Breeding					
Reed Warbler	Breeding					
Blackcap	Breeding					
Wren	Breeding					
Starling	Breeding			Red	X	41, 42
Blackbird	Breeding					
Song Thrush	Breeding			Red	X	41, 42
Robin	Breeding					

Breeding Bird Survey and Vantage Point Survey of a site in Great Yarmouth, Norfolk

Species	Likely breeding status	Annex 1 EU Birds Directive ¹	Schedule 1 Wildlife & Countryside Act 1981 ²	Birds of Conservation Concern ³	UK BAP Priority Species ⁴	Species of Principle Importance ⁵
Black Redstart	Breeding		X	Red		
House Sparrow	Breeding			Red	X	41, 42
Dunnock	Breeding			Amber	X	41, 42
Pied Wagtail	Breeding					
Chaffinch	Breeding					
Greenfinch	Breeding					
Linnet	Breeding			Red	X	41, 42
Goldfinch	Breeding					
Feral Pigeon	Breeding					
Total species = 35						

¹ Species included on Annex 1 of the EU Birds Directive (79/409/EEC).

² Species protected by Schedule 1 of the Wildlife & Countryside Act 1981.

³ Species on the Birds of Conservation Concern Red and Amber list (Hayhow *et al.*, 2017).

⁴ Priority Species in the UK Biodiversity Action Plan (Anon, 2012).

⁵ Species included in Section 41 of the Natural Environment and Rural Communities Act 2006 (Ref: Anon 2006).

3.3 Of the 33 species recorded as breeding (confirmed, probable and possible) within the study area, seven were covered by one or more of the criteria listed in paragraph 2.16 (N.B. for BoCC Amber listed species only those that also held other designated have been included). Table 3.2 summarises the seven species, the number of breeding territories and their conservation status.

Table 3.2 Summary of bird species of specific conservation value considered to be breeding during the 2018 Breeding Bird Survey.

Species	Breeding Territories/Pairs in 2018	Conservation Status
Herring Gull	14	Red
Starling	4	UKBAP, Red, SPI
Song Thrush	1	UKBAP, Red, SPI
Black Redstart	2-3	WCA1, Red
House Sparrow	7	UKBAP, Red, SPI
Dunnock	5	UKBAP, Amber, SPI
Linnet	1	UKBAP, Red, SPI

Annex1 - Annex 1 of the Birds Directive; **WCA1** - Wildlife and Countryside Act 1981 (as amended) Schedule 1; **UKBAP** - UK Biodiversity Action Plan species; **Red** - Birds of Conservation Concern Red list, **SPI** - NERC Act 2006 (as amended) Species of Principal Importance.

3.4 Of the species considered to be of highest conservation value; there were 14 pairs of Herring Gull, 4 Starling nesting sites, 1 Song Thrush territory, 2-3 Black Redstart territories, 7 pairs of House Sparrow, 5 Dunnock territories and 1 pair of Linnet.

3.5 Figures 3.1 shows the territory maps for those species that were considered to be breeding within the survey area and which were listed as Annex 1, WCA1, UKBAP, BoCC Red list and SPI. The territory maps show the location and number of breeding territories/pairs present of the target species.

Herring Gull

- 3.6 There was a total of 14 pairs of Herring Gull in the survey area.
- 3.7 Ten pairs were nesting on the roof-tops of buildings on the eastern side of the River Yare and four pairs were nesting on the roof-tops of buildings on the western side of the River Yare.

Starling

- 3.8 There was a total of four pairs of Starling in the survey area.
- 3.9 One pair was nesting on the eastern side of the River Yare and three pairs were nesting on the western side of the River Yare. All nests were situated within suitable features on buildings.

Song Thrush

- 3.10 There was one pair of Song Thrush in the survey area.
- 3.11 The territory was situated on the western side of the River Yare, near William Adams Way next to Southtown Common Recreation Ground.

Black Redstart

- 3.12 There were two-three Black Redstart territories in the survey area.
- 3.13 Two territories were on the eastern side of the River Yare, one bird was singing near Swanston's Road and another near Suffling Road and Admiralty Road. A probable third territory was on the western side of the River Yare, a bird was heard singing at the intersection between William Adam's Way, Malthouse Land and Beccles Road.

House Sparrow

- 3.14 There was a total of seven pairs of House Sparrow in the survey area.
- 3.15 All seven were nesting on the western side of the River Yare. All nests were situated within suitable features on residential buildings.

Dunnock

- 3.16 There was a total of five pairs of Dunnock in the survey area.
- 3.17 All five were nesting on the western side of the River Yare. All nests were situated within suitable habitat along William Adams Way next to Southtown Common Recreation Ground.

Linnet

- 3.18 There was one pair of Linnet in the survey area.

- 3.19 The territory was situated on the eastern side of the River Yare, near the intersection between Newcastle Road and Southgates Road, where a small area of derelict land provided some suitable bramble scrub habitat.

Vantage Point Survey

- 3.20 During the Vantage Point Survey visits, seven bird species were recorded flying within the study area along the River Yare. These included Cormorant, Sparrowhawk, Oystercatcher, Black-headed Gull, Lesser Black-backed Gull, Herring Gull and Hobby.
- 3.21 Of these, Herring Gull and Hobby are considered to be of highest conservation value, being covered by one or more of the criteria listed in paragraph 2.16 (N.B. for BoCC Amber listed species only those that also held other designated have been included).
- 3.22 A single Hobby, a species listed on Schedule 1 of the Wildlife & Countryside Act 1981 (as amended), was recorded on the 19th July for 125 seconds in the 35-125m height band.
- 3.23 Herring Gull, a BoCC Red list species was recorded during all seven survey visits.
- 3.24 With the exception of Lesser Black-backed Gull, Herring Gull and Kestrel, Table 3.3 shows the details of the species recorded during the Vantage Points survey visits.
- 3.25 As Lesser Black-backed Gull, Herring Gull and Kestrel were breeding in the study area they were recorded during all eleven survey visits, throughout the 3 hour survey periods, at all three height bands and all directions. Therefore the details of these species have been omitted from the results Table 3.3.
- 3.26 There were no observations made of the Common Tern, the main target species of the survey. There were also no observations of any other waterbirds that qualify as features of the Breydon Water SPA.
- 3.27 The behaviour of all the birds seen comprised flights over the survey area. Black-headed Gull, Lesser Black-backed Gull and Herring Gull were also seen feeding in the survey area picking food items from the surface of the water.
- 3.28 The direction of flight of the birds observed was primarily either north to south or south to north along the route of the river. As a result of their breeding activity, Lesser Black-backed Gull and Herring Gull were seen flying in all directions within the survey area.

Table 3.3 Summary of bird activity recorded during the 2018 Vantage Point Survey.

Date	Time	Number Age/Sex	Time (sec) in 500m	Dir	Height Band	Flight Time in Each height Band Within 500m Survey area (15 second Intervals)											
						15	30	45	60	15	30	45	60	15	30	45	60
Cormorant																	
19/07/18	1323	Adult	70	W	C > 125m												
					B35-125m	Y	Y	Y	Y								
					A 0 - 35m												
Sparrowhawk																	
29/05/18	0909	Adult male	60	SW	C > 125m												
					B35-125m												
					A 0 - 35m	Y	Y	Y	Y								
29/05/18	0910	Adult female	40	NW	C > 125m												
					B35-125m												
					A 0 - 35m	Y	Y										

Breeding Bird Survey and Vantage Point Survey of a site in Great Yarmouth, Norfolk

Date	Time	Number Age/Sex	Time (sec) in 500m	Dir	Height Band	Flight Time in Each height Band Within 500m Survey area (15 second Intervals)											
						15	30	45	60	15	30	45	60	15	30	45	60
19/07/18	1251	1st Sum	145	N	C > 125m												
					B35-125m	Y	Y	Y	Y	Y	Y	Y	Y				
					A 0 - 35m												
Hobby																	
19/07/18	1336	Adult	125	N then W	C > 125m												
					B35-125m	Y	Y	Y	Y	Y	Y	Y	Y				
					A 0 - 35m												
Oystercatcher																	
29/06/18	0700	Adult	40	N	C > 125m												
					B35-125m												
					A 0 - 35m	Y	Y										
19/07/18	1732	2 Adults	45	S	C > 125m												
					B35-125m												
					A 0 - 35m	Y	Y	Y									

Breeding Bird Survey and Vantage Point Survey of a site in Great Yarmouth, Norfolk

Date	Time	Number Age/Sex	Time (sec) in 500m	Dir	Height Band	Flight Time in Each height Band Within 500m Survey area (15 second Intervals)											
						15	30	45	60	15	30	45	60	15	30	45	60
20/07/18	0657	1	45	N	C > 125m												
					B35-125m												
					A 0 - 35m	Y	Y	Y									
Black-headed Gull																	
17/05/18	0951	2 Adults	80	N	C > 125m												
					B35-125m												
					A 0 - 35m	Y	Y	Y	Y	Y							
17/05/18	1108	Adult	180	N	C > 125m												
					B35-125m												
					A 0 - 35m	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
17/05/18	1441	Adult	45	N	C > 125m												
					B35-125m												
					A 0 - 35m	Y	Y	Y									
17/05/18	1448	Adult	80	N	C > 125m												

Breeding Bird Survey and Vantage Point Survey of a site in Great Yarmouth, Norfolk

Date	Time	Number Age/Sex	Time (sec) in 500m	Dir	Height Band	Flight Time in Each height Band Within 500m Survey area (15 second Intervals)								15	30	45	60
						15	30	45	60	15	30	45	60				
					B35-125m												
					A 0 - 35m	Y	Y	Y	Y	Y							
29/05/18	1638	Adult	50	N	C > 125m												
					B35-125m												
					A 0 - 35m	Y	Y	Y									
14/06/18	1050	Adult	45	S	C > 125m												
					B35-125m												
					A 0 - 35m	Y	Y	Y									
28/06/18	1305	2 Adults	40	N	C > 125m												
					B35-125m												
					A 0 - 35m	Y	Y										
28/06/18	1356	Adult	40	N	C > 125m												
					B35-125m												
					A 0 - 35m	Y	Y										

Breeding Bird Survey and Vantage Point Survey of a site in Great Yarmouth, Norfolk

Date	Time	Number Age/Sex	Time (sec) in 500m	Dir	Height Band	Flight Time in Each height Band Within 500m Survey area (15 second Intervals)											
						15	30	45	60	15	30	45	60	15	30	45	60
29/06/18	0708	Adult	150	N	C > 125m												
					B35-125m												
					A 0 - 35m	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		
29/06/18	0715	Adult	100	N	C > 125m												
					B35-125m												
					A 0 - 35m	Y	Y	Y	Y	Y	Y						
29/06/18	0721	Adult	90	N	C > 125m												
					B35-125m												
					A 0 - 35m	Y	Y	Y	Y	Y	Y						
29/06/18	0729	Adult	110	N	C > 125m												
					B35-125m												
					A 0 - 35m	Y	Y	Y	Y	Y	Y	Y					
29/06/18	0734	2 adults	95	N	C > 125m												
					B35-125m												

Breeding Bird Survey and Vantage Point Survey of a site in Great Yarmouth, Norfolk

Date	Time	Number Age/Sex	Time (sec) in 500m	Dir	Height Band	Flight Time in Each height Band Within 500m Survey area (15 second Intervals)								15	30	45	60
						15	30	45	60	15	30	45	60				
					A 0 - 35m	Y	Y	Y	Y	Y	Y						
29/06/18	0737	Adult	60	S	C > 125m												
					B35-125m												
					A 0 - 35m	Y	Y	Y	Y								
19/07/18	1104	Adult	50	N	C > 125m												
					B35-125m												
					A 0 - 35m	Y	Y	Y									
19/07/18	1113	Adult	60	S	C > 125m												
					B35-125m												
					A 0 - 35m	Y	Y	Y	Y								
19/07/18	1121	Adult	30	S	C > 125m												
					B35-125m												
					A 0 - 35m	Y	Y										
19/07/18	1135	4 adults	60	N	C > 125m												

Breeding Bird Survey and Vantage Point Survey of a site in Great Yarmouth, Norfolk

Date	Time	Number Age/Sex	Time (sec) in 500m	Dir	Height Band	Flight Time in Each height Band Within 500m Survey area (15 second Intervals)											
						15	30	45	60	15	30	45	60	15	30	45	60
					B35-125m												
					A 0 - 35m	Y	Y	Y	Y								
19/07/18	1153	Adult	45	NW	C > 125m												
					B35-125m	Y	Y	Y									
					A 0 - 35m												
19/07/18	1219	Adult	30	S	C > 125m												
					B35-125m												
					A 0 - 35m	Y	Y										
20/07/18	0555	Adult	50	S	C > 125m												
					B35-125m												
					A 0 - 35m	Y	Y	Y									
20/07/18	0602	Adult	85	S	C > 125m												
					B35-125m												
					A 0 - 35m	Y	Y	Y	Y	Y							

Breeding Bird Survey and Vantage Point Survey of a site in Great Yarmouth, Norfolk

Date	Time	Number Age/Sex	Time (sec) in 500m	Dir	Height Band	Flight Time in Each height Band Within 500m Survey area (15 second Intervals)											
						15	30	45	60	15	30	45	60	15	30	45	60
20/07/18	0640	Adult	45	N													
					C > 125m												
					B35-125m												
					A 0 - 35m	Y	Y	Y									

4 KEY POINTS AND FINDINGS

- 4.1 Four Breeding Bird Survey visits were conducted between mid May and June. These surveys recorded a total of 35 bird species. It was considered that the survey results presented an accurate reflection of the bird species present during the survey visits.
- 4.2 It was recognised that survey visits were not made in late March or April when birds' breeding behaviour would also be observable. For instance, Black Redstart breeding activity was only recorded on the first visit in mid-May, subsequent visits failed to detect this species, as they become less conspicuous. Guidance for this species (Gilbert et al., 1998) suggests that surveys can commence from mid-April at the start of the period when this species is frequently more activity singing and setting up breeding territories. As this species was only recorded on the single survey visit, precaution is required and these records all are considered here to constitute confirmed breeding territories.
- 4.3 Overall the species recorded reflected an assemblage typical of the habitat present at the site. The habitats comprised primarily urban residential and industrial land; however, there were also small isolated areas of amenity and improved grassland, tall ruderal, dense and scattered scrub, ephemeral/short perennial, broad-leaved lowland deciduous woodland (including plantation woodland) and hedgerows.
- 4.4 Observations of bird activity during the breeding bird survey indicated that 33 species recorded were considered to be confirmed and/or probable/possible breeding species.
- 4.5 Of the breeding/probable/possible breeding species, the survey area supported seven bird species (Herring Gull, Black Redstart, Starling, Song Thrush, House Sparrow, Dunnock, and Linnet) that are recognised for their conservation value by being either Schedule 1 species of the Wildlife & Countryside Act 1981 (as amended), UK BAP listed species, Principal Species of Importance (Section 41 NERC Act 2006) and/or listed on the BoCC Red List in recognition of their significant population decline (>50%) and consequently of conservation concern.
- 4.6 As such, national species action plans have been created for these species to safeguard current populations and reverse population declines.
- 4.7 All the species mentioned here listed on recognised conservation criteria are of some conservation importance. The presence of these species should be of material consideration when assessing the potential impact of the scheme proposals on birds.
- 4.8 Without mitigation, the development proposals would likely result in a number of direct adverse impacts on breeding birds. These direct impacts would include, (i) habitat loss through land-take and (ii) direct mortality.

- 4.9 In addition to the direct adverse impacts there would also be a number of indirect adverse impacts, which would include disturbance.
- 4.10 The provision of habitat to support nesting birds would be necessary to ensure the development did not have a permanent adverse effect on the individual breeding birds and the breeding bird assemblage as a whole.
- 4.11 During the breeding season, all nesting birds are protected under the terms of the Wildlife & Countryside Act 1981 (as amended) and Countryside Rights of Way Act (2000) with the aim of avoiding damage/destruction of nests, eggs and young. While Black Redstart, as Schedule 1 species, has additional protection from disturbance. Therefore, measures will be necessary to avoid contravention of the law.
- 4.12 In addition, the NERC Act, 2006 (Section 41) lists Species of Principal Importance (SPI) for the purpose of conserving biodiversity, which is a duty of all public authorities under Section 40 of the NERC Act. The planning of the new river crossing should therefore aim to incorporate and promote the protection and conservation of these species through appropriate mitigation and enhancement measures.
- 4.13 A total of 33 hours of Vantage Point survey visits were carried out between mid May and July. These surveys recorded a total of seven bird species (Cormorant, Sparrowhawk, Oystercatcher, Black-headed Gull, Lesser Black-backed Gull, Herring Gull and Hobby). It was considered that the survey results presented an accurate reflection of the bird species present during the survey visits.
- 4.14 Of the species, recorded Herring Gull, and Hobby are recognised for their conservation value by being either listed on the BoCC Red List in recognition of their significant population decline (>50%) and consequently of conservation concern and Schedule 1 species of the Wildlife & Countryside Act 1981 (as amended), respectively.
- 4.15 The presence of these species should be of material consideration when assessing the potential impact of the scheme proposals on birds.
- 4.16 Without mitigation, the development proposals would likely result in a number of direct adverse impacts on breeding birds. These direct impacts would include, (i) habitat loss through land-take and (ii) direct mortality.
- 4.17 There were no observations made of Common Tern, which was the target species of the Vantage Point survey. There were also no observations of any other waterbirds that qualify as features of the Breydon Water SPA. Therefore, based on the results of this survey the integrity of the Breydon Water SPA and waterbirds that qualify as features of the Breydon Water SPA would not appear to be a constraint to the development. The Vantage Point survey methodology did not include nocturnal surveys, although as common terns are considered be amongst the least nocturnally active of seabirds (see for example Bradbury et al., 2014) this not considered to be a constraint. The surveys were completed over a single breeding season so that no conclusions can be drawn

with regards inter-annual variability. The surveys in 2018 were however considered to be robust and carried out over a considerable span of the Common Tern breeding season; the fact that the species was not recorded at all suggests that even when considering inter-annual variability in foraging movements there is not likely to be significant connectivity with the survey area.

- 4.18 Based on the findings of this Breeding Bird and Vantage Point Survey, a number of mitigation measures can be recommended that should be incorporated into the scheme proposals that would limit the impact of the scheme on the existing local bird assemblage.

5 RECOMMENDATIONS

- 5.1 Based on the results of the Breeding Bird and Vantage Point Surveys a number of recommendations can be made. These can be divided into two distinct areas. Firstly, recommendations with regards to the bird survey and secondly, recommendations regarding bridge design and construction.
- 5.2 Recommendations with regard to bird surveys are as follows:
1. carry out a species-specific Black Redstart Survey in 2019, that covers the full survey period, that is commences in March 2019;
 2. consider repeating the Breeding Bird Survey in 2019, that covers the full survey period, that is commences in March 2019;
 3. consider whether nocturnal Vantage Point surveys are necessary; and
 4. consider whether Vantage Point surveys are necessary to cover the autumn/winter period.
- 5.3 Recommendations with regard to bridge design and construction are as follows:
1. ensure bridge design incorporates features (e.g. high sided screens) that encourage birds to fly above the height of any vehicles, especially, heavy goods vehicles. This will aim to minimise bird mortality as a result of collision with vehicles.
 2. ensure any lighting on the bridge is designed to avoid light spillage into surrounding areas of water and/or land. This will aim to avoid attracting birds to the light source or any prey that may themselves be attracted to the light source.
 3. ensure legal compliance is maintained pertaining to breeding birds, therefore site clearance should place outside the birds' breeding season, (March-September inclusive) or, if this not possible, include measures to ensure breeding birds remain unaffected by the de-vegetation/demolition activities. For instance, the vegetation and buildings affected should be checked, by an experienced ornithologist acting as an ECoW, prior to de-vegetation/demolition work commencing. If nesting birds were found to be present, these works would need to be delayed until the nesting birds had completed their breeding cycle.
 4. ensure legal compliance is maintained pertaining to Schedule 1 breeding birds namely Black Redstart therefore de-vegetation/demolition activities must avoid disturbing these species during the breeding season. To achieve this the actual nest sites must be identified before work commences and a suitable sized exclusion zone established around the nesting area.
 5. consider provision of nesting sites and feeding areas for Black Redstart to be located in areas that avoids potential bird mortality as a result of collision with vehicles.
 6. consider provision of nesting boxes of various designs (e.g. Peregrine, Kestrel, Robin, , Swift, Starling, House Sparrow) to replace those natural

- sites potentially lost to the scheme, to be located in areas that avoids potential bird mortality as a result of collision with vehicles.
7. consider habitat creation and/or breeding bird enhancement measures (e.g. areas of native flowering plants and shrubs aimed to provide breeding birds with nest sites and sources of food) to be located in areas that avoids potential bird mortality as a result of collision with vehicles.
- 5.4 A long term (25 year) Ecological Management Plan (EMP) should be prepared as part of the development. The EMP would help to ensure any of the mitigation and enhancement measures summarised in this report that are implemented as part of the scheme are described in detail and prescribe their creation and management such that it would have the best chance of success.
- 5.5 The production and implementation of the EMP would minimise the potential for the new development to have a permanent adverse effect on the local bird assemblage within the site. The EMP should be prepared in-combination with the landscaping plan, to provide a mechanism by which the measures would be incorporated into the scheme design. The EMP would also provide details about the management procedures and monitoring programme necessary to ensure the habitats created and features incorporated are maintained in a favourable condition in the long term.

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7 FIGURES

Figure 1.1 Map showing the indicative Breeding Bird Survey area.



Figure 1.2 Map showing the indicative Vantage Point Survey area.

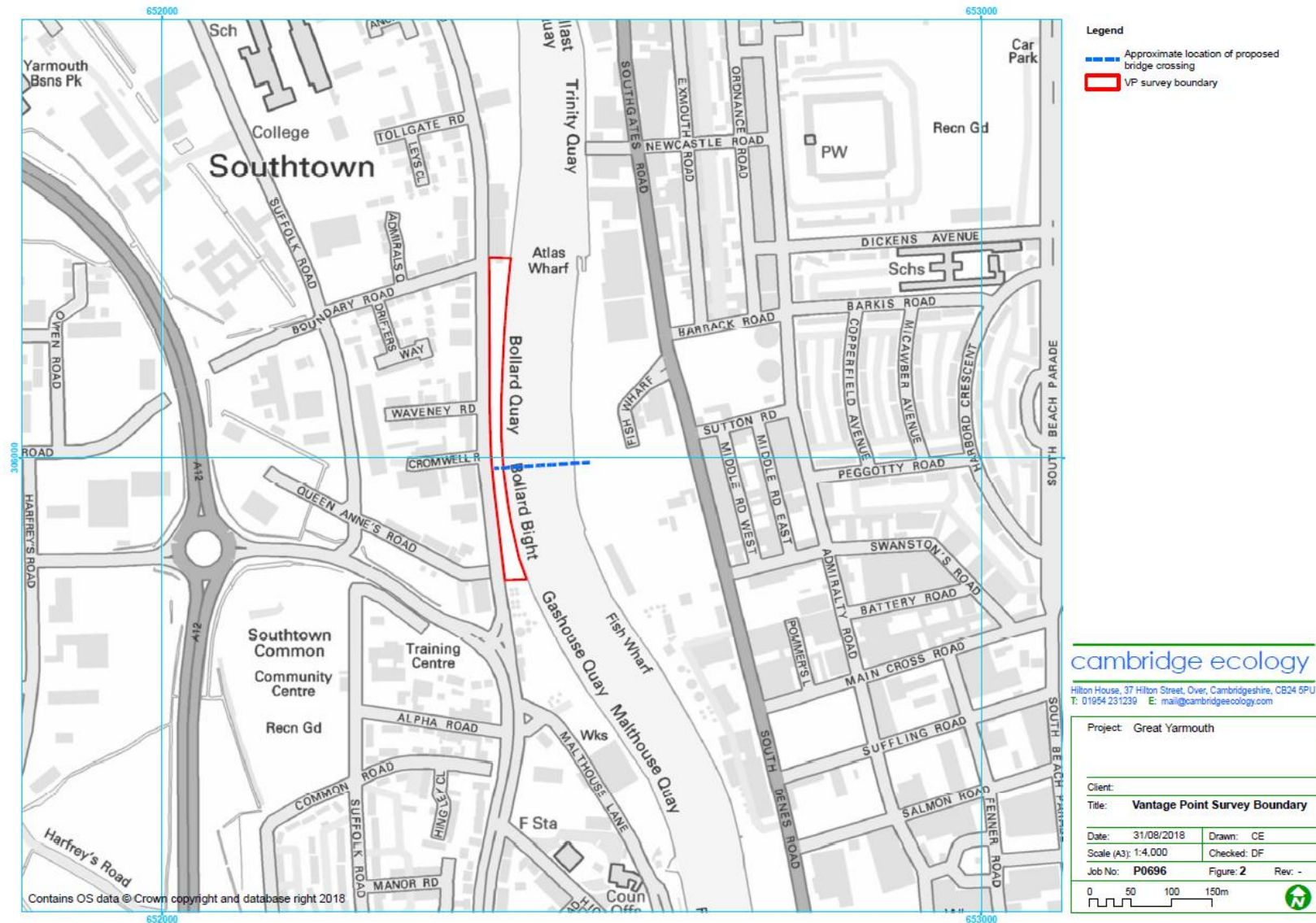
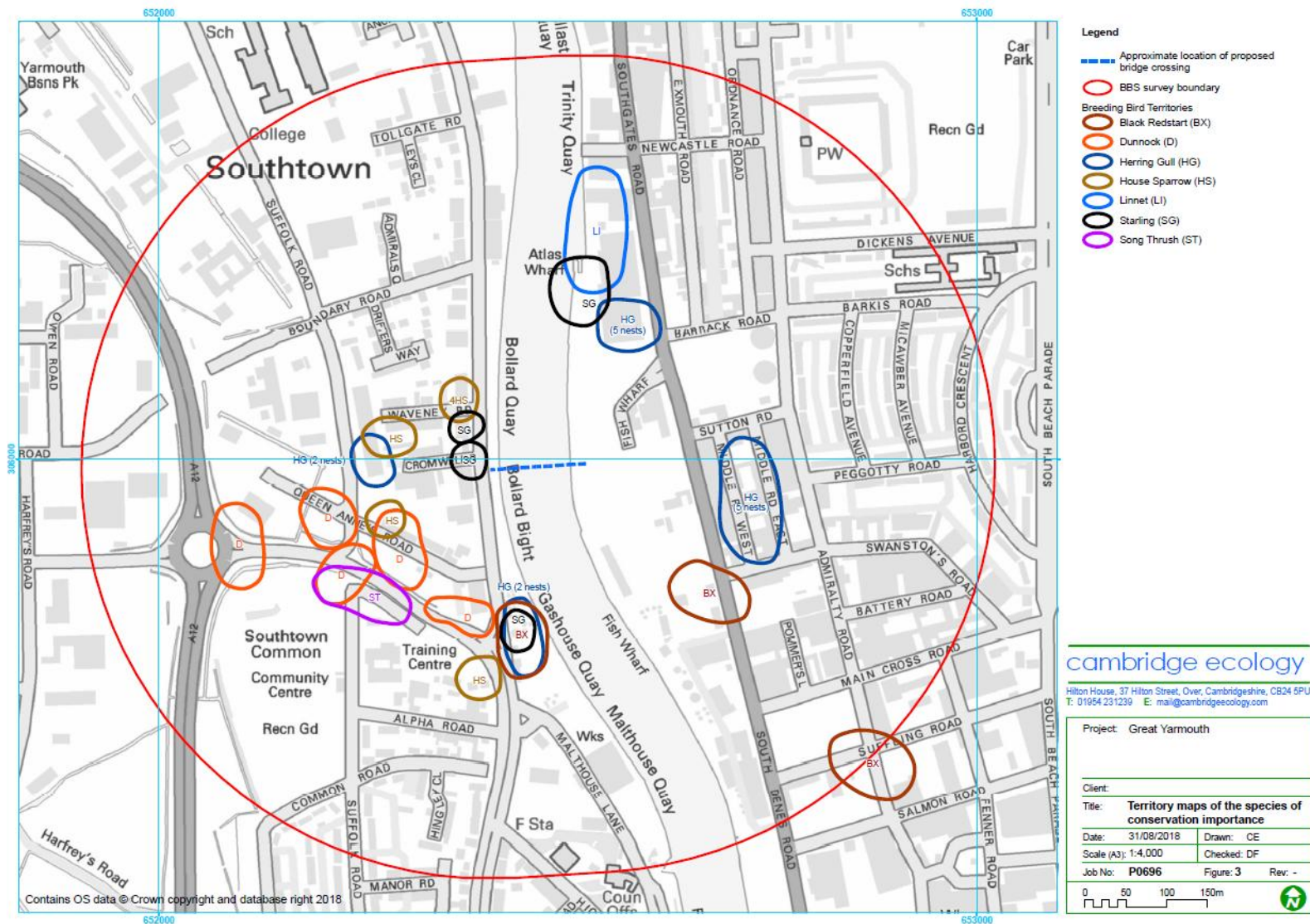


Figure 3.1: Plan showing the indicative location of breeding territories of bird species of conservation importance



8 ANNEX 8D.1

Table 7.1: Species recorded during the 2018 Breeding Bird Survey and Vantage Point Survey.

Common Name	Scientific Name
Mallard	<i>Anas platyrhynchos</i>
Cormorant	<i>Phalacrocorax carbo</i>
Sparrowhawk	<i>Accipiter nisus</i>
Moorhen	<i>Gallinula chloropus</i>
Oystercatcher	<i>Haematopus ostralegus</i>
Black-headed Gull	<i>Chroicocephalus ridibundus</i>
Lesser Black-backed Gull	<i>Larus fuscus</i>
Herring Gull	<i>Larus argentatus</i>
Woodpigeon	<i>Columba palumbus</i>
Collared Dove	<i>Streptopelia decaocto</i>
Swift	<i>Apus apus</i>
Great Spotted Woodpecker	<i>Dendrocopos major</i>
Green Woodpecker	<i>Picus viridis</i>
Kestrel	<i>Falco tinnunculus</i>
Hobby	<i>Falco subbuteo</i>
Magpie	<i>Pica pica</i>
Carrion Crow	<i>Corvus corone</i>
Blue Tit	<i>Cyanistes caeruleus</i>
Great Tit	<i>Parus major</i>
Long-tailed Tit	<i>Aegithalos caudatus</i>
Chiffchaff	<i>Phylloscopus collybita</i>
Reed Warbler	<i>Acrocephalus scirpaceus</i>
Blackcap	<i>Sylvia atricapilla</i>
Wren	<i>Troglodytes troglodytes</i>
Starling	<i>Sturnus vulgaris</i>
Blackbird	<i>Turdus merula</i>
Song Thrush	<i>Turdus philomelos</i>
Robin	<i>Erithacus rubecula</i>
Black Redstart	<i>Phoenicurus ochruros</i>
House Sparrow	<i>Passer domesticus</i>
Dunnock	<i>Prunella modularis</i>
Pied Wagtail	<i>Motacilla alba</i>
Chaffinch	<i>Fringilla coelebs</i>
Greenfinch	<i>Chloris chloris</i>
Linnet	<i>Linaria cannabina</i>
Goldfinch	<i>Carduelis carduelis</i>
Feral Pigeon	<i>Columba livia domestica</i>