EDF Energy

Sizewell C New Nuclear Power Station: Terrestrial and Freshwater Ecology, and Ornithology

DRAFT Seabird Report 2011-12

June 2012

AMEC Environment & Infrastructure UK Limited

Report for

EDF Energy

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Document Revisions

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1. Introduction

1.1 Purpose of this Report

An area of land directly north of Sizewell B Nuclear Power Station, which is located near Leiston in Suffolk, has been identified as having the potential to accommodate the proposed development of one or more new nuclear reactors. This proposed development is known as Sizewell C. The site of the proposed development has an approximate central National Grid Reference (NGR) of TM473640.

AMEC Environment & Infrastructure UK Ltd (formerly Entec UK Ltd) was commissioned by EDF Energy in 2011 to undertake seabird surveys of the inshore waters between Sizewell and Orford Ness. The purpose of this report, which outlines the findings of the survey work, is to inform the design of Sizewell C and the Environmental Statement for the scheme.

1.2 Scope

The primary purpose of this work is to gather information that will be used to identify any potential impacts on little tern (*Sternula albifrons*) and red-throated diver (*Gavia stellata*) populations due to the development of a new nuclear facility at Sizewell, Suffolk. The data will be used within both the Environmental Impact Assessment and Habitats Regulations Assessment processes, as little tern are a qualifying feature of the Minsmere-Walberswick Special Protection Area (SPA) and Alde-Ore Estuary SPA, and red-throated diver of the Outer Thames Estuary SPA. A desk study was also carried out to identify statutory and non statutory designated sites of ornithological importance that are designated or cited for bird species that could potentially use the inshore waters at Sizewell. This report details the findings from the desk study and surveys undertaken from March 2011 to April 2012 inclusive.

Potential effects on little tern and red-throated diver have been highlighted through the ongoing consultation process with the Royal Society for the Protection of Birds (RSPB) and Natural England (NE). The potential impacts on these species, highlighted by consultees are;

- the potential for construction and operation of the new nuclear build and offshore facilities to disturb or displace foraging little tern and red-throated diver (or their movements to and from breeding, resting and foraging areas), and
- the effects of temperature increase caused by warm water emitted from the proposed outtake facility (also referred to in this report as the cooling water discharge) on the availability of little tern and red-throated diver prey.

In addition, the proposed development could impact on other species of seabird and wildfowl using the inshore waters adjacent and close to Sizewell, as follows:

- the potential for construction and operation of the new nuclear build and offshore facilities to disturb or displace foraging, resting (loafing and roosting) and commuting seabirds and wildfowl;

- the potential for construction and operation of the new nuclear build and offshore facilities to disturb or displace nesting kittiwakes and other seabirds resting on the Sizewell rigs, and
- the effects of temperature increase caused by warm water emitted from the proposed outtake facility on the availability of prey for seabirds and wildfowl that use the inshore waters between Sizewell and Orford Ness for foraging.

1.3 Background

In order to provide baseline information on how little terns are using the inshore waters at Sizewell, surveys were initially undertaken from May to August 2010. At the time of designing and undertaking the 2010 little tern survey programme, results obtained from the initial options stages indicated that the discharge of warm water from the Sizewell C outfall would drift to the south of Sizewell towards the shallow waters off Thorpeness. Subsequent to this, further modelling work (made available after the completion of the 2010 survey season) indicated that the cooling water discharge had the potential to extend as far south as Orford Ness lighthouse. During much of the 2010 survey period, the outfall from Sizewell B was not in operation. The outfall is known to attract foraging seabirds (including terns) to the area. In addition, little tern failed to establish a breeding colony on the Minsmere beach in 2010, a site which is within the foraging range for this species from Sizewell. The data collected in 2010 was therefore not thought to be representative of 'normal' years when greater numbers of little tern could potentially occur in the Sizewell area. Subsequent to the 2010 surveys, the predicted spread of the cooling water discharge had extended south to Orford Ness lighthouse (well outside the 2010 survey area) and within the foraging range for any little terns breeding within the Alde-Ore Estuary SPA. In addition, in 2011, the Outer Thames Estuary SPA (which includes the inshore and offshore waters adjacent to the coast from Sizewell to Orford Ness) was classified for its internationally important wintering population of red-throated diver.

In view of this, the surveys were repeated in 2011, with the scope of the work being widened to encompass a larger survey area, extending south to Orford Ness lighthouse and the collection of data for a wider range of seabird and wildfowl species (including little tern and red-throated diver).

1.4 Study Area

The study area referred to in this report, includes the inshore waters visible (and where bird species will be reliably detected - this will vary depending upon species) from the 12 observation points used to undertake the VP surveys, detailed in Section 2.2.1. The study area covers much of the inshore waters that are likely to be affected by the cooling water discharge (based on modelling results available at the start of the surveys in spring 2011 as to where the cooling water discharge might spread to), and any inshore waters likely to be affected by disturbance due to construction of Sizewell C. Results from modelling work undertaken after the surveys were completed in spring 2012 indicate that the cooling water discharge is predicted to spread north to Dunwich beach, approximately 6km north of the study area (as well as south to Orford Ness lighthouse). The cooling water discharge is also predicted to primarily inhabit waters close (within approximately 1-2km) to the shoreline throughout its spread from north to south along the coast.

At the time of writing this report, the final location of Sizewell C (and its associated facilities) and the warm water outfall had not been determined. It is however known that the outfalls for Sizewell B and C will run concurrently for several years at least although the precise time period is not known at this stage. In addition, surveys were also undertaken at two little tern breeding colonies located outside the study area, on the beaches at Minsmere and Dingle Marshes.

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2. Methods

2.1 Desk Study

A data-gathering exercise was undertaken in January 2012 to obtain information relating to statutory and non statutory designated nature conservation sites of ornithological importance that support species (that appear in their descriptions or citations) that could occur in the inshore waters within the study area (Sizewell to Orford Ness). The information on statutory designated sites was obtained through the use of the websites: www.magic.gov.uk, www.jncc.gov.uk and www.naturalengland.org.uk. The information on non-statutory designated sites and bird records were obtained from the Suffolk Biological Records Centre (SBRC). Given that seabird and wildfowl species can range widely during routine movements between foraging, resting and breeding sites, a 20km search area (for statutory designated sites) and a 3km search area (for non-statutory designated sites) from the study area was employed. Only those species that could potentially use the inshore waters for foraging or resting, or that might be disturbed by the proposed development works during migration and flights between foraging and resting areas were considered, and included the following species groups:

- Wildfowl (swans, geese and ducks);
- Other water birds (divers, grebes, herons and cormorants);
- Waders, and
- Seabirds (gannets, shearwaters & petrels, auks, skuas, terns and gulls).

Data on bird species that could potentially use the offshore waters between Sizewell and Orford Ness was also obtained from the following sources:

- Birds records within 3km of the study area, for 2005-2010, collected by the Suffolk Ornithologists' Group (SOG) was provided by the SBRC, and
- Wetland Bird Survey (WeBS) data for 2005-2010 was obtained from the British Trust for Ornithology, for WeBS count sectors that cover coastal areas and inshore waters within or adjacent to the study area.

This contextual information is important as it may highlight other notable species that could occur in the study area. A number of other primary sources of data were identified and used to inform the work. These include:

- Birds of Suffolk (Piotrowski, 2003);
- Suffolk Birds 2000-2010 inclusive (the annual county bird reports, published by the Suffolk Naturalists' Trust in collaboration with the Suffolk Ornithologists' Group);
- Annual bird reports for 2009 and 2010 for the Orford Ness National Nature Reserve, produced by the National Trust;

- Annual bird reports and data for 2006-2010 for Minsmere nature reserve produced by the RSPB, and
- Annual land management reports for the EDF Sizewell Estate for 2005-2010, produced by the Suffolk Wildlife Trust and ADAS.

2.2 Surveys

2.2.1 Seabird and Wildfowl VP Surveys

In order to identify the type and level of use by seabirds and wildfowl in the study area, a programme of surveys were carried out from 12 locations (vantage points - VPs) extending along the Sizewell coast from approximately 500m north of the proposed Sizewell C new build area, south to Orford Ness. These surveys were undertaken from late March 2011 to April 2012. This includes all of the period when little tern and red-throated diver are present in the area (primarily May-August and October-April respectively). A complete survey of the study area was undertaken (each survey taking 2-3 days) approximately every fortnight. A total of 328 45-minute watches were completed from 24 March 2011 to 25 April 2012 (a total of 246 hours of survey time). Additional watches were undertaken from VPs 1-4 during August 2011 when large congregations of common tern and little gull were foraging and resting around the Sizewell B outfall.

The number of 45-minute watches (in parenthesis) undertaken at each VP was as follows, from north to south: VP1 (28), VP2 (30), VP3 (30), VP4 (29), VP5 (27), VP6 (27), VP7 (27), VP8 (26), VP9 (26), VP10 (26), VP11 (26) and VP12 (26).

During each survey day, 45 minute watches were completed at up to eight different VPs. Each VP was spaced approximately 1km apart between Sizewell and Thorpeness (the area closest to the Sizewell C new build) and 2km apart between Thorpeness and Orford Ness. A suitable (minimum 10-15 minute) break was taken between each 45 minute watch to allow the surveyor to rest their eyes and move to the next VP. Surveys were undertaken during daylight house with the timings varied during the survey period to ensure that as full a range of tidal states as possible were covered from each VP. **Figure 2.1** shows the location of the study area and VPs.

During each watch, details of any flight-lines or hunting activity of seabirds and wildfowl were drawn onto maps. Details of the numbers and type of activity (for example: foraging, loafing, roosting or commuting) were also recorded. The perpendicular distance between the shoreline and bird or birds was also recorded, generally to the nearest 100m for individuals less than 500m from the shoreline and to the nearest 500m for birds further out. Distant groups of birds flying offshore were recorded in distance bands (for example, 1-2km, 2-4km, etc). Priority was given to the collection of data for little tern and red-throated diver for which additional information was recorded, including the type of foraging activity (dives, surface feeding, etc) and any prey caught. The type of foraging activity can often determine what type of prey has been caught (e.g. for little terns, diving for fish, surface pick-ups for invertebrates). Searches were also made for terns and gulls resting along the shoreline between Sizewell and Orford Ness. The dates, time and weather conditions during the surveys are shown in **Table A1, Appendix A**.

2.2.2 Little Tern Colony Surveys

A programme of colony surveys were undertaken to identify the direction of flight of little terns when leaving or returning to colonies located within the Minsmere-Walberswick SPA and Alde-Ore Estuary SPA, and the levels of feeding activity close inshore adjacent to the colonies. Surveys for little terns were undertaken at three colonies: Minsmere beach (O.S Grid Reference TM 477 666), Dingle marshes (O.S. Grid Reference TM 489 733) and Slaughden beach (O.S. Grid Reference TM 459 579). **Figure 2.2** shows the location of the three little tern colonies.

Agreement was reached with Alan Miller (SWT) and Adam Rowlands (RSPB) that 100 metres would be a suitable distance to watch the terns from to avoid disturbing them. At Slaughden where there was greater concern about disturbance, watches were undertaken from a distance of 200m, in agreement with National Trust wardens who manage the site. The surveys involved watching little tern movements in and out of the colonies; recording the direction of incoming and outgoing flights. Birds leaving the colony were followed until out of sight, with the aid of a telescope. Details of the broad category of prey being returned to the colonies were noted (e.g. fish or invertebrates) and any foraging activity in inshore waters adjacent to the colonies was also recorded. Details of the colony development, such as display behaviour and any chicks or fledged young present were also recorded.

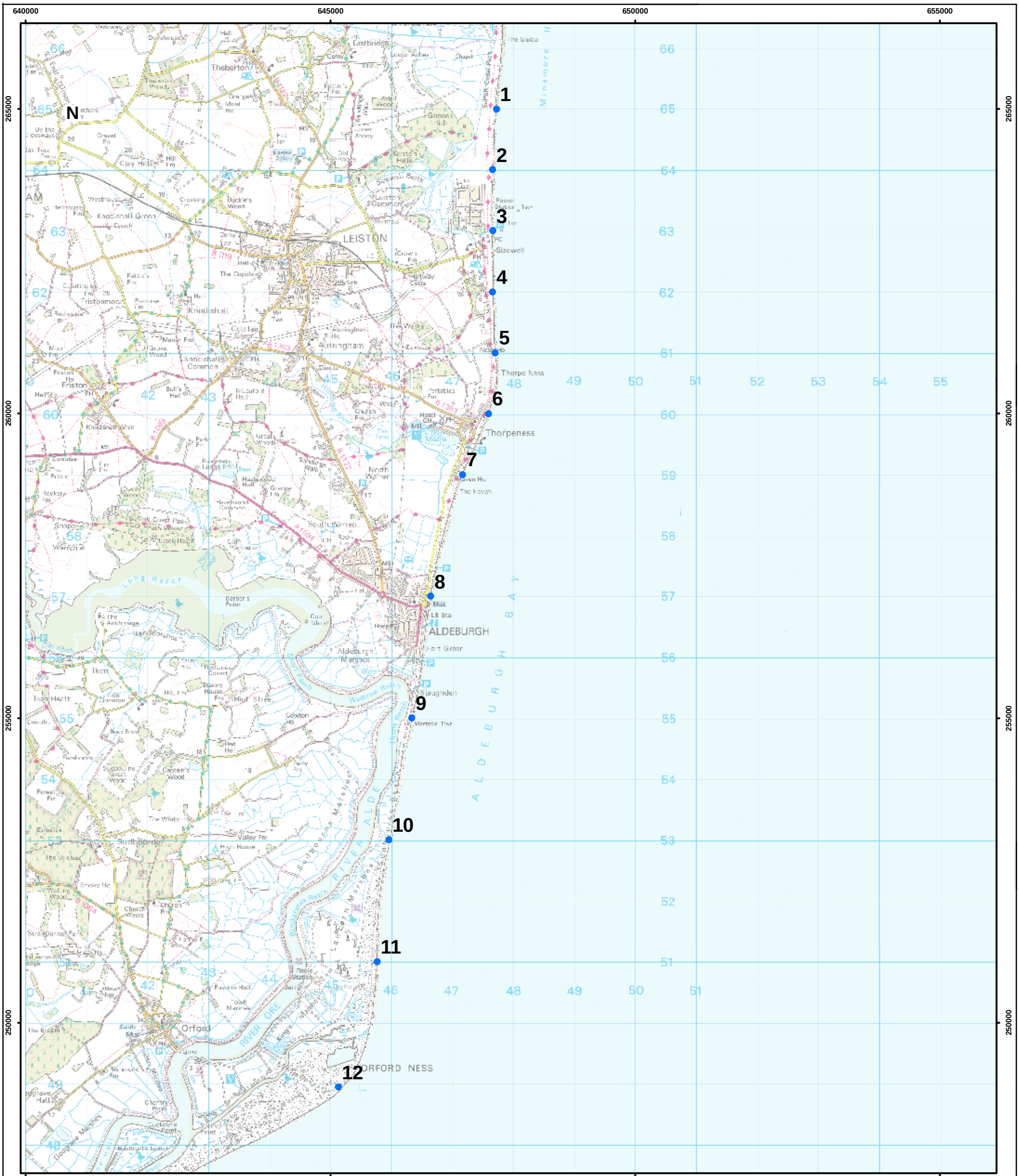
Between mid-May and early August 2011, weekly watches (each taking three hours) were undertaken at each active colony (only the Dingle colony remained in use by little terns throughout the breeding season). In addition, extended watches were undertaken once monthly from May to July 2011 at the Dingle and Minsmere colonies (none were undertaken at Slaughden due to the sensitivity of the site to disturbance), and at VPs 2 and 3 (located adjacent to the Sizewell B outfall). These extended watches were completed over a minimum 6 hour period to incorporate both low and high water (approximately half of a full tidal cycle). An additional 3 hours of watch was undertaken at VP2 on 12 August, during a period when large numbers of terns and little gull were feeding around Sizewell B outfall. The dates, time and weather conditions during the three hour and six hour colony surveys are shown respectively in **Tables A2 and A3** in **Appendix A**. A total of 159 hours of survey was completed between 11 May and 12 August, broken down by site, as follows:

- Dingle: 17 May to 12 August (69 hours);
- Minsmere: 11 May to 1 August (39 hours);
- Slaughden: 2 June to 23 June (12 hours);
- VP2: 23 May to 12 August (21 hours);
- VP1: 24 May to 15 July (18 hours).

The start and finish times of the three-hour colony surveys were varied over the course of the breeding season to ensure that all aspects of the diurnal activity patterns of the species were covered (for example: foraging activity may be concentrated in the morning or evening). The timing of the surveys was also varied to ensure that watches were undertaken through much of the tidal cycle.

Records of other seabird and waterfowl species (seen over the sea and adjacent beach) were also collected during the colony surveys, particularly those undertaken from VPs 2 and 3, and at

Slaughden (i.e. locations within the study area), although priority was again given to the collection of little tern data.



Key:

VP location

0 3 Kilometres

Scale: 1:60,000 @ A3

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Figure 2.1
VP locations

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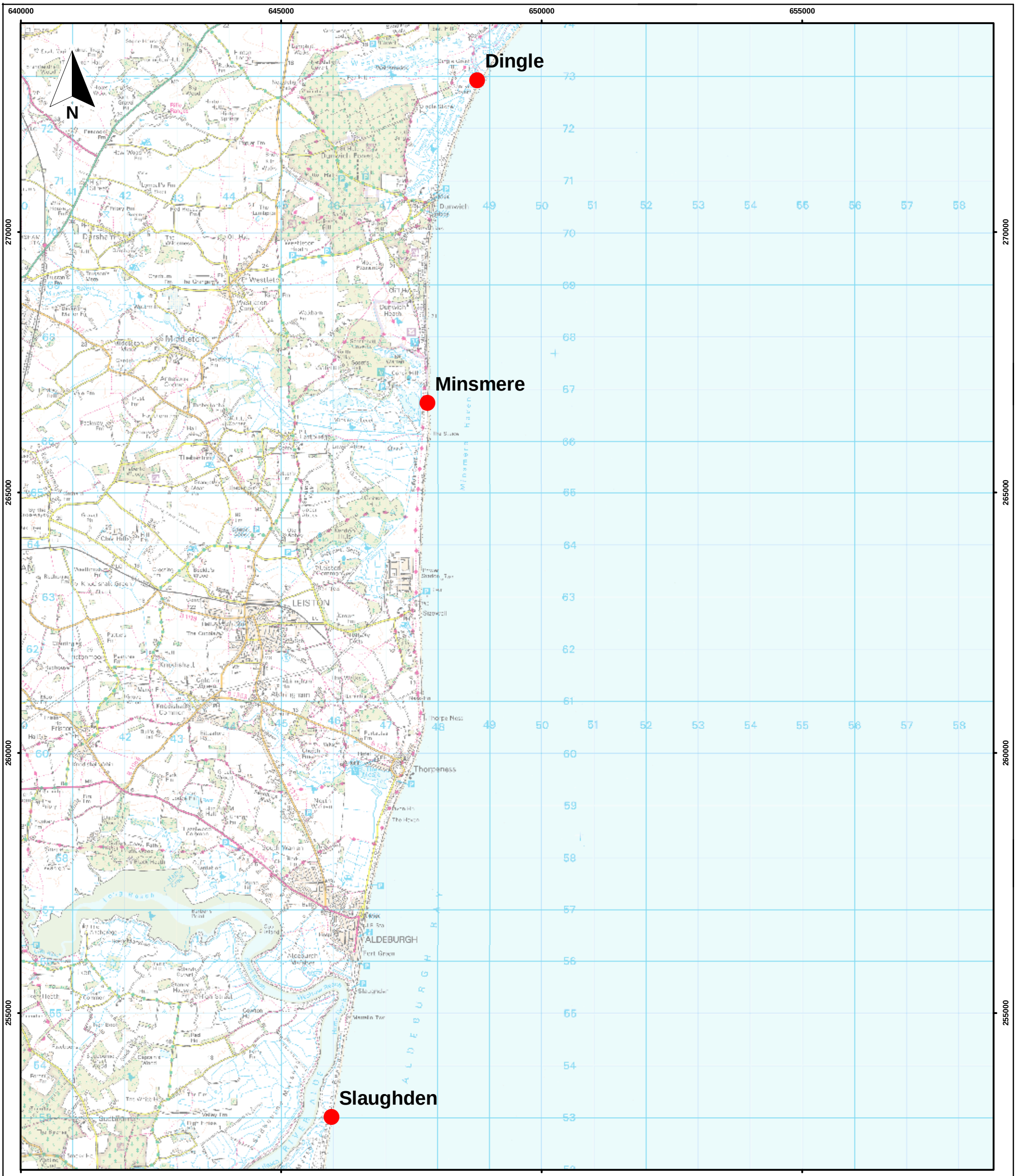

Key:

Colony location

0 3 Kilometres

Scale: 1:70,000 @ A3

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Figure 2.2
Little Tern Colony Locations

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3. Results

3.1 Designated Sites of Ornithological Importance

A total of five SPAs, three Ramsar sites and six SSSIs (which contain designated or cited species that could potentially use the inshore waters between Sizewell and Orford Ness) are located within 20km of the study area.

Key species which are designated features of SPAs that are likely to forage in the study area include: wintering red-throated diver (the designated feature of the Outer Thames Estuary SPA), breeding little tern (designated features of the Minsmere-Walberswick SPA, Alde-Ore Estuary SPA and Bencare-Easton Bavents SPA) and breeding Sandwich tern (a designated feature of the Alde-Ore Estuary SPA). In addition, there is the potential for lesser black-backed gull (which is a designated feature of the Alde-Ore Estuary SPA during the breeding season) to rest and forage on the sea within the study area. Herring gull and black-headed gull (which appear in the breeding seabird assemblage qualification for the Alde-Ore Estuary SPA) may also rest and forage on the sea within the study area. Teal and wigeon, which appear in the winter waterfowl assemblage qualification for the Alde-Ore SPA may also rest on the sea.

Additional species which could potentially use the study area and appear in the SSSI citations and Ramsar site descriptions (detailed below) include: Mediterranean gull (breeds in nationally important numbers at the Minsmere-Walberswick and Alde-Ore Ramsar sites) and Arctic tern, common tern and common gull which appear as breeding species in the citation for the Alde-Ore Estuary SSSI.

Of the non-statutory designated sites, the Sizewell Rigs County Wildlife Site is designated for its regionally important breeding colony of kittiwake. Full details of these and other species of seabird and wildfowl that appear as designated or cited features of designated sites are provided below (nonseabird/wildfowl species are not included). The location of the SPAs, Ramsar Sites, SSSIs and non-statutory designated sites, in relation to the study area is shown in **Figures 3.1a-d** respectively.

3.1.1 European Designated Sites

Five SPAs, which contain designated or cited species that could potentially use the inshore waters in the study area are located within 20km of the study area (the locations of which are shown on **Figure 3.1a**).

Minsmere-Walberswick SPA

The Minsmere-Walberswick SPA is located adjacent to the north of the study area. The SPA was classified on the basis of its breeding and wintering bird interest, and includes the following:

Minsmere-Walberswick SPA qualifies under Article 4.1 of EC Directive 2009/147/EC on the conservation of wild birds (codified version)[1] by supporting populations of European importance of the following species listed on Annex 1 of the Directive:

During the breeding season:

- Avocet (Recurvirostra avosetta), 91 pairs representing at least 15.4% of the breeding population in Great Britain (RBBP 1996);
- Little tern (Sternula albifrons), 28 pairs representing at least 1.2% of the breeding population in Great Britain (5 year mean, 1992-1996);

The site also qualifies under Article 4.2 of the Directive by supporting populations of European importance of the following migratory species.

During the breeding season:

- Teal (Anas crecca), 73 pairs representing 4.9% of the population in Great Britain (Count, 1990);
- Gadwall (Anas strepera), 24 pairs representing 3.1% of the population in Great Britain (Count, 1990);
- Shoveler (Anas clypeata), 23 pairs representing 2.3% of the population in Great Britain (Count, 1990).

Over winter:

- Shoveler, 98 individuals representing 1% of the population in Great Britain (5 year peak mean 1991/92-1995/96);
- Gadwall, 93 individuals representing 1.1% of the population in Great Britain (5 year peak mean 1991/92-1995/96);
- (Russian) White-fronted goose (Anser albifrons albifrons), 67 individuals representing 1.1% of the population in Great Britain (5 year peak mean 1991/92-1995/96).

Subsequent to the publication of the data above (as included in the Natura 2000 Standard Data Form), the following changes have been suggested by the SPA Review (Stroud *et al.*, 2001):

Removal of the following species that originally qualified under Article 4.2 of the Directive

- During breeding season: teal, gadwall and shoveler;
- During winter: shoveler, gadwall and white-fronted goose;

Addition of the following species that now qualify under Article 4.2 of the Directive by supporting populations of European importance over winter:

[1] The European Union meets its obligations for bird species under the Bern Convention and Bonn Convention and more generally by means of Directive 2009/147/EC (Birds Directive) on the conservation of wild birds (the codified version of Council Directive 79/409/EEC as amended).

- Avocet, 278 individuals representing at least 21.9% of the wintering population in Great Britain (5 year peak mean 1991/2 - 1995/6)

The SPA Review has yet to be formally adopted, although in practice SPA Review information (regarding additional species) is given the same credence by nature conservation consultees as that contained on the Natura 2000 Data Sheets. JNCC states that individual site accounts should be taken as the definitive list of qualifying species at the SPAs concerned.

Alde-Ore Estuary SPA

The Alde-Ore Estuary SPA is located adjacent to the west of the study area between the town of Aldeburgh and Orford Ness. The SPA then extends south to Shingle Street and Bawdsey. The SPA was classified on the basis of its breeding and wintering bird interest, and includes the following:

Alde-Ore Estuary SPA qualifies under Article 4.1 of the EC Directive 2009/147/EC on the conservation of wild birds (codified version) by supporting populations of European importance of the following species listed on Annex 1 of the Directive during the breeding season:

- Avocet, 104 pairs, representing 23.1% of the breeding population in Great Britain (5 year mean, 1990-1994);
- Little tern, 48 pairs, representing 2% of the breeding population in Great Britain (5 year mean, 1993-94, 1996-98);
- Sandwich tern (Sterna Sandvicensis), 169 pairs, representing 1.2% of the breeding population in Great Britain (5 year mean, 1992-96).

During the winter:

- Ruff (Philomachus pugnax), 3 individuals, representing 0.4% of the population in Great Britain (5 year mean, 1991/2-1995/6);
- Avocet (Recurvirostra avosetta), 766 individuals, representing 60.3% of the breeding population in Great Britain (5 year mean, 1991/2-1995/6).

The site also qualifies under Article 4.2 of the Directive by supporting populations of European importance of the following migratory species during the breeding season:

- Lesser black-backed gull (*Larus fuscus*), 14,070 pairs representing 11.3% of the breeding population in Great Britain (5 year mean, 1994-98)[2].

During the winter:

- Redshank (*Tringa totanus*), 1,919 individuals, representing at least 1.1% of the population in Great Britain (5 year mean, 1991/2-1995/6).

Subsequent to the publication of the data above (as included in the Natura 2000 Standard Data Form), the following changes have been suggested by the SPA Review (Stroud *et al.*, 2001):

[2] In the SPA Review, the SPA qualifying population for lesser black-backed gull is given as, 21,700 pairs representing at least 17.5% of the breeding Western Europe/Mediterranean/Western Africa population (Count as at 1998).

Removal of ruff (during winter) that originally qualified under Article 4.1 of the Directive

Addition of the following:

- A seabird assemblage of international importance. The area qualifies under Article 4.2 of the Directive (79/409/EEC) by regularly supporting at least 20,000 seabirds during the breeding season. The area regularly supports 59,118 individual seabirds (Count period ongoing) including: herring gull (*Larus argentatus*), black-headed gull (*Chroicocephalus ridibundus*), lesser black-backed gull, little tern and Sandwich tern (*Sterna sandvicensis*);

- A wetland of international importance. The area qualifies under Article 4.2 of the Directive (79/409/EEC) by regularly supporting at least 20,000 waterfowl. Over winter, the area regularly supports 24,962 individual waterfowl (5 year peak mean 1991/2 - 1995/6) including: black-tailed godwit (*Limosa limosa islandica*), dunlin (*Calidris alpina alpina*), lapwing (*Vanellus vanellus*), shoveler, teal, wigeon (*Anas penelope)*, shelduck (*Tadorna tadorna)*, white-fronted goose, redshank and avocet.

Outer Thames Estuary SPA

The study area is located within the Outer Thames Estuary SPA which extends offshore from the Thames Estuary north along the Suffolk coast. The SPA was classified on the basis of its wintering bird interest, and includes the following:

The Outer Thames Estuary SPA qualifies under Article 4.1 of the EC Directive 2009/147/EC on the conservation of wild birds (codified version) by supporting populations of European importance of the following species listed on Annex 1 of the Directive during the winter:

- Red-throated diver: 6,466 individuals representing 38% of the winter population in Great Britain (peak mean over the period 1989-2006/07).

Deben Estuary SPA

The Deben Estuary SPA is located approximately 15km to the south and south-west of the study area. The SPA was classified on the basis of its breeding and wintering bird interest, and includes the following:

The Deben Estuary SPA qualifies under Article 4.1 of the EC Directive 2009/147/EC on the conservation of wild birds (codified version) by supporting populations of European importance of the following species listed on Annex 1 of the Directive, during winter:

- Avocet: 95 individuals, representing 7.5% of the winter population in Great Britain (5 year mean, 1991/2-1995/6).

The site also qualifies under Article 4.2 of the Directive by supporting populations of European importance of the following migratory species during the winter:

- Brent goose (*Branta bernicla*): 2,516 individuals, representing 0.8% of the winter population in Great Britain (5 year mean, 1991/2-1995/6).

Subsequent to the publication of the data above (as included in the Natura 2000 Standard Data Form), the following changes have been suggested by the SPA Review (Stroud *et al.*, 2001):

- Removal of brent goose (during winter) that originally qualified under Article 4.2 of the Directive

Bencare to Easton Bavents SPA

The Bencare to Easton Bavent SPA is located approximately 15km to the north of the study area. The SPA was classified on the basis of its breeding and wintering bird interest, and includes the following:

Alde-Ore Estuary SPA qualifies under Article 4.1 of the EC Directive 2009/147/EC on the conservation of wild birds (codified version) by supporting populations of European importance of the following species listed on Annex 1 of the Directive, during the breeding season:

- Little tern: 21 pairs, representing 0.9% of the breeding population in Great Britain (5 year mean, 1992-1996)[3].

3.1.2 Internationally Designated Sites

Three Ramsar Sites, which contain designated or cited species that could potentially use the inshore waters between Sizewell and Orford Ness, are located within 20km of the study area (the locations of which are shown on **Figure 3.1b**).

Minsmere-Walberswick Ramsar Site

The Minsmere-Walberswick Ramsar Site is located adjacent to the north of the study area and shares a common boundary with the Minsmere-Walberswick SPA in this area. No species are listed under Ramsar Criterion 6 (i.e. those that occur in internationally important numbers). The Ramsar site however supports a number of species that occur at nationally important levels, as follows:

During the breeding season:

- Mediterranean gull (Larus melanocephalus): 2 apparently occupied nests, representing an average of 1.8% of the GB population (Seabird 2000 Census);
- Black-headed gull: 2,558 apparently occupied nests, representing an average of 1.9% of the GB population (Seabird 2000 Census);
- Little tern: 20 apparently occupied nests, representing an average of 1% of the GB population (Seabird 2000 Census);

Species with peak counts in spring/autumn:

- Teal: 3,083 individuals, representing an average of 1.6% of the GB population (5 year peak mean 1998/9-2002/3);
- Ruff: 10 individuals, representing an average of 1.4% of the GB population (5 year peak mean 1998/9-2002/3);

[3] In the SPA Review, the SPA qualifying population for little tern is given as 53 pairs representing at least 2.2% of the breeding population in Great Britain (Count as at 1997)

- Black-tailed godwit: 846 individuals, representing an average of 5.4% of the GB population (5 year peak mean 1998/9-2002/3 - spring peak);
- Spotted redshank (Tringa erythropus), 15 individuals, representing an average of 11% of the GB population (5 year peak mean 1998/9-2002/3), and
- Greenshank (Tringa nebularia), 9 individuals, representing an average of 1.5% of the GB population (5 year peak mean 1998/9-2002/3).

Species with peak counts during winter:

- White-fronted goose: 212 individuals, representing an average of 3.6% of the GB population (5 year peak mean for 1996/7-2000/01);
- Gadwall: 261 individuals, representing an average of 1.5% of the GB population (5 year peak mean 1998/9-2002/3);
- Shoveler: 238 individuals, representing an average of 1.6% of the GB population (5 year peak mean 1998/9-2002/3);
- Avocet: 329 individuals, representing an average of 9.6% of the GB population (5 year peak mean 1998/9-2002/3);
- Golden plover (Pluvialis apricaria): 4,503 individuals, representing an average of 1.8% of the GB population (5 year peak mean 1998/9-2002/3);
- Redshank: 1,386 individuals, representing an average of 1.1% of the GB population (5 year peak mean 1998/9-2002/3), and
- Lesser black-backed gull: 905 individuals, representing an average of 1.4% of the GB population (5 year peak mean 1998/9-2002/3).

Alde-Ore Estuary Ramsar Site

The Alde-Ore Estuary Ramsar Site is located adjacent to the west of the study area between Aldeburgh and Orford Ness where it shares a common boundary with the SPA of the same name. The Ramsar site then extends south to Bawdsey. The Alde-Ore Estuary qualifies as a Ramsar Site under Criterion 3 for supporting a notable assemblage of breeding and wintering wetland birds. The Alde-Ore Estuary Ramsar site also qualified under Criterion 6 for supporting internationally important populations of the following:

Species regularly supported during the breeding season:

- Lesser black-backed gull: 5,790 apparently occupied nests, representing an average of 3.9% of the breeding population (Seabird 2000 Census)

Species with peak counts in winter:

- Avocet: 1,187 individuals, representing an average of 1.6% of the population (5 year peak mean 1998/9-2002/3)
- Redshank: 2,368 individuals, representing an average of 2% of the GB population (5 year peak mean 1998/9-2002/3).

The Alde-Ore Estuary Ramsar Site also supports a number of species that occur at nationally important levels, as follows:

- Mediterranean gull: 6 apparently occupied nests, representing an average of 5.5% of the GB population (Seabird 2000 Census);
- Sandwich tern: 169 pairs, representing an average of 1.6% of the GB population (5 year mean 1991-1995);
- Little tern: 88 apparently occupied nests, representing an average of 4.5% of the GB population (Seabird 2000 Census);

Species with peak counts in spring/autumn:

- Black-tailed godwit: 283 individuals, representing an average of 1.8% of the GB population (5 year peak mean 1998/9-2002/3);
- Spotted redshank: 44 individuals, representing an average of 32.3% of the GB population (5 year peak mean 1998/9-2002/3);
- Greenshank: 29 individuals, representing an average of 4.8% of the GB population (5 year peak mean 1998/9-2002/3);

Species with peak counts in winter:

- White-fronted goose: 186 individuals, representing an average of 3.2% of the GB population (5 year peak mean for 1996/7-2000/01);
- Shelduck: 1,398 individuals, representing an average of 1.7% of the GB population (5 year peak mean 1998/9-2002/3);
- Wigeon: 6,851 individuals, representing an average of 1.6% of the GB population (5 year peak mean 1998/9-2002/3);
- Teal: 2,447 individuals, representing an average of 1.2% of the GB population (5 year peak mean 1998/9-2002/3);
- Pintail (Anas acuta): 556 individuals, representing an average of 1.9% of the GB population (5 year peak mean 1998/9-2002/3), and
- Shoveler: 224 individuals, representing an average of 1.5% of the GB population (5 year peak mean 1998/9-2002/3).

Deben Estuary Ramsar Site

The Deben Estuary Ramsar Site is located approximately 15km south and south-west of the study area, where it shares a common boundary with the SPA of the same name. The Deben Estuary qualifies as a Ramsar Site under Criterion 6 for supporting internationally important populations of the following during the winter:

Species regularly supported during the breeding season:

- Brent goose (dark-belied race): 1,953 individuals, representing an average of 1.9% of the GB population (5 year peak mean 1998/9-2002/3).

The Alde-Ore Estuary Ramsar Site also supports a number of species that occur at nationally important levels, as follows:

Species with peak counts in spring/autumn:

- Black-tailed godwit: 307 individuals, representing an average of 1.9% of the GB population (5 year peak mean 1998/9-2002/3);
- Greenshank: 22 individuals, representing an average of 3.6% of the GB population (5 year peak mean 1998/9-2002/3);

Species with peak counts in winter:

- Bean goose (Anser fabalis fabalis): 5 individuals, representing an average of 1.2% of the GB population (Source period not collated)
- Shelduck: 832 individuals, representing an average of 1% of the GB population (5 year peak mean 1998/9-2002/3);
- Avocet: 167 individuals, representing an average of 4.9% of the GB population (5 year peak mean 1998/9-2002/3);
- Spotted redshank: 3 individuals, representing an average of 2.2% of the GB population (5 year peak mean 1998/9-2002/3), and
- Redshank: 2,124 individuals, representing an average of 1.8% of the GB population (5 year peak mean 1998/9-2002/3).

3.1.3 Nationally Designated Sites

Six SSSIs, which contain designated or cited species that could potentially use the inshore waters between Sizewell and Orford Ness, are located within 20km of the study area (the locations of which are shown on **Figure 3.1c**).

Minsmere-Walberswick Heaths & Marshes SSSI

The Minsmere-Walberswick Heaths & Marshes SSSI is located adjacent to the north of the study area. The SSSI contains extensive reedbeds (at Minsmere and Walberswick) and marshes. The reedbeds are an important habitat for birds, including breeding garganey (*Anas querquedula*). At Minsmere, a 20 hectare area of shallow lagoons and islands has been created for wading birds and wildfowl. This area is renowned for its breeding colony of avocets, and shoveler, gadwall, teal and shelduck also breed.

Leiston-Aldeburgh SSSI

The Leiston-Aldeburgh SSSI is located adjacent to the west of the study area between Sizewell Hall and Thorpeness. The SSSI, which includes much of the North Warren and Aldringham Walks RSPB nature reserve, contains a rich mosaic of habitats including acid grassland, heath, scrub, woodland, fen, open water and vegetated shingle. The variety of habitats supports a diverse and abundant community of breeding and over-wintering birds. The marshes, the open water and their margins support a diverse range of breeding birds, including gadwall. The SSSI is also attractive to wintering waterfowl including Bewick's swan (*Cygnus columbianus*) and regularly supports important populations of white-fronted goose, gadwall and teal.

Alde-Ore Estuary SSSI

The Alde-Ore Estuary SSSI is located adjacent to the west of the study area between Aldeburgh and Orford Ness where it shares a common boundary with the SPA of the same name. The SSSI then extends south towards Bawdsey. The site is of national importance for its birdlife. Havergate Island holds one of the largest breeding colonies of avocet in Britain, and they also feed in large numbers on Hazelwood Marshes and the Alde mudflats. Other breeding birds on the Island and elsewhere on the site include gadwall, shoveler, oystercatcher (*Haematopus ostralegus*), ringed plover (*Charadrius hiaticula*), common gull (*Larus canus*), arctic tern (*Sterna paradisaea*), common tern, Sandwich tern and little tern. There are also very large breeding colonies of black-headed gull, lesser-black-backed gull and herring gull on Orford Ness. In winter and during migration, the site is visited by nationally important numbers of wildfowl and waders, including Bewick's swan, shelduck, teal, wigeon, redshank and avocet.

Sizewell Marshes SSSI

Sizewell Marshes SSSI is located at its nearest, 350m to the west of the study area. The SSSI is of national importance for the considerable area of lowland, unimproved wet meadow it contains. The SSSI citation states that the breeding bird assemblage is of national significance, with many species that are typical of wet grassland and associated habitats, including shoveler, gadwall, teal, snipe (*Gallinago gallinago*) and lapwing. However, since its notification, surveys undertaken by SWT who manage the area indicate that the level of ornithological interest for the SSSI has declined, with gadwall now the only species that is likely to continue to breed with regularity (and in regionally, rather than nationally important numbers).

Pakefield to Easton Bavents SSSI

The Pakefield to Easton Bavents SSSI is located approximately 13km north of the study area. The SSSI is nationally important for its vegetated shingle features, saline lagoons, flood-plain fens, and scarce breeding birds. The site supports nationally important populations of breeding little tern. The SSSI supports nationally important breeding bird assemblages of lowland open water and their margins (including gadwall), lowland heath, scrub and woodland.

Deben Estuary SSSI

The Deben Estuary SSSI is located approximately 15km south and south-west of the study area, where it shares a common boundary with the SPA of the same name. The numbers of redshank over-wintering on the estuary are of international importance and the summer breeding population of this species is of county significance. The site is of national importance for its winter populations of dark-bellied brent goose, shelduck and black-tailed godwit, with the numbers of wigeon, pintail and grey plover (*Pluvialis squatarola*) approaching this level in some years. The Deben Estuary supports many other species, including dunlin, curlew (*Numenius arquata*) and mute swan (*Cygnus olor*).

3.1.4 Non-Statutory Designated Sites

Ten non-statutory designated sites are located within 3km of the study area. These include areas adjoining statutory designations which, while valued, do not meet the criteria for SAC, SPA or SSSI status, and include County Wildlife Sites and Suffolk Wildlife Trust Reserves. Although all of these sites will have some bird interest, four specifically mention species of birds that might potentially use the waters within the study area, as follows (the locations of which are shown on **Figure 3.1d**):

- Middle Alde Intertidal River & Adjacent Marshes CWS (located 400m west of the study area) is an important area for breeding and wintering wildfowl. It is located adjacent to the Alde-Ore Estuary SSSI.
- Sizewell Levels & Associated Areas CWS (at its nearest located 200m west of the study area) is a large area of land, consisting of woodland, plantation, wet meadow, osier beds and scrub situated behind Sizewell power station. The numerous dykes provide good cover for wildfowl, including teal and mallard. The CWS is managed by the Suffolk Wildlife Trust.
- Sizewell Rigs County Wildlife Site (located within the study area), includes the two offshore maintenance structures (north and south rig respectively) associated with the cooling water intake and outfall. The rigs support a colony of over 200 breeding kittiwakes. This is one of two sites in Suffolk where kittiwake colonies have become established (the other being at Lowestoft4). The numbers of kittiwakes breeding at these sites represent a very small proportion of the UK population, which has no natural nesting sites on the UK east coast between Kent and Yorkshire.
- Southern Minsmere Levels CWS (located 600m NW of the study area) is of importance as it is directly adjacent to the Minsmere SPA, SAC and SSSI and is of interest for its breeding waders and wildfowl and its over-wintering bird community. The CWS is managed by the Suffolk Wildlife Trust.

3.2 Desk Study, Bird Records

3.2.1 Suffolk Biological Records Centre Bird Data

Suffolk Biological Record Centre (SBRC) data, for 1991-2010, much of which has been provided by the Suffolk Ornithologists' Group (SOG), indicates that the occurrence of different seabird and wildfowl species within the study area is very seasonal and that large numbers are recorded infrequently. A large proportion of the SBRC records since at least 2007 are for the waters offshore of Thorpeness where RSPB wardens for North Warren (Dave Thurlow and previously Rob Macklin) undertook frequent periods of sea-watching (counting birds offshore).

Table B1 in **Appendix B** shows the annual total number of each seabird and wildfowl species (for species that could potentially forage in offshore waters within the study area) recorded at each location, within approximately 3km of the study area, since 1990. A large proportion of the SBRC records are of birds commuting along the coastline and for most species there are very few records that specifically refer to birds foraging or loafing on the sea within the study area. However, the data shows that common scoter, red-throated diver, great crested grebe, cormorant, kittiwake, gulls (herring, black-headed, lesser black-backed and common), common tern, Sandwich tern and guillemot regularly migrate or undertake short-distance movements offshore between Minsmere and Orford Ness. Eider, velvet scoter, goldeneye, red-breasted merganser, skuas (pomarine, Arctic and great), little gull, terns (little, black and Arctic) and razorbill were also recorded more infrequently or in smaller numbers. **Table 3.1** shows the

[4] On a purpose built wall constructed by Associated British Ports to compensate for the loss of the Lowestoft South Pier Pavilion (which was demolished in 1988).

monthly total number of individuals (for species for which the majority of records are likely to relate to birds recorded offshore) recorded in the study area since 1990.

Table 3.1 SBRC Data: Monthly total numbers of birds recorded in the Study Area

Species common name	Species biological name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Scaup	*Aythya marila*	5	6			1			1		6	21	28
Eider	*Somateria mollissima*	13	22	10	6	2	5		8	37	146	182	177
Long-tailed duck	*Clangula hyemalis*	1			1						3	4	1
Common scoter	*Melanitta nigra*	571	451	166	176	107	578	1,037	1,155	1,241	486	1,447	675
Velvet scoter	*Melanitta fusca*	5	1		2			3	2		1	17	12
Goldeneye	*Bucephala clangula*	11	57	1							31	52	7
Red-breasted merganser	*Mergus serrator*	11	6	1	7	1		1		6	42	93	29
Red-throated diver	*Gavia stellata*	11,473	2,390	1,856	645	2	3	6	2	9	87	2,519	14,349
Black-throated diver	*Gavia arctica*	6	3	6	4	1				1	5	15	13
Great northern diver	*Gavia immer*	3	3			2	1			1	1	7	3
Great crested grebe	*Podiceps cristatus*	367	363	66	13	8	10	4	4	41	69	439	1,467
Red-necked grebe	*Podiceps grisegena*	3	3								2	2	6
Slavonian grebe	*Podiceps auritus*	5									2	2	3
Black-necked grebe	*Podiceps nigricollis*	8	3	8									
Fulmar	*Fulmarus glacialis*	26	22	104	181	282	69	28	22	54	2	45	18
Sooty shearwater	*Puffinus griseus*							2	44	41	71	3	1
Manx shearwater	*Puffinus puffinus*				5	3	28	29	5	31	2		
Storm petrel	*Hydrobates pelagicus*						1	10	1			11	
Leach's petrel	*Oceanodroma leucorhoa*									1			

Species common name	Species biological name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Gannet	*Morus bassanus*	429	576	3,013	844	371	1,787	2,732	1,715	521	1,100	1,127	92
Cormorant	*Phalacrocorax carbo*	63	159	21		19		90	29	176	41	44	570
Shag	*Phalacrocorax aristotelis*	1							2	1	2	3	3
Grey phalarope	*Phalaropus fulicarius*										1		
Pomarine skua	*Stercorarius pomarinus*	43	14	1	11	17			4	14	12	14	8
Arctic skua	*Stercorarius parasiticus*	3	5	1	4	8	15	80	156	143	29	7	3
Long-tailed skua	*Stercorarius longicaudus*					5			2	4	2	2	
Great skua	*Stercorarius skua*	5			22	10	1	2	8	8	53	20	
Kittiwake	*Rissa tridactyla*	4,583	1,296	591	1,033	1,314	1,703	2,224	261	15	73	251	789
Black-headed gull	*Chroicocephalus ridibundus*	6,700	3,890	156		69		217		290	449	154	120
Little gull	*Hydrocoloeus minutes*	11		2	4	4	4	95	580	585	51	265	
Mediterranean gull	*Larus melanocephalus*	22	9	6	7	2	7	7	2	1	4	2	9
Common gull	*Larus canus*	210	244			86		2			50		
Lesser black-backed gull	*Larus fuscus*	106	102	41			32	61	620	133	118	31	26
Herring gull	*Larus argentatus*	2,242	5,350	500									300
Yellow-legged gull	*Larus michahellis*	7	4	2	1							1	6
Iceland gull	*Larus glaucoides*	8	7										3
Glaucous gull	*Larus hyperboreus*	2	2	1						1	3	4	3
Great black-backed gull	*Larus marinus*	222	26	14		22				1	97	284	280
Little tern	*Sternula albifrons*				18	131	111	237	82	2			
Black tern	*Chlidonias niger*					9	2	4	89	124			

Species common name	Species biological name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Sandwich tern	*Sterna sandvicensis*				40	66	158	1,250	2,125	145	19		
Common tern	*Sterna hirundo*				117	700	122	4,490	13,766	2,896	29	1	
Roseate tern	*Sterna dougallii*					1	5	2					
Arctic tern	*Sterna paradisaea*				1	75	5	10	136	82	12	1	
Guillemot	*Uria aalge*	649	175	76	3	24	48	13	2	5	3	240	3,604
Razorbill	*Alca torda*	124	3		2	3	8	2	2	7	8	5	6
Little auk	*Alle alle*										51	411	3
Puffin	*Fratercula arctica*					1	2			2	3	5	4

NB: It has not been possible to separate the records of birds seen offshore from those seen inland, and therefore the figures shown in the table above will contain an unknown proportion of birds seen inland, at sites such as the North Warren and Minsmere RSPB reserves. However, for these species, the majority of individuals recorded will be birds flying over, or resting on the sea.

3.2.2 Wetland Bird Survey (WeBS) Data

Figure 3.2 shows the location of WeBS (Core Count) Count Sectors located within or adjacent to the study area. **Table B2** in **Appendix B** shows the peak monthly counts (from 2005/06 to 2009/10[5]) of seabirds and wildfowl species (that could potentially forage or rest on offshore waters within the study area) recorded within each WeBS Count Sector. Six WeBS Core Count Sectors were surveyed within or adjacent to the study area, of which only the Minsmere Offshore Sector (33074) includes counts of birds on the sea. No offshore WeBS counts are undertaken within the study area, although data from WeBS Count Sector 33074 (located 900m to the north of VP1) provides information about the numbers of birds occurring on the sea adjacent to the study area. It should also be noted that the days on which WeBS are undertaken (once-monthly) do not necessarily coincide with those days when peak numbers of seabirds occur in the area (which is often determined by specific weather conditions). However, the WeBS data does indicate that the large numbers of teal and wigeon that occur on the Minsmere RSPB reserve do not regularly rest on the adjacent sea. The data also suggests that large numbers of red-throated diver are also likely to be an infrequent occurrence offshore of Minsmere. Small numbers of terns and gulls were recorded offshore of Minsmere in relation to the large numbers counted on the adjacent Minsmere RSPB nature reserve.

3.3 Surveys

3.3.1 Vantage Point Surveys

A total of 68 species of seabird and wildfowl were recorded during the vantage point (VP) surveys undertaken from 22 March 2011 to 25 April 2012. Individuals were seen commuting along the shoreline, foraging on and over the sea, and resting on the sea. For most species, individuals could readily be detected with the use of a high-powered telescope up to a distance of about 1000-1500m. Beyond this distance, only the larger and/or more distinct species (such as gannet) could be identified to species level. Large numbers of divers were seen beyond 1500m from the shoreline, and these have been assumed to be red-throated diver as the desk study indicates that other diver species are rarely recorded in the study area.

Counts of birds foraging around the Sizewell B outfall and birds loafing on the outfall structures and rigs were also undertaken. However, Sizewell B outfall was not in operation from the beginning of September to mid-October 2011, which resulted in there being very little seabird activity in this area during this period.

The peak monthly counts of birds using the study area (for example, those foraging, resting or nesting/displaying, but excluding commuting birds) from each VP are presented in **Table C1** in **Appendix C**. The monthly total number of commuting birds recorded within the study area from each VP is presented in **Table C2** in **Appendix C**.

An account of the type and level of use of the study area by each species recorded during the VP surveys is provided below. Incidental records collected during other surveys undertaken in the Sizewell area in 2011-12, and records of species recorded during the little tern colony surveys in

[5] The WeBS survey year runs from July to June the following year

2011 have also been included here. Records of regionally scarce species (such as little gull and black tern), extracted from the Birdguides website (www.birdguides.com) have also been included to provide a more complete picture of the numbers and seasonal timing of each species in the area.

Red-throated Diver

A total of 5,056 red-throated divers were recorded during the VP surveys of which 3,997 were recorded commuting through the study area and 1,059 were foraging or resting on the sea. The largest numbers of divers were recorded in March-April 2011 and from December 2011 to April 2012, with much smaller numbers seen from August to October 2011 and none in May, June and July 2011. Divers were seen on most survey dates from 22 March to 19 April 2011 and again from 31 August 2011 to 23 April 2012. Large numbers of birds were seen loafing and foraging on the inshore waters within the study area during VP surveys undertaken in very calm weather conditions (almost flat calm seas) on 24, 25 and 28 March 2011 (at the end of the 2010-11 winter period when divers are present in the area). These calm conditions continued until the 19th April. The divers were clearly visible at a distance of up to 2km from the shoreline, although additional birds were seen commuting north and south further out to sea. A total of 463 divers were counted from VPs 1-12 in late March 2011, of which 347 birds were seen from VPs 5-7 (offshore of Thorpeness village) and 42 from VP1 between Minsmere and Sizewell. Calm conditions such as these did not occur again during any of the VP surveys undertaken during the months when divers are present in good numbers (i.e. from December 2011 to April 2012). During periods when the sea was 'choppy', the divers were primarily seen when alighting or landing on the sea and many birds resting or foraging on the sea would not have been recorded. During each survey, the divers were primarily seen flying in one particular direction (either north or south along the coast). Many of the flights were relatively short in distance (a few hundreds of metres) as birds adjusted their positions in response to tidal water movements up and down the coast. There were several occasions when large groups of divers were seen making these short-distance movements for very brief periods, sometimes involving at least 50-100 birds. During the winter of 2011-12, large counts of divers undertaking short-distance movements (generally in one direction) included a total of 858 birds from VPs 10-12 on 6 January and 685 from VPs 1-8 on February 2. Large counts of divers foraging or loafing on the sea included 100 birds from VPs1-7 on 20 February and 91 from VP 8-12 on 30 March.

Table 3.2 presents the total and mean number of divers (counted on each 45 minute count) recorded from each VP during the survey period.

Table 3.2 Total and mean number of Red-throated divers in each VP

	Commuting	Commuting	Foraging/loafing	Foraging/loafing
VP	Total	Mean	Total	Mean
1	213	15.1	128	9.1
2	208	14.8	62	4.4
3	112	8.0	47	3.4

VP	Commuting Total	Commuting Mean	Foraging/loafing Total	Foraging/loafing Mean
4	464	33.1	50	3.6
5	210	15.0	222	15.9
6	264	18.9	157	11.2
7	322	22.9	119	8.5
8	379	29.0	38	2.9
9	102	7.7	18	1.4
10	322	24.8	57	4.4
11	445	34.2	108	8.3
12	956	73.5	53	4.1

The data collected during the VP surveys indicates that the distribution of divers was reasonably evenly spread through the study area in 2011-12, although the largest numbers of foraging and resting divers were seen in waters offshore of Thorpeness (VPs 5-7), with relatively low numbers observed offshore of Sizewell (VPs 2-3). The largest numbers of commuting birds were seen from VP12 from Orfordness lighthouse. The total number of commuting divers recorded in 1km distance bands from the shorelines was: 0-1km (741 birds, 19% of the total number of commuting divers recorded), 1-2km (663, 17%), 2-3km (805, 20%), 3-4km (497, 13%), 4-5km (494, 12%) and 5-6km (409, 10%), with the numbers observed decreasing with distance. This was expected due to decreased visibility caused by the often misty conditions occurring offshore. **Figures 3.3a-b** shows the peak number of red-throated divers recorded in each 1km grid square within the study area in VPs1-6 and VPs7-12 respectively.

Cormorant

Groups of cormorant were regularly seen loafing on the rigs at Sizewell (primarily the northern rig) and the nearby outfall structures. The waters immediately surrounding Sizewell B outfall were used by foraging cormorants. During the VP surveys there were regular flights of 1-10 cormorants flying to and from the rigs, both in a northerly and southerly direction, primarily within 500m of the shoreline. A count of 32 cormorant were recorded on the rigs on 24 March 2011 after which numbers fell to 1-10 birds, increasing again in August when 15 birds were counted there on the 31st. Numbers increased during the autumn and remained at a high level from October 2011 to March 2012 when 50-80 birds were present in the Sizewell rigs area on most visits. At least 78 birds were resting on north rig on 20 February (some parts of the rig platform where the cormorants roost are not visible from the shoreline), and a total of 96 birds were recorded on the rigs and surrounding waters on 3 February. Small numbers of cormorant were seen feeding on the waters surrounding the rigs and at the outfall, with a peak count of 25 birds at the outfall on 3 February, although generally 1-7 birds were usually present.

Away from the Sizewell outfall and rigs area, generally 1-10 cormorants were recorded from each VP, foraging in the waters usually within 1km of the shoreline. Birds were seen foraging in the inshore waters throughout much of the study area, with favoured areas being at Orford Ness (VPs 11-12). Large numbers of cormorants were seen feeding on the sea at Orford Ness

within 500m of the shoreline from November to February, although there was a count of 42 birds there on 20 May. During the winter, groups of cormorants were seen resting on the lagoon adjacent to VP12 and commuting between there and the adjacent sea where they were feeding. A total of 140 birds were seen on the lagoon on the 15 December and 20-30 birds were seen foraging on the sea nearby on most dates in the winter.

Kittiwake

Kittiwakes were recorded in the study area throughout much of the survey period but primarily during spring and summer. Nesting birds were present at the Sizewell Rigs at the start of the VP surveys on 24 March 2011, and remained there until early September. Without undertaking a survey from a boat it was not possible to accurately assess the number of pairs of kittiwake breeding on the rigs. Birds breed on the upper ledges that surround the rigs on all four sides (three of the four sides are visible from the shoreline), but also on ledges underneath the platforms. Photographic evidence provided in 2011 by Steve Parish (AMEC employee) suggests that a substantial number of kittiwakes nest under the platforms. Birds nesting on the seaward (eastern) ledge of the rigs and those nesting under the platforms are not visible from the beach. Counts undertaken from VPs 2 and 3 between March and July 2011 indicate that approximately 120 pairs were nesting on the upper ledges of each rig (240 pairs in total). This estimate includes birds on the ledges not visible from the shoreline and assumes that a similar number of birds are present here to that on the visible ledges.. In addition, an unknown number of nests were located underneath the platforms, suggesting a minimum total of some 300 pairs.

The first kittiwake chicks were seen on the rigs on 16 June and by 21 June at least 250 chicks may have been present. The number of kittiwakes on the rigs began to decline during August as the juveniles fledged and departed the area, with 152 birds counted on 17 August, 94 on 24 August, 41 on 31 August, 6 on 9 September and none thereafter.

Very little foraging activity was observed within the study area during the breeding season, with only occasional adult and juvenile birds seen feeding with terns and other gulls at the outfall. However, there was an almost continual movement of kittiwakes flying from the rigs out to sea, generally in a south-east direction, but also north-east. Very few kittiwakes were noted offshore during colony counts undertaken from Dingle. During the VP surveys, kittiwakes were seen moving distantly offshore from VPs 5-8 (Thorpeness to Aldeburgh) but none were noted further south offshore from VPs 9-12 (Slaughden to Orford Ness).

The occurrence of kittiwakes in the study area outside the breeding season was much more sporadic (from September to February), although birds were seen in fairly large numbers on a number of occasions during periods of stormy weather. During rough weather occasional birds were seen resting on the rigs and feeding around the outfall. Notable records included a group of 100 kittiwakes foraging 4-7km offshore from VP12 on 15 December, 191 birds commuting past VPs 9-12 on 8 December and 129 from VPs1-6 and 18 foraging at the outfall on 3 January. Kittiwakes began to return to the rigs to nest in early March 2012 and by 27 March an estimated 330 birds were present.

Little Gull

Little gulls were recorded during the VP surveys from 2 June to 8 December 2011. The first record involved two birds foraging offshore of Slaughden beach (VP10) on 2 June. An adult was then seen at the Sizewell B outfall on 6 July, after which numbers increased rapidly to 15 birds there on 15 July and 20 on 20 July. Numbers continued to increase at the outfall into

August, with a peak count of 72 birds recorded on 17 August. Also on 17 August, 44 birds were seen loafing on the sea at Thorpeness (VP5) and there was a steady flow of little gulls flying between there and the outfall, with rafts of birds resting on the sea between VPs 5 and 2. Up to 29 little gulls were also seen resting on the sea from VP4 on 17 August, and the total number of birds present in the VP1-5 area (between Sizewell and Thorpeness) was in the region of 100-140. A count of 72 birds was again recorded at the outfall on 31 August after which numbers declined rapidly to only 1-3 birds in early September when the outfall was not in operation. Much of the little gull activity was centred at the outfall, with birds picking food from the waters' surface and then resting in rafts of up 20 birds primarily between the outfall and rigs. Elsewhere, a juvenile was seen loafing on the lagoon adjacent to VP12 on 24 August and two birds were foraging along the coastline off VP7 on 31 August. A similar number of little gulls were reported at Sizewell outfall by *Birdguides*, with birds being reported there from 6 July to 9 September, including 79 on 30 July 2011, and 150 flying south during a 2-hour watch on 31 July.

During late autumn and winter, little gulls were recorded during the VP surveys on three survey dates, with one bird commuting past VP11 on 7 November followed by a group of 16 past VP6 on the following day, all heading north. The last records of the survey period were of single birds flying north past VP9 and VP11 on 8 December. **Figure 3.4** shows the peak number of foraging and loafing little gulls recorded in each 1km grid square during the AMEC surveys.

Mediterranean Gull

During the 2011 breeding season, Mediterranean gulls were recorded on two (out of 29) VP survey dates and on an additional five dates (out of 29) during the little tern colony surveys, from 11 April to 20 July. Birds were seen flying along the coastline between Minsmere (where breeding was being attempted) and the Sizewell B outfall. Mediterranean gulls were also seen foraging around the outfall on four dates, with two birds there on 23 May, up to five different individuals on 24 May, one on 21 June and two on 15 July. From August 2011 to the end of the survey period in April 2012, Mediterranean gulls were recorded on seven (out of 41) dates during the VP surveys, involving 1-2 individuals commuting past VPs 1, 5, 9 and 10.

Other gull species

Flocks of up to 200 large gulls were occasionally seen following fishing boats, usually 2-4km offshore between Sizewell and Aldeburgh. The Sizewell B outfall attracted flocks of juvenile herring and lesser black-backed gull, which rested on the sea surrounding the outfall structure, and adult and juvenile birds were also seen resting on the nearby rigs. Numbers at the outfall were generally small during the breeding season, with 10-30 herring gulls and 1-5 lesser black-backed gulls usually present, although larger numbers were sometimes recorded, including 135 herring gull there on 24 March and 75 on 8 June. A peak count of 15 lesser black-backed gulls were counted on and around the rigs on 24 March and up to eight great black-backed gulls were recorded on the rigs and Sizewell A and B outfall structures in March-April 2011. Elsewhere within the study area, congregations of up to 100 lesser black-backed gulls were seen on the beach along Orford Ness between VPs 10 and 12, although there, very little foraging activity was observed on or over the adjacent sea. On Aldeburgh beach, a mixed flock of some 50-100 large gulls (herring, lesser black-backed and great black-backed) was present during the breeding season around the fishing boats on the shingle.

During May and June, there was an almost continual movement of black-headed gulls flying between the Sizewell outfall, where they were feeding and Minsmere scrapes, where large

numbers were nesting. The peak count of black-headed gulls at the outfall was 500 birds on 8 June, although these numbers were exceptional, with generally 30-100 birds present.

Numbers of large gulls increased after the breeding season, with congregations of mainly herring and great black-backed gulls present at Sizewell (on the beach and around the outfall) and on the beach at Aldeburgh. In contrast, numbers of lesser black-backed gull declined from November and very few were seen (usually 1-10 birds) from then until the following March. Large numbers of herring gulls were recorded foraging around the outfall, resting on the rigs and adjacent beach from November to early April, including 320 there on 7 March 2012 and 300 on 2 April 2012. Great black-backed gulls were also numerous around the outfall during the winter, with 80 recorded there and on the adjacent beach on 19 December 2011 and 70 on 7 March 2012. Both species also foraged in large numbers behind the incoming fishing boats between Sizewell and Aldeburgh.

Small numbers of common gull and black-headed gulls were seen foraging at the outfall during winter and included peak counts of 69 black-headed gulls there on 19 December and 60 common gulls on 3 January although numbers were usually less, with 5-20 birds of each species usually present. Much larger numbers of these species were seen resting on the sea (primarily during the late afternoon), within 500m of the shoreline between VPs 4 and 8, particularly offshore of North Warren (VPs 7 and 8). Here, 2000 common gulls were recorded on 20 January and 1000 black-headed gulls on 20 December, and there were 200 common and 100 black-headed gulls offshore of VP9 on 25 January.

Little Tern

The first little tern was recorded on Minsmere scrape on 21 April and the last at the Sizewell B outfall on 3 August (records from all AMEC bird survey work undertaken in the area in 2011). During the VP surveys, little terns were recorded in the study area from 10 May to 24 June 2011, with much of the foraging activity being close offshore (within 300m of the beach) at Sizewell (VPs 1-4) during May. Up to 16 birds were recorded foraging from VPs1-4 on May 10, 18 and 19, although no foraging activity was recorded during the six hour watches undertaken from VP2 and VP3 on May 23 and 24 respectively. Little terns were primarily seen moving up and down the shoreline, diving for small fish in the shallows. Foraging around the outfall was rarely observed although a group of 15 birds was seen there with common terns and gulls on 19 May. Foraging little terns were not recorded from VPs1-4 thereafter.

No foraging activity was recorded between VPs 6 and 9 (Thorpness to Aldeburgh), although four little terns were seen commuting past the area on 9 June. There was a concentrated period of activity at nearby Slaughden beach (VP10) from May 20 to 15 June. On 20 May, a group of 18 little terns were observed resting on Slaughden beach by VP10 after which up to 22 birds were present in the area until the last were seen on 15 June (details of the attempt to start a colony at Slaughden are provided in Section 3.2.2). During this period, little terns were often seen foraging over the spit (which is exposed at very low tides) that extends from VP10 to VP11, 500-1000m offshore. Little terns were not seen foraging over the spit in July. At Orford Ness (VPs 11-12), 2-4 little terns were seen foraging offshore on two dates (20 May and 24 June) and two birds were also seen resting on the lagoon near Orford Ness Lighthouse (VP12) also on 24 June.

Figures 3.5a-c show the little tern flight lines and any areas of concentrated foraging activity within the study area (split into three stretches covering VPs 1-4, VPs 5-8 and VPs 9-12 respectively).

Common Tern

Common terns were recorded in the Sizewell/Minsmere area during the 2011 AMEC bird surveys from 20 April until 21 October 2011, with returning birds seen on 23 April 2012. The largest numbers of foraging birds, when many juveniles were also present, were recorded from July to September. Large numbers of common terns were seen foraging offshore from Minsmere south to Orford Ness, including within much of the study area (VPs 1-12). Much of the foraging activity was close inshore with 47% of foraging common terns seen within 100m of the shoreline and 79% within 500m. Very few (only 4%) were seen foraging more than 1km offshore. Common terns were regularly seen commuting up and down the coast, often 2-3km from the shoreline, again with peak numbers recorded from July to September.

Large numbers of common tern were seen foraging around the Sizewell B outfall, although numbers did not peak until August, when many juveniles were present. However, during June and July there was an almost continual movement of common terns (often carrying fish) between the outfall and the breeding colony at Minsmere (150 bird passes per hour were recorded from VP2 on July 15). In August, a large mixed group of adult and juvenile birds was seen feeding around the outfall, picking up fish from the surface and then resting on the nearby beach (a peak count of 230 birds was recorded there on 12 August). The outfall was not operational throughout September and so very few common terns were seen from VPs1-4 during this period, although good numbers were seen elsewhere within the study area.

From VPs 5-7, congregations of common tern were seen foraging over the area of shallow water off Thorpeness, primarily from July to September, with a peak count of 42 birds recorded there on 17 August. At Aldeburgh (VPs 8-9), up to 16 birds were recorded foraging offshore, mostly from June to August. From VP10 and VP11, large numbers of common tern were seen foraging over the shallow water spit, 500-100m offshore, primarily during July and August, with a peak count of 45 birds present on 24 August. At Orford Ness (VP12), up to 14 common terns were recorded foraging offshore, with birds also seen commuting between there and the adjacent lagoon, where a peak count of 50 birds was noted on 29 July.

Figures 3.6a-c show the common tern flight lines (of foraging birds) and any areas of concentrated foraging activity within the study area (split into three stretches covering VPs 1-4, VPs 5-8 and VPs 9-12 respectively).

Sandwich Tern

Sandwich terns were recorded in the study area during the 2011 AMEC bird surveys from 11 April to 3 October 2011, with returning birds first noted on 13 April 2012. Small numbers of Sandwich terns were seen foraging offshore or commuting along the coastline, both close inshore and more than 1-2km from the shoreline. Peak numbers were recorded in July and August when up to 10 Sandwich terns were counted at any one time, although usually only 1-2 birds were recorded together. In common with little tern, the Sizewell B outfall did not attract any large congregations of Sandwich tern, with 1-2 birds occasionally stopping briefly to feed in the area before moving on. The most favoured feeding areas were over the shallow waters offshore of Thorpeness and between Slaughden beach and Orford Ness where up to 10-11 birds were occasionally noted. These birds were also seen resting on nearby lagoons adjacent to the Orford Ness lighthouse and Slaughden beach where peak counts of 12 birds (on 12 August) and 10 birds (on 8 August) were recorded respectively.

Figures 3.7a-c shows the Sandwich tern flight lines (of foraging birds) and any areas of concentrated foraging activity within the study area (split into three stretches covering VPs1-4, VPs5-8 and VPs9-12 respectively).

Black Tern

Black terns were recorded during the 2011 AMEC bird surveys on seven survey dates (including on four out of 70 VP survey dates and three out of 29 colony survey dates) from 20 July to 31 August 2011. Much of the activity was recorded at the Sizewell B outfall from VPs 2 and 3. Black terns were seen foraging around the outfall and then resting on the sea or nearby beach with common terns. The first black terns were recorded at the outfall on 20 July (2 birds), followed by counts of one bird on 4 August, four on 12 August, a peak of 31 birds on 24 August, then six on 26 August and five on 31 August. Elsewhere, four birds were seen foraging with common terns over the shallow water spit from VP10 on 24 August, and a single bird was on the beach with little terns at Dingle on 22 July. *Birdguides* also reported numerous records of up to 25 black terns at the Sizewell outfall from 9 July to 4 September.

Arctic Tern

Arctic terns were recorded during the 2011 AMEC bird surveys on four survey dates, from 4 to 26 August. The first record (and peak count) was of nine birds (six adults and three juveniles) feeding at Sizewell B outfall on 4 August, and these were followed by three juveniles on the 12th and 17th and two juveniles on 26 August. Birdguides also reported several records of 1-4 Arctic terns at the Sizewell outfall from 8 August to 1 September.

Roseate Tern

During the little tern colony surveys, a single first-year bird was seen resting on the beach at Dingle on 18 July. None were recorded in the study area although there were several reports from the Birdguides website of 1-2 birds on the Minsmere scrape from 29 May to 14 July, and one record from Sizewell outfall on 13 July.

Other Bird Species

Small numbers of other seabird and wildfowl species were recorded during the VP surveys undertaken between 24 March 2011 and 25 April 2012. Most records were of birds commuting along the sea both in a northerly and southerly direction.

Seabirds

One of the most frequently recorded seabird species was gannet, for which a total of 840 birds were counted on 39 survey dates, throughout much of the year. The only record of gannet feeding, was a single bird at Sizewell B outfall on 2 January, with the remaining birds seen commuting through the study area, usually at least 1km from the shoreline. There were occasional records of 1-2 fulmar commuting through the study area (a total of 14 birds on 7 dates), a Manx shearwater was seen flying south past VP12 on 7 November and 1-2 black-throated diver were recorded on the sea (and flying past) on 1 December and 20 February. Three species of skua were recorded commuting through the study area (and attacking terns and gulls), with Arctic skua being the most numerous (a total of 31 birds on 12 dates, primarily during September and October), followed by great skua (a total of 18 birds on 6 dates, primarily in October and November) and pomarine skua (a total of 7 birds on 4 dates, primarily in November and December). Small numbers of auks were seen commuting through the study area, with a total of 82 guillemots and razorbills recorded, primarily from October to December.

A single little auk was seen commuting south through the study area 200m from the shoreline on 7 November.

Waterfowl (ducks, geese and swans)

Very few waterfowl species were recorded foraging or resting on the inshore waters within the study area. Most of the records were of birds commuting (both north and south) through the area. Brent geese were frequently seen migrating, mostly south through the study area, from late September to early November, with a total of 730 birds counted, including a peak count of 255 birds on 7 November. Wigeon and teal were also frequently recorded flying past (primarily from October to February), with occasional records of flocks of birds resting on the sea, including 300 teal and 25 wigeon from VP9 on 25 January and 100 teal and 150 wigeon from VPs1-4 on 3 October. Smaller numbers (generally 1-10 birds) of mallard, shelduck, pintail, shoveler and gadwall were also seen commuting throughout the study area throughout much of the year.

Of those duck species that are more closely associated with marine habitats, 1-3 red-breasted merganser and 1-2 goldeneye were seen commuting through the study area on two and seven survey dates respectively during winter. Eider were also recorded (a total of 41 birds on 10 dates) including eight birds resting on the sea from VP9 on 7 March. Common scoter were the most frequently recorded 'sea duck' with a total of 495 birds seen on 35 dates, throughout much of the year. Scoters were occasionally seen resting on the sea, including a peak count of 32 from VP6 on 23 November.

Great crested grebe

A total of 416 great crested grebes were counted on 25 dates during the VP surveys, with birds recorded on all but one survey date from 23 November 2011 to 23 April 2012. Pairs of birds and small groups of usually 1-5 grebes were seen foraging on the sea (often close inshore) throughout much of the study area, with a peak count of 90 birds counted in VPs 1-7 on 20 February.

Waders

Small numbers of waders were occasionally seen commuting through the study area, moving between more suitable foraging and roosting areas further afield, such as the Blyth Estuary (11km to the north) and Alde/Ore Estuaries (adjacent and to the south of the study area).

A total of 16 species of wader were recorded during the VP surveys, the most frequently seen being turnstone, for which a total of 100 birds were noted on 19 dates. Small numbers (usually no more than ten birds) of curlew, dunlin, ringed plover, avocet and oystercatcher were also seen commuting through the study area on a reasonably regular basis (each species was recorded on between 11 and 16 survey dates during the survey period).

Very few waders were seen foraging along the shoreline in the study area, although birds were seen nearby on the River Alde (inland from VPs 9-10) and on the lagoon adjacent to VP12. The most notable record was of a grey phalarope foraging on the sea, 600-800m offshore from VP8 on 22 September. A mixed flock of 25 dunlin, 30 ringed plover and a turnstone were seen resting on the beach at VP10 on 20 May and there were 1-2 ringed plovers seen either resting or displaying on the beach at various locations on five further survey dates. Turnstones were regularly recorded feeding on the beach at VP9 where 19 birds were counted on 25 November.

3.3.2 Little Tern Colony Surveys

Colony surveys were undertaken at three sites where little terns attempted to breed in 2011: two within the Minsmere-Walberswick SPA (referred to in this report as Dingle and Minsmere) and one within the Alde-Ore Estuary SPA at Slaughden beach. The Minsmere, Dingle and Slaughden colonies are located approximately 3km north, 9km north and 10km south of Sizewell B outfall respectively. A summary of little tern activity recorded at each site during each visit is provided in **Table 3.2**. **Figures 3.8a-d** shows the flight lines of foraging and commuting little terns, and areas of concentrated foraging activity from Dingle, Minsmere, Slaughden and VPs2-3 respectively.

Table 3.2 Summary of Little Tern Activity at each Colony

Location	Date	Summary of little tern activity
Dingle	17-May-11	At least 7 little terns recorded, mainly commuting past colony. Some display noted.
Dingle	18-May-11	1-6 birds flying along shore, 2 stopping to display, but very little foraging offshore
Dingle	20-May-11	Up to 9 birds recorded, of which 7 were around/in the colony. Displaying and mating observed.
Dingle	03-Jun-11	Up to 90 birds around colony, then foraging well offshore (800-100m +) due to rough seas and strong winds
Dingle	09-Jun-11	Up to 110 birds present, with peak counts of 80 loafing on beach and 40-50 foraging offshore
Dingle	10-Jun-11	Continual activity at colony, with at least 17 birds bringing fish to colony
Dingle	10-Jun-11	Up to 30 birds present, loafing on shoreline
Dingle	13-Jun-11	Up to 50 birds present, with 20 nesting in colony (17 Walberswick, 3 Dingle)
Dingle	16-Jun-11	Peak count 84 birds, including 66 loafing on beach. 27 birds were in the colony, including at least 12 incubating. Plenty of foraging within 300m offshore, but little further offshore.
Dingle	24-Jun-11	Up to 80 birds present, with 60 loafing on the beach and much foraging activity close offshore (with plenty of fish being caught). Up to 26 birds incubating (20 Walberswick, 6 Dingle) but many birds had not settled to nest. The data suggests a total of 40 pairs of which 26 pairs were attempting to breed.
Dingle	29-Jun-11	Up to 28 birds present. The first chick was seen (1-2 days old), plus other birds incubating and displaying.
Dingle	06-Jul-11	30 birds present around colony including 3 pairs with young, 8 pairs on eggs and 8-10 unsettled birds
Dingle	07-Jul-11	Up to 25 birds in colony, but little foraging activity. At least 5 chicks present, and still plenty of incubating activity.
Dingle	14-Jul-11	44 birds present, including 32 loafing on beach, 5 on nests and 4-6 pairs with young.
Dingle	19-Jul-11	Up to 82 birds around colony, including 8 fledged young and 6 chicks. Plenty of foraging well offshore, up to 1km.
Dingle	22-Jul-11	Major influx of birds, with up to 180 present, including 150 on beach of which 10 were juveniles. Large numbers of common terns foraging 2-3km offshore, which may have included little tern also. 6 young still in colony.
Dingle	27-Jul-11	65 birds loafing on beach including at least 7 fledged young. Later, at least 30 birds foraging well offshore (1500m).

Location	Date	Summary of little tern activity
Dingle	01-Aug-11	Up to 22 birds flying around colony, but very little foraging offshore. A group of 4 chicks still in colony.
Dingle	12-Aug-11	No little tern recorded
Minsmere	11-May-11	Up to 36 birds present, with birds loafing on Minsmere South Scrape and foraging close offshore
Minsmere	18-May-11	Up to 23 birds present, loafing on South Scrape and beach and foraging close offshore. Fish being caught and presented to mates.
Minsmere	19-May-11	Up to 79 birds present, mainly on scrape, but also 34 seen on beach and adjacent colony area. Plenty of foraging offshore, and birds seen flying towards Dunwich.
Minsmere	23-May-11	Up to 4 birds recorded, foraging offshore in strong winds and occasionally resting on scrapes. No display noted.
Minsmere	08-Jun-11	4 birds on scrape, but no breeding activity
Minsmere	16-Jun-11	Up to 5 birds foraging offshore, but no breeding activity
Minsmere	23-Jun-11	No birds on the scrape, but up to 11 regularly foraging close offshore from Minsmere beach
Minsmere	29-Jun-11	No breeding activity, 1 bird on scrape, 4 commuting north
Minsmere	12-Jul-11	No breeding activity, 2 birds flew over beach and 1 was resting on the beach
Minsmere	27-Jul-11	1 bird flying north. No gulls and common terns on scrape (all departed)
Minsmere	01-Aug-11	No little tern recorded
Slaughden	02-Jun-11	Up to 12 birds foraging offshore and loafing around colony. Colony appeared to be extended along a long stretch of the beach.
Slaughden	10-Jun-11	22 birds present at colony and foraging close offshore
Slaughden	15-Jun-11	Up to 6 birds present, presenting fish and mating on beach. One possible nest on the beach where a female was being fed.
Slaughden	23-Jun-11	No birds present, colony abandoned
VP2	23-May-11	1-2 birds flying past VP on several occasions, no foraging offshore
VP2	15-Jun-11	No little tern recorded
VP2	20-Jul-11	No little tern recorded
VP2	12-Aug-11	No little tern recorded

Location	Date	Summary of little tern activity
VP3	24-May-11	2 birds flying by outfall, no foraging offshore
VP3	23-Jun-11	No little tern recorded
VP3	15-Jul-11	No little tern recorded

Details presented in Table 3.2 show that little terns initially started to prospect for nest sites at Minsmere (little terns were first recorded there on 11 May) after which this area was abandoned in favour of Dingle. During May, there was plenty of foraging activity at Minsmere, generally close inshore and within 500m of the beach, and display was noted, with groups of birds alternating between resting on the Minsmere scrapes and foraging offshore. On 19 May, 79 little terns were seen on the South Scrape at Minsmere after which numbers fell quickly and only small groups of up to 11 birds were seen foraging offshore during June and July.

In the last week of May, National Trust wardens at Orford Ness reported that little terns were attempting to establish a colony on Slaughden beach. Up to 22 birds were present in the area between June 2 and 15, with at least one pair attempting to breed. The colony was however abandoned soon after, with no little terns recorded there on June 23.

At Dingle, up to 110 little terns were present on 3 June and between then and 19 July large numbers were seen in and around the colony. A breeding colony was established at Dingle during June within the fenced-off area on the beach either side of the boundary between the Dingle and Walberswick reserves (see blue hatched area shown in Figure 3.8a). The bulk of the activity was in the Walberswick section of the colony where successful breeding occurred. By late June, a total of c.40 pairs were present at the colony of which c.26 pairs were attempting to breed (3 pairs in the Dingle section and the remainder in the Walberswick section). Up to 80 little terns were at the Dingle colony throughout much of June and July, with groups of birds alternating between loafing on the beach and foraging close offshore. During June and July, there was a great deal of successful foraging activity at Dingle primarily involving little terns diving and catching small fish. Much of the foraging was close offshore (within 500m of the beach) although birds were occasionally seen flying further out to sea. The terns were regularly seen flying both north, and south towards Minsmere beach and the study area from the Dingle colony.

On 22 July, there was a major influx of up to 180 little terns at the Dingle colony. These birds did not stay long and were largely gone by 27 July, although large numbers of presumably resident breeding birds were still present on that date. Little terns were last seen at the Dingle colony on 1 August, when four well-grown young were still in the fenced off area.

620000 625000 630000 635000 640000 645000 650000 655000 660000 665000 670000

285000 280000 275000 270000 265000 260000 255000 250000 245000 240000 235000 230000

N

1
2
3
4
5
6
7
8
9
10
11
12

Key:

- VP location
- Minsmere-Walberswick SPA
- Alde-Ore Estuary SPA
- Deben Estuary SPA
- Bencare to Easton Bavents SPA

0 3 6 9 Kilometres

Scale: 1:200,000 @ A3

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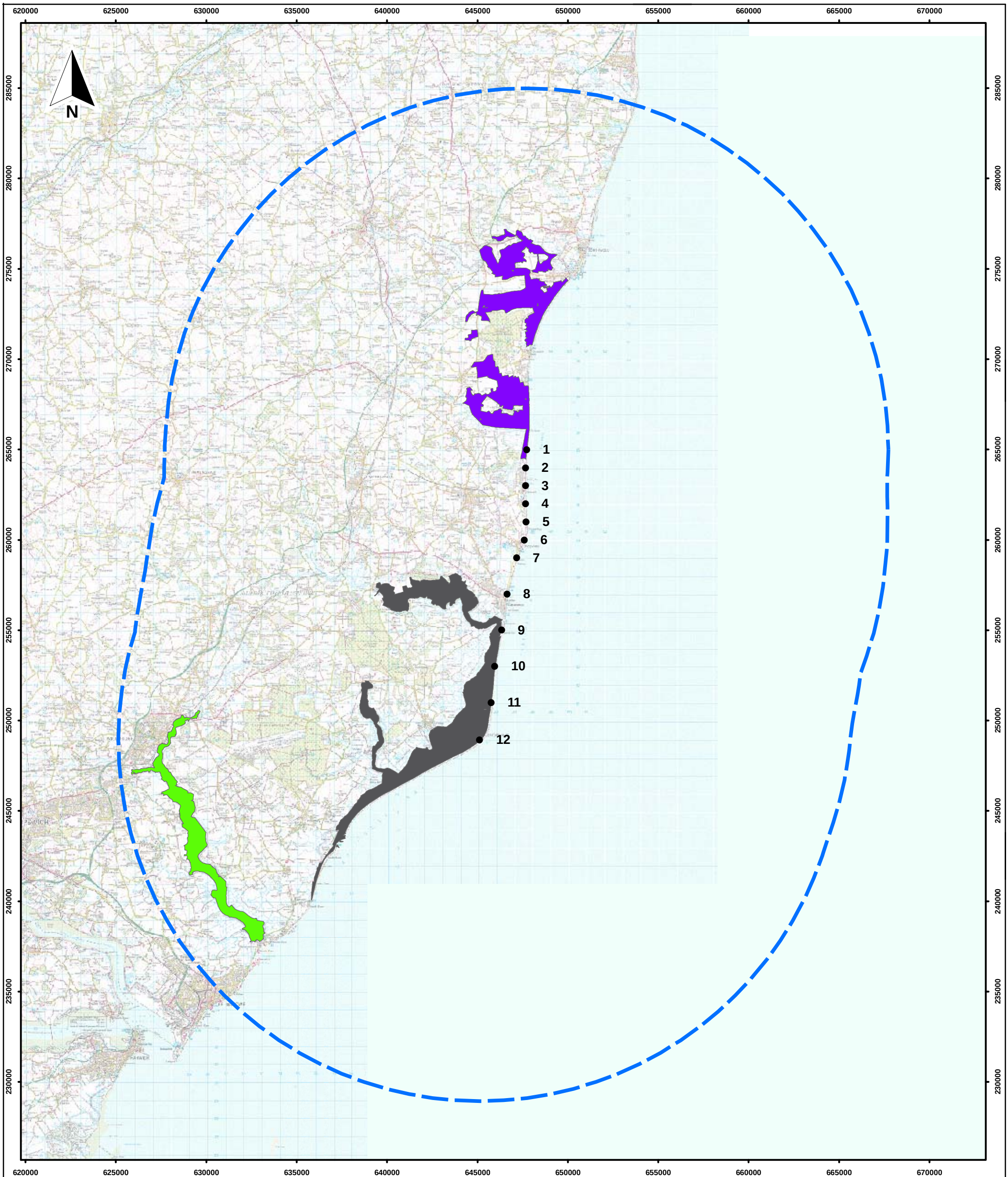
EDF

Sizewell Seabird Report 2011-12

Figure 3.1a
SPAs (designated in part for seabirds and wildfowl) within 20km of the Study Area

May 2012
28130-A233a.mxd tugwc

amec



Key:

- VP location
- Minsmere-Walberswick Ramsar site
- Alde-Ore Estuary Ramsar site
- Deben Estuary Ramsar site

0 3 6 9 Kilometres

Scale: 1:200,000 @ A3

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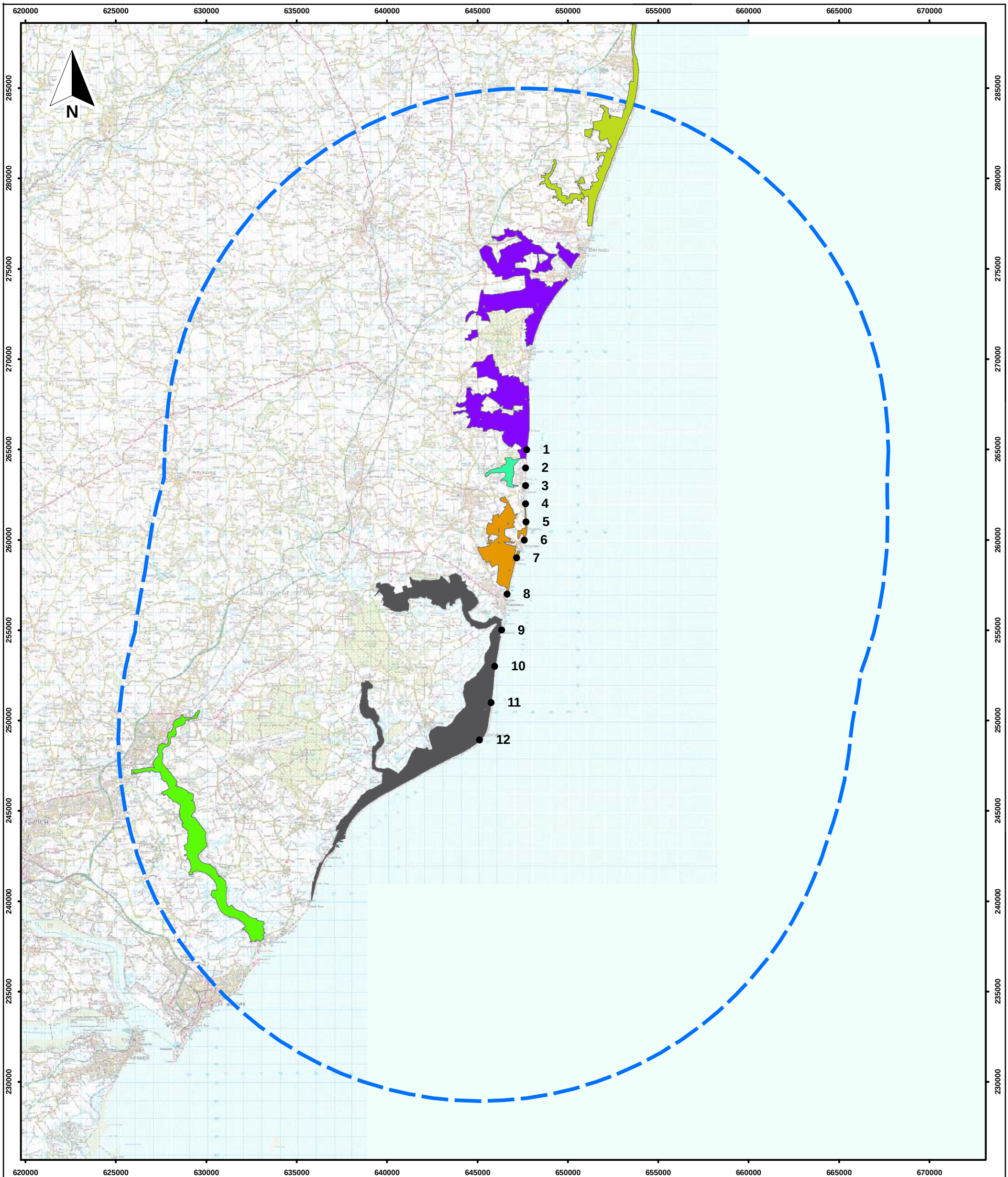
EDF

Sizewell Seabird Report 2011-12

Figure 3.1b
Ramsar sites (designated in part for seabirds and wildfowl) within 20km of the Study Area

May 2012
28130-A234a.mxd tugwc

amec



Key:

- VP location
- Minsmere-Walberswick Heaths & Marshes SSSI
- Deben Estuary SSSI
- Leiston-Aldeburgh SSSI
- Alde-Ore Estuary SSSI
- Sizewell Marshes SSSI
- Pakefield to Easton Bavents SSSI

0 3 6 9 Kilometres

Scale: 1:200,000 @ A3

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EDF

Sizewell Seabird Report 2011-12

Figure 3.1c
SSSIs (notified in part for seabirds and wildfowl) within 20km of the Study Area

May 2012
28130-A235a.mxd tugwc

amec

640000 645000 650000 655000

265000 260000 255000 250000 245000

N

Southern Minsmere Levels

Sizewell Levels &
Associated Areas

1
2
3 Sizewell Rigs
4
5
6
7
8
9

Middle Alde Intertidal River
& Adjacent Marshes

10
11
12

SAXMUNDHAM
LEISTON
Thorpeness
ALDEBURGH
ORFORD NESS

Key:

VP location

County Wildlife Sites

0 3 Kilometres

Scale: 1:80,000 @ A3

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EDF

Sizewell Seabird Report 2011-12

Figure 3.1d
Non statutory sites (designated in part for seabirds and wildfowl) within 3km of the Study Area

May 2012
28130-A411.mxd tugwc

amec

640000 645000 650000 655000

265000 260000 255000 250000

N

Minsmere Offshore

Minsmere (not offshore)

Sizewell Belts

Thorpeness and North Warren

Alde Estuary Sector 5

Alde Estuary Sector 9

1 2 3 4 5 6 7 8 9 10 11 12

SAXMUNDHAM LEISTON THORPENESS ALDEBURGH ORFORD NESS

Key:

- VP location
- WeBS Core Count Sector

0 3 Kilometres

Scale: 1:75,000 @ A3

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EDF

Sizewell Seabird Report 2011-12

Figure 3.2
WeBS Core Count Sectors within or adjacent to the Study Area

May 2012
28130-A236a.mxd tugwc

amec

650000

265000

260000

650000

Minsmere Haven

1
2
3
4
5
6

4 — 7
7 — 12
1 — 11 — 11
3 — 34 — 10
3 — 109 — 33

N

The Round House
Ash Wood
Ash Wood Cottages
Walk Barn
Dunwich Forest
Goose Hill
Sandlings Walk
Upper Abbey
Pit (dis)
Nursery Covert
Kenton Hills
Leiston Carr
Grimseys
Sizewell Belts
Reckham Pits Wood
Sewage Works
Sizewell Power Station
Leiston Common
Sandy Lane (Track)
Rookyard Wood
Broom Covert
LEISTON CP
Sizewell Crossing
Crown Farm
Halfway Cottages
Home Farm
Sizewell Common
Sandlings Walk
S C Path
Hall
Sizewell Cliff
Grimsey's Lane
Dismantled Railway
The Walks
Square Covert
Pit (dis)
Dower House
Ness House
Corporals Belts
Stone House
Tumulus
Shellpits Cottages
Suffolk Coast Path
ALDRINGHAM CUM THORPE CP
Aldringham Common
Margaret Wood
Alexander Wood
Thorpeness Common
Partables Farm
Recn Gd
Navigation Station
Thorpe Ness
The Ogilvie Almshouses
Church Farm
Bird's Farm
Ward Hill
Thorpeness Golf Club
Sheepwash Crossing
Hotel
Thorpeness
Sizewell
PC
Tower
46
47
48
49

Key:

- VP location
- 1 — Peak count of divers

Peak number of birds

- 1 - 5 birds
- 6 - 10 birds
- 11 - 20 birds
- 21 - 40 birds
- 40 + birds

0 — 1 Kilometres

Scale: 1:18,000 @ A3

H:\Projects\28130 Sizewell Ecology Studies (Sub File)\5 Design\Drawings\GIS\ArcGIS\mxd

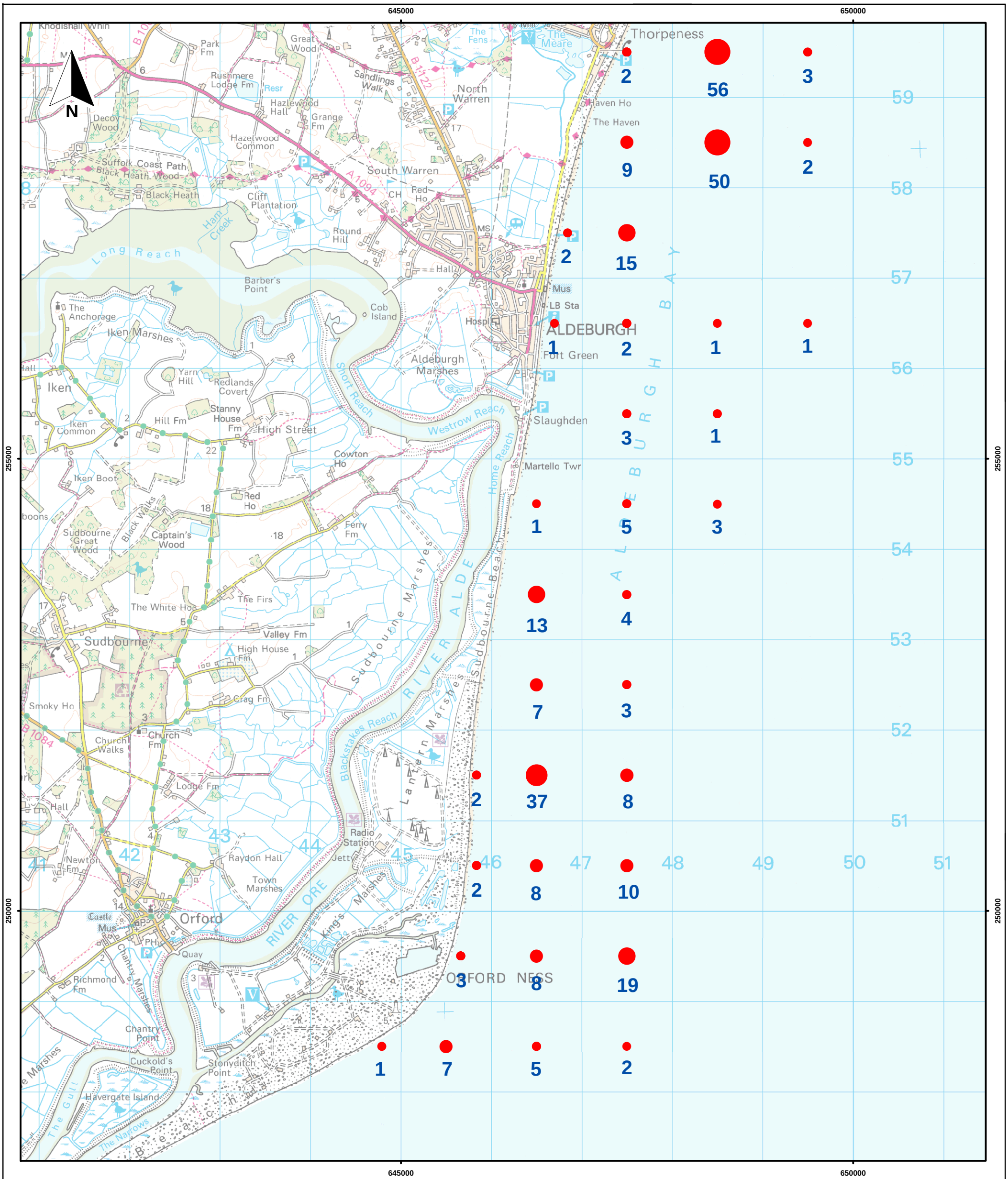
EDF

Sizewell Seabird Report 2011-12

Figure 3.3a
Peak numbers of foraging and loafing Red-throated Divers in each 1km square, March 2011 to April 2012

May 2012
28130-A237a.mxd tugwc

amec



Key:

- VP location
- 1 — Peak count of divers

Peak number of birds

- 1 - 5 birds
- 6 - 10 birds
- 11 - 20 birds
- 21 - 40 birds
- 40 + birds

0 1 2 Kilometres

Scale: 1:40,000 @ A3

H:\Projects\28130 Sizewell Ecology Studies (Sub File)\5 Design\Drawings\GIS\ArcGIS\mxd

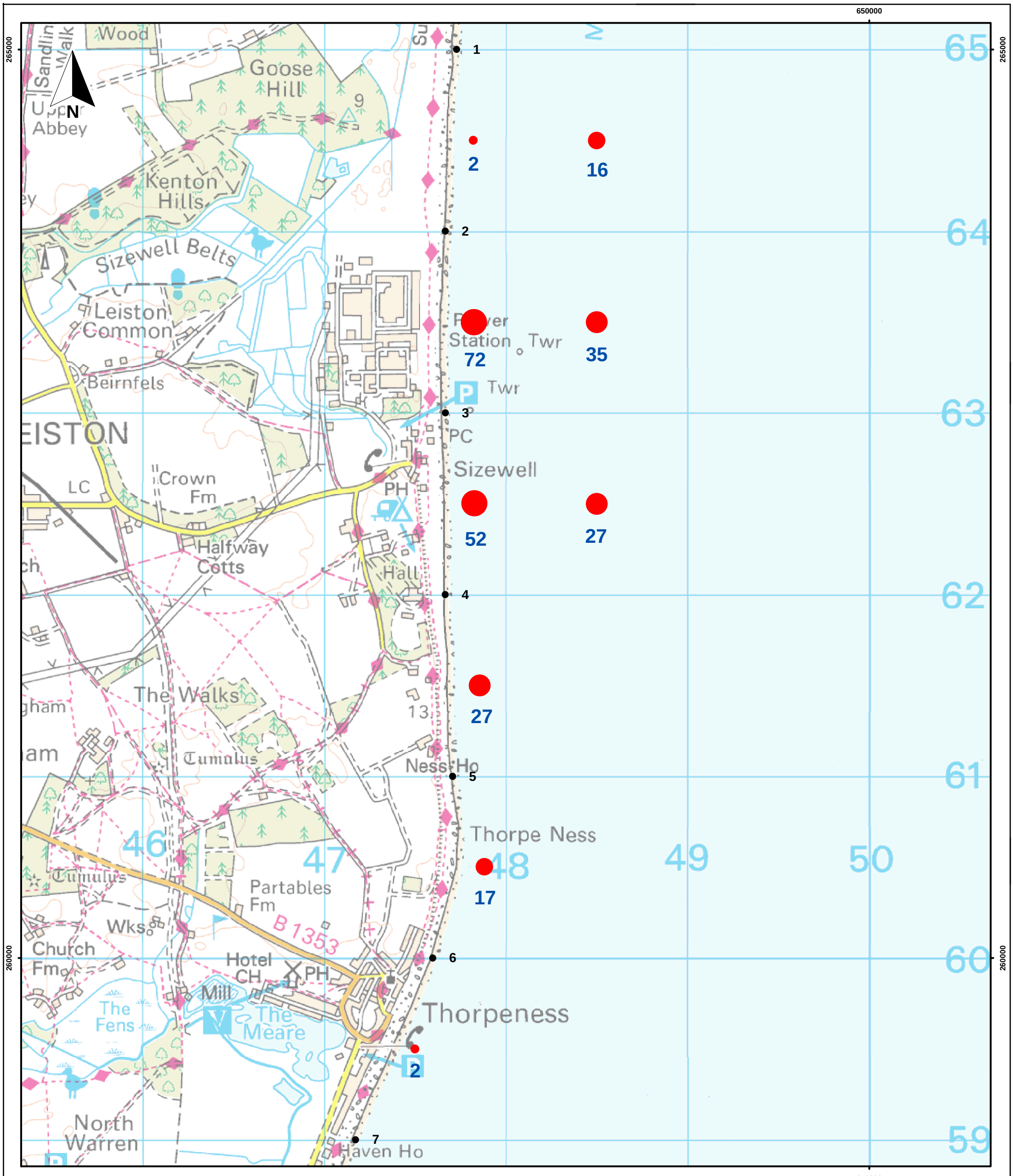
EDF

Sizewell Seabird Report 2011-12

Figure 3.3b
Peak numbers of foraging and loafing Red-throated Divers in each 1km square, March 2011 to April 2012

May 2012
28130-A238a.mxd tugwc

amec



Key:

- VP location
- 1 — Peak count of divers

Peak number of birds

- 1 - 5 birds
- 6 - 10 birds
- 11 - 20 birds
- 21 - 40 birds
- 41 + birds

0 1 Kilometres

Scale: 1:20,000 @ A3

H:\Projects\28130 Sizewell Ecology Studies (Sub File)\5 Design\Drawings\GIS\ArcGIS\mxd

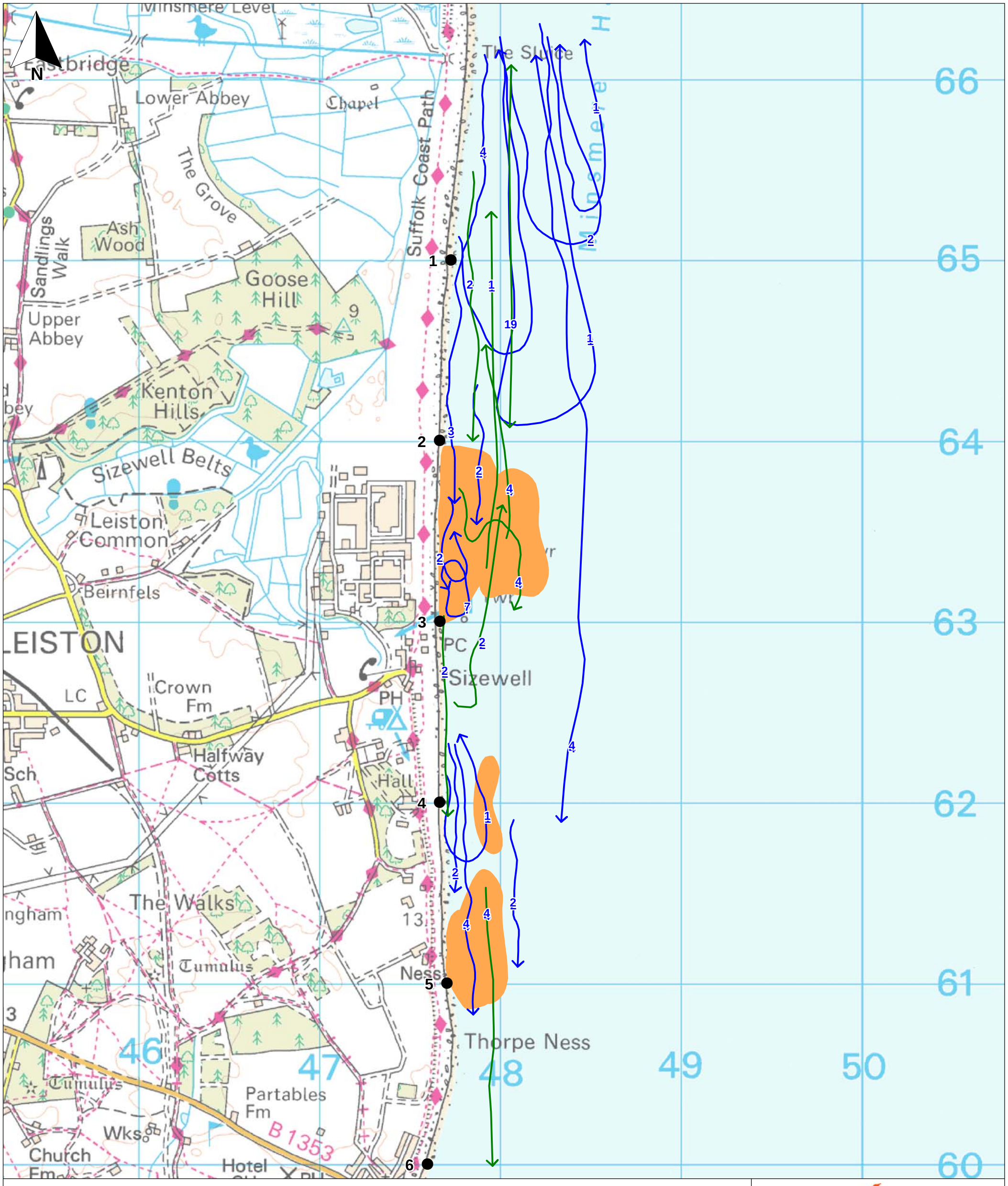
EDF

Sizewell Seabird Report 2011-12

Figure 3.4
Peak numbers of foraging and loafing Little Gulls in each 1km square, March 2011 to April 2012

May 2012
28130-A239a.mxd tugwc

amec



Key:

- Flight lines of foraging birds
- Flight lines of commuting birds
- Areas of concentrated foraging activity
- 1 ● Vantage point
- 1 Number of birds along flight line

0 km 1 km

Scale 1:20,000 @ A3

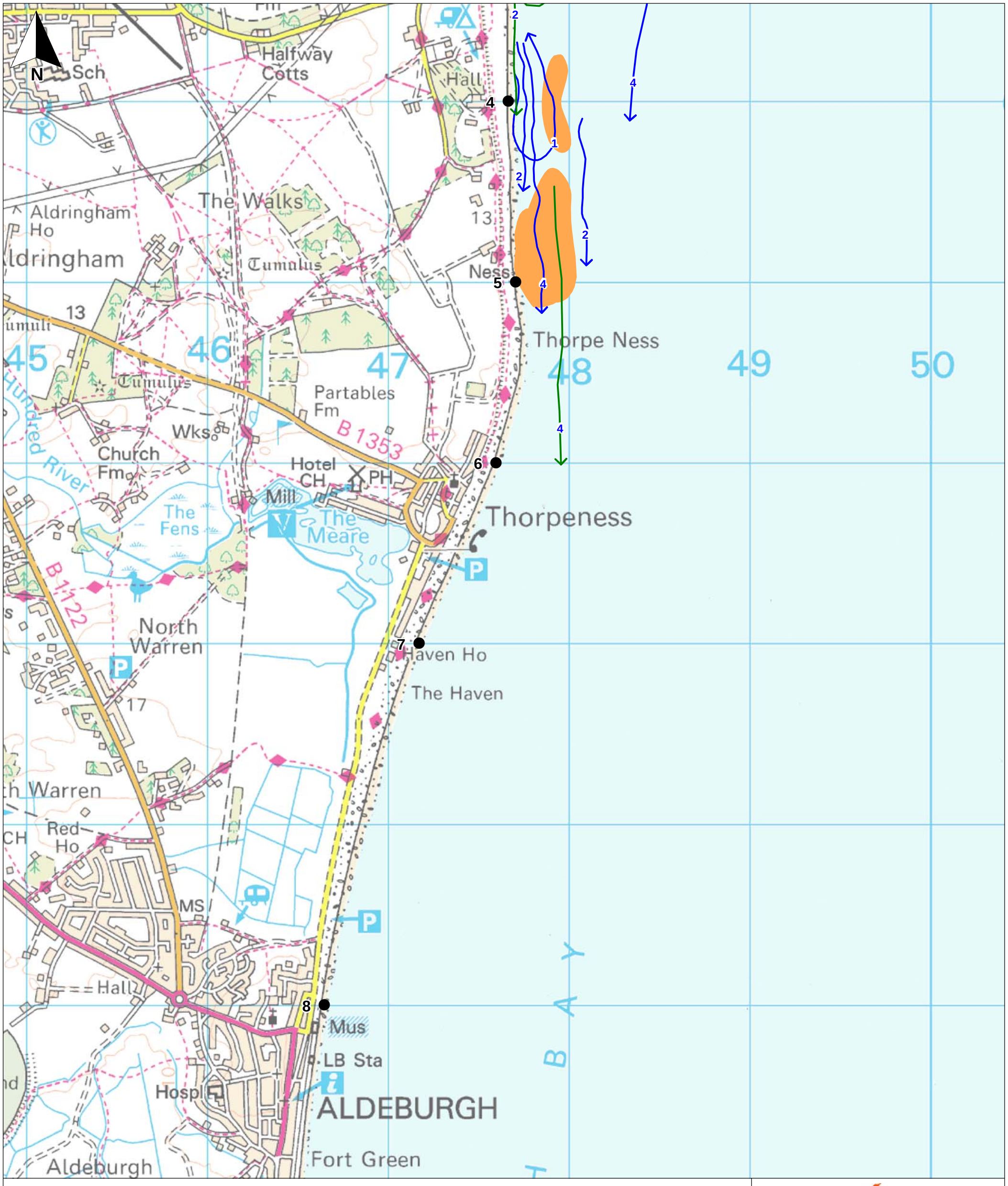
EDF

Sizewell Seabird Report 2011-12

Figure 3.5a
VP Surveys:
Flight Lines and Foraging Areas of Little Tern,
May to early August 2011

May 2012
28130-A186b.wor tugwc

amec



Key:

- Flight lines of foraging birds
- Flight lines of commuting birds
- Areas of concentrated foraging activity
- 1 ● Vantage point
- 1 Number of birds along flight line

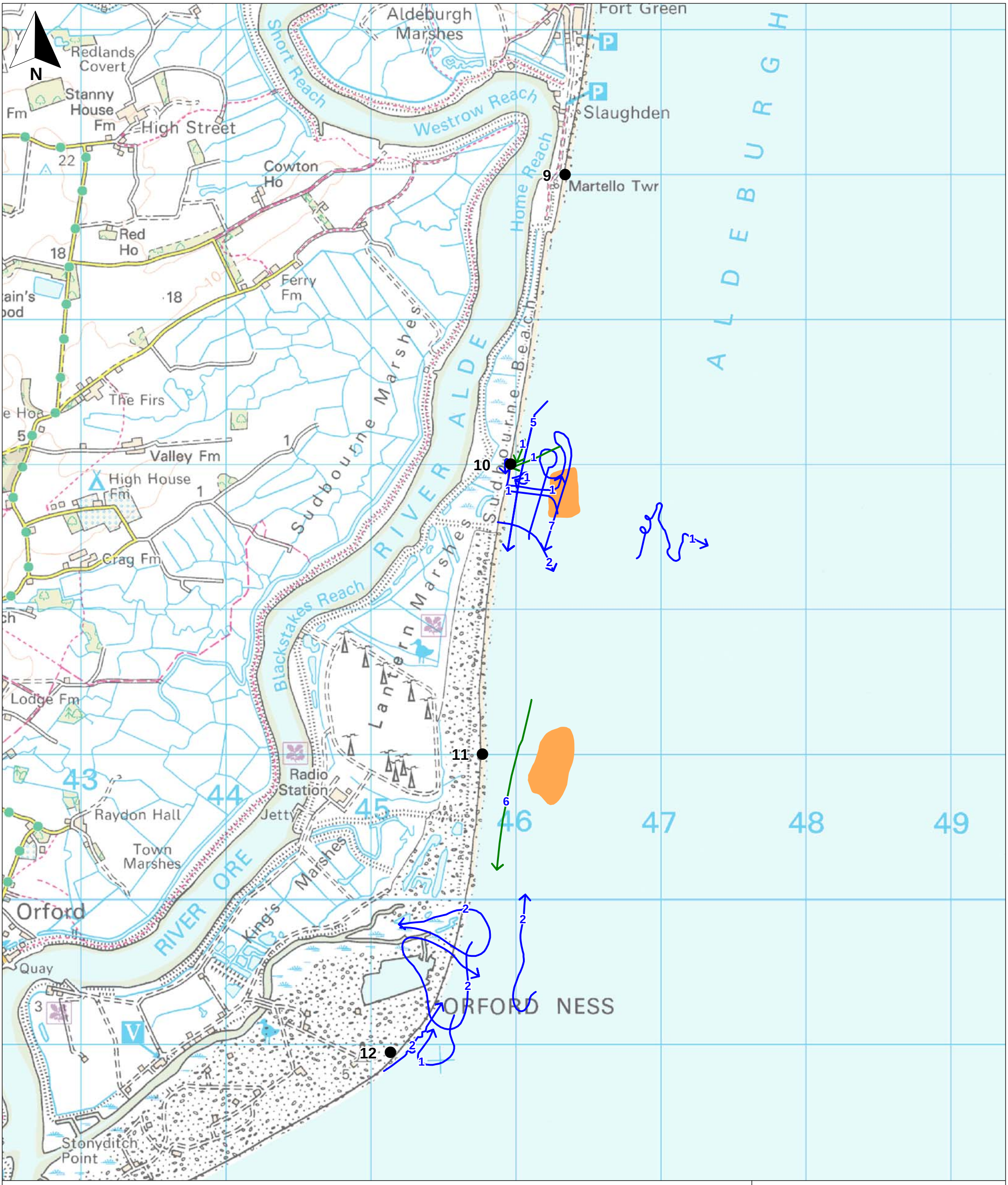
0 km 1 km

Scale 1:20,000 @ A3

Sizewell Seabird Report 2011-12

Figure 3.5b
VP Surveys:
Flight Lines and Foraging Areas of Little Tern,
March to September 2011

May 2012
28130-A187b.wor tugwc



Key:

- Flight lines of foraging birds
- Flight lines of commuting birds
- Areas of concentrated foraging activity
- 1 ● Vantage point
- 1 Number of birds along flight line

0 km 1 km

Scale 1:25,000 @ A3

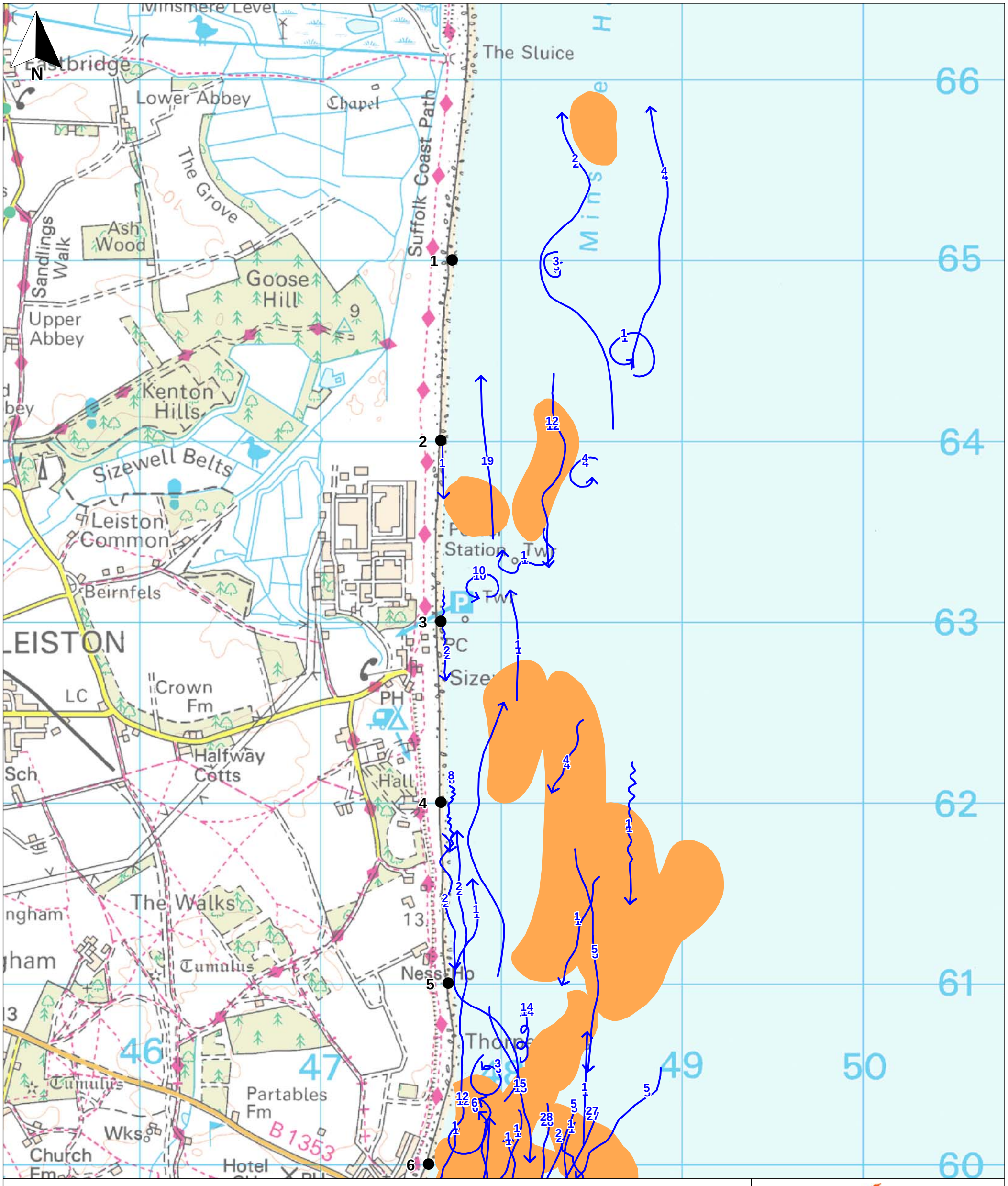
EDF

Sizewell Seabird Report 2011-12

Figure 3.5c
VP Surveys:
Flight Lines and Foraging Areas of Little Tern,
March to September 2011

May 2012
28130-A188b.wor tugwc

amec



Key:

- Flight lines of foraging birds
- Areas of concentrated foraging activity
- 1 ● Vantage point
- 1 Number of birds along flight line

0 km 1 km

Scale 1:20,000 @ A3

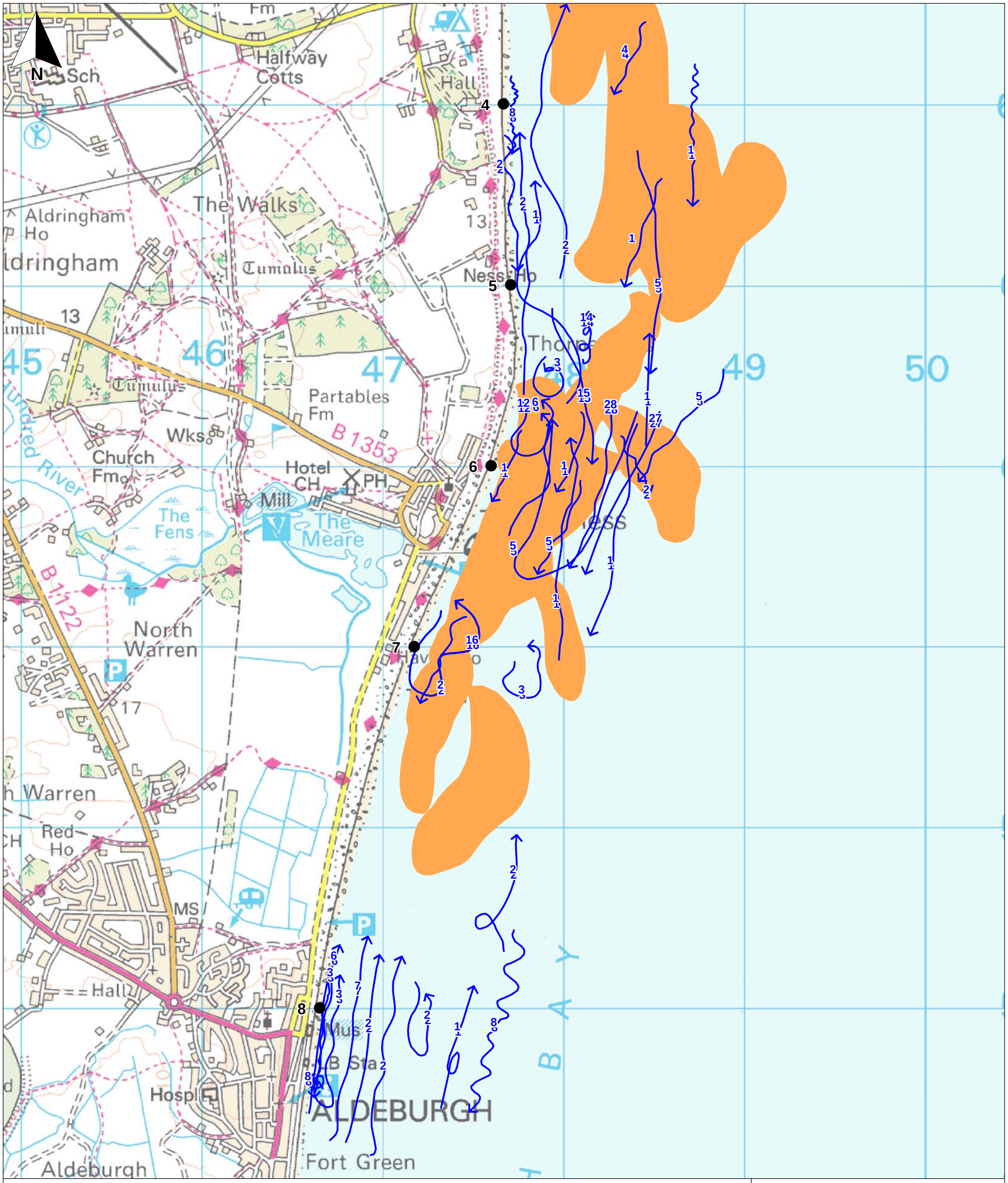
EDF

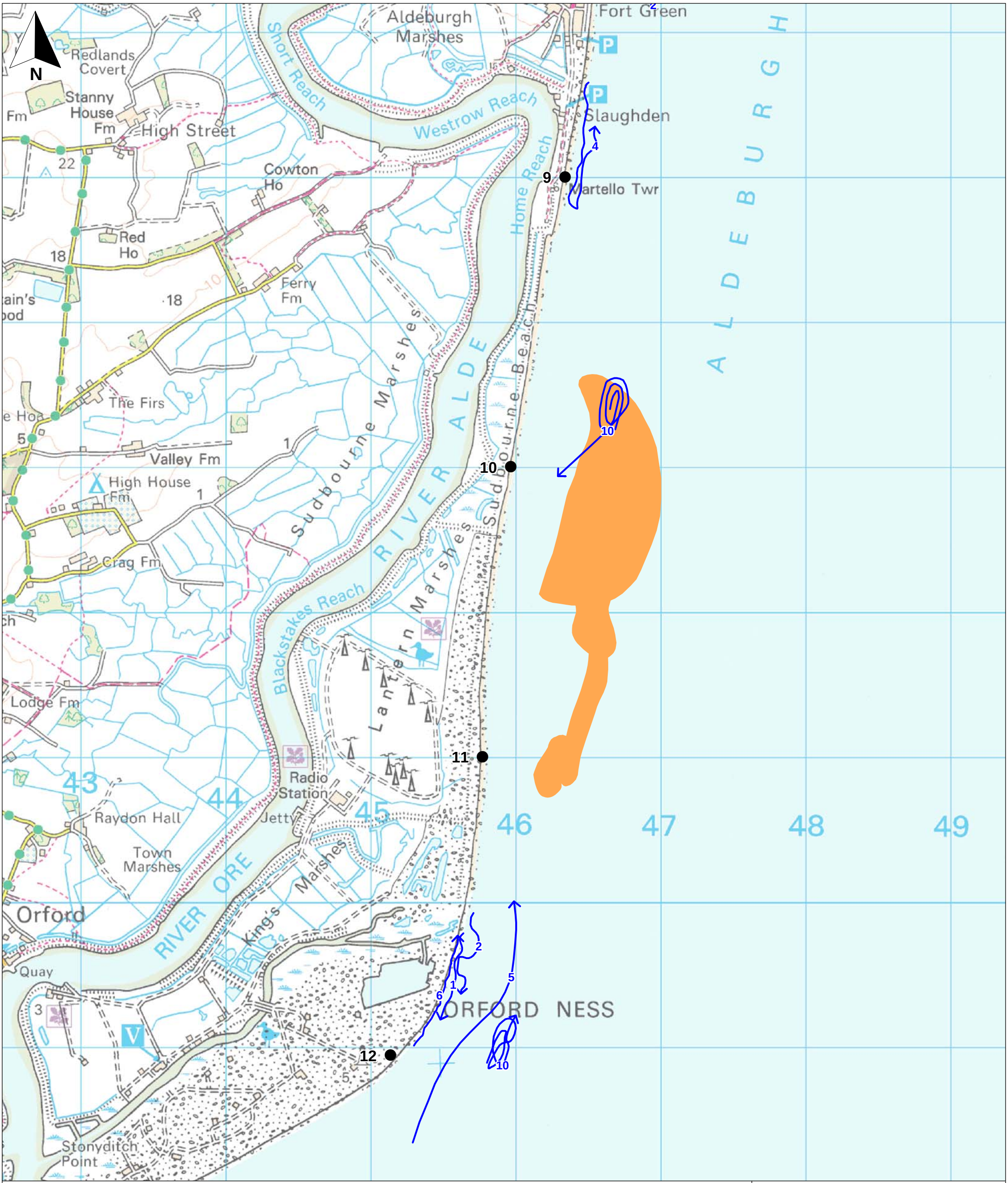
Sizewell Seabird Report 2011-12

Figure 3.6a
VP Surveys:
Flight Lines and Foraging Areas of Common Tern,
March to September 2011

May 2012
28130-A183b.wor tugwc

amec





Key:

- Flight lines of foraging birds
- Areas of concentrated foraging activity
- 1 ● Vantage point
- 1 Number of birds along flight line

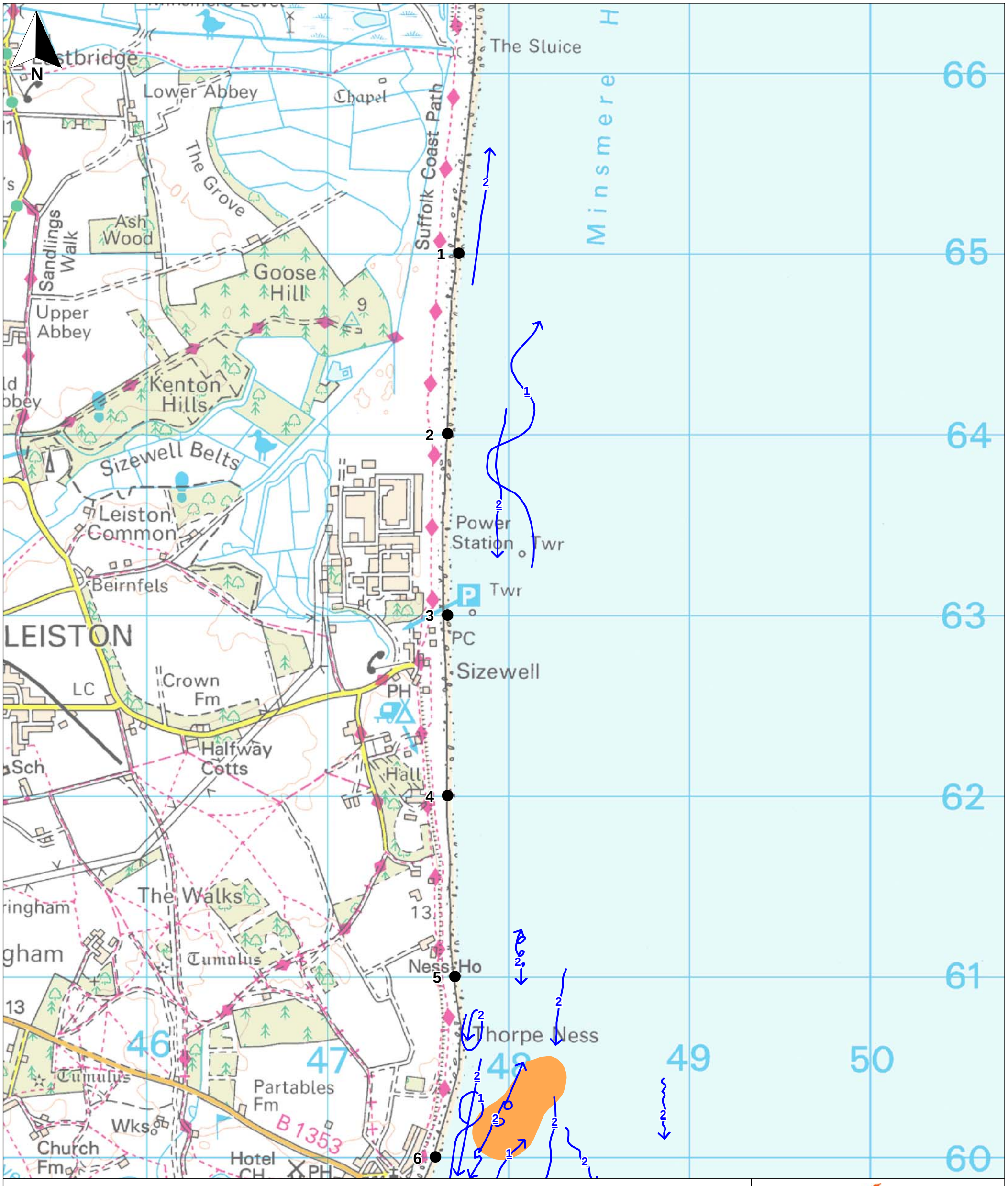
0 km 1 km

Scale 1:25,000 @ A3

Sizewell Seabird Report 2011-12

Figure 3.6c
VP Surveys:
Flight Lines and Foraging Areas of Common Tern,
March to September 2011

May 2012
28130-A185b.wor tugwc



Key:

- Flight lines of foraging birds
- Areas of concentrated foraging activity
- 1 ● Vantage point
- 1 Number of birds along flight line

0 km 1 km

Scale 1:20,000 @ A3

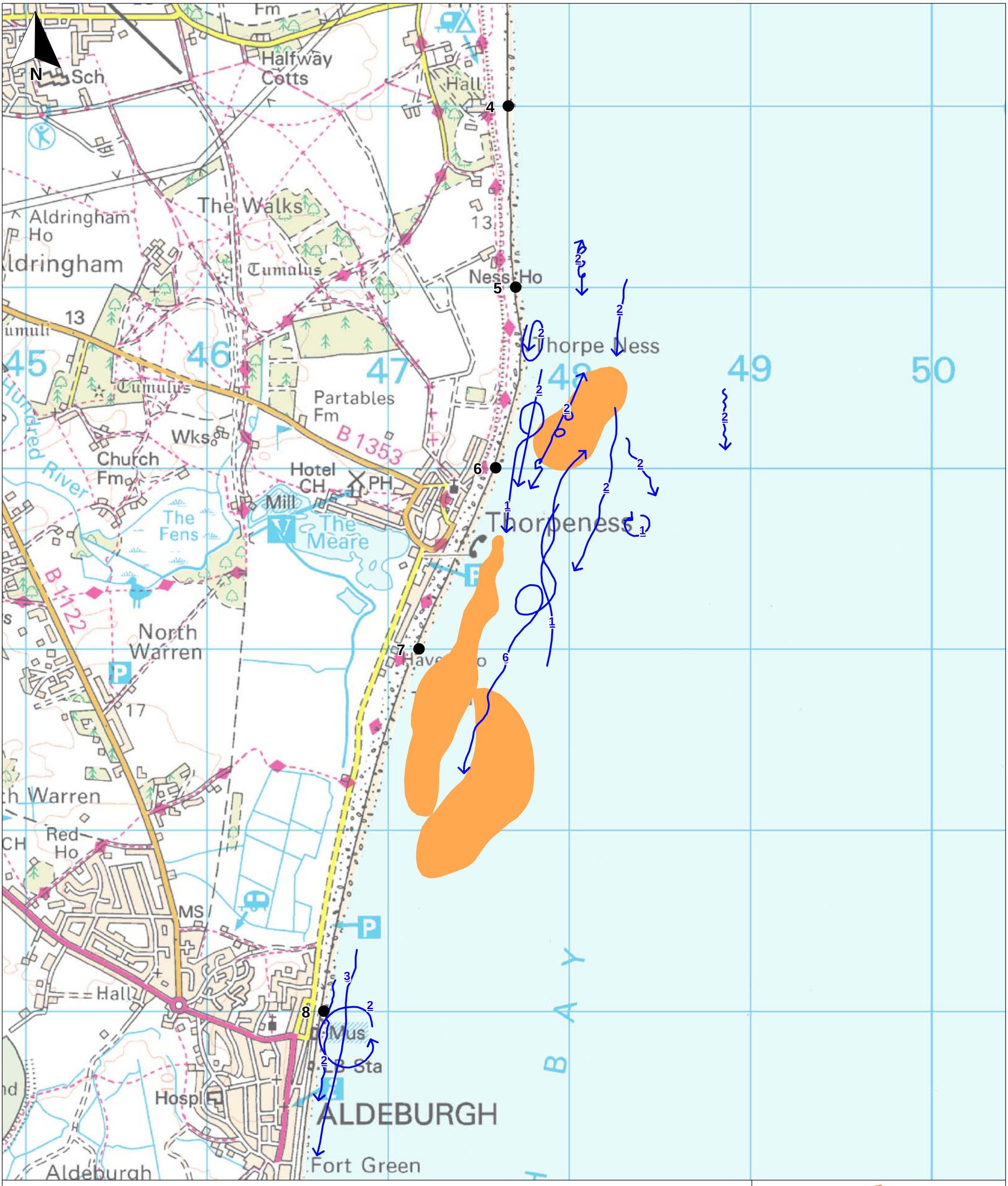
EDF

Sizewell Seabird Report 2011-12

Figure 3.7a
VP Surveys:
Flight Lines and Foraging Areas of Sandwich Tern,
March to September 2011

May 2012
28130-A189b.wor tugwc

amec



Key:

- Flight lines of foraging birds
- Areas of concentrated foraging activity
- 1 ● Vantage point
- 1 Number of birds along flight line

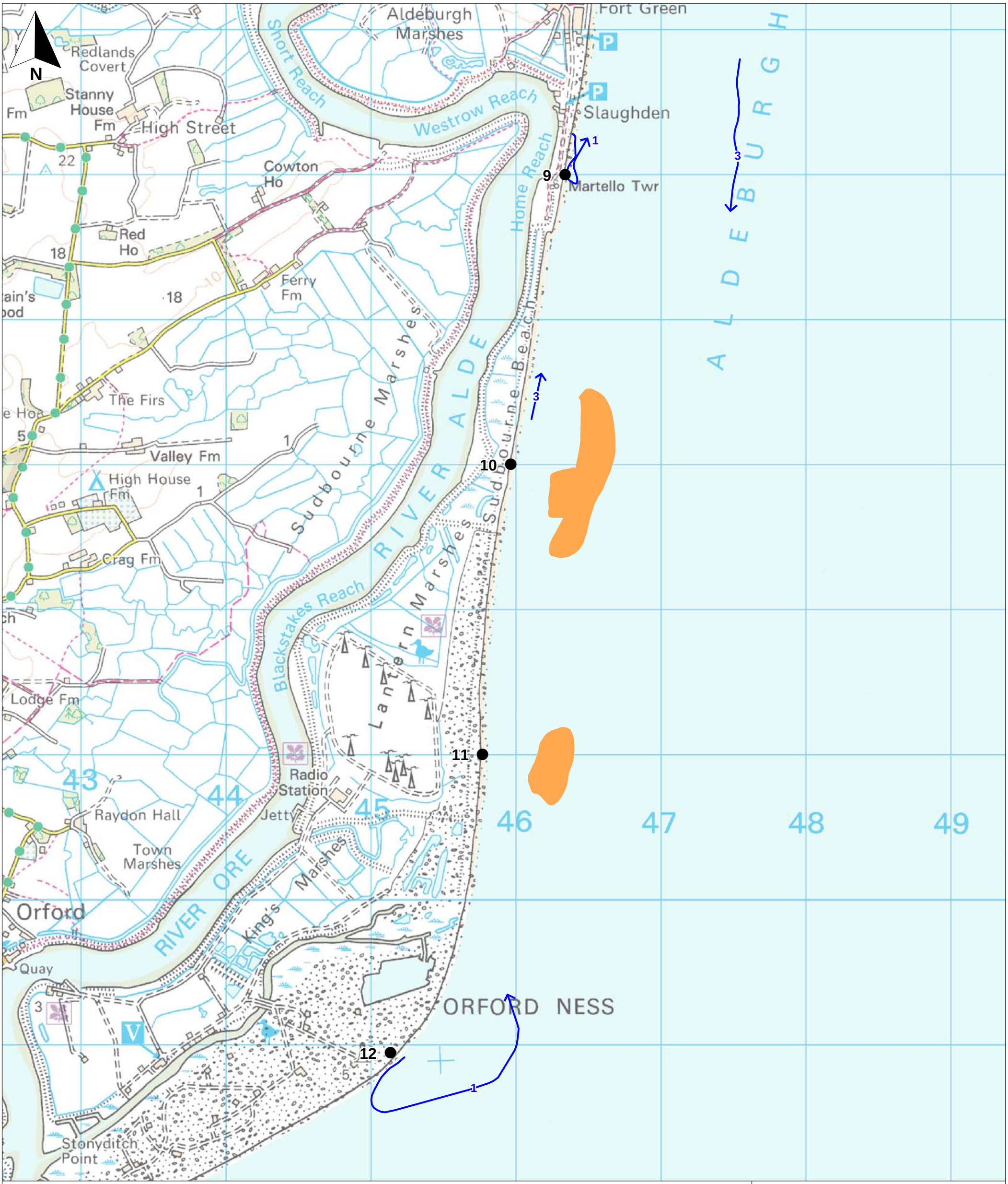
0 km 1 km

Scale 1:20,000 @ A3

Sizewell Seabird Report 2011-12

Figure 3.7b
VP Surveys:
Flight Lines and Foraging Areas of Sandwich Tern,
March to September 2011

May 2012
28130-A190b.wor tugwc



Key:

- Flight lines of foraging birds
- Areas of concentrated foraging activity
- 1 ● Vantage point
- 1 Number of birds along flight line

0 km 1 km

Scale 1:25,000 @ A3

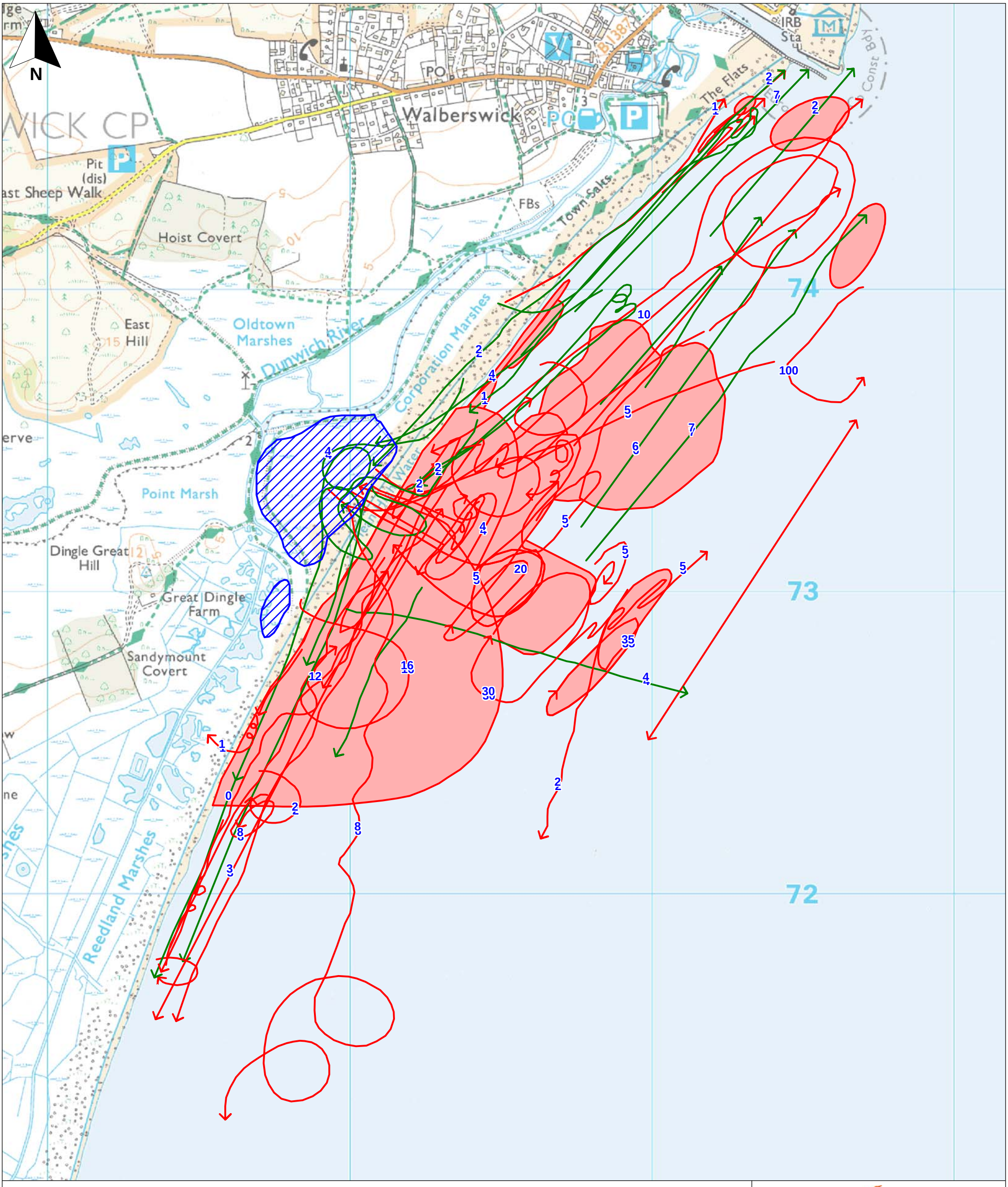
EDF

Sizewell Seabird Report 2011-12

Figure 3.7c
VP Surveys:
Flight Lines and Foraging Areas of Sandwich Tern,
March to September 2011

May 2012
28130-A191b.wor tugwc

amec



Key:

- Flight lines of foraging birds
- Flight lines of commuting birds
- Areas of concentrated foraging activity
- Main locations of nesting little terns

0 m — 500 m

Scale 1:12,000 @ A3

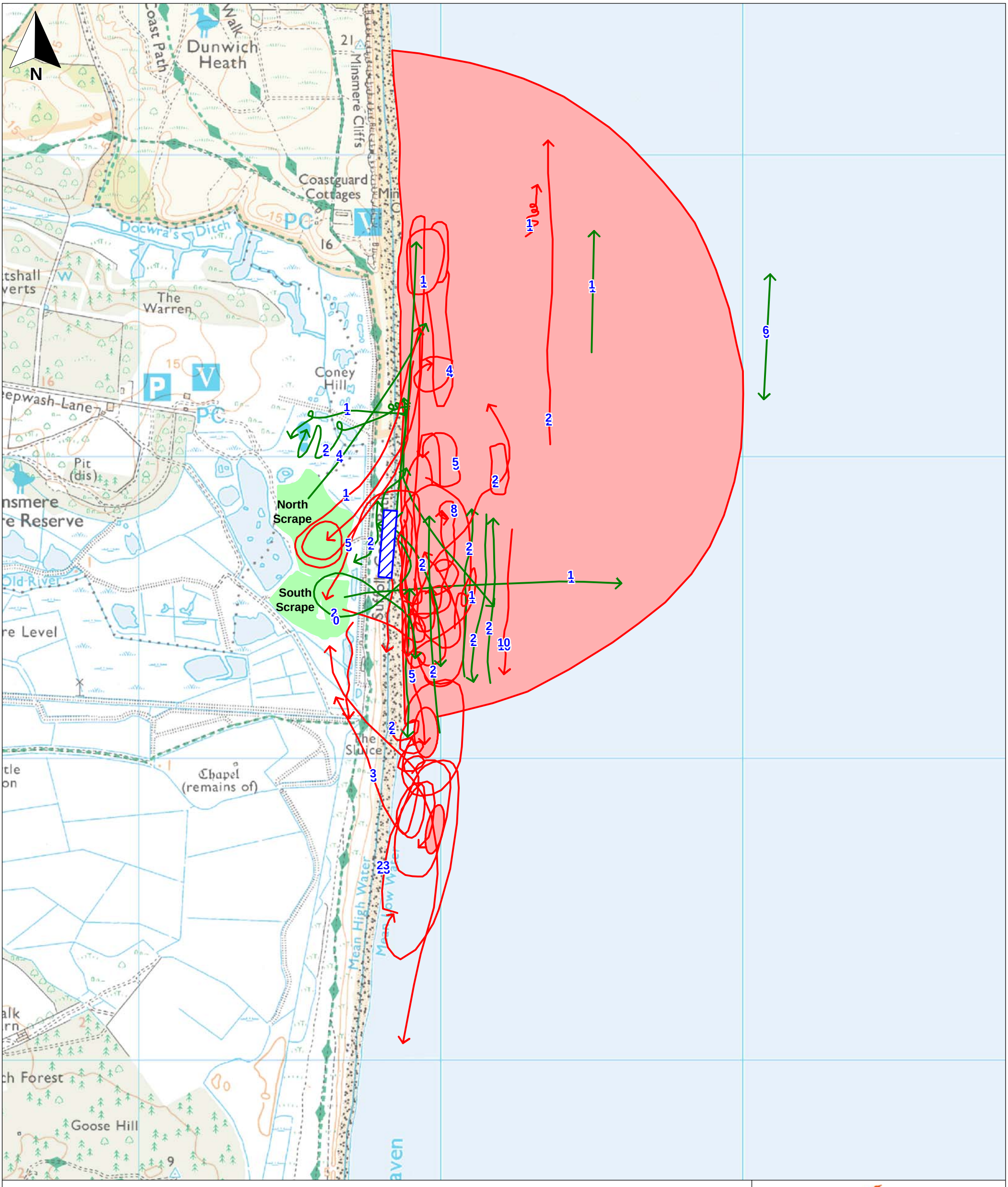
EDF

Sizewell Seabird Report 2011-12

Figure 3.8a
Colony Surveys:
Flight Lines and Foraging Areas of Little Tern at Dingle
May to early August 2011

May 2012
28130-A192b.wor tugwc

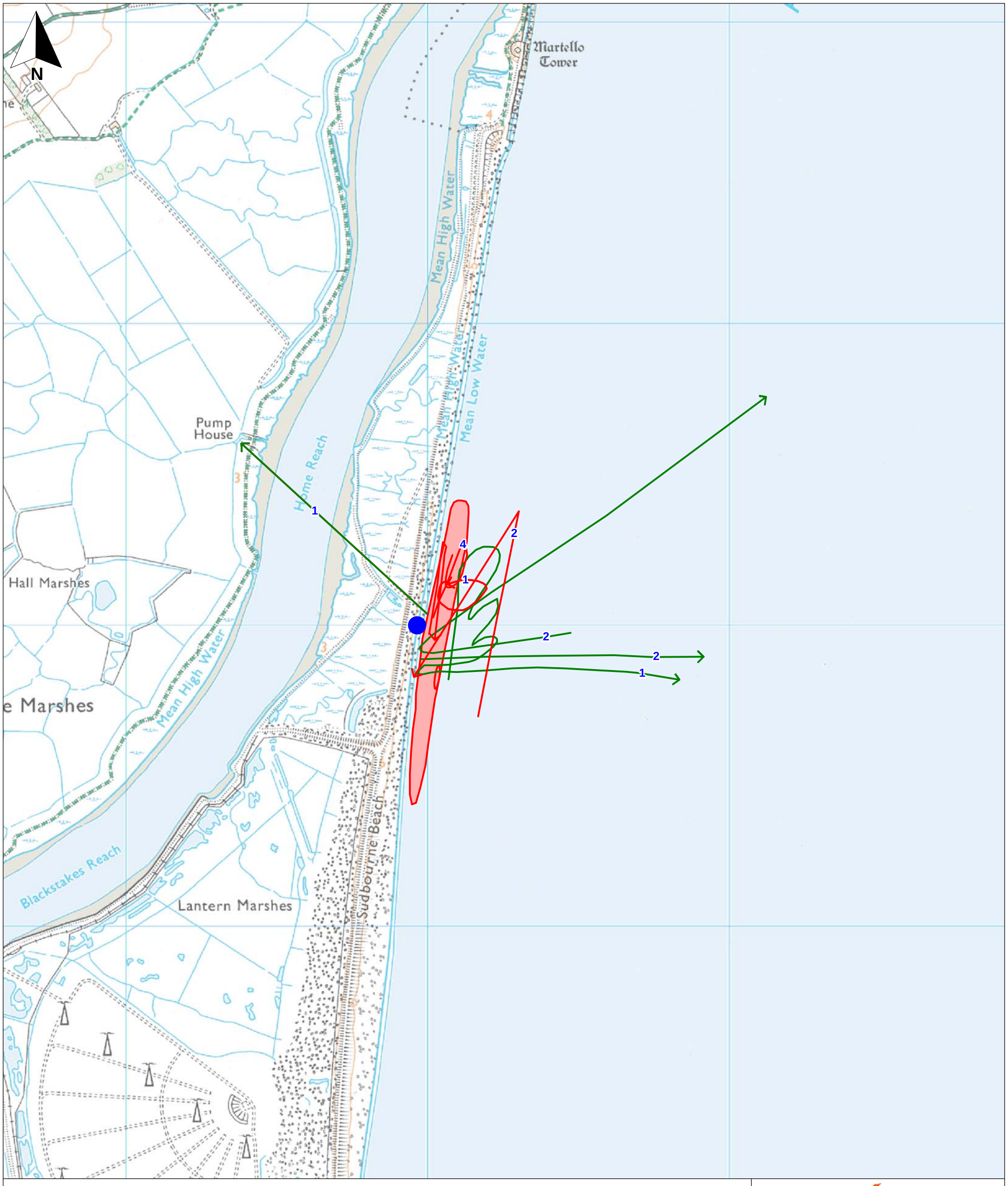
amec



Sizewell Seabird Report 2011-12

Figure 3.8b
Colony Surveys:
Flight Lines and Foraging Areas of Little Tern at Minsmere
May to early August 2011

May 2012
28130-A193b.wor tugwc



Key:

- Flight lines of foraging birds
- Flight lines of commuting birds
- Areas of concentrated foraging activity
- Colony locations

0 m — 500 m

Scale 1:12,000 @ A3

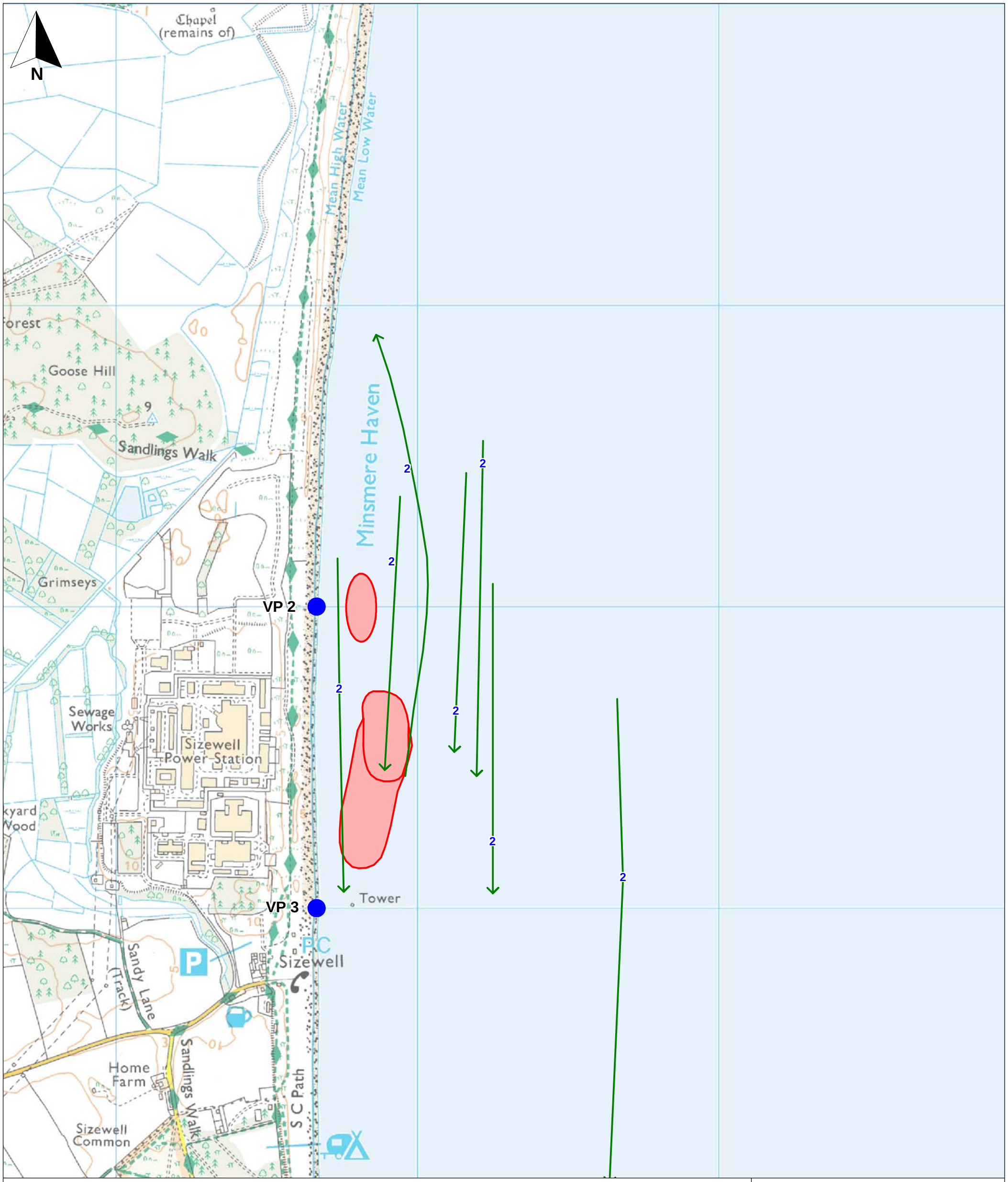
EDF

Sizewell Seabird Report 2011-12

Figure 3.8c
Colony Surveys:
Flight Lines and Foraging Areas of Little Tern at Slaughden
May to early August 2011

May 2012
28130-A194b.wor tugwc

amec



Key:

- Flight lines of commuting birds
- Areas of concentrated foraging activity
- Viewpoints

0 m — 500 m

Scale 1:12,000 @ A3

Sizewell Seabird Report 2011-12

Figure 3.8d
Colony Surveys:
Flight Lines and Foraging Areas of Little Tern at Viewpoint 2 and 3
May to early August 2011

May 2012
28130-A195b.wor tugwc

4. Discussion

Results from the VP surveys undertaken between Sizewell and Orford Ness (the study area) from March 2011 to April 2012 indicate that the inshore waters are used by a limited range of seabird and wildfowl species, primarily terns and gulls. There was generally a low level of bird movement (migration) during the daylight hours along the coast and inshore waters, usually involving small numbers of seabirds and wildfowl.

Results from the little tern colony surveys indicate that much of the foraging activity by this species is concentrated close offshore adjacent to the colony location and during 2011 thre was a low level use of the study area (taking into account that colonies were not established at Minsmere and Slaughden in that year.

4.1 SPA and Ramsar Site Designated Species

Eight species which appear as designated features of SPAs and Ramsar Sites (within 20km of the study area) were recorded foraging and/or loafing on the waters within the study area: wigeon, teal, red-throated diver, black-headed gull, herring gull, lesser black-backed gull, little tern and Sandwich tern. Use of the study area by these species is discussed in further detail below:

Red-throated Diver

The Outer Thames Estuary SPA (which includes the study area) is designated for its internationally important wintering population of red-throated diver. The European (excluding Russian) breeding population of red-throated divers is estimated at 7,158 to 10,502 pairs, while the Russian population is estimated at 50,000 to 100,000 pairs (Hagemeijer & Blair, 1997)). The vast majority of the European population winters in the southern North Sea and the offshore area from the Wadden Sea, but also in the Baltic. The divers wintering in the Baltic Sea (up to 26,000 birds) are thought likely to be derived from the Russian breeding population (Hemmingsson, 2002). The current estimated wintering population of red-throated divers in the UK is 17,000 birds, with the Greater Thames Estuary holding 44% (O'Brien *et al.*, 2008)[1]. Recent aerial survey work suggests that the Greater Thames wintering population may be as high as 15,000 in some years, although there is likely to be considerable interchange of birds between this area and the Wadden Sea wintering grounds. These birds largely originate from Scottish and Scandinavian breeding populations along with some from as far away as Greenland (Hemmingsson, 2002). In addition, in the south-eastern North Sea area, up to 36,000 red-throated divers winter off the Wadden Sea (Laursen & Essink, 2005).

The peak count of 858 red-throated divers recorded in the study area in January 2012 represents 13.3% of the qualifying population for the Outer Thames Estuary SPA (of 6,466 birds) and exceeds the threshold of national importance for a site (170 birds, Holt *et al.*, 2011). These birds were seen undertaking short distance flights offshore from VPs 10-12, with individuals seen from close inshore (less than 1km from the shoreline) to beyond the horizon (a distance of approximately 5km assuming an observer eye height of roughly 1.7m above the level of the sea). Of these, 45% of birds were seen within 1km of the shoreline, with a further 10% present in each 1km distance band between 1-5km (e.g. 1-2km, 2-3km, etc). It is likely that most of

these birds took flight in order to reposition themselves due to tidal water flow and that they were feeding on the sea in the general area where they were seen to take flight.

Table 4.1 shows the monthly peak and total counts of red-throated divers recorded off the Suffolk Coast[6] from 2004 to 2010.

Table 4.1 Peak counts of Red-throated Diver along the Suffolk Coast

Month	2010	2009	2008	2007	2006	2005	2004
Jan	932	2,001	2,726	862	1,764	1,393	4,710
Feb	849	257	775	180	633	367	1,029
Mar	1,528	665	640	100	101	116	(808)
Apr	35	606	189	109	n/a	n/a	(30)
May	2 (8)	(8)	1 (6)	(5)	2 (10)	1 (1)	2 (2)
Jun	0	1 (1)	1 (5)	1 (1)	2 (2)	0	1 (2)
Jul	1 (1)	0	1 (5)	0	1 (1)	0	1 (1)
Aug	1 (4)	n/a	1 (1)	2 (4)	1 (1)	1 (1)	1 (2)
Sep	15	n/a	33	n/a	2 (5)	n/a	(104)
Oct	26	117	18	n/a	8 (27)	n/a	(152)
Nov	291	66	868	336	828	153	2,141
Dec	2,170	2,703	3,294	700	1,051	1,320	1,559

The offshore waters between Orford Ness and Lowestoft are known to support large numbers of wintering red-throated divers. The highest counts of birds are consistently recorded from Thorpeness, although this may be due in part to greater observer effort at this location (Thurlow, 2010). Red-throated divers can be seen offshore from Suffolk in all months of the year, although the peak period for wintering birds is from late November to February (Piotrowski, 2003). The first wintering birds occur in the area in October, with some not departing until mid-April. The picture is complicated by the occurrence of migrating birds offshore, with spring migration occurring from March to early May and autumn migration from August through to October and November. Numbers occurring offshore of Suffolk during winter appear to vary greatly between years and it is likely that this is due to the abundance and distribution of sprat shoals in the area (Piotrowski, 2003). The winter red-throated diver population off the Suffolk coast was estimated at 1,500-3,000 birds during the 1990s (Piotrowski, 2003). Large numbers of divers were seen in 2004, followed by much smaller numbers in 2005-07 after which near-2004 levels were reached in 2008 and 2009.

[6] The figures have been obtained from Suffolk Birds 2004-2010. The figures not in parenthesis show the peak daily count that month from any one location. The figures in parenthesis show the total number of divers recorded that month - these figures are shown for the period outside the main diver occurrence months of Jan-Apr and Oct-Dec or where no daily peak count was available.

The movements of divers recorded during the AMEC VP surveys in 2011-12 are likely to be due to the offshore flood tidal stream, which is virtually due south, and the ebb flood stream due north (Pye & Blott, 2006). Flood tidal velocities are greatest five hours before high tide and on the ebb tide, one hour after high tide (Pye & Blott, 2006). Tidal conditions may affect divers in two ways: firstly, birds may be subjected to tidal drift and secondly, tidal conditions may concentrate prey items, especially along the offshore sandbanks (Thurlow, 2010). Red-throated divers, (particularly loafing birds) are likely to be drifted by currents and wind and therefore it is reasonable to assume that after a period of southerly drift (on a flood tide) divers will compensate by flying north, and conversely compensate after drifting north on an ebb tide by flying south.

Thurlow (2010) found that the peak monthly counts from Thorpeness during winters 2000/01 to 2007/08 were consistently higher than those from a study undertaken at Covehithe (on the Suffolk coast, approx. 18-20km to the north of Sizewell) in 1994-96 (Dare, 1998) and from Kessingland (approx. 22-25km north of Sizewell) which, if anything, is watched more intensively than at Thorpeness. This indicates that the bulk of wintering divers in Suffolk generally occur in the southern part of Sole Bay in the Minsmere-Thorpeness area (Thurlow, 2010). Results from aerial surveys undertaken in 2004-05 (DTI, 2006) also seemed to show a higher density of divers occurring south from Thorpeness to Orford Ness than to the north of Thorpeness. Much greater numbers of divers are likely to feed and rest on the sea further offshore, well beyond that visible from the shoreline, (i.e. 5+km), Brown & Grice (2005). Aerial surveys of the Outer Thames have found divers up to 40km offshore and this species generally occurs in waters less than 30m deep, over sandy substrate (Brown & Grice 2005, Laursen & Essink 2005).

Results from the AMEC surveys indicate that the study area is likely to support an important proportion of the UK and Outer Thames Estuary SPA wintering populations of red-throated diver. However, it is acknowledged that counting divers from the shoreline is difficult, and that very calm sea conditions are needed to detect divers on the sea, although the large flocks of divers seen alighting from the sea during the AMEC surveys provide an indication of the numbers using the area at the time. Given that sea conditions during the surveys undertaken in winter 2011-12 were rarely calm, it is likely that the numbers of divers recorded represent an underestimate of the true numbers present.

Black-headed Gull

Black-headed gull is described as a very common resident, winter visitor and passage migrant in Suffolk (Mason [ed], 2011). Black-headed gull appears in the breeding seabird assemblage qualification for the Alde-Ore Estuary SPA and nationally important numbers (2,558 pairs) breed in the Minsmere-Walberswick Ramsar site. A total of 1,506 pairs (1,115 pairs in 2009) nested on Minsmere RSPB nature reserve in 2010, and 32-37 pairs bred on Orford Ness in that year (Mason [ed], 2011). Elsewhere, 2,000 pairs bred on Walberswick National Nature Reserve in 2007 (Mason [ed], 2009). The breeding population of black-headed gull in Suffolk ranged between 2,153 and 3,221 pairs in the 1990s (Piotrowski, 2003), and a total of 2,767 pairs were recorded in the county during the national seabird census (1998-2002).

During the VP surveys, a steady flow of black-headed gulls was recorded flying between the Sizewell B outfall and Minsmere from May to July 2011. Congregations of up to 500 black-headed gull were seen feeding around the outfall during the breeding season. Once the gulls had departed from the Minsmere colony at the end of July, very few birds were seen around the outfall, until numbers started to gradually increase in September as winter visitors began to

return to the area. Numbers of black-headed gulls remained relatively low (in comparison to the breeding season) through the winter. The evidence from the VP surveys indicates that the outfall at Sizewell provides an important food resource to black-headed gulls breeding at nearby Minsmere. However, it is likely that many birds from local breeding colonies also feed elsewhere, such as on rubbish tips and in recently ploughed arable farmland, and in the many pig farms in the area, such as those at Leiston and Blythburgh.

Herring Gull

Herring gull is described as a very common resident, winter visitor and passage migrant in Suffolk (Mason [ed], 2011) and this species appears in the breeding seabird assemblage qualification for the Alde-Ore Estuary SPA. Herring gulls breed with lesser black-backed gulls in a large colony on Lantern Marsh at Orford Ness (within the Alde-Ore SPA and adjacent to VPs 10-11), where a total of 150 pairs of the former species were counted in 2009 (Mason [ed], 2010). Numbers at this colony have declined dramatically in the last ten years, primarily due to fox predation (Mason [ed], 2010), with a peak of 6,750 pairs of herring gull recorded in 2000 (JNCC Seabird Monitoring Programme data). Away from this colony within Suffolk, 125 pairs bred on nearby Havergate Island in 2001 and increasing numbers of herring gulls are breeding in coastal urban areas, including 250 pairs in Lowestoft in 2000, and 71 pairs in Ipswich and 100 pairs at Felixstowe Docks in 2001 (JNCC Seabird Monitoring Programme data).

During the VP surveys undertaken in the breeding season period (from March to August 2011), relatively small numbers of herring gulls (usually 10-30 birds) were recorded loafing and foraging around Sizewell B outfall, and resting on the nearby rigs. However the number of herring gulls greatly increased at the outfall during winter when counts in excess of 200 birds were recorded.

The numbers of herring gull present at the outfall in winter is likely to represent an important proportion (i.e. more than 1%) of the total number present in Suffolk. Other congregations of herring gull feed on pig fields in the area, and rest on the Blyth Estuary.

Great Black-backed Gull

Great black-backed gull is described as a common winter visitor and passage migrant in Suffolk with a few staying through the summer (Piotrowski, 2003). This species mainly occurs at coastal and estuarine sites in Suffolk (primarily from late September to March) although a few birds now spend the winter at inland refuse tips (Piotrowski, 2003). During the 1993 Winter Gull Roost Census, a total of 523 great black-backed gulls were recorded in Suffolk of which most (75%) were recorded in Lowestoft Harbour. Estuaries are important feeding sites, with 150-500 birds sometimes present on the Alde-Ore complex. Results from the VP surveys indicate that the flocks of birds recorded on the beach at Aldeburgh and those feeding at the outfall represent an important proportion (i.e. more than 1%) of the likely Suffolk population in winter. These birds alternate between resting on the rigs and adjacent beach, and foraging at the outfall and behind fishing boats.

Lesser Black-backed Gull

Lesser black-backed gull is described as a very common summer visitor and passage migrant in Suffolk, with increasing numbers also over-wintering in the county (Mason [ed], 2011). A breeding population of European importance (of 14,070 pairs) appears as a designated feature of the Alde-Ore Estuary SPA. Nationally important numbers of this species (905 individuals) also appear in the description for the Minsmere-Walberswick Ramsar site. Lantern Marshes on

Orford Ness supports a very large breeding colony of lesser black-backed gull, with 23,000 pairs counted there in 2000 (JNCC, Seabird Monitoring Programme). However, numbers at this colony have declined dramatically since the turn of the century (primarily due to fox predation), with only 550 pairs reported there in 2010 (Mason [ed], 2011). Elsewhere, increasing numbers of birds are nesting in coastal urban locations, such as Felixstowe Docks (300 pairs in 2001), Ipswich (99 pairs in 2001) and Lowestoft (750 pairs in 2000).

During the VP surveys, small numbers of birds (generally 1-5 birds) were recorded loafing around the Sizewell B outfall and on the nearby rigs. Elsewhere within the study area, groups of up to 50 lesser black-backed gulls were seen resting on the beach adjacent to the Lantern Marshes gull colony (adjacent to VPs 10-11) or at nearby Orford Ness lighthouse (adjacent to VP12), although no large congregations of birds were seen on the sea. Numbers of lesser black-backed gulls declined in the study area in the autumn and remained at a low level from November 2011 to March 2012.

Results from the VP surveys provide no evidence to indicate that the outfall or other areas of inshore waters within the study area provide important resting or foraging areas for lesser black-backed gulls. It is likely that many birds breeding at local colonies feed widely along the coast and in pig fields, such as those at Blythburgh.

Little Tern

The little tern is described as being a common summer visitor and passage migrant in Suffolk (Mason [ed], 2011). Little terns breed on sand and shingle beaches in a number of colonies located along the Suffolk coast, including on Minsmere beach and between Dunwich and Walberswick. Both of these colonies are located on the upper reaches of shingle ridges, backed by reedbeds and lagoons that comprise the Minsmere and Dingle RSPB nature reserves respectively. However, these sites are not used every year and there is a considerable interchange of birds between colonies.

The Minsmere-Walberswick, Alde-Ore Estuary and Benacre to Easton Bavents SPAs all qualify under Article 4.1 of the Birds Directive by supporting little tern populations of European importance during the breeding season. The Minsmere and Dingle colonies are located within the Minsmere-Walberswick SPA. Within the Alde-Ore Estuary SPA, little terns have bred sporadically at Slaughden beach and on Havergate Island in recent years. There are also further colonies located along the Suffolk coast to the north of the Minsmere-Walberswick SPA and south of the Alde-Ore Estuary SPA. **Table 4.2** details the number of breeding little tern at colonies in Suffolk since 2000.

Table 4.2 Number of Breeding Pairs of Little Tern in Suffolk[7]

Site	Distance from Study Area	Nearest SPA	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000
Havergate Island	Adjacent	Alde-Ore (within)					3	0		0	0	1	3
Orford	Adjacent	Alde-Ore (within)					0	2					
Orford Ness	Adjacent	Alde-Ore (within)				?	?		0		31	48	85
Shingle Street	Adjacent	Alde-Ore (within)					0	?		6			
Slaughden	8km south	Alde-Ore (within)	0	0	0	5		7		28			
Kessingland	21-23km north	Benacre-Easton Bavents (0-1km north)	100	0	0	0	0	?		0	10		
Benacre	20km north	Benacre-Easton Bavents (within)	30	0	?	?	40	9	37	7	80	20	1
Covehithe	18km north	Benacre-Easton Bavents (within)					0	4		0	2	2	0
Easton Bavents	16km north	Benacre-Easton Bavents (within)								0	0	0	0
Bawdsey/Deben	14-17km south	Deben (0-3km north)					0	4		0		40	
Southwold Beach	12-13km north	Minsmere-Walberswick (1-2km)											1
Dingle	9km north	Minsmere-Walberswick (within)	3	11	2	2	2	1		0	0	7	2
Dunwich beach	7-8km north	Minsmere-Walberswick (within)	0	20									
Minsmere	3km north	Minsmere-Walberswick (within)	0	1	41	12	7	36	2	0	0	0	13
Walberswick	10-11km north	Minsmere-Walberswick (within)					0	0	3	0	0		4
Felixstowe Docks	24km south	Stour & Orwell (3-4km east)										7	37

[7] A zero count denotes that the colony was visited but no little terns were present; ? indicates that breeding may have taken place but no count was obtained, and a blank that no data either way was received.

Site	Distance from Study Area	Nearest SPA	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000
Landguard	25km south	Stour & Orwell (3-4km east)	0	0	0	0	0	0	1	2	8	0	0
Shotley	26km south	Stour & Orwell (within)								3	0	2	2
Trimley Marshes	25km south	Stour & Orwell (within)					0	10					
Suffolk total:			133	32	43	19	52	73	43	46	131	127	148

In 2010, breeding was attempted at three colonies, of which one (3 pairs at Dingle) was within the Minsmere-Walberswick SPA, with the remaining attempts located to the north at Kessingland and Benacre (Mason [ed], 2011). Breeding was attempted by little terns at three colonies in 2009 (all within the Minsmere-Walberswick SPA), and young were reported at one (Dunwich beach). Breeding was not recorded within the Alde-Ore Estuary SPA in 2010 or 2009. In 2008, breeding was reported from three sites (Dingle, Minsmere and Kessingland) and was successful only at Minsmere (Mason [ed] 2009). Breeding has also been reported from at least seven other locations along the Suffolk coast since 2005: Bawdsey, Havergate Island, Orford, Slaughden beach, Covehithe, Bawdsey and Trimley, although rarely with any success. The numbers breeding at each colony varies considerably between years, with the establishment of a colony dependant on habitat suitability and prey availability. Individuals often move to another colony after breeding failure, to attempt nesting again within the same year.

Results from radio-tracking work on little terns in Norfolk by Perrow *et al*. (2005) found that the average home range of nesting birds was 4km^2 (i.e. birds that were feeding chicks were primarily foraging within 2km of the colony). However, in 2004, the radio-tagged terns from the Norfolk colony being studied failed to breed, primarily due to a shortage of food, after which the birds were recorded foraging up to 25km from the site (Perrow *et al*., 2005). The same scenario is likely to have occurred in 2010 and 2011 when large numbers of little terns were seen foraging off Dingle during the VP surveys undertaken in 2010 (from 30 June to 13 July) and 2011 (on 22 July). It is likely that these birds were failed breeders from colonies such as Kessingland. Langston (2009) gives a foraging distance of 5km from the breeding colony for little tern and states that this species generally makes numerous relatively short flights to catch fish for chicks. These data indicate that the area where the warm water plume could spread is within the regular foraging range for little terns derived from the Minsmere colony (3km to the north) but is likely to be visited on a more occasional basis by birds from the Dingle and Dunwich colonies (respectively, 9km and 6km to the north of Sizewell). In addition, any birds breeding at Slaughden and Havergate Island would also be respectively adjacent and within 1-2km of the cooling water discharge.

Figure 4.1 shows the approximate location of the little tern colonies reported along the Suffolk coast between 2000 and 2010, and the likely main foraging area for birds derived from each colony (i.e. within 5km of the colony) in relation to the predicted warm water plume.

Findings from the colony surveys and VP surveys undertaken from May to August 2011 support the results obtained from similar surveys in 2010. Results from the colony surveys undertaken at Dingle, Minsmere and Slaughden in 2011 indicate that much of the little tern foraging activity is concentrated within 1km of the colony location. At Dingle, foraging activity for the provisioning of chicks was also concentrated within 1km of the colony. Much of the foraging activity recorded during the VP surveys within the study area was in the shallow waters adjacent to the shoreline, or within 300m offshore. Low levels of little tern foraging activity were observed around the Sizewell B outfall, unlike common tern, which were attracted to the area in much larger numbers. Elsewhere within the study area, little tern foraging activity was sporadic and involved small numbers of birds (generally 1-5). Neither the colony nor VP survey results indicated that little terns were regularly flying further out to sea to feed. The foraging activity took two forms: firstly dives for small fish which would often be presented to chicks or to adults during courtship display, and secondly, surface dives to pick up other small prey such as invertebrates. Adults were observed carrying fish as they commuted up and down the shoreline, to and from the direction of the Dingle colony.

Results from the 2011 colony surveys indicate that as in 2010, Dingle was in the end the favoured breeding site. A number of young were successfully fledged at Dingle in 2011, from c.26 pairs, with many other pairs present but not attempting to breed. Initially the terns attempted to establish colonies at Minsmere, but no nesting was observed there, with birds feeding close offshore and then resting on the Minsmere South Scrape during May. These birds had largely departed from Minsmere by early June. Possible causes for the failure include the beach topography, which has become increasingly narrow (pers. comm. Robin Harvey, RSPB warden), and the presence of the large black-headed gull breeding colony on the adjacent RSPB reserve.

In early June 2011, a number of little terns also attempted to establish a colony on Slaughden beach, during which National Trust wardens fenced off a section of the beach to provide protection from humans and land-based predators. However, nesting was not attempted here, and the birds had departed from the area by the end of June, possibly a result of the large herring and lesser black-backed gull colony adjacent.

To conclude, results from the surveys in 2011 (as in 2010) show that the inshore waters between Sizewell to Orford Ness did not provide important feeding grounds for little terns from nearby breeding colonies. However, the lack of established colonies at Minsmere and Slaughden (2km north and adjacent to the study area respectively) in both years is likely to have lead to fewer little terns using the study area in those years. In a year when little terns breed at these locations a greater numbers of birds is predicted to use the waters in the study area for foraging.

Sandwich Tern

The Sandwich tern is described as being a common passage migrant but declining summer visitor to Suffolk (Mason [ed], 2010). An internationally important breeding population of Sandwich tern is a designated feature of the Alde-Ore Estuary SPA and Ramsar Site (of 169 pairs). Within Suffolk, Sandwich terns have primarily bred at Havergate Island (first bred there in 1951) and Minsmere (first bred in 1965). The numbers of Sandwich tern breeding on Havergate Island increased to a peak of 800 pairs in 1962 after which breeding became more and more irregular, particularly since 2005. At Minsmere, breeding has also become very sporadic, with no pairs present in most years, but occasionally large numbers in others. In 2009, a colony of 550 pairs established itself on Minsmere scrape (likely due to breeding failure at another colony along the North Sea coast), although no young survived to fledge due to predation. The species has now become an irregular and largely unsuccessful breeder in Suffolk, primarily due to predation from a variety of sources, both avian (gulls) and mammalian (foxes). **Table 4.3** details the number of breeding Sandwich tern in Suffolk since 2000.

Table 4.3 Number of Breeding Pairs of Sandwich Tern in Suffolk

Year	Minsmere	Havergate Island
2010	0	0
2009	550	2
2008	1	0
2007	0	0

Year	Minsmere	Havergate Island
2006	0	0
2005	0	3
2004	0	2
2003	0	15
2002	0	2
2001	0	1
2000	0	7

During the VP surveys, small numbers of Sandwich tern were regularly observed commuting along the coastline and through inshore waters in the study area. The number of birds recorded increased in August and September, after the breeding season period, suggesting that these were probably passage migrants, moving south through the area. Very few foraging Sandwich terns were recorded in the study area (that area potentially affected by the cooling water discharge) during the 2011 breeding season period (April to July). The most frequently used foraging areas by passage birds were the shallow waters off Thorpeness and between Slaughden and Orford Ness.

The surveys were however undertaken in a year when no breeding colony was established along the Suffolk coast and therefore fewer birds would be expected to be seen during the breeding season. It is predicted that in a year when birds breed (for example at Minsmere or Havergate Island) much larger numbers of Sandwich tern would use the inshore waters within the study area to forage.

4.2 Other Notable Species

A number of other notable species were recorded foraging and/or loafing in the study area during the VP and colony surveys undertaken from March 2011 to April 2012. These include the following, the details of which are discussed further below:

- Species which are listed as occurring in nationally important numbers at Ramsar sites (Mediterranean gull);
- or are listed in the citations of SSSI's within 20km of the study area (common gull, Arctic tern and common tern);
- or are primary reason for the designation of a County Wildlife Site (kittiwake);
- or are likely to occur in at least regionally important numbers (great crested grebe, little gull, great black-backed gull and black tern).

Great Crested Grebe

Great crested grebe is described as a locally common resident, passage migrant and winter visitor in Suffolk (Piotrowski, 2003). Numbers wintering in the county have increased greatly in recent years. Flocks of 30-100 birds were first reported in Sole Bay (off the Suffolk coast) in the 1980s and by the 1990s, numbers in excess of 500 were being counted, including 1,439

birds on 20 April 2000 (Piotrowski, 2003). The peak numbers of wintering great crested grebes occur in January and February, coinciding with the presence of sprat shoals – an important food source to divers and great crested grebes (Piotrowski, 2003). Wintering numbers of great crested grebe off the Suffolk coast in 2010 were considered to be low, with a peak count of 157 birds recorded off Thorpeness on 21 February (Mason [ed], 2011). The numbers of great crested grebes recorded during the VP surveys undertaken in winter 2011-12 were of a similar order to those in 2010 (peak count of 90 birds) although generally, numbers within the study area were much lower on most visits (10-40 birds). Elsewhere in Suffolk, congregations of wintering grebes occur on inland water bodies such as Alton Water, where a peak of 138 birds was recorded on 7 November 2010 (Mason [ed], 2011). Other counts in 2010 include 37 birds on Weybread Pits (inland) in November and 72 on the sea off Kessingland in March (Mason [ed], 2011).

To conclude, results from the VP surveys undertaken in 2011-12 indicate that the waters in the study area are likely to be used by a large proportion of the wintering population of great crested grebe in Suffolk during winter, principally from November to April.

Mediterranean Gull

Mediterranean gull is described as being an uncommon resident, passage migrant and winter visitor in Suffolk, and a rare breeder (Mason [ed], 2011). Nationally important numbers of breeding Mediterranean gull appear as notable features of the Minsmere-Walberswick and Alde-Ore Estuary Ramsar sites. Birds bred at two sites in Suffolk in 2009 and 2010: at Minsmere (two pairs in both years) and at an undisclosed coastal site (five pairs in both years), Mason [ed], 2011, 2010. Mediterranean gulls have over-summered in Suffolk since the early 1980s and the first breeding attempt was recorded on Havergate Island in 1986 (Piotrowski, 2003). Mediterranean gulls then attempted to breed at this site sporadically (and often unsuccessfully), and on the Blyth Estuary, and in the late 1990s at Minsmere.

During the VP surveys, small numbers of Mediterranean gulls were seen in the study area sporadically throughout much of survey period. During other AMEC bird surveys undertaken in the Sizewell area in 2011, birds were seen flying over Goose Hill between Minsmere and Leiston town, and birds were also observed feeding in pig fields just north-east of Leiston. Results from the surveys indicate that the outfall provides a foraging site for Mediterranean gulls derived from Minsmere. Mediterranean gulls generally depart from Minsmere in late July, after which few are observed at this site. It is likely that the Minsmere birds feed at a wide variety of sites, including recently ploughed arable fields, pig fields and coastal shore-lines and estuaries.

Large congregations of Mediterranean gulls occasionally occur on the Suffolk coast immediately after the breeding season, including 86 birds at Blythburgh and 125 birds at Southwold in July 2011 (Mason [ed], 2011). Notable post-breeding season movements of birds are also recorded off the Suffolk coast, with up to 70 Mediterranean gulls counted from various locations from Lowestoft to Languard in August and September 2011. However, no congregations of Mediterranean gulls were recorded at Sizewell in these years and very few birds were recorded there during the VP surveys undertaken after the 2011 breeding season from August 2011 to April 2012.

Kittiwake

Kittiwake first bred in Suffolk in 1958 on the South Pier Pavilion in Lowestoft (Piotrowski, 2003). Numbers breeding on the South Pier Pavilion increased to 107 pairs in 1988, after which

the site was demolished, with birds moving to a nearby purpose-built 'kittiwake breeding wall' where a peak of 259 pairs bred in 1995. Since 1994, kittiwakes have also bred on the two rigs (c.150-500m) offshore of Sizewell Power Stations where 219 pairs were present in 2001 (Piotrowski, 2003). More recently, 80 pairs bred in Lowestoft in 2009 (60 on the kittiwake wall and 20 on Clairemont Pier) and 374 pairs bred on the Sizewell rigs in 2008 (Mason [ed] 2009, 2010). The Suffolk colonies represent the only breeding locations for Kittiwake in the East of England Region, and the only ones between the Kent coast and Bempton cliffs / Flamborough colonies in Yorkshire. However, the numbers present on the rigs form a small proportion (0.5%) of the total in England (76,281 pairs during the 1998-2002 Seabird Census, Brown & Grice, 2005).

Results from the VP surveys in 2011-12 indicate that kittiwakes from the regionally important breeding colony at Sizewell generally forage further offshore and are rarely observed feeding within 2km of the shoreline during the breeding season. Most flights of kittiwake recorded during the breeding season (March to August 2011) were in a general south-east or north-east direction (i.e. birds heading out to sea). Very little foraging activity was observed from the shoreline vantage point locations within the study area (i.e. within 5km of the shoreline).

During the winter, congregations of kittiwakes were occasionally seen foraging well offshore (at least 3km from the shoreline) and at the outfall during rough or stormy sea conditions. Thurlow (2010) noted seeing groups of kittiwakes feeding over the sandbank that stretches offshore from Sizewell to Thorpeness. Kittiwakes feed on small shoaling fish such as sand-eels, herring and sprat (Brown & Grice, 2005). During winter, birds forage and rest on the sea far from land, and are rarely seen from the shore, except during stormy conditions (Brown & Grice, 2005).

To conclude, results from the VP surveys in 2011-12 indicate that the inshore waters within the study area do not provide important feeding grounds for the kittiwakes breeding on Sizewell rigs. After the departure of the young and adult birds in August, very few kittiwakes were recorded on the rigs during autumn and winter, although flocks of birds were occasionally seen foraging offshore and at the Sizewell B outfall during stormy conditions.

Little Gull

Little gull breed in Russia and in increasing numbers in Scandinavia, these birds migrating via the UK to their wintering grounds in the eastern Atlantic and Irish Sea (Brown & Grice, 2005). Numbers occurring in the UK have increased dramatically since the 1950s, possibly a result of a westward shift in the species' breeding distribution, with increasing numbers breeding in Scandinavia (Brown & Grice, 2005). In Suffolk, the little gull is described as a fairly common passage migrant and scarce summer and winter visitor (Piotrowski, 2003). Little gulls occur during both the spring passage (April-May) and autumn passage periods (July-September). Offshore movements of birds principally occur in the autumn from September to early November, and have included an exceptional count of 506 birds flying north past Thorpeness on 7 November 1999 (Piotrowski, 2003). Small numbers of little gull occur at Minsmere and Sizewell in spring (April-May) but much larger numbers occur in autumn, particularly around the Sizewell outfall. **Table 4.4** details the peak monthly counts at Sizewell since 2005.

Table 4.4 Peak Monthly Counts of Little Gull at Sizewell[8]

Year	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2011				79	70	30			
2010					26	12	6		
2009			4		75	86			
2008						135			
2007				20	75	5			
2006				8	75	45	20		2
2005				20	100	50	60		

The peak count of 100-140 little gulls (including both adults and first-year birds) recorded between Thorpeness and Sizewell during the VP surveys undertaken in August 2011 represents a very substantial proportion of the total numbers usually recorded in Suffolk during autumn passage. There is no national threshold of importance for a site for little gull (Holt *et al.*, 2011). However, results from Wetland Bird Survey (WeBS) show that the peak count recorded at Sizewell is likely to be of national importance, with only three other sites in the UK surpassing these numbers, as follows (the numbers provided are the 5-year peak mean WeBS Core counts for 2005/06-2009/10):

- Hornsea Mere, East Yorkshire (5,868 birds, peak numbers in September)
- Alt Estuary, Merseyside/Lancashire (186 birds, peak numbers in April)
- Tophill Low lakes, East Yorkshire (179 birds, peak numbers in July)

Little gulls (together with cormorant, other gull species and common tern) congregate around the Sizewell B outfall to forage for small fish. Little gulls appear in July and numbers build up to a peak in August, and then decline through September, with a few lingering into October in some years. Results from the VP surveys show that the Sizewell B outfall attracts nationally important numbers of little gulls during the autumn passage period. Numbers at the outfall vary between years, and are very dependant on whether the facility is in operation at the time. For example, the numbers of little gull fell dramatically immediately after the outfall was put out of operation in early September 2011. Likewise, very few little gulls were seen at Sizewell in 2010, when again the outfall was not expelling warm water.

Common Tern

The common tern is described as a common summer visitor and passage migrant in Suffolk (Mason [ed], 2011) and appears in the Alde-Ore Estuary SSSI citation as an important breeding species for the site. In Suffolk, common terns breed on the coast and in recent years at inland water bodies, such as at Alton Water Reservoir (particularly where tern nesting rafts are provided). Most of the tern colonies that used to occur on beaches have now been deserted due

[8] The figures have been obtained from Suffolk Birds 2005-2010, and the website: www.birdguides.com

to human disturbance, although a few survive on very inaccessible locations such as Orford Ness. **Table 4.5** shows the number of pairs of breeding common tern recorded in Suffolk at each location since 2005.

Table 4.5 Number of Breeding Common Terns in Suffolk[9]

Site	2010	2009	2008	2007	2006	2005
Alton Water (inland)	n/c	53	n/c	40	35	18
Benacre Broad (coastal)	1					
Dingle Marshes (coastal)			n/c	2		
Flixton (inland)	1					
Havergate Island (coastal)	n/c	n/c	43	n/c	51	67
Lackford Lakes (inland)	1	1	1	1		
Lake Lothing, Lowestoft	5	10	30	13	24	n/c
Minsmere (coastal)	167	191	n/c	35	93	81
Needham Market (inland)		n/c	n/c	1		
Trimley Marshes (coastal)	n/c	0	n/c	35	55	45
Weybread GPs (inland)	2	1		n/c	11	
Suffolk Total:	177	256	74	127	269	211

In recent years, the principal sites holding colonies have been at Minsmere, Havergate Island, Lake Lothing and Alton Water. Allowing for counts that were not received, the county population is likely to be in the region of 200-250 pairs, compared with 1,000-1,500 pairs on Orford Ness alone in the early 1900s (Piotrowski, 2003). A total of 4,700 pairs were recorded breeding along the coast in England during the 1998-2002 Breeding Seabird Census (Brown & Grice, 2005). In addition to this, an estimated 600-1,000 pairs were nesting at inland sites in England (Brown & Grice, 2005). Totals of coastal breeding birds (during the 1998-2002 Census) for individual counties in the East of England Region included: 184 pairs in Suffolk, 502 pairs in Norfolk and 289 pairs in Essex (Brown & Grice, 2005).

In Suffolk, the first common terns usually arrive in mid-April and then breed from May to July. The return migration of these birds is well underway by late July and peaks in August. The migration southwards continues through September and into early October, with very few seen thereafter (Piotrowski, 2003).

During the VP surveys, common terns were regularly seen foraging around Sizewell B outfall from May to September 2011. A steady flow of birds was observed flying between the Minsmere colony and outfall, with many birds carrying fish, presumably to feed young. During the peak period of the breeding season in June, common terns were regularly seen at the outfall. However, in July and August, numbers increased substantially, with a peak count of 230 birds

[9] n/c denotes that breeding probably took place but that no count was provided

recorded in August. By the end of July, the breeding terns had departed from Minsmere, and an increasing number of fledged juveniles and adults were seen at the outfall, with groups of birds resting on the adjacent beach and on the sea, then making regular visits to the outfall area to pick fish from the waters' surface. Elsewhere, within the study area, groups of 20-40 common terns were regularly seen foraging offshore, with the largest numbers observed diving into the shallow waters up to 1km offshore between Thorpeness and Orford Ness from late July to September. During this period, there was also a steady movement of common terns flying up and down the coastline, often well offshore at least 2km from the shoreline.

To conclude, the results from the surveys indicate that the Sizewell B outfall provides an important foraging resource to common terns derived from the Minsmere colony (and elsewhere) from May to September. Away from the outfall, the inshore waters between Thorpeness and Orford Ness also provide important foraging areas for this species, particularly during the post-fledging period from late July to September.

Arctic Tern

The Arctic tern is described as a fairly common passage migrant that occasionally breeds in Suffolk (Mason [ed], 2011. Breeding Artic tern appears in the citation for the Alde-Ore Estuary SSSI, although in recent years nesting within the county has been very sporadic. Since 2005, breeding has been attempted in only one year, involving a single pair which bred at Minsmere (Suffolk Birds 2005-2010). Regular breeding has not occurred on Havergate Island since 1994 (Piotrowski, 2003). Small numbers of Arctic tern are recorded along the Suffolk coast during spring passage (April-June) and autumn passage (July-October) and birds also occasionally turn up at inland water bodies, particularly in spring. In 2009, a total of 15 birds were recorded in Suffolk in late July and August, followed by a further 17 in September and 44 in October (Mason [ed], 2010). Owing to the difficulties in identifying this species with certainty (even at modest distances), it is likely that many Arctic terns go undetected as they migrate along the Suffolk coast in spring and autumn. During the autumn migration, small numbers of Arctic tern (usually juveniles) join the common terns to forage around the Sizewell B outfall. Their occurrence at the outfall appears to be sporadic, and there are a number of very late records (in November and even December). **Table 4.6** shows the peak monthly counts of Arctic tern at Sizewell (the figures have been derived from Suffolk Birds 2005-2010, and the website: www.birdguides.com).

Table 4.6 Peak Monthly Counts of Arctic Tern at Sizewell

Year	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2011					7	2			
2010					1	2			
2009					1	2			
2008									
2007					2	15			
2006					2				1
2005					12	10	2	1	

To conclude, the Arctic tern appears to be an annual visitor to the Sizewell B outfall in very small numbers (usually just 1-3 birds, but occasionally in larger numbers) during the autumn passage period from August to November. The numbers occurring at the outfall are very small in terms of the UK breeding population of 52,600 pairs (Seabird 2000, Brown & Grice, 2005).

Black Tern

The black tern is described as a fairly common passage migrant in Suffolk (Mason[ed], 2011). Black terns occur at inland and coastal sites in the spring and autumn passage periods and are seen in the largest numbers during periods of south-easterly winds from late-April to early June (Piotrowski, 2003). The return autumn migration begins in late July (when juveniles are also recorded) and peaks in September, with a few birds lingering into October and even November. Exceptional counts have included 328 birds at Lackford Lakes (inland) in May 2000 and autumn movements off the coast have included 170 birds off Southwold and Minsmere in August 1992 (Piotrowski, 2003), although numbers are usually much smaller. During the autumn passage, black terns also occur around the Sizewell B outfall where birds feed with common terns and gulls. **Table 4.7** shows the peak monthly counts of black tern at Sizewell (the figures have been derived from Suffolk Birds 2005-2010, and the website: www.birdguides.com).

Table 4.7 Peak Monthly Counts of Black Tern at Sizewell

Year	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2011				4	21	1			
2010					5	4			
2009					2	3			
2008		6			3	2			
2007					30	2			
2006				1	7	8	1		
2005					30	8			

The black tern breeds throughout much of Europe and in Russia, and winters in sub-Saharan Africa. In the UK, the black tern was a regular breeder in England, with its stronghold in the Fenland of East Anglia (Brown & Grice, 2005). Due to the drainage of the fens in the 18th Century, the species declined and last bred on a regular basis in the UK in the 1840s and 1850s. Black terns have bred on a handful of occasions in England since, and now the species is almost solely a passage migrant. However, the species remains a regular migrant from mid-April to early June and again from July to October. Counts numbering several tens of black tern are not uncommon on inland water bodies in spring, and large movements of birds have also been recorded off the coast in autumn, including an exceptional count of 10,000 black terns past Dungeness in September 1992. There is no national threshold of importance for a site for black tern and similar to little gull, numbers recorded by the WeBS tend to be dependent on the survey dates coinciding with influxes of passage birds (Holt *et al.*, 2011). However, it is likely that in most autumns, at least several hundred black terns occur for brief periods along the coast and at inland sites. In view of this and evidence from the VP surveys, the Sizewell B outfall is likely

to provide an important foraging resource to migrating black tern during the autumn passage period (July to September).

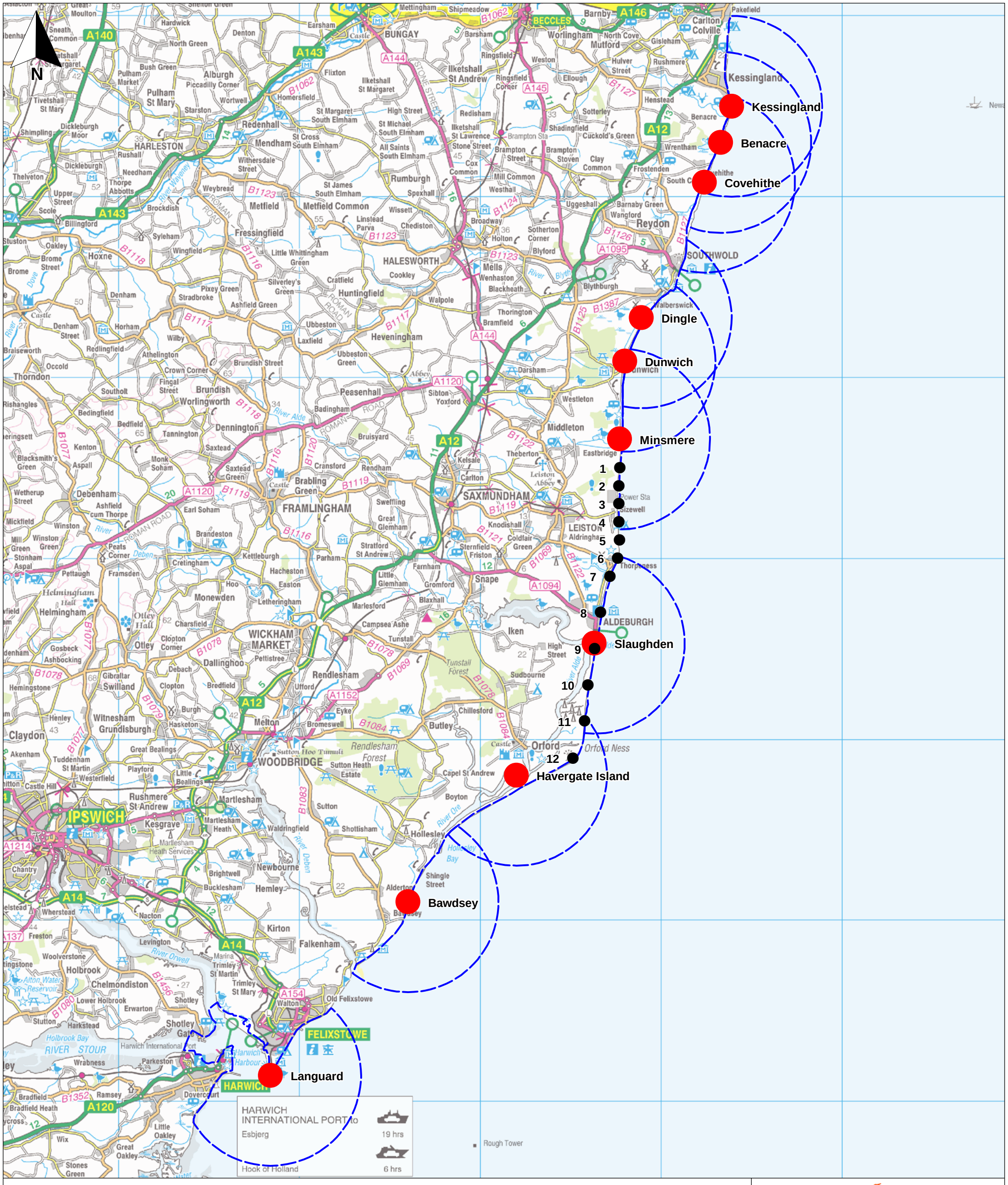


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Figure 4.1
Little Tern Colonies in Suffolk, 2005-2009

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5. Conclusion

Results from the desk study and VP surveys undertaken from March 2011 to April 2011 indicate that the inshore waters in the study area (including the Sizewell B outfall) provide an important foraging area to a number of seabird species. The outfall at Sizewell provides an important foraging area to black-headed gull and common tern during the breeding season (May-July), to common tern, little gull and black tern during autumn passage (August-September), and to herring gull and great black-backed gull in winter (October-March).

The inshore waters within the study area were also used by large numbers of common tern (primarily during the post-breeding period, in August to September) and smaller numbers of Sandwich tern. Numbers of red-throated diver that are important in terms of the Outer Thames Estuary SPA also occur in the study area from November to early April and these birds are often associated with small groups of great crested grebe, both of which are likely to be feeding on shoals of sprat.

Results from the VP surveys indicate that kittiwake to not forage in the inshore waters around Sizewell on a regular basis but are likely to feed further offshore. Results from the little tern colony surveys indicate that this species primarily feeds close to the colony locations, and that the outfall and waters' in the study area receive low level use by this species. The study area is located within the regular foraging range of little terns breeding at Minsmere, Slaughden and Havergate Island. However, in recent years, breeding has become increasingly sporadic at these sites for a variety of reasons, including beach profile (and therefore habitat suitability), predation and disturbance.

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Appendix A
Survey Visit Details

Table A1 VP Surveys, Survey Dates, Times and Weather Conditions

Location	Date	Time (from)	Time (to)	Wave height (cm)	Wind direction	Wind strength	Cloud cover (of 8)	Precipitation	Visibility
10	22-Mar-11	13:00	13:45	5-15	NE	2	1	None	Poor (misty at 1km+)
11	22-Mar-11	11:30	12:15	10-15	NE	2	0	None	Poor (misty at 1km+)
12	22-Mar-11	10:10	10:55	10-20	NE	0-1	4	None	Poor (misty at 1km+)
1	24-Mar-11	12:30	13:15	5-10	ENE	3	0	None	Very good (5km+)
2	24-Mar-11	13:45	14:30	5-10	ENE	2-3	0	None	Very good (5km+)
3	24-Mar-11	14:50	15:35	5-15	ENE	2-3	3	None	Very good (5km+)
4	25-Mar-11	12:05	12:50	10-15	NE	1-2	0	None	Good (moderate haze)
5	25-Mar-11	14:25	15:10	10-15	E	1-2	0	None	Good (light haze)
6	25-Mar-11	13:30	14:15	10-15	NE	1-2	0	None	Good (moderate haze)
7	28-Mar-11	10:35	11:20	10-20	NE	2-3	6	None	Very good (5km+)
8	28-Mar-11	11:45	12:30	10-20	ENE	3	1	None	Good (moderate haze)
9	28-Mar-11	14:30	15:15	5-15	NE	2	8	None	Poor (misty at 1km+)
9	07-Apr-11	13:25	14:10	0-10	W	3	8	None	Very good (5km+)
10	07-Apr-11	14:50	15:35	0-5	SE	0-2	7	None	Very good (5km+)
11	07-Apr-11	16:15	17:00	0-5	SE	2	8	None	Very good (5km+)

Location	Date	Time (from)	Time (to)	Wave height (cm)	Wind direction	Wind strength	Cloud cover (of 8)	Precipitation	Visibility
12	07-Apr-11	17:40	18:25	0-5	SE	1	7	None	Very good (5km+)
5	08-Apr-11	08:45	09:30	0-5		0	0	None	Very good (5km+)
6	08-Apr-11	10:20	11:05	0-5	W	1	0	None	Good (moderate haze)
7	08-Apr-11	11:35	12:20	0-5	SE	1	0	None	Very good (5km+)
8	08-Apr-11	12:50	13:35	0-5	SE	0-1	0	None	Very good (5km+)
1	11-Apr-11	08:25	09:10	10-15		1	2	None	Very good (5km+)
2	11-Apr-11	09:25	10:10	10-15	W	1-2	1	None	Good (light haze)
3	11-Apr-11	10:45	11:30	10-15	SW	2-3	1	None	Good (light haze)
4	11-Apr-11	11:45	12:30	20-30	SW	3-4	0	None	Good (light haze)
5	13-Apr-11	12:30	13:15	20-40	S	4	8	None	Very good (5km+)
6	13-Apr-11	11:35	12:20	30-60	S	4	8	None	Very good (5km+)
7	14-Apr-11	12:00	12:45	40-60	S	4-5	8	None	Very good (5km+)
8	14-Apr-11	13:15	14:00	30-60	SE	6	7	None	Very good (5km+)
1	18-Apr-11	14:35	15:20	0-10	NE	1-2	6	None	Very good (5km+)
2	18-Apr-11	15:40	16:25	0-10	NE	2	7	None	Very good (5km+)
3	18-Apr-11	16:45	17:30	0-10	NE	2	7	None	Very good (5km+)
4	18-Apr-11	17:50	18:35	0-5	NE	1	7	None	Very good (5km+)
9	19-Apr-11	12:45	13:20	0-5	E	1	7	None	Very good (5km+)
10	19-Apr-11	11:30	12:15	0-5	E	1-2	8	None	Very good (5km+)
11	19-Apr-11	10:10	10:55	0-20	E	2	4	None	Good (light haze)
12	19-Apr-11	08:55	09:40	0-20	E	2	7	None	Very good (5km+)

Location	Date	Time (from)	Time (to)	Wave height (cm)	Wind direction	Wind strength	Cloud cover (of 8)	Precipitation	Visibility
1	10-May-11	10:10	10:55	20	SSE	3-4	1	None	Slight haze
2	10-May-11	11:05	11:50	30-50	SSE	4-5	1	None	Moderate haze
3	10-May-11	12:10	12:55	40-60	SSE	5-6	0	None	Moderate haze
4	18-May-11	15:50	16:35	60-80	S	3-4	5	None	Very good (5km+)
1	19-May-11	14:20	15:05	40-50	ENE	5-6	1	None	Good (slight haze)
2	19-May-11	13:20	14:05	30-40	ENE	4	2	None	Good (slight haze)
3	19-May-11	12:25	13:10	30-40	ENE	4	4	None	Good (slight haze)
4	19-May-11	11:25	12:10	30-40	E	4	4	None	Very good (5km+)
9	20-May-11	08:45	09:30	25	W	1-2	1	None	Very good (5km+)
10	20-May-11	10:15	11:00	25	W	1	0	None	Very good (5km+)
11	20-May-11	11:45	12:30	25	SW	1-2	1	None	Very good (5km+)
12	20-May-11	13:10	13:55	25	SW	1-2	0	None	Very good (5km+)
5	26-May-11	10:40	11:25	50	SW	1-3	7	None	Very good (5km+)
6	26-May-11	09:10	09:55	50	SW	1-3	5	None	Very good (5km+)
7	26-May-11	07:55	08:40	40	SW	1-3	7	None	Very good (5km+)
8	26-May-11	06:55	07:40	25	SW	1-3	3	None	Very good (sun glare in east)
1	08-Jun-11	14:30	15:15	20-30	S	5-6	5	None	Good
2	08-Jun-11	15:30	16:15	30-40	S	5-6	4-5	None	Good
3	08-Jun-11	16:30	17:15	40	S	5-6	6	None	Good
4	08-Jun-11	17:30	18:15	30-40	S	5-6	6	None	Good
5	09-Jun-11	16:45	17:30	30	S-SE	4-5	6	None	Good

Location	Date	Time (from)	Time (to)	Wave height (cm)	Wind direction	Wind strength	Cloud cover (of 8)	Precipitation	Visibility
6	09-Jun-11	15:45	16:30	35	S-SE	5-6	6-7	Light drizzle	Moderate
7	09-Jun-11	14:45	15:30	40	SE	5-6	7-8	Heavy showers	Moderate to poor
8	09-Jun-11	13:45	14:30	30-40	SE	5-6	7-8	Heavy showers	Moderate to poor
9	14-Jun-11	17:00	17:45	20	SE	2	0	None	Very good (5km+)
10	14-Jun-11	18:10	18:55	20	SE	2	0	None	Very good (5km+)
11	14-Jun-11	19:25	20:10	15	SE	2-3	0	None	Very good (5km+)
12	14-Jun-11	20:35	21:20	10	SE	2	1	None	Very good (5km+)
3	16-Jun-11	13:15	14:00	15-30	SW	2	8	Heavy rain	Moderate
4	16-Jun-11	12:20	13:05	15-30	SW	3-4	8	Light rain	Good
1	21-Jun-11	17:20	18:05	100	SSE	5	5-8	None	Hazy
2	21-Jun-11	18:25	19:10	100	SSE	4-5	5-8	None	Hazy
3	21-Jun-11	19:25	20:10	100	SSE	4-5	8	None	Hazy
4	21-Jun-11	20:25	21:10	80	SSE	3-5	2-3	None	Hazy, some glare in east
5	22-Jun-11	08:10	08:55	40	SW	2-3	5	None	Hazy, some glare in east
6	22-Jun-11	09:20	10:05	40	SW	2-3	5	None	Hazy, some glare in east
7	22-Jun-11	10:25	11:10	40	SW	2-3	6-8	Light showers	Good, some glare in east
8	22-Jun-11	11:30	12:15	30	SW	2	8	Light showers	Good, some glare in east
9	24-Jun-11	12:30	13:15	10-20	W	4	6	None	Moderate haze
10	24-Jun-11	08:20	09:05	15-30	W	4	1	None	Slight haze
11	24-Jun-11	09:30	10:15	20-30	W	4-5	1	None	Moderate haze
12	24-Jun-11	11:05	11:50	30-50	W	5	3	None	Moderate haze

Location	Date	Time (from)	Time (to)	Wave height (cm)	Wind direction	Wind strength	Cloud cover (of 8)	Precipitation	Visibility
1	06-Jul-11	12:40	13:25	40-60	SW	4-6	4	None	Very good (5km+)
2	06-Jul-11	13:40	14:25	40-80	S	5-6	4-5	None	Very good (5km+)
3	06-Jul-11	14:45	15:30	60-80	S	6	3	None	Very good (5km+)
4	06-Jul-11	15:40	16:25	60-90	S	5-6	3	None	Very good (5km+)
5	12-Jul-11	10:00	10:45	150	NNE	5	7	None	Good
6	12-Jul-11	08:55	09:40	150	NNE	5	8	None	Good
7	12-Jul-11	07:55	08:35	125	N	4-5	6	None	Strong glare in east
8	12-Jul-11	07:00	07:45	100	N	4	4	None	Strong glare in east
9	13-Jul-11	13:30	14:15	75	NW	4	8	None	Fair, misty at 2km
10	13-Jul-11	10:50	11:35	50	NW	4	8	None	Good
11	13-Jul-11	09:40	10:25	50	NW	3	8	None	Good
12	13-Jul-11	08:25	09:10	50	NW	3	8	None	Good
1	26-Jul-11	18:20	19:05	50	NW	2	8	None	Fair
2	26-Jul-11	17:15	18:00	40	NW	2	8	Light drizzle	Fair
3	26-Jul-11	16:10	16:55	40	NW	2	8	None	Fair
4	26-Jul-11	15:00	15:45	40	NW	2	8	Light drizzle	Fair
5	28-Jul-11	11:40	12:25	25	NE	2	3	None	Misty at 3km
6	28-Jul-11	10:35	11:20	25	NE	2	5	None	Light haze, misty at 3km
7	28-Jul-11	09:35	10:20	25	NE	1	8	None	Misty at 3km
8	28-Jul-11	08:30	09:15	25	NE	1	8	None	Misty at 3km
9	29-Jul-11	13:55	14:45	25-50	N	2	6	None	Good

Location	Date	Time (from)	Time (to)	Wave height (cm)	Wind direction	Wind strength	Cloud cover (of 8)	Precipitation	Visibility
10	29-Jul-11	10:45	11:30	25-50	N	2	8	None	Fair, misty at 2km
11	29-Jul-11	09:30	10:15	25-50	N	1	8	None	Fair, misty at 2km
12	29-Jul-11	08:20	09:05	25-50	N	1	8	None	Fair, misty at 2km
5	03-Aug-11	15:30	16:15	30	S	2-3	4	None	Very good (5km+)
6	03-Aug-11	16:30	17:15	30	S	2-3	3	None	Very good (5km+)
7	03-Aug-11	17:35	18:20	30	S	2-3	2	None	Very good (5km+)
8	03-Aug-11	18:40	19:25	30	S	2-3	5	None	Very good (5km+)
1	04-Aug-11	13:05	13:50	30	W	3	8	Raining	Good
2	04-Aug-11	12:00	12:45	50	W	3	8	Light rain	Good
3	04-Aug-11	11:00	11:45	50	W	3-4	8	None	Very good (5km+)
4	04-Aug-11	09:50	10:35	50	W	4	8	None	Very good (5km+)
7	08-Aug-11	15:15	16:00	20-40	WNW	5-6	7	None	Very good (5km+)
8	08-Aug-11	14:10	14:55	30-40	WNW	6	4	Light rain	Very good (5km+)
9	08-Aug-11	13:05	13:50	20-30	WNW	6	4	None	Very good (5km+)
10	08-Aug-11	11:15	12:00	20-40	WNW	6	5	None	Slight haze
11	08-Aug-11	10:05	10:50	20-30	WNW	5-6	1-2	None	Very good (5km+)
12	08-Aug-11	08:35	09:20	30-40	WSW	4	2	None	Very good (5km+)
1	17-Aug-11	14:00	14:45	40-80	NE	4	7	None	Very good (5km+)
2	17-Aug-11	12:55	13:40	30-50	ENE	3	7	None	Good (light haze)
3	17-Aug-11	11:55	12:40	30-60	E	3	7	None	Very good (5km+)
4	17-Aug-11	10:55	11:40	20-40	ENE	3	6	None	Very good (5km+)

Location	Date	Time (from)	Time (to)	Wave height (cm)	Wind direction	Wind strength	Cloud cover (of 8)	Precipitation	Visibility
5	17-Aug-11	09:05	09:50	40-60	NE	2-3	5	None	Good (light haze)
6	17-Aug-11	08:05	08:50	20-40	N	2	3-4	None	Very good (5km+)
2	24-Aug-11	15:40	16:15	30-60	S	3-4	7	None	Very good (5km+)
3	24-Aug-11	14:40	15:25	30-50	SSW	3	8	None	Very good (5km+)
9	24-Aug-11	13:20	14:05	20-40	S	4	7	None	Very good (5km+)
10	24-Aug-11	11:30	12:15	30-60	SSW	3-4	8	None	Very good (5km+)
11	24-Aug-11	10:20	11:05	30-60	SSW	3-4	8	None	Very good (5km+)
12	24-Aug-11	08:30	09:15	30-60	S	2-3	8	Light rain	Misty at 1km+
2	26-Aug-11	15:10	15:55	60-90	WSW	3	7	None	Very good (5km+)
1	31-Aug-11	14:10	14:55	30-60	NE	3-4	8	None	Very good (5km+)
2	31-Aug-11	13:00	13:45	30-60	NNW	2	7	None	Very good (5km+)
3	31-Aug-11	12:00	12:45	30-60	N	3-4	7	None	Very good (5km+)
4	31-Aug-11	11:00	11:45	30-60	WNW	2	8	None	Very good (5km+)
5	31-Aug-11	09:30	10:15	30-60	W	2	8	None	Very good (5km+)
6	31-Aug-11	08:35	09:20	60-80	W	2	8	None	Very good (5km+)
7	31-Aug-11	07:30	08:15	10-20	W	2	8	None	Very good (5km+)
7	08-Sep-11	16:10	16:55	40-70	SW	4-5	6-8	None	Very good (5km+)
8	08-Sep-11	15:15	16:00	40-80	SSW	4-5	8	None	Very good (5km+)
9	08-Sep-11	14:15	15:00	50-80	SSW	5-6	8	None	Very good (5km+)
10	08-Sep-11	11:30	12:15	50-80	S	5-6	8	Light rain	Very good (5km+)
11	08-Sep-11	10:15	11:00	60-90	S	6	8	None	Very good (5km+)

Location	Date	Time (from)	Time (to)	Wave height (cm)	Wind direction	Wind strength	Cloud cover (of 8)	Precipitation	Visibility
12	08-Sep-11	08:20	09:05	90-120	S	5	8	None	Very good (5km+)
1	09-Sep-11	08:55	09:40	40-60	SW	3	8	Light rain	Good (Misty at 3km+)
2	09-Sep-11	10:05	10:50	30-60	SW	3	8	None	Very good (5km+)
3	09-Sep-11	11:05	11:50	30-60	SW	3-4	8	None	Very good (5km+)
4	09-Sep-11	12:35	13:20	20-40	SW	2-3	8	None	Very good (5km+)
5	09-Sep-11	14:05	14:50	40-60	S	3	8	None	Very good (5km+)
6	09-Sep-11	15:00	15:45	40-60	S	3	7	None	Very good (5km+)
7	22-Sep-11	15:25	16:10	20-40	WSW	4-5	4	None	Very good (5km+)
8	22-Sep-11	14:25	15:10	30-40	WSW	4	2	None	Very good (5km+)
9	22-Sep-11	13:25	14:10	20-30	WSW	5-6	3	None	Very good (5km+)
10	22-Sep-11	11:25	12:10	50-70	WSW	5	3	None	Very good (5km+)
11	22-Sep-11	10:10	10:55	50-70	SSW	5-6	2	None	Good (light haze)
12	22-Sep-11	08:25	09:10	60-90	S	4-5	0	None	Very good (5km+)
1	26-Sep-11	11:05	11:50	50-60	SW	3	7-8	None	Very good (5km+)
2	26-Sep-11	09:55	10:40	30-60	SW	3	7	None	Very good (5km+)
3	26-Sep-11	08:50	09:35	60-80	SW	4	7	None	Very good (5km+)
4	26-Sep-11	07:40	08:25	20-40	S	1-2	7	Light rain	Very good (5km+)
5	26-Sep-11	14:20	15:05	60-90	SW	2-3	4	None	Very good (5km+)
6	26-Sep-11	13:20	14:05	60-80	SW	2-3	7	Showers	Very good (5km+)
1	03-Oct-11	14:55	15:40	30-60	SSW	4	1	None	Light heat haze at 1.5km+
2	03-Oct-11	13:50	14:35	60-100	SSW	4	1	None	Light heat haze at 1.5km+

Location	Date	Time (from)	Time (to)	Wave height (cm)	Wind direction	Wind strength	Cloud cover (of 8)	Precipitation	Visibility
3	03-Oct-11	12:50	13:35	60-120	SSW	4-5	1	None	Light heat haze at 1.5km+
4	03-Oct-11	11:55	12:40	60-90	S	3	7	None	Very good (5km+)
5	03-Oct-11	09:50	10:35	30-60	S	2-3	7-8	Light showers	Very good (5km+)
6	03-Oct-11	08:55	09:40	40-60	SSE	2	5	None	Very good (5km+)
7	07-Oct-11	16:35	17:20	60-90	WNW	4-5	3-4	None	Very good (5km+)
8	07-Oct-11	15:40	16:25	60-80	WNW	5	5	None	Very good (5km+)
9	07-Oct-11	14:40	15:25	40-80	WNW	6	5	None	Very good (5km+)
10	07-Oct-11	12:15	13:00	80-100	WNW	4-5	6	None	Very good (5km+)
11	07-Oct-11	10:35	11:20	20-40	WNW	5-6	6	None	Very good (5km+)
12	07-Oct-11	08:50	09:35	20-40	W	5-6	2	None	Very good (5km+)
1	17-Oct-11	10:35	11:20	20-40	SW	3-4	3-4	None	Good, sun glare in SE
2	17-Oct-11	09:30	10:15	20-40	SW	3	1	None	Good, sun glare in SE
3	17-Oct-11	08:30	09:15	20-40	SW	2-3	0	None	Very good (5km+)
4	17-Oct-11	07:20	08:05	20-40		0-1	0	None	Very good (5km+)
5	17-Oct-11	13:15	14:00	60-100	SSW	5-6	4	None	Very good (5km+)
6	17-Oct-11	12:20	13:05	60-100	S	4-5	5	None	Very good (5km+)
7	21-Oct-11	07:30	08:15	20-40	SW	3	6	None	Good, sun glare in east
8	21-Oct-11	08:25	09:10	20-40	SW	2-3	4-5	None	Good, sun glare in east
9	21-Oct-11	15:35	16:20	60-80	S	5	1-2	None	Very good (5km+)
10	21-Oct-11	13:35	14:20	60-90	S	5-6	3	None	Very good (5km+)
11	21-Oct-11	12:20	13:05	60-100	S	5	6	None	Very good (5km+)

Location	Date	Time (from)	Time (to)	Wave height (cm)	Wind direction	Wind strength	Cloud cover (of 8)	Precipitation	Visibility
12	21-Oct-11	10:30	11:15	60-80	S	5-6	6-7	None	Very good (5km+)
7	07-Nov-11	07:10	07:55	120-160	N	6	8	None	Misty at 1500m+
8	07-Nov-11	15:10	15:55	150-180	NE	6-7	8	None	Misty at 1500m+
9	07-Nov-11	14:15	15:00	120-160	NNE	7	8	None	Misty at 1500m+
10	07-Nov-11	12:05	12:50	90-120	N	6	8	None	Misty at 1500m+
11	07-Nov-11	10:45	11:30	100-120	N	6-7	8	None	Misty at 1500m+
12	07-Nov-11	08:50	09:35	60-120	N	6	8	None	Misty at 1500m+
1	08-Nov-11	13:20	14:05	120-150	E	5-6	8	None	Misty at 1500m+
2	08-Nov-11	12:20	13:05	120-160	ESE	4-5	8	None	Misty at 2000m+
3	08-Nov-11	11:15	12:00	120-150	E	4-5	8	None	Misty at 2000m+
4	08-Nov-11	10:15	11:00	90-120	ESE	5	8	None	Misty at 3000m+
5	08-Nov-11	08:40	09:25	120-180	ENE	6	8	None	Misty at 2500m+
6	08-Nov-11	07:40	08:25	150-180	ENE	6	8	None	Misty at 1500m+
1	23-Nov-11	09:05	09:50	10-25		1	2	None	Good, but heat haze at 3km+
2	23-Nov-11	10:00	10:45	15-30	SW	2-3	4	None	Good, sun glare in SE
3	23-Nov-11	11:00	11:45	10-20	SW	2-3	3-4	None	Good, sun glare in SE
4	23-Nov-11	11:55	12:40	10-20	SW	2	5-6	None	Very good (5km+)
5	23-Nov-11	14:05	14:50	30-40	SW	2-3	8	None	Very good (5km+)
6	23-Nov-11	13:10	13:55	30-40	SW	3	7-8	None	Very good (5km+)
7	23-Nov-11	15:15	16:00	10-20	SW	2-3	8	None	Very good (5km+)

Location	Date	Time (from)	Time (to)	Wave height (cm)	Wind direction	Wind strength	Cloud cover (of 8)	Precipitation	Visibility
8	25-Nov-11	07:15	08:00	20-30	SW	3	8	Raining	Misty at 1500m+
9	25-Nov-11	14:50	15:35	60-80	SW	5-6	2-3	None	Very good (5km+)
10	25-Nov-11	12:15	13:00	40-80	SW	5-6	2-3	None	Very good (5km+)
11	25-Nov-11	10:55	11:40	80-100	SW	4-5	1	None	Good, sun glare in SE
12	25-Nov-11	08:55	09:40	60-80	SW	4-5	2-3	None	Good, sun glare in east
1	01-Dec-11	10:55	11:40	60-80	SW	2-3	8	None	Very good (5km+)
2	01-Dec-11	09:55	10:40	60-80	SW	2	8	None	Very good (5km+)
3	01-Dec-11	08:50	09:35	60-80	SW	2-3	7-8	None	Very good (5km+)
4	01-Dec-11	07:45	08:30	60-80	SW	3	6-7	None	Very good (5km+)
5	01-Dec-11	13:35	14:20	50-70	SW	2-3	7-8	None	Very good (5km+)
6	01-Dec-11	12:40	13:25	40-80	SW	3	5-6	None	Very good (5km+)
7	01-Dec-11	14:50	15:35	30-50	SW	2	8	None	Very good (5km+)
8	08-Dec-11	15:05	15:50	100-150	SSW	6-7	8	None	Very good (5km+)
9	08-Dec-11	14:10	14:55	100-120	SSW	7	8	None	Misty at 2000m+
10	08-Dec-11	12:10	12:55	60-150	SSW	7	8	None	Very good (5km+)
11	08-Dec-11	10:45	11:30	80-150	SSW	7	8	None	Very good (5km+)
12	08-Dec-11	08:50	09:35	100-150	SW	6	8	None	Very good (5km+)
9	15-Dec-11	14:35	15:20	50-80	WSW	6-7	2	None	Very good (5km+)
10	15-Dec-11	12:10	12:55	60-100	WSW	6	7	None	Very good (5km+)
11	15-Dec-11	10:50	11:35	80-120	WSW	6	7	Raining	Very good (5km+)
12	15-Dec-11	09:05	09:50	100-150	WSW	6-7	8	None	Very good (5km+)

Location	Date	Time (from)	Time (to)	Wave height (cm)	Wind direction	Wind strength	Cloud cover (of 8)	Precipitation	Visibility
1	19-Dec-11	15:05	15:50	60-80	SW	2-3	8	Light rain	Good, but misty at 3km+
2	19-Dec-11	14:05	14:50	60-80	SW	3	8	Light rain	Good, but misty at 3km+
3	19-Dec-11	13:10	13:50	60-80	SW	2	8	Raining	Good, but misty at 3km+
4	19-Dec-11	12:00	12:45	60-80	SW	3	8	Light rain	Very good (5km+)
5	19-Dec-11	10:30	11:15	60-80	SW	3	8	Light rain	Very good (5km+)
6	19-Dec-11	09:35	10:20	60-80	SW	3	8	None	Very good (5km+)
7	19-Dec-11	08:30	09:15	40-70	SW	3-4	5-6	None	Glare in SE, hazy at 4km+
8	20-Dec-11	15:00	15:45	20-40	NW	2	8	None	Very good (5km+)
1	03-Jan-12	10:45	11:30	120-180	SW	6-7	8	Light rain	Misty at 3km+
2	03-Jan-12	09:40	10:25	120-180	SW	7	8	None	Misty at 3km+
3	03-Jan-12	08:40	09:25	120-180	SW	7	8	None	Misty at 3km+
4	03-Jan-12	13:30	14:15	120-180	SW	6	8	None	Very good (5km+)
7	03-Jan-12	14:50	13:35	120-150	SW	6	1-2	None	Very good (5km+)
10	06-Jan-12	12:30	13:15	60-90	SW	3-4	1	None	Sun glare in SE
11	06-Jan-12	11:15	12:00	20-40	SW	4	1	None	Sun glare in SE
12	06-Jan-12	09:20	10:05	50-80	SW	6	1-2	None	Sun glare in east
5	18-Jan-12	12:25	13:10	60-90	SSW	4-5	8	None	Misty at 3km+
6	18-Jan-12	11:30	12:15	70-100	SSW	5	8	None	Misty at 2km+
8	18-Jan-12	09:55	10:40	60-90	S	5-6	8	Raining	Misty at 2km+
9	18-Jan-12	08:25	09:20	60-90	S	5-6	8	Light rain	Misty at 2km+
1	20-Jan-12	10:30	11:15	40-80	SW	3-4	8	Raining	Good (3km+)

Location	Date	Time (from)	Time (to)	Wave height (cm)	Wind direction	Wind strength	Cloud cover (of 8)	Precipitation	Visibility
2	20-Jan-12	09:25	10:10	40-60	SW	3-4	8	Raining	Misty at 4-5km+
3	20-Jan-12	08:30	09:15	60-90	SW	3-4	8	Light rain	Good (3km+)
4	20-Jan-12	12:05	12:50	60-100	SW	3-4	8	Raining	Good (3km+)
5	20-Jan-12	14:15	15:00	30-50	W	4	8	None	Very good (5km+)
6	20-Jan-12	13:20	14:05	60-90	SW	4	8	Light rain	Good (3km+)
7	20-Jan-12	15:25	16:10	40-60	W	4	8	None	Very good (5km+)
8	25-Jan-12	15:45	16:30	20-40	SW	2-3	8	None	Very good (5km+)
9	25-Jan-12	14:55	15:40	20-40	SW	3-4	8	None	Very good (5km+)
10	25-Jan-12	10:30	11:15	30-50	SW	3	8	None	Misty at 1.5-2km
11	25-Jan-12	11:40	12:25	30-60	SW	3-4	8	None	Very good (5km+)
12	25-Jan-12	13:20	14:05	30-50	SW	4	8	None	Very good (5km+)
1	03-Feb-12	15:35	16:20	30-50	NW	4	7	None	Very good (5km+)
2	03-Feb-12	14:35	15:20	30-50	NW	4	7	None	Very good (5km+)
3	03-Feb-12	13:40	14:25	30-50	NW	4	4	None	Very good (5km+)
4	03-Feb-12	08:00	08:45	60-80	NW	1-2	5	None	Very good (5km+)
5	03-Feb-12	11:20	12:05	40-60	WNW	3-4	0	None	Sun glare in SE
6	03-Feb-12	12:15	13:00	40-60	WNW	4	1	None	Sun glare in SE
7	03-Feb-12	09:15	10:00	60-100	NW	3	1	None	Sun glare in SE
8	03-Feb-12	10:10	10:55	40-60	NW	3-4	1	None	Sun glare in SE
9	07-Feb-12	14:50	15:35	90-120	ENE	5	1-2	Patchy snow cover to 10cm	Very good (5km+)
10	07-Feb-12	12:20	13:05	40-80	ENE	5	0	Patchy snow cover to 10cm	Sun glare in SE

Location	Date	Time (from)	Time (to)	Wave height (cm)	Wind direction	Wind strength	Cloud cover (of 8)	Precipitation	Visibility
11	07-Feb-12	10:55	11:40	80-170	ENE	5-6	0	None	Sun glare in SE
12	07-Feb-12	09:00	09:45	40-80	NE	4-5	2	None	Sun glare in east
1	20-Feb-12	08:35	09:20	60-80	SW	3	7-8	None	Very good (5km+)
2	20-Feb-12	09:40	10:25	40-60	SW	2-3	8	None	Very good (5km+)
3	20-Feb-12	10:40	11:25	30-60	SW	3-4	4	None	Sun glare in SE
4	20-Feb-12	12:30	13:15	40-60	SW	3	2	None	Very good (5km+)
5	20-Feb-12	13:55	14:40	60-90	S	4	7	None	Very good (5km+)
6	20-Feb-12	14:50	15:35	30-60	S	4	6	None	Very good (5km+)
7	20-Feb-12	15:55	16:40	40-70	S	5	6	None	Very good (5km+)
8	22-Feb-12	15:40	16:25	60-100	S	5	8	Light rain	Misty at 4-5km+
9	22-Feb-12	14:40	15:25	80-120	S	6	8	None	Misty at 4km+
10	22-Feb-12	12:10	12:55	80-120	S	6	8	None	Misty at 4km+
11	22-Feb-12	10:40	11:25	60-100	SSE	6	8	None	Misty at 3km+
12	22-Feb-12	09:00	09:45	80-120	SSE	5	8	None	Misty at 3km+
1	07-Mar-12	10:05	10:50	100-150	SSW	5-6	8	Raining	Misty at 3-4km+
2	07-Mar-12	09:05	09:50	100-150	SSW	5-6	8	Showers	Very good (5km+)
3	07-Mar-12	08:00	08:45	120-150	SSW	6	8	Raining	Very good (5km+)
4	07-Mar-12	15:20	16:05	100-150	SW	4-5	8	Showers	Very good (5km+)
5	07-Mar-12	16:15	17:00	100-150	SW	4	8	Showers	Misty at 6km+
6	07-Mar-12	14:25	15:00	100-150	SSW	5	8	Raining	Misty at 2-3km+, clearing to 6km+
9	07-Mar-12	12:30	13:15	100-150	SSW	5-6	8	Raining	Misty at 4km+

Location	Date	Time (from)	Time (to)	Wave height (cm)	Wind direction	Wind strength	Cloud cover (of 8)	Precipitation	Visibility
7	09-Mar-12	15:50	16:30	40-80	SW	5	7-8	None	Misty at 4-5km+
8	09-Mar-12	14:55	15:40	40-80	SW	4	7	None	Very good (5km+)
10	09-Mar-12	11:55	12:40	40-100	S	5	8	None	Very good (5km+)
11	09-Mar-12	10:30	11:05	40-80	SW	4-5	7-8	None	Very good (5km+)
12	09-Mar-12	08:55	09:40	80-120	SW	4-5	3-4	None	Sun glare in East
1	27-Mar-12	08:20	09:05	20-40	NE	1-2	0	None	Very good (5km+), sun glare in east
2	27-Mar-12	09:35	10:20	30-40	NE	2	0	None	Very good (5km+), sun glare in ESE
3	27-Mar-12	10:45	11:30	20-40	NE	1-2	0	None	Very good (5km+)
4	27-Mar-12	12:10	12:55	20-40	NE	3	1-2	None	Very good (5km+), sun glare in SE
5	27-Mar-12	13:30	14:15	20-40	NE	2-3	1-2	None	Very good (5km+)
6	27-Mar-12	14:25	15:10	20-40	NE	2	1-2	None	Very good (5km+)
7	27-Mar-12	15:30	16:15	20-40	NE	2-3	1	None	Very good (5km+)
8	30-Mar-12	15:00	15:45	30-60	NW	3	7-8	None	Misty at 5km+
9	30-Mar-12	14:05	14:50	30-60	NW	3-4	7	None	Misty at 5km+
10	30-Mar-12	11:55	12:40	20-40	NW	4	6	None	Misty at 4-5km+
11	30-Mar-12	10:30	11:15	20-40	NW	4	8	None	Misty at 4-5km+
12	30-Mar-12	09:00	09:45	10-20	NW	4-5	6	None	Misty at 4-5km+
1	02-Apr-12	08:35	09:20	20-40	WNW	3	5	None	Very good (5km+), sun glare in east
2	02-Apr-12	09:35	10:20	30-60	WNW	3	6-7	None	Very good (5km+), sun glare in ESE
3	02-Apr-12	10:35	11:20	20-40	WNW	3	5-6	None	Very good (5km+), sun glare in SE
4	02-Apr-12	12:05	12:50	30-50	W	3	2-3	None	Very good (5km+), sun glare in SSE

Location	Date	Time (from)	Time (to)	Wave height (cm)	Wind direction	Wind strength	Cloud cover (of 8)	Precipitation	Visibility
5	02-Apr-12	13:25	14:10	30-60	SW	4-5	2-3	None	Very good (5km+), misty at 4-5km+
6	02-Apr-12	14:20	15:05	40-70	SSW	4-5	6-7	None	Very good (5km+)
7	02-Apr-12	15:25	16:10	30-60	W	4-5	6-7	None	Very good (5km+)
8	13-Apr-12	15:30	16:15	30-50	E	2-3	6	None	Very good (5km+)
9	13-Apr-12	14:30	15:15	20-40	E	3	6	None	Very good (5km+)
10	13-Apr-12	12:30	13:15	20-40	E	2	7	None	Very good (5km+), light heat haze
11	13-Apr-12	11:15	12:00	20-40	E	2	4-5	None	Very good (5km+), sun glare in SE
12	13-Apr-12	09:15	10:00	20-40	ENE	2	7-8	None	Very good (5km+)
1	23-Apr-12	08:40	09:25	30-50	SE	3	7-8	None	Very good (5km+)
2	23-Apr-12	07:35	08:20	30-40	SE	3	7-8	None	Very good (5km+), misty at 5-6km+
3	23-Apr-12	06:35	07:20	30-40	SE	1	6-7	None	Very good (5km+), misty at 4km+
4	23-Apr-12	10:20	11:05	40-80	SE	4-5	4	None	Very good (5km+), sun glare in SE
5	23-Apr-12	11:15	12:00	40-80	SE	4	4	None	Very good (5km+), sun glare in SE
6	23-Apr-12	12:40	13:25	60-100	SE	5	2	None	Very good (5km+)
7	23-Apr-12	13:30	14:15	60-100	SE	5-6	3-4	None	Very good (5km+)
8	25-Apr-12	14:30	15:15	150-180	SE	7	8	Light rain	Very good (5km+)
9	25-Apr-12	13:35	14:20	150-180	SE	7	8	Light rain	Very good (5km+)
10	25-Apr-12	11:30	12:15	120-180	SSE	7	8	Heavy rain	Misty at 3km+
11	25-Apr-12	10:20	11:05	100-150	SSE	7	8	Heavy rain	Misty at 3km+
12	25-Apr-12	08:50	09:35	100-150	SSE	6	8	Light rain	Very good (5km+)

Table A2 Three Hour Colony Watches, Survey Dates, Times and Weather Conditions

Location	Date	Field worker	Time (from)	Time (to)	Wave height (cm)	Wind direction	Wind strength	Cloud cover (of 8)	Precipitation	Visibility
Minsmere	11-May-11	M Raven	13:00	16:00	30-40	SW	3	8	None	Very good (3km+)
Minsmere	18-May-11	S Haynes	08:20	12:20	50	SW	4	8	None	Very good (3km+)
Dingle	18-May-11	S Haynes	16:10	19:10	100-150	SW-S	2-3	7-8	None	Slight haze
Dingle	20-May-11	M Raven	12:30	15:30	10-15	SW	4-5	0	None	Moderate haze
Minsmere	23-May-11	M Raven	12:50	15:50	100-120	S	7	1	None	Very good (3km+)
Slaughden	02-Jun-11	S Haynes	08:20	11:20	25	NE	2-3	1	None	Misty, visibility poor beyond 200m
Dingle	09-Jun-11	S Haynes	12:00	15:00	50	SW	2-3	5-7	Heavy showers	Very good (3km+)
Dingle	10-Jun-11	A Miller	07:00	10:00	25	S	3	3	None	Very good (3km+)
Slaughden	10-Jun-11	S Haynes	08:30	11:30	50	SSW	2-3	8	Heavy showers	Moderate
Dingle	10-Jun-11	A Miller	11:00	14:00	20-30	S	4-5	7	None	Slight haze
Dingle	13-Jun-11	M Raven	12:35	15:35	90-120	SE	4-6	8	None	Very good (3km+)
Slaughden	15-Jun-11	S Haynes	08:35	11:35	10	SW	1-2	7-8	None	Very good (3km+)
Minsmere	16-Jun-11	T Sykes	05:30	08:30	5	W	1-3	8-3	None	Very good (3km+)
Dingle	16-Jun-11	T Sykes	09:40	12:40	5	W	1-2	6	Light rain from 1220hrs	Very good (3km+)
Minsmere	23-Jun-11	M Raven	07:55	10:55	15-20	W	4-5	7-8	None	Very good (3km+)
Slaughden	23-Jun-11	M Raven	12:55	15:55	40-60	W	4-7	7-8	Heavy showers	Very good (3km+)
Dingle	24-Jun-11	M Raven	14:25	17:25	15-30	SW	3-4	6	None	Very good (3km+)
Minsmere	29-Jun-11	S Haynes	08:00	11:00	25	SW	2	4	None	Very good (3km+)
Dingle	29-Jun-11	S Haynes	12:00	15:00	25	SW	2	3	None	Very good (3km+)
Dingle	07-Jul-11	S Haynes	08:30	11:30	50	SW	2	4	None	Very good (3km+)

Location	Date	Field worker	Time (from)	Time (to)	Wave height (cm)	Wind direction	Wind strength	Cloud cover (of 8)	Precipitation	Visibility
Minsmere	12-Jul-11	M Raven	12:35	15:35	70-100	N	4-6	8	None	Very good (3km+)
Dingle	14-Jul-11	S Haynes	16:00	19:00	200	SW	2	8	None	Fair-good, misty, spray at 1km
Dingle	22-Jul-11	S Haynes	08:10	11:35	50	SW	2	4	None	Fair, sun glare
Dingle	27-Jul-11	S Haynes	10:00	13:00	25	N	2	8	None	Misty at 3km
Minsmere	27-Jul-11	S Haynes	15:00	18:00	25	N	2	6	None	Good
Dingle	01-Aug-11	M Raven	10:20	13:20	50-70	E	4-5	1	None	Moderate haze
Minsmere	01-Aug-11	M Raven	14:50	17:50	60-90	E	5	0-1	None	Moderate haze
Dingle	12-Aug-11	M Raven	08:05	11:05	15-20	SW-NW	3-4	8	Light rain	Misty at 1-1.5km
Sizewell outfall	12-Aug-11	M Raven	12:40	15:40	40-60	NE	3	8	None	Very good (3km+)

Table A3 Extended Colony Watches, Survey Dates, Times and Weather Conditions

Location	Date	Field worker	Time (from)	Time (to)	Wave height (cm)	Wind direction	Wind strength	Cloud cover (of 8)	Precipitation	Visibility
Dingle	17-May-11	S Haynes	08:20	14:45	50-100	SW	3	7-8	None	Very good (3km+)
Minsmere	19-May-11	S Haynes	09:00	15:00	25	ENE	1-2	2-5	None	Very good (3km+)
VP2	23-May-11	S Haynes	08:45	15:50	150-200	SW	6-7	2-4	None	Very good (3km+)
VP3	24-May-11	S Haynes	08:00	15:00	25	W-SW	3	2	None	Good (sun glare in east)
Dingle	03-Jun-11	S Haynes	07:50	14:50	150	NE	3-5	0-8	None	Early mist clearing, then very good visibility
Minsmere	08-Jun-11	S Haynes	08:15	15:15	100	SW	2-4	5-7	None	Good, but some sun glare and haze
VP2	15-Jun-11	T Sykes	10:30	17:50	30	SSE	4	5-7	None	Very good (3km+)
VP3	23-Jun-11	T Sykes	08:00	15:45	50	S	3-5	3-8	None	Very good (3km+)
Dingle	06-Jul-11	S Haynes	08:15	15:15	50	SW	3-4	4	None	Good, but sun glare in east
VP3	15-Jul-11	S Haynes	08:00	15:00	100	SW	2-3	2-3	None	Good, but sun glare in east
Dingle	19-Jul-11	S Haynes	08:00	15:00	50	S-SE	3-4	5-6	None	Very good (3km+)
VP2	20-Jul-11	S Haynes	08:15	15:15	25	SW	1-2	5-7	None	Very good (3km+)

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Appendix B
Desk Study, Bird Data

Table B1 SBRC Data, Total Annual Counts[10]

English name	Location	2000	2001	2002	2003	2004	2005	2006	2007	2008
Scaup	North Warren	12		8	13					
Scaup	Thorpeness								12	11
Eider	North Warren	717	549	54						
Eider	Slaughden								5	1
Eider	Thorpeness								75	251
Long-tailed duck	North Warren		1	4						
Long-tailed duck	Sizewell								1	
Long-tailed duck	Thorpeness								2	3
Common scoter	North Warren	4,031	6,440	2,602						
Common scoter	Sizewell									70
Common scoter	Slaughden								30	38
Common scoter	Thorpeness								1,622	4,526
Velvet scoter	North Warren	29	24	22	13					

[10] NB: a blank cell does not confirm that the species was not present at that site in that year, but that no count was undertaken, or that the data was not submitted to the SBRC

English name	Location	2000	2001	2002	2003	2004	2005	2006	2007	2008
Velvet scoter	Sizewell									1
Velvet scoter	Slaughden								2	1
Velvet scoter	Thorpeness								9	18
Goldeneye	Aldeburgh								3	
Goldeneye	North Warren	66	24	32	1	2				
Goldeneye	Thorpeness								11	64
Red-breasted merganser	North Warren	181	56	45						
Red-breasted merganser	Slaughden									2
Red-breasted merganser	Thorpeness								19	66
Red-throated diver	North Warren	31,757	28,951	10,754	3,650					
Red-throated diver	Slaughden									1
Red-throated diver	Thorpeness								3,736	28,670
Black-throated diver	North Warren	7	8	4	6					
Black-throated diver	Slaughden								1	
Black-throated diver	Thorpeness								21	27
Great northern diver	North Warren	3	1	2	1					
Great northern diver	Slaughden									1
Great northern diver	Thorpeness								5	9
Great crested grebe	North Warren	826	917	602	445	11				
Great crested grebe	Thorpeness								1,416	1,292
Red-necked grebe	North Warren	7	4	7	2		1			
Red-necked grebe	Thorpeness								6	6

English name	Location	2000	2001	2002	2003	2004	2005	2006	2007	2008
Slavonian grebe	North Warren	4								
Cormorant	North Warren	3,772	2,875	1,206	392	173	149			
Cormorant	Sizewell Rigs								80	
Grey phalarope	North Warren	4								
Grey phalarope	Thorpeness									1
Pomarine skua	North Warren	292	30	20	5					
Pomarine skua	Sizewell								1	1
Pomarine skua	Thorpeness								36	73
Arctic skua	North Warren	143	168	74	57				1	
Arctic skua	Sizewell								1	8
Arctic skua	Sizewell Rigs									6
Arctic skua	Slaughden								1	
Arctic skua	Thorpeness								73	216
Long-tailed skua	North Warren	3	6	1						
Long-tailed skua	Orford Ness									5
Long-tailed skua	Thorpeness								3	6
Great skua	North Warren	33	34	13	9					
Great skua	Thorpeness								45	69
Kittiwake	North Warren	12,561	16,698	1,905						
Kittiwake	Thorpeness								2,063	11,044
Black-headed gull	North Warren	8,379	17,145	3,401	1,601	2,633	1,583			1,403
Black-headed gull	Thorpeness								482	219

English name	Location	2000	2001	2002	2003	2004	2005	2006	2007	2008
Little gull	Minsmere								3	
Little gull	North Warren	508	633	453	227	8	2		1	
Little gull	Sizewell								9	265
Little gull	Sizewell Rigs								194	49
Little gull	Slaughden								2	
Little gull	Thorpeness								174	718
Mediterranean gull	Aldeburgh									2
Mediterranean gull	North Warren	17	8	4			3		2	
Mediterranean gull	Sizewell								3	
Mediterranean gull	Thorpeness									24
Common gull	North Warren	1,695	19,964	164	4	31	28			
Common gull	Thorpeness									136
Lesser black-backed gull	North Warren	54	4,561	2,867	430	72	83			201
Lesser black-backed gull	Thorpeness									223
Herring gull	North Warren	119	1,413	430	346	333	268			
Iceland gull	North Warren	3				2	1		1	2
Iceland gull	Orford Ness									1
Glaucous gull	North Warren	4	1	1			2			1
Glaucous gull	Sizewell								1	
Glaucous gull	Sizewell Rigs								1	
Glaucous gull	Slaughden									3
Glaucous gull	Thorpeness									1

English name	Location	2000	2001	2002	2003	2004	2005	2006	2007	2008
Great black-backed gull	North Warren	74	71	37	78	78	107			351
Great black-backed gull	Thorpeness									22
Little tern	North Warren	62	99	99	44	2				
Little tern	Sizewell				1	16				
Little tern	Slaughden									2
Little tern	Thorpeness								89	340
Black tern	Minsmere									1
Black tern	North Warren	18	13	3						
Black tern	Sizewell								30	7
Black tern	Sizewell Rigs									11
Black tern	Thorpeness								10	25
Whiskered tern	Sizewell									2
Sandwich tern	North Warren	773	1,076	668	90		3			
Sandwich tern	Sizewell									2
Sandwich tern	Thorpeness								314	3,422
Common tern	Minsmere									3
Common tern	North Warren	1,338	4,869	1,296	389	7	8			20
Common tern	Sizewell Rigs								2	40
Common tern	Thorpeness								2,535	17,120
Roseate tern	North Warren		1							
Roseate tern	Thorpeness								3	2
Arctic tern	North Warren	22	11	7	1				1	

English name	Location	2000	2001	2002	2003	2004	2005	2006	2007	2008
Arctic tern	Sizewell								21	1
Arctic tern	Sizewell Rigs								16	7
Arctic tern	Slaughden								4	
Arctic tern	Thorpeness								72	22
Guillemot	North Warren	25,034	30,028	5,572	4,079					
Guillemot	Thorpeness								4,308	422
Razorbill	North Warren	16	3	4	5					
Razorbill	Thorpeness								18	124

Table B2 Peak Monthly WeBS Counts[11]

Sector	Sector description	Species common name	Species biological name	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
33073	Minsmere (not offshore)	Wigeon	*Anas penelope*	4	27	291	241	517	768	714	935	550	190	2	2
33074	Minsmere (offshore)	Wigeon	*Anas penelope*	0	0	0	0	0	12	0	3	0	0		0
33312	Sizewell Belts	Wigeon	*Anas penelope*			16	27	12	7	31	75	60			
33352	North Warren & Thorpeness	Wigeon	*Anas penelope*			150	235	1,400	2,025	3,120	2,750	1,120			
33445	Alde Estuary (S5)	Wigeon	*Anas penelope*			0	0	331	1,070	359	160	888			
33445	Alde Estuary (S9)	Wigeon	*Anas penelope*				649	1,682	1,652	2,213	1,834	1,162			
33073	Minsmere (not offshore)	Teal	*Anas crecca*	75	761	1,252	1,796	1,429	1,155	1,105	735	643	388	4	33
33074	Minsmere (offshore)	Teal	*Anas crecca*	0	0	0	0	0	0	3	2	0	0		0
33312	Sizewell Belts	Teal	*Anas crecca*			12	20	28	60	117	69	61			
33352	North Warren & Thorpeness	Teal	*Anas crecca*			260	555	860	1,017	789	560	340			
33445	Alde Estuary (S5)	Teal	*Anas crecca*			0	0	10	17	54	13	11			
33445	Alde Estuary (S9)	Teal	*Anas crecca*				349	1,146	1,210	1,261	1,119	591			
33073	Minsmere (not offshore)	Scaup	*Aythya marila*	0	0	0	0	0	0	0	1	0	0	0	0
33073	Minsmere (not offshore)	Common scoter	*Melanitta nigra*	0	0	0	0	0	1	0	0	0	1	0	0
33074	Minsmere (offshore)	Common scoter	*Melanitta nigra*	0	1	0	0	40	10	200	6	0	0		0
33073	Minsmere (not offshore)	Goldeneye	*Bucephala clangula*	0	0	0	0	0	2	5	6	3	3	0	0
33074	Minsmere (offshore)	Goldeneye	*Bucephala clangula*	0	0	0	0	3	0	0	0	0	0		0
33445	Alde Estuary (S5)	Goldeneye	*Bucephala clangula*			0	0	3	4	5	3	3			

[11] Zero denotes that a count was undertaken but the species was not recorded; a blank that no count was undertaken for that species

Sector	Sector description	Species common name	Species biological name	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
33445	Alde Estuary (S9)	Goldeneye	*Bucephala clangula*				0	1	2	2	3	0			
33074	Minsmere (offshore)	Red-breasted merganser	*Mergus serrator*	0	0	0	1	0	0	0	0	0	0		0
33445	Alde Estuary (S5)	Red-breasted merganser	*Mergus serrator*			0	0	2	0	0	1	0			
33445	Alde Estuary (S9)	Red-breasted merganser	*Mergus serrator*				0	0	1	2	3	1			
33074	Minsmere (offshore)	Red-throated diver	*Gavia stellata*	0	0	0	0	2	56	3	1	10	3		0
33445	Alde Estuary (S5)	Great northern diver	*Gavia immer*			0	0	1	0	0	0	0			
33445	Alde Estuary (S9)	Great northern diver	*Gavia immer*				0	0	1	0	0	0			
33073	Minsmere (not offshore)	Great crested grebe	*Podiceps cristatus*	4	5	2	0	0	0	0	2	3	4	3	4
33074	Minsmere (offshore)	Great crested Grebe	*Podiceps cristatus*	0	0	0	2	21	57	10	202	18	0		0
33445	Alde Estuary (S5)	Great crested Grebe	*Podiceps cristatus*			0	1	5	4	7	5	6			
33445	Alde Estuary (S9)	Great crested Grebe	*Podiceps cristatus*				0	0	0	32	0	0			
33073	Minsmere (not offshore)	Cormorant	*Phalacrocorax carbo*	16	43	20	12	13	6	4	5	6	4	7	14
33074	Minsmere (offshore)	Cormorant	*Phalacrocorax carbo*	0	0	0	1	0	4	1	0	0	0		1
33312	Sizewell Belts	Cormorant	*Phalacrocorax carbo*			1	0	1	1	0	1	0			
33352	North Warren & Thorpeness	Cormorant	*Phalacrocorax carbo*			12	6	15	14	10	6	2			
33445	Alde Estuary (S5)	Cormorant	*Phalacrocorax carbo*			6	7	15	3	4	2	4			
33445	Alde Estuary (S9)	Cormorant	*Phalacrocorax carbo*				51	45	137	88	181	102			
33073	Minsmere (not offshore)	Black-headed gull	*Chroicocephalus ridibundus*	288	10	19	107	25	32	126	326	1,311	2,547	2,153	838
33074	Minsmere (offshore)	Black-headed gull	*Chroicocephalus ridibundus*			0	2	0	2	1	0	0			0
33312	Sizewell Belts	Black-headed gull	*Chroicocephalus ridibundus*			0	0	0	0	41	0	0			
33352	North Warren & Thorpeness	Black-headed gull	*Chroicocephalus ridibundus*			35	159	255	270	435	230	181			
33445	Alde Estuary (S5)	Black-headed gull	*Chroicocephalus ridibundus*			118	91	187	108	149	101	89			

Sector	Sector description	Species common name	Species biological name	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
33445	Alde Estuary (S9)	Black-headed gull	*Chroicocephalus ridibundus*				151	354	117	342	2,231	448			
33073	Minsmere (not offshore)	Little gull	*Hydrocoloeus minutus*	15	8	0	0	0	1	0	0	0	0	3	11
33074	Minsmere (offshore)	Little gull	*Hydrocoloeus minutus*			0	0	1	0	0	0	0			0
33073	Minsmere (not offshore)	Mediterranean gull	*Larus melanocephalus*	4	0	0	1	0	0	0	4	15	45	14	11
33445	Alde Estuary (S9)	Mediterranean gull	*Larus melanocephalus*				0	1	0	1	3	0			
33073	Minsmere (not offshore)	Common gull	*Larus canus*	0	0	4	7	13	16	46	18	10	10	154	1
33074	Minsmere (offshore)	Common gull	*Larus canus*			0	1	0	0	0	0	0			0
33352	North Warren & Thorpeness	Common gull	*Larus canus*			0	1	4	4	19	3	3			
33445	Alde Estuary (S5)	Common gull	*Larus canus*			0	1	0	0	2	0	3			
33445	Alde Estuary (S9)	Common gull	*Larus canus*				10	50	140	75	184	14			
33073	Minsmere (not offshore)	Lesser black-backed gull	*Larus fuscus*	177	3	14	26	22	5	29	16	36	29	29	88
33074	Minsmere (offshore)	Lesser black-backed gull	*Larus fuscus*			0	4	0	0	0	0	0			0
33352	North Warren & Thorpeness	Lesser black-backed gull	*Larus fuscus*			68	31	14	12	26	50	41			
33445	Alde Estuary (S5)	Lesser black-backed gull	*Larus fuscus*			1	0	11	0	0	0	0			
33445	Alde Estuary (S9)	Lesser black-backed gull	*Larus fuscus*				14	20	15	53	831	2,160			
33073	Minsmere (not offshore)	Herring gull	*Larus argentatus*	2	1	5	3	41	42	93	146	253	28	42	9
33074	Minsmere (offshore)	Herring gull	*Larus argentatus*			13	2	0	12	5	3	0			1
33312	Sizewell Belts	Herring gull	*Larus argentatus*			0	0	0	0	2	2	3			
33352	North Warren & Thorpeness	Herring gull	*Larus argentatus*			10	40	18	50	78	28	44			
33445	Alde Estuary (S5)	Herring gull	*Larus argentatus*			8	28	30	12	52	14	12			
33445	Alde Estuary (S9)	Herring gull	*Larus argentatus*				57	210	343	393	711	697			
33073	Minsmere (not offshore)	Yellow-legged gull	*Larus michahellis*	0	0	0	0	1	1	2	1	3	1	0	1

Sector	Sector description	Species common name	Species biological name	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
33073	Minsmere (not offshore)	Caspian gull	*Larus Cachinnans*	0	0	0	1	1	0	1	1	2	1	0	0
33074	Minsmere (offshore)	Caspian gull	*Larus Cachinnans*			0	0	0	1	0	0	0			0
33352	North Warren & Thorpeness	Caspian gull	*Larus Cachinnans*			0	0	1	0	1	0	1			
33445	Alde Estuary (S9)	Yellow-legged gull	*Larus michahellis*				1	1	1	0	3	0			
33073	Minsmere (not offshore)	Glaucous gull	*Larus hyperboreus*	0	0	0	0	0	0	0	0	1	0	0	0
33445	Alde Estuary (S9)	Glaucous gull	*Larus hyperboreus*				0	0	0	1	0	0			
33073	Minsmere (not offshore)	Great black-backed gull	*Larus marinus*	2	0	1	3	27	41	53	102	148	38	13	2
33074	Minsmere (offshore)	Great black-backed gull	*Larus marinus*			0	0	0	2	0	1	0			0
33352	North Warren & Thorpeness	Great black-backed gull	*Larus marinus*			10	59	21	20	53	58	16			
33445	Alde Estuary (S5)	Great black-backed gull	*Larus marinus*			0	3	7	0	2	2	4			
33445	Alde Estuary (S9)	Great black-backed gull	*Larus marinus*				41	52	64	32	39	76			
33073	Minsmere (not offshore)	Little tern	*Sternula albifrons*	67	1	0	0	0	0	0	0	0	0	16	53
33074	Minsmere (offshore)	Little tern	*Sternula albifrons*			0	0	0	0	0	0	0		6	20
33073	Minsmere (not offshore)	Sandwich tern	*Sterna sandvicensis*	847	50	0	0	0	0	0	0	0	10	3	405
33074	Minsmere (offshore)	Sandwich tern	*Sterna sandvicensis*			0	0	0	0	0	0	0		0	2
33073	Minsmere (not offshore)	Common tern	*Sterna hirundo*	210	64	0	0	0	0	0	0	0	2	163	189
33074	Minsmere (offshore)	Common tern	*Sterna hirundo*			0	0	0	0	0	0	0		0	3
33073	Minsmere (not offshore)	Roseate tern	*Sterna dougallii*	3	0	0	0	0	0	0	0	0	0	0	1
33073	Minsmere (not offshore)	Arctic tern	*Sterna paradisaea*	1	1	0	0	0	0	0	0	0	0	0	2

Appendix C
Survey Results

Table C1 Peak counts of foraging and resting birds recorded from each VP[12]

Species common name	Species biological name	VP	Location	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Brent goose	*Branta bernicla*	1	On beach	0	0	0	0	0	0	0	0	16	0	0	0	0	0
Brent goose	*Branta bernicla*	4	Inshore waters	0	0	0	0	0	0	8	0	0	0	0	0	0	0
Brent goose	*Branta bernicla*	5	Inshore waters	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Brent goose	*Branta bernicla*	11	Inshore waters	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Wigeon	*Anas penelope*	1	Inshore waters	0	0	0	0	0	0	0	50	0	0	0	8	0	0
Wigeon	*Anas penelope*	2	Inshore waters	0	0	0	0	0	0	0	100	0	0	0	0	0	0
Wigeon	*Anas penelope*	3	Inshore waters	0	0	0	0	0	0	0	95	0	0	0	0	0	0
Wigeon	*Anas penelope*	4	Inshore waters	0	0	0	0	0	0	0	100	0	0	0	0	0	0
Wigeon	*Anas penelope*	7	Inshore waters	0	0	0	0	0	0	0	0	0	0	0	0	10	8
Wigeon	*Anas penelope*	8	Inshore waters	0	0	0	0	0	0	0	10	0	0	0	0	0	0
Wigeon	*Anas penelope*	9	Inshore waters	0	0	0	0	0	0	0	0	0	0	25	0	0	0
Wigeon	*Anas penelope*	11	Inshore waters	0	0	0	0	0	0	0	0	0	0	50	0	0	0

[12] The figures show the peak count of birds recorded during a 45-minute watch. The five species of 'common' gulls (black-headed, common, lesser black-backed, herring and great black-backed) were not routinely counted during the watches. Peak counts from the 3 and 6 hour colony survey watches undertaken from VP2 and VP3 have also been included.

Species common name	Species biological name	VP	Location	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Wigeon	*Anas penelope*	12	Inshore waters	11	0	0	0	0	0	0	0	0	0	0	0	0	0
Gadwall	*Anas strepera*	1	Inshore waters	0	0	0	0	0	2	0	0	0	0	0	0	0	0
Gadwall	*Anas strepera*	11	Inshore waters	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Teal	*Anas crecca*	1	Inshore waters	0	0	0	0	0	0	0	100	0	0	0	0	0	0
Teal	*Anas crecca*	2	Inshore waters	0	0	0	0	0	0	0	40	0	0	0	0	0	0
Teal	*Anas crecca*	3	Inshore waters	0	0	0	0	0	0	0	18	0	0	0	0	0	0
Teal	*Anas crecca*	4	Inshore waters	0	0	0	0	0	0	0	70	0	0	0	0	0	0
Teal	*Anas crecca*	5	Inshore waters	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Teal	*Anas crecca*	8	Inshore waters	0	0	0	0	0	0	0	5	0	0	140	0	0	0
Teal	*Anas crecca*	9	Inshore waters	0	0	0	0	0	0	0	0	0	0	300	0	0	0
Teal	*Anas crecca*	11	Inshore waters	0	0	0	0	0	0	0	0	0	0	10	0	0	0
Teal	*Anas crecca*	12	Inshore waters	0	0	0	0	0	0	0	0	0	0	100	0	0	0
Mallard	*Anas platyrhynchos*	11	Inshore waters	0	0	0	0	0	0	0	0	0	0	5	0	0	0
Eider	*Somateria mollissima*	7	Inshore waters	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Eider	*Somateria mollissima*	9	Inshore waters	0	0	0	0	0	0	0	0	0	0	0	0	8	0
Eider	*Somateria mollissima*	10	Inshore waters	0	0	0	4	0	0	0	0	0	0	0	0	0	0
Eider	*Somateria mollissima*	11	Inshore waters	0	0	0	5	0	0	0	0	4	0	0	0	0	0
Eider	*Somateria mollissima*	12	Inshore waters	0	0	0	0	0	2	1	0	0	0	0	0	0	0
Common scoter	*Melanitta nigra*	2	Inshore waters	0	0	0	0	0	0	0	0	0	1	0	0	0	0
Common scoter	*Melanitta nigra*	4	Inshore waters	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Common scoter	*Melanitta nigra*	5	Inshore waters	0	1	0	0	0	0	0	0	24	4	0	0	0	0
Common scoter	*Melanitta nigra*	6	Inshore waters	0	11	0	0	20	0	8	5	32	0	0	0	0	0

Species common name	Species biological name	VP	Location	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Common scoter	*Melanitta nigra*	7	Inshore waters	3	0	0	0	0	0	0	0	22	1	0	0	0	0
Common scoter	*Melanitta nigra*	8	Inshore waters	3	0	0	0	0	0	0	0	0	0	0	0	0	0
Common scoter	*Melanitta nigra*	9	Inshore waters	0	0	0	20	0	0	0	0	0	0	0	0	0	0
Common scoter	*Melanitta nigra*	10	Inshore waters	0	0	0	0	0	0	0	0	0	30	0	0	0	0
Red-throated diver	*Gavia stellata*	1	Inshore waters	42	3	0	0	0	0	0	0	0	3	0	57	18	0
Red-throated diver	*Gavia stellata*	2	Inshore waters	7	1	0	0	0	0	0	0	0	1	1	10	16	20
Red-throated diver	*Gavia stellata*	3	Inshore waters	14	5	0	0	0	0	0	0	0	1	0	7	14	1
Red-throated diver	*Gavia stellata*	4	Inshore waters	5	0	0	0	0	0	0	0	0	7	7	9	17	0
Red-throated diver	*Gavia stellata*	5	Inshore waters	190	4	0	0	0	0	0	0	0	3	3	8	2	2
Red-throated diver	*Gavia stellata*	6	Inshore waters	101	7	0	0	0	0	0	0	3	1	2	10	8	10
Red-throated diver	*Gavia stellata*	7	Inshore waters	56	2	0	0	0	0	0	0	1	3	13	8	13	12
Red-throated diver	*Gavia stellata*	8	Inshore waters	16	1	0	0	0	0	0	0	0	2	3	7	3	0
Red-throated diver	*Gavia stellata*	9	Inshore waters	2	1	0	0	0	0	0	0	0	1	1	0	10	1
Red-throated diver	*Gavia stellata*	10	Inshore waters	7	1	0	0	0	0	0	0	0	1	6	3	22	4
Red-throated diver	*Gavia stellata*	11	Inshore waters	5	11	0	0	0	0	0	0	1	0	6	2	60	2
Red-throated diver	*Gavia stellata*	12	Inshore waters	18	3	0	0	0	0	0	0	0	1	6	3	10	1
Black-throated diver	*Gavia arctica*	3	Inshore waters	0	0	0	0	0	0	0	0	0	1	0	1	0	0
Black-throated diver	*Gavia arctica*	4	Inshore waters	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Great crested grebe	*Podiceps cristatus*	1	Inshore waters	0	0	0	0	0	0	0	0	2	10	1	39	2	1
Great crested grebe	*Podiceps cristatus*	2	Inshore waters	0	0	0	0	0	0	0	0	0	0	0	1	4	0
Great crested grebe	*Podiceps cristatus*	3	Inshore waters	0	0	0	0	0	0	0	0	0	1	4	2	2	0
Great crested grebe	*Podiceps cristatus*	4	Inshore waters	0	0	0	0	0	0	0	0	0	12	5	6	3	0

Species common name	Species biological name	VP	Location	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Great crested grebe	*Podiceps cristatus*	5	Inshore waters	2	0	0	0	0	0	0	0	1	2	6	2	1	0
Great crested grebe	*Podiceps cristatus*	6	Inshore waters	0	0	0	0	0	0	0	0	0	4	6	4	3	0
Great crested grebe	*Podiceps cristatus*	7	Inshore waters	0	0	0	0	0	0	0	0	0	3	5	10	2	0
Great crested grebe	*Podiceps cristatus*	8	Inshore waters	0	0	0	0	0	0	0	0	1	2	1	1	1	1
Great crested grebe	*Podiceps cristatus*	9	Inshore waters	0	0	0	1	0	0	0	0	0	0	1	1	0	0
Great crested grebe	*Podiceps cristatus*	10	Inshore waters	0	0	0	0	0	0	0	0	0	0	0	2	0	0
Great crested grebe	*Podiceps cristatus*	11	Inshore waters	0	0	0	0	0	0	0	0	0	0	4	1	3	0
Great crested grebe	*Podiceps cristatus*	12	Inshore waters	0	0	0	0	0	0	0	0	0	0	20	1	5	3
Fulmar	*Fulmarus glacialis*	3	Inshore waters	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Gannet	*Morus bassanus*	2	Siz B outfall	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Gannet	*Morus bassanus*	8	Inshore waters	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Gannet	*Morus bassanus*	10	Inshore waters	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Cormorant	*Phalacrocorax carbo*	1	Inshore waters	20	0	0	0	0	0	1	1	0	1	5	3	0	1
Cormorant	*Phalacrocorax carbo*	2	Inshore waters	0	0	0	0	0	15	2	21	37	63	0	96	0	1
Cormorant	*Phalacrocorax carbo*	2	North Rig	32	5	4	0	4	13	8	36	29	40	67	78	75	48
Cormorant	*Phalacrocorax carbo*	2	Siz A outfall structure	0	0	0	0	0	0	1	0	0	2	0	0	1	0
Cormorant	*Phalacrocorax carbo*	2	Siz B outfall	0	0	0	0	1	6	0	1	10	6	24	25	1	2
Cormorant	*Phalacrocorax carbo*	2	Siz B outfall structure	0	0	0	0	2	0	0	3	4	5	7	5	0	0
Cormorant	*Phalacrocorax carbo*	3	Inshore waters	8	0	1	10	0	2	9	1	31	59	31	102	45	5
Cormorant	*Phalacrocorax carbo*	2 & 3	Rigs & outfall area	0	0	0	0	0	0	0	0	0	0	39	0	83	0
Cormorant	*Phalacrocorax carbo*	3	South Rig	0	0	0	0	0	0	0	2	0	0	0	0	6	0
Cormorant	*Phalacrocorax carbo*	4	Inshore waters	1	1	0	0	0	1	4	3	0	4	9	10	2	4

Species common name	Species biological name	VP	Location	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Cormorant	*Phalacrocorax carbo*	5	Inshore waters	3	0	0	0	0	1	1	1	1	6	7	5	1	1
Cormorant	*Phalacrocorax carbo*	6	Inshore waters	5	1	0	0	0	1	1	2	1	7	4	2	3	2
Cormorant	*Phalacrocorax carbo*	7	Inshore waters	3	0	0	0	0	2	1	2	1	1	5	2	0	2
Cormorant	*Phalacrocorax carbo*	8	Inshore waters	0	0	0	0	0	1	0	0	2	0	3	0	0	1
Cormorant	*Phalacrocorax carbo*	9	Inshore waters	4	0	0	0	0	0	0	2	0	2	3	1	0	1
Cormorant	*Phalacrocorax carbo*	10	Inshore waters	6	0	0	0	0	0	1	0	5	5	6	0	0	0
Cormorant	*Phalacrocorax carbo*	11	Inshore waters	4	0	0	1	0	0	1	7	31	19	12	1	1	1
Cormorant	*Phalacrocorax carbo*	12	Inshore waters	8	1	42	1	0	0	0	2	14	90	27	6	5	7
Marsh harrier	*Circus aeruginosus*	7	Inshore waters	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Marsh harrier	*Circus aeruginosus*	12	On beach	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Kestrel	*Falco tinnunculus*	2	Inshore waters	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Kestrel	*Falco tinnunculus*	10	Inshore waters	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Hobby	*Falco subbuteo*	1	Inshore waters	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Hobby	*Falco subbuteo*	4	Inshore waters	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Peregrine	*Falco peregrinus*	2	Inshore waters	0	0	0	0	0	0	0	0	0	1	0	0	0	0
Peregrine	*Falco peregrinus*	12	Inshore waters	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Ringed plover	*Charadrius hiaticula*	7	On beach	0	0	0	0	0	2	0	0	0	0	0	0	0	0
Ringed plover	*Charadrius hiaticula*	9	On beach	0	0	0	0	0	0	0	0	0	0	3	0	0	0
Ringed plover	*Charadrius hiaticula*	10	On beach	2	0	30	0	0	0	0	0	0	0	0	0	2	0
Golden plover	*Pluvialis apricaria*	12	On beach	0	0	0	0	10	0	0	0	0	0	0	0	0	0
Grey plover	*Pluvialis squatarola*	10	On beach	0	0	0	0	0	0	0	0	0	2	0	0	0	0
Sanderling	*Calidris alba*	7	On beach	0	0	0	0	0	1	0	0	0	0	0	0	0	0

Species common name	Species biological name	VP	Location	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Dunlin	*Calidris alpina*	10	On beach	0	0	25	0	0	0	0	0	0	0	0	0	0	0
Whimbrel	*Numenius phaeopus*	12	On beach	0	0	0	0	1	0	3	0	0	0	0	0	0	0
Turnstone	*Arenaria interpres*	2	North Rig	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Turnstone	*Arenaria interpres*	7	On beach	0	0	0	0	0	0	0	1	3	0	0	0	0	0
Turnstone	*Arenaria interpres*	8	On beach	0	0	0	0	0	0	0	1	0	0	5	0	0	0
Turnstone	*Arenaria interpres*	9	On beach	0	0	0	0	0	0	0	0	19	0	7	0	0	0
Turnstone	*Arenaria interpres*	10	On beach	0	0	1	0	0	0	0	0	0	4	0	0	0	0
Grey phalarope	*Phalaropus fulicarius*	8	Inshore waters	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Pomarine skua	*Stercorarius pomarinus*	7	Inshore waters	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Pomarine skua	*Stercorarius pomarinus*	12	Inshore waters	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Arctic skua	*Stercorarius parasiticus*	1	Inshore waters	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Arctic skua	*Stercorarius parasiticus*	2	Inshore waters	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Arctic skua	*Stercorarius parasiticus*	4	Inshore waters	0	0	0	0	4	0	0	0	0	0	0	0	0	0
Arctic skua	*Stercorarius parasiticus*	7	Inshore waters	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Arctic skua	*Stercorarius parasiticus*	8	Inshore waters	0	0	0	0	1	0	1	0	0	0	0	0	0	0
Great skua	*Stercorarius skua*	8	Inshore waters	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Great skua	*Stercorarius skua*	9	Inshore waters	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Great skua	*Stercorarius skua*	11	Inshore waters	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Great skua	*Stercorarius skua*	12	Inshore waters	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Kittiwake	*Rissa tridactyla*	1	Inshore waters	0	0	0	0	0	1	0	0	0	0	6	0	0	20
Kittiwake	*Rissa tridactyla*	2	North Rig	67	61	95	66	50	36	3	0	2	0	0	5	92	76
Kittiwake	*Rissa tridactyla*	2	Siz B outfall	0	0	0	0	0	2	0	0	0	0	18	1	0	0

Species common name	Species biological name	VP	Location	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Kittiwake	*Rissa tridactyla*	2 & 3	Rigs & outfall area	0	12	255	200	80	63	2	0	0	0	0	3	330	30
Kittiwake	*Rissa tridactyla*	3	South Rig	116	63	99	86	134	107	1	0	1	0	0	4	65	82
Kittiwake	*Rissa tridactyla*	4	Inshore waters	27	1	0	0	0	5	0	0	0	0	5	0	0	0
Kittiwake	*Rissa tridactyla*	5	Inshore waters	5	8	0	0	0	0	0	0	0	0	0	0	0	0
Kittiwake	*Rissa tridactyla*	6	Inshore waters	0	3	0	0	0	0	0	0	0	1	1	0	0	23
Kittiwake	*Rissa tridactyla*	7	Inshore waters	0	0	0	0	0	0	0	0	0	0	0	0	0	10
Kittiwake	*Rissa tridactyla*	9	Inshore waters	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Kittiwake	*Rissa tridactyla*	10	Inshore waters	0	0	0	0	0	0	0	0	0	3	0	0	0	0
Kittiwake	*Rissa tridactyla*	11	Inshore waters	0	0	0	0	0	0	0	0	0	0	15	0	0	0
Kittiwake	*Rissa tridactyla*	12	Inshore waters	0	0	0	0	0	0	0	0	0	100	0	0	0	0
Black-headed gull	*Chroicocephalus ridibundus*	1	Inshore waters	0	0	0	0	0	0	0	0	0	10	0	0	0	0
Black-headed gull	*Chroicocephalus ridibundus*	2	Inshore waters	0	0	110	0	0	0	0	0	0	0	0	0	0	0
Black-headed gull	*Chroicocephalus ridibundus*	2	Siz B outfall	0	0	0	0	5	0	0	1	12	20	25	10	2	0
Black-headed gull	*Chroicocephalus ridibundus*	2 & 3	Rigs & outfall area	0	0	0	500	0	0	0	0	0	69	0	0	0	0
Black-headed gull	*Chroicocephalus ridibundus*	3	On beach	0	0	0	0	0	0	0	0	0	17	0	0	0	0
Black-headed gull	*Chroicocephalus ridibundus*	4	Inshore waters	0	0	0	0	0	0	0	14	40	0	70	150	52	0
Black-headed gull	*Chroicocephalus ridibundus*	5	Inshore waters	0	0	0	0	0	0	0	0	10	10	100	150	90	0
Black-headed gull	*Chroicocephalus ridibundus*	6	Inshore waters	0	0	0	0	0	4	0	0	0	0	250	0	0	0
Black-headed gull	*Chroicocephalus ridibundus*	7	Inshore waters	0	0	0	0	0	0	0	0	50	50	300	50	0	0
Black-headed gull	*Chroicocephalus ridibundus*	8	Inshore waters	0	0	0	0	0	0	0	0	0	1000	400	0	0	0
Black-headed gull	*Chroicocephalus ridibundus*	8	On beach	0	0	0	0	0	0	0	0	0	0	30	5	0	0
Black-headed gull	*Chroicocephalus ridibundus*	9	Inshore waters	0	0	0	0	0	0	0	0	0	0	450	0	0	0

Species common name	Species biological name	VP	Location	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Black-headed gull	*Chroicocephalus ridibundus*	10	Inshore waters	0	0	0	0	0	0	0	0	1	0	25	0	0	0
Black-headed gull	*Chroicocephalus ridibundus*	11	Inshore waters	0	0	0	0	0	0	0	26	0	0	0	0	0	0
Little gull	*Hydrocoloeus minutus*	1	Inshore waters	0	0	0	0	0	4	3	0	0	0	0	0	0	0
Little gull	*Hydrocoloeus minutus*	2	Inshore waters	0	0	0	0	11	0	1	0	0	0	0	0	0	0
Little gull	*Hydrocoloeus minutus*	2	Siz B outfall	0	0	0	0	29	72	0	0	0	0	0	0	0	0
Little gull	*Hydrocoloeus minutus*	3	Inshore waters	0	0	0	0	0	53	0	0	0	0	0	0	0	0
Little gull	*Hydrocoloeus minutus*	4	Inshore waters	0	0	0	0	0	29	0	0	0	0	0	0	0	0
Little gull	*Hydrocoloeus minutus*	5	Inshore waters	0	0	0	0	0	44	0	0	0	0	0	0	0	0
Little gull	*Hydrocoloeus minutus*	7	Inshore waters	0	0	0	0	0	2	0	0	0	0	0	0	0	0
Mediterranean gull	*Larus melanocephalus*	2	Siz B outfall	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Mediterranean gull	*Larus melanocephalus*	5	Inshore waters	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Common gull	*Larus canus*	1	Inshore waters	0	0	0	0	0	0	0	0	0	72	0	0	0	0
Common gull	*Larus canus*	2	Inshore waters	0	0	0	0	0	0	0	0	0	0	0	0	0	24
Common gull	*Larus canus*	2 & 3	Rigs & outfall area	0	0	0	0	0	0	0	0	0	0	0	10	0	0
Common gull	*Larus canus*	2	Siz B outfall	0	0	0	0	1	0	0	0	12	30	60	30	10	0
Common gull	*Larus canus*	3	Inshore waters	0	0	0	0	0	0	0	0	0	53	0	0	0	0
Common gull	*Larus canus*	4	Inshore waters	0	0	0	0	0	0	0	0	0	0	20	50	3	0
Common gull	*Larus canus*	5	Inshore waters	0	0	0	0	0	0	0	0	3	25	300	200	25	0
Common gull	*Larus canus*	6	Inshore waters	0	0	0	0	0	0	0	0	0	0	250	0	1	0
Common gull	*Larus canus*	7	Inshore waters	0	0	0	0	0	0	0	1	150	50	2000	50	0	1
Common gull	*Larus canus*	8	Inshore waters	0	0	0	0	0	0	0	0	0	200	100	0	0	0
Common gull	*Larus canus*	9	Inshore waters	0	0	0	0	0	0	0	0	11	0	100	0	0	0

Species common name	Species biological name	VP	Location	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Common gull	*Larus canus*	10	Inshore waters	0	0	0	0	0	0	0	0	0	0	25	0	0	0
Lesser black-backed gull	*Larus fuscus*	1	Inshore waters	0	0	0	0	0	2	1	0	15	1	0	0	0	0
Lesser black-backed gull	*Larus fuscus*	2	Inshore waters	15	0	0	0	0	5	0	0	0	0	0	0	0	0
Lesser black-backed gull	*Larus fuscus*	2	North Rig	0	4	4	0	5	4	2	0	9	0	0	0	5	4
Lesser black-backed gull	*Larus fuscus*	2	Siz B outfall	0	0	0	0	1	10	0	0	0	2	10	0	2	2
Lesser black-backed gull	*Larus fuscus*	3	Inshore waters	0	0	0	10	0	0	3	0	0	1	0	0	2	0
Lesser black-backed gull	*Larus fuscus*	3	On beach	0	0	0	0	0	0	0	0	0	1	0	0	0	0
Lesser black-backed gull	*Larus fuscus*	3	South Rig	14	9	8	6	2	10	0	3	1	0	0	1	1	8
Lesser black-backed gull	*Larus fuscus*	4	Inshore waters	1	4	0	0	0	5	2	10	2	0	0	4	0	0
Lesser black-backed gull	*Larus fuscus*	5	Inshore waters	0	0	0	0	0	0	4	0	0	0	10	0	2	13
Lesser black-backed gull	*Larus fuscus*	6	Inshore waters	0	0	0	0	0	3	0	0	0	0	4	0	0	0
Lesser black-backed gull	*Larus fuscus*	7	Inshore waters	0	0	0	0	0	1	9	0	0	0	25	0	0	0
Lesser black-backed gull	*Larus fuscus*	8	Inshore waters	7	0	0	0	0	0	20	0	0	0	0	0	0	0
Lesser black-backed gull	*Larus fuscus*	8	On beach	0	0	0	0	0	0	10	0	0	0	0	0	0	0
Lesser black-backed gull	*Larus fuscus*	9	Inshore waters	0	0	0	0	0	0	4	0	0	0	0	0	0	0
Lesser black-backed gull	*Larus fuscus*	10	Inshore waters	3	0	0	0	0	0	0	0	4	0	0	0	0	0
Lesser black-backed gull	*Larus fuscus*	10	On beach	0	0	0	0	0	0	0	25	0	0	0	0	0	0
Lesser black-backed gull	*Larus fuscus*	11	Inshore waters	2	0	0	0	0	9	0	0	0	0	0	0	0	0
Lesser black-backed gull	*Larus fuscus*	11	On beach	0	0	0	0	0	0	0	40	0	0	0	0	0	0
Lesser black-backed gull	*Larus fuscus*	12	Inshore waters	0	0	0	0	0	15	0	0	0	0	0	0	0	0
Lesser black-backed gull	*Larus fuscus*	12	On beach	0	0	0	4	0	0	50	0	0	0	0	0	0	0
Herring gull	*Larus argentatus*	1	Inshore waters	0	0	0	0	0	20	14	0	65	22	0	0	0	60

Species common name	Species biological name	VP	Location	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Herring gull	*Larus argentatus*	1	On beach	0	0	0	0	0	0	0	0	22	10	10	0	0	0
Herring gull	*Larus argentatus*	2	Inshore waters	135	0	0	0	0	43	0	0	55	0	130	0	0	300
Herring gull	*Larus argentatus*	2	North Rig	0	28	3	0	12	9	16	4	33	7	23	11	34	23
Herring gull	*Larus argentatus*	2 & 3	Rigs & outfall area	0	0	0	0	0	0	0	0	0	0	0	185	200	0
Herring gull	*Larus argentatus*	2	Siz A outfall structure	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Herring gull	*Larus argentatus*	2	Siz B outfall	0	0	3	0	7	43	0	24	38	100	100	80	320	30
Herring gull	*Larus argentatus*	3	Inshore waters	0	0	0	75	0	0	80	0	100	186	0	0	0	0
Herring gull	*Larus argentatus*	3	On beach	0	0	0	0	0	0	0	0	0	60	0	0	0	0
Herring gull	*Larus argentatus*	3	South Rig	11	9	16	18	7	15	8	7	27	23	32	20	39	29
Herring gull	*Larus argentatus*	4	Inshore waters	0	10	0	0	0	5	80	30	2	0	0	0	0	0
Herring gull	*Larus argentatus*	4	On beach	0	0	0	0	0	0	0	0	0	34	0	0	0	0
Herring gull	*Larus argentatus*	5	Inshore waters	0	12	0	0	0	0	0	0	6	0	0	10	0	50
Herring gull	*Larus argentatus*	5	On beach	0	0	0	0	0	0	0	0	0	3	30	0	0	0
Herring gull	*Larus argentatus*	6	Inshore waters	0	0	0	0	0	0	25	0	20	0	0	0	0	0
Herring gull	*Larus argentatus*	7	Inshore waters	0	0	0	0	0	5	0	0	0	14	0	0	0	0
Herring gull	*Larus argentatus*	7	On beach	0	0	0	0	0	0	0	95	0	0	0	0	0	0
Herring gull	*Larus argentatus*	8	Inshore waters	25	0	0	0	0	0	65	0	0	0	0	0	0	0
Herring gull	*Larus argentatus*	8	On beach	0	0	0	0	0	0	40	0	14	25	70	40	25	0
Herring gull	*Larus argentatus*	9	Inshore waters	5	0	0	0	0	0	0	0	0	0	0	0	0	0
Herring gull	*Larus argentatus*	10	Inshore waters	24	0	0	0	0	0	0	0	101	0	0	0	0	0
Herring gull	*Larus argentatus*	10	On beach	0	0	0	0	0	0	0	25	0	0	0	0	0	0
Herring gull	*Larus argentatus*	11	Inshore waters	44	0	0	0	0	0	0	6	0	0	20	0	0	0

Species common name	Species biological name	VP	Location	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Herring gull	*Larus argentatus*	11	On beach	0	0	0	0	0	0	0	20	0	0	0	0	0	0
Herring gull	*Larus argentatus*	12	Inshore waters	0	0	0	0	0	10	0	0	0	0	0	0	0	0
Great black-backed gull	*Larus marinus*	1	Inshore waters	0	1	0	0	0	3	8	1	20	23	4	0	0	0
Great black-backed gull	*Larus marinus*	1	On beach	0	0	0	0	0	0	0	0	13	35	35	0	0	0
Great black-backed gull	*Larus marinus*	2	Inshore waters	0	0	0	0	0	3	0	0	30	0	30	0	0	20
Great black-backed gull	*Larus marinus*	2	North Rig	1	1	0	0	0	1	1	0	8	1	0	1	10	2
Great black-backed gull	*Larus marinus*	2 & 3	Rigs & outfall area	0	0	0	0	0	0	0	0	0	0	0	45	50	0
Great black-backed gull	*Larus marinus*	2	Siz A outfall structure	0	0	0	0	0	1	2	2	0	0	0	1	0	0
Great black-backed gull	*Larus marinus*	2	Siz B outfall	0	0	0	0	0	1	0	3	17	60	60	50	70	15
Great black-backed gull	*Larus marinus*	3	Inshore waters	0	0	0	5	0	0	5	0	40	80	0	0	2	0
Great black-backed gull	*Larus marinus*	3	On beach	0	0	0	0	0	0	0	0	0	10	0	0	0	0
Great black-backed gull	*Larus marinus*	3	South Rig	1	0	0	0	0	1	0	2	1	5	0	4	30	0
Great black-backed gull	*Larus marinus*	4	Inshore waters	1	0	0	0	0	1	5	6	2	0	0	2	0	0
Great black-backed gull	*Larus marinus*	4	On beach	0	0	0	0	0	0	0	0	0	5	0	0	0	0
Great black-backed gull	*Larus marinus*	5	Inshore waters	0	0	0	0	0	2	0	0	1	2	0	0	2	0
Great black-backed gull	*Larus marinus*	5	On beach	0	0	0	0	0	0	0	0	0	3	5	0	0	0
Great black-backed gull	*Larus marinus*	6	Inshore waters	1	0	0	0	0	1	1	1	2	6	0	0	0	0
Great black-backed gull	*Larus marinus*	6	On beach	0	0	0	0	0	0	0	0	0	7	0	0	0	0
Great black-backed gull	*Larus marinus*	7	Inshore waters	0	0	0	0	0	1	0	2	3	5	5	0	0	0
Great black-backed gull	*Larus marinus*	7	On beach	0	0	0	0	0	0	0	5	0	0	0	0	0	0
Great black-backed gull	*Larus marinus*	8	Inshore waters	0	0	0	0	0	0	7	0	0	0	0	0	2	0
Great black-backed gull	*Larus marinus*	8	On beach	0	0	0	0	0	0	0	20	12	20	40	15	5	0

Species common name	Species biological name	VP	Location	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Great black-backed gull	*Larus marinus*	9	Inshore waters	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Great black-backed gull	*Larus marinus*	10	Inshore waters	0	0	0	0	0	0	0	0	16	0	0	0	0	0
Great black-backed gull	*Larus marinus*	10	On beach	0	0	0	0	0	0	0	15	0	0	0	0	0	0
Great black-backed gull	*Larus marinus*	11	Inshore waters	0	0	0	0	0	0	0	5	4	0	1	0	0	0
Great black-backed gull	*Larus marinus*	11	On beach	0	0	0	0	0	0	0	10	0	0	0	0	0	0
Great black-backed gull	*Larus marinus*	12	Inshore waters	0	0	0	0	0	5	0	0	3	0	2	0	6	2
Great black-backed gull	*Larus marinus*	12	On beach	0	0	0	0	0	0	5	0	0	0	0	0	0	0
Little tern	*Sternula albifrons*	1	Inshore waters	0	0	4	0	0	0	0	0	0	0	0	0	0	0
Little tern	*Sternula albifrons*	2	Inshore waters	0	0	14	0	0	0	0	0	0	0	0	0	0	0
Little tern	*Sternula albifrons*	2	Siz B outfall	0	0	15	0	0	0	0	0	0	0	0	0	0	0
Little tern	*Sternula albifrons*	4	Inshore waters	0	0	16	0	0	0	0	0	0	0	0	0	0	0
Little tern	*Sternula albifrons*	10	Inshore waters	0	0	7	8	0	0	0	0	0	0	0	0	0	0
Little tern	*Sternula albifrons*	10	On beach	0	0	18	0	0	0	0	0	0	0	0	0	0	0
Little tern	*Sternula albifrons*	12	Inshore waters	0	0	2	2	0	0	0	0	0	0	0	0	0	0
Black tern	*Chlidonias niger*	2	Siz B outfall	0	0	0	0	0	31	0	0	0	0	0	0	0	0
Black tern	*Chlidonias niger*	3	Inshore waters	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Black tern	*Chlidonias niger*	11	Inshore waters	0	0	0	0	0	4	0	0	0	0	0	0	0	0
Sandwich tern	*Sterna sandvicensis*	1	Inshore waters	0	0	0	0	0	2	1	1	0	0	0	0	0	0
Sandwich tern	*Sterna sandvicensis*	2	Inshore waters	0	0	0	0	0	0	2	0	0	0	0	0	0	0
Sandwich tern	*Sterna sandvicensis*	2	Siz B outfall	0	0	0	1	0	2	0	0	0	0	0	0	0	0
Sandwich tern	*Sterna sandvicensis*	5	Inshore waters	0	0	2	2	2	1	2	0	0	0	0	0	0	0
Sandwich tern	*Sterna sandvicensis*	6	Inshore waters	0	0	3	0	2	8	2	1	0	0	0	0	0	0

Species common name	Species biological name	VP	Location	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Sandwich tern	*Sterna sandvicensis*	7	Inshore waters	0	0	0	0	0	4	6	0	0	0	0	0	0	0
Sandwich tern	*Sterna sandvicensis*	8	Inshore waters	0	0	0	0	0	3	0	0	0	0	0	0	0	0
Sandwich tern	*Sterna sandvicensis*	9	Inshore waters	0	0	0	0	0	1	3	0	0	0	0	0	0	0
Sandwich tern	*Sterna sandvicensis*	10	Inshore waters	0	0	0	0	3	2	0	0	0	0	0	0	0	0
Sandwich tern	*Sterna sandvicensis*	11	Inshore waters	0	0	0	0	0	2	0	0	0	0	0	0	0	0
Sandwich tern	*Sterna sandvicensis*	12	Inshore waters	0	0	0	0	11	2	2	0	0	0	0	0	0	0
Common tern	*Sterna hirundo*	1	Inshore waters	0	0	1	0	0	15	12	5	0	0	0	0	0	0
Common tern	*Sterna hirundo*	2	Inshore waters	0	0	19	1	0	76	8	0	0	0	0	0	0	0
Common tern	*Sterna hirundo*	2	On beach	0	0	0	0	0	25	0	0	0	0	0	0	0	0
Common tern	*Sterna hirundo*	2	Siz B outfall	0	0	14	38	110	55	0	0	0	0	0	0	0	1
Common tern	*Sterna hirundo*	3	Inshore waters	0	0	0	3	0	19	10	1	0	0	0	0	0	0
Common tern	*Sterna hirundo*	4	Inshore waters	0	0	0	6	0	10	7	0	0	0	0	0	0	0
Common tern	*Sterna hirundo*	5	Inshore waters	0	0	0	0	0	30	7	0	0	0	0	0	0	0
Common tern	*Sterna hirundo*	6	Inshore waters	0	0	0	0	14	42	28	0	0	0	0	0	0	0
Common tern	*Sterna hirundo*	7	Inshore waters	0	0	0	0	0	28	2	1	0	0	0	0	0	0
Common tern	*Sterna hirundo*	8	Inshore waters	0	0	0	2	16	8	2	0	0	0	0	0	0	0
Common tern	*Sterna hirundo*	9	Inshore waters	0	0	0	0	0	4	0	0	0	0	0	0	0	0
Common tern	*Sterna hirundo*	10	Inshore waters	0	0	0	0	12	16	0	0	0	0	0	0	0	0
Common tern	*Sterna hirundo*	11	Inshore waters	0	0	0	0	0	45	0	1	0	0	0	0	0	0
Common tern	*Sterna hirundo*	12	Inshore waters	0	0	0	6	10	14	0	0	0	0	0	0	0	0
Arctic tern	*Sterna paradisaea*	2	Siz B outfall	0	0	0	0	0	9	0	0	1	0	0	0	0	0
Guillemot	*Uria aalge*	2	Inshore waters	0	0	0	0	0	1	0	0	0	0	0	0	0	0

Species common name	Species biological name	VP	Location	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Guillemot	*Uria aalge*	12	Inshore waters	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Razorbill	*Alca torda*	5	Inshore waters	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Razorbill	*Alca torda*	7	Inshore waters	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Razorbill	*Alca torda*	11	Inshore waters	0	0	0	0	0	0	0	0	0	8	0	0	0	0
Razorbill / guillemot[13]		1	Inshore waters	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Razorbill / guillemot		5	Inshore waters	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Razorbill / guillemot		6	Inshore waters	0	0	0	0	0	0	0	0	0	1	1	0	0	0
Razorbill / guillemot		8	Inshore waters	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Razorbill / guillemot		9	Inshore waters	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Short-eared owl	*Asio flammeus*	5	Inshore waters	0	0	0	0	0	0	0	0	0	1	0	0	0	0
Short-eared owl	*Asio flammeus*	10	On beach	0	0	0	0	0	0	0	0	0	0	0	0	2	0
Snow bunting	*Plectrophenax nivalis*	2	On beach	0	0	0	0	0	0	0	0	0	0	8	0	0	0
Snow bunting	*Plectrophenax nivalis*	3	On beach	0	0	0	0	0	0	0	0	0	13	0	0	0	0

[13] Auk species can only reliably be identified at close distance, and therefore sightings of unidentified auk species have been attributed to either guillemot or razorbill (the remaining auk species are rare in coastal waters off Suffolk).

Table C2 Total count of commuting birds recorded from each VP[14]

Species common name	Species biological name	VP	Mar -11	Apr-11	May-11	Jun-11	Jul -11	Aug -11	Sep-11	Oct-11	Nov-11	Dec-11	Jan-12	Feb-12	Mar-12	Apr -12
Pink-footed goose	*Anser brachyrhynchus*	9									2					
Greylag goose	*Anser anser*	2														2
Greylag goose	*Anser anser*	5										20				
Greylag goose	*Anser anser*	12													3	
Brent goose	*Branta bernicla*	1							1					50		
Brent goose	*Branta bernicla*	2							21		21					2
Brent goose	*Branta bernicla*	3							9		6		6			1
Brent goose	*Branta bernicla*	4							24		8					
Brent goose	*Branta bernicla*	5							5		72					
Brent goose	*Branta bernicla*	6							85	12	59	1			11	
Brent goose	*Branta bernicla*	7		1							3					
Brent goose	*Branta bernicla*	8								7	55					
Brent goose	*Branta bernicla*	9								13	127		1			
Brent goose	*Branta bernicla*	10								17	50					
Brent goose	*Branta bernicla*	11								5	14					
Brent goose	*Branta bernicla*	12								4	9		2	2		
Shelduck	*Tadorna tadorna*	1												2		2
Shelduck	*Tadorna tadorna*	2										1				1

[14] The figures show the total number of individuals counted during each month. The numerous flights of cormorant and the five species of 'common' gulls (black-headed, common, lesser black-backed, herring and great black-backed) were not routinely counted during the watches and have therefore not been included in Table C2.

Species common name	Species biological name	VP	Mar -11	Apr-11	May-11	Jun-11	Jul -11	Aug -11	Sep-11	Oct-11	Nov-11	Dec-11	Jan-12	Feb-12	Mar-12	Apr -12
Shelduck	*Tadorna tadorna*	3											10			
Shelduck	*Tadorna tadorna*	4								2		4				
Shelduck	*Tadorna tadorna*	5		1										2		
Shelduck	*Tadorna tadorna*	6									1					
Shelduck	*Tadorna tadorna*	7										3				
Shelduck	*Tadorna tadorna*	8											1			1
Shelduck	*Tadorna tadorna*	12										2				
Wigeon	*Anas penelope*	1								7	5					
Wigeon	*Anas penelope*	2										2				
Wigeon	*Anas penelope*	3									14		3			
Wigeon	*Anas penelope*	4								7	30					
Wigeon	*Anas penelope*	5							3	9						
Wigeon	*Anas penelope*	6								12	10					
Wigeon	*Anas penelope*	7										7				23
Wigeon	*Anas penelope*	9											8		1	
Wigeon	*Anas penelope*	11											3			
Wigeon	*Anas penelope*	12									1	2				
Gadwall	*Anas strepera*	6									20					
Teal	*Anas crecca*	1									6		1			
Teal	*Anas crecca*	2							8							
Teal	*Anas crecca*	4	3						3	19						
Teal	*Anas crecca*	5									1					

Species common name	Species biological name	VP	Mar -11	Apr-11	May-11	Jun-11	Jul -11	Aug -11	Sep-11	Oct-11	Nov-11	Dec-11	Jan-12	Feb-12	Mar-12	Apr -12
Teal	*Anas crecca*	6									1					
Teal	*Anas crecca*	7					1					10				
Teal	*Anas crecca*	10										230	215			
Teal	*Anas crecca*	11						5								
Teal	*Anas crecca*	12						21				56				
Mallard	*Anas platyrhynchos*	1						2								
Mallard	*Anas platyrhynchos*	2									1					
Mallard	*Anas platyrhynchos*	9												5		
Pintail	*Anas acuta*	3											5			
Pintail	*Anas acuta*	8										1				
Pintail	*Anas acuta*	11										6				
Pintail	*Anas acuta*	12										4				
Shoveler	*Anas clypeata*	1									1					
Shoveler	*Anas clypeata*	7										16	2			
Shoveler	*Anas clypeata*	9												2		
Tufted duck	*Aythya fuligula*	2													1	
Eider	*Somateria mollissima*	1													8	
Eider	*Somateria mollissima*	5									1					
Eider	*Somateria mollissima*	6									2					
Eider	*Somateria mollissima*	11										2				
Eider	*Somateria mollissima*	12									1					
Common scoter	*Melanitta nigra*	1							5					2		

Species common name	Species biological name	VP	Mar -11	Apr-11	May-11	Jun-11	Jul -11	Aug -11	Sep-11	Oct-11	Nov-11	Dec-11	Jan-12	Feb-12	Mar-12	Apr -12
Common scoter	*Melanitta nigra*	2					4					2				
Common scoter	*Melanitta nigra*	3		3				20				8	7			11
Common scoter	*Melanitta nigra*	5							15		10		1			
Common scoter	*Melanitta nigra*	6		7					1		8					
Common scoter	*Melanitta nigra*	7			5		15	11	4		29					
Common scoter	*Melanitta nigra*	8		22	2		6		3							
Common scoter	*Melanitta nigra*	9										2				
Common scoter	*Melanitta nigra*	10								8						
Common scoter	*Melanitta nigra*	11					16				16					
Common scoter	*Melanitta nigra*	12		20			1		3			15	2		2	
Goldeneye	*Bucephala clangula*	11											3			
Goldeneye	*Bucephala clangula*	12										2				
Red-breasted merganser	*Mergus serrator*	2										2				
Red-breasted merganser	*Mergus serrator*	4											1			
Red-breasted merganser	*Mergus serrator*	5									2					
Red-breasted merganser	*Mergus serrator*	6														7
Red-breasted merganser	*Mergus serrator*	12										1	1			
Red-throated diver	*Gavia stellata*	1	22	2				1	1		1	95	7	69	2	13
Red-throated diver	*Gavia stellata*	2	1							1	2	23	14	11	150	6

Species common name	Species biological name	VP	Mar -11	Apr-11	May-11	Jun-11	Jul -11	Aug -11	Sep-11	Oct-11	Nov-11	Dec-11	Jan-12	Feb-12	Mar-12	Apr -12
Red-throated diver	*Gavia stellata*	3	4	2								10	24	49	13	10
Red-throated diver	*Gavia stellata*	4	61	1							10	13	156	202	20	1
Red-throated diver	*Gavia stellata*	5	3	1							2	19	8	173	3	1
Red-throated diver	*Gavia stellata*	6	31	5							2	35	14	21	151	11
Red-throated diver	*Gavia stellata*	7	24						1			40	10	225	22	
Red-throated diver	*Gavia stellata*	8	7	2						2		276	1	40	51	
Red-throated diver	*Gavia stellata*	9	1	3					1	1		12	3	1	80	
Red-throated diver	*Gavia stellata*	10	1	1							4	3	39	224	46	4
Red-throated diver	*Gavia stellata*	11	17	1						1	1	12	330	37	45	1
Red-throated diver	*Gavia stellata*	12	11	4							1	159	710	51	20	
Black-throated diver	*Gavia arctica*	1										1				
Great crested grebe	*Podiceps cristatus*	1										5	2	13		
Great crested grebe	*Podiceps cristatus*	2	2									6				
Great crested grebe	*Podiceps cristatus*	3												2		2
Great crested grebe	*Podiceps cristatus*	4										2	3	1		
Great crested grebe	*Podiceps cristatus*	5									3	1		1	1	
Great crested grebe	*Podiceps cristatus*	6										1		2		1
Great crested	*Podiceps cristatus*	7										1			1	

Species common name	Species biological name	VP	Mar -11	Apr- 11	May- 11	Jun- 11	Jul -11	Aug -11	Sep- 11	Oct- 11	Nov- 11	Dec- 11	Jan- 12	Feb- 12	Mar- 12	Apr -12
grebe																
Great crested grebe	*Podiceps cristatus*	8												5		
Great crested grebe	*Podiceps cristatus*	10												4		
Great crested grebe	*Podiceps cristatus*	11											1	4		
Great crested grebe	*Podiceps cristatus*	12										1	9	7		
Fulmar	*Fulmarus glacialis*	1												1		2
Fulmar	*Fulmarus glacialis*	3													1	4
Fulmar	*Fulmarus glacialis*	5			1											
Fulmar	*Fulmarus glacialis*	6			1											
Fulmar	*Fulmarus glacialis*	7			1											
Fulmar	*Fulmarus glacialis*	8														1
Fulmar	*Fulmarus glacialis*	10					1									
Fulmar	*Fulmarus glacialis*	12													1	
Manx shearwater	*Puffinus puffinus*	12									1					
Gannet	*Morus bassanus*	1					3	1	1	3			27	6	2	3
Gannet	*Morus bassanus*	2					11		5	1		1	24		10	1
Gannet	*Morus bassanus*	3					1		7					2	4	
Gannet	*Morus bassanus*	4				1	8		11		2		9		2	
Gannet	*Morus bassanus*	5			6			2	3	3	4		1		2	1
Gannet	*Morus bassanus*	6		2	29		33			3		2	2		15	2

Species common name	Species biological name	VP	Mar -11	Apr- 11	May- 11	Jun- 11	Jul -11	Aug -11	Sep- 11	Oct- 11	Nov- 11	Dec- 11	Jan- 12	Feb- 12	Mar- 12	Apr -12
Gannet	*Morus bassanus*	7	4	2	22		8		5	54	1					
Gannet	*Morus bassanus*	8	1	1			18		7	91				26		
Gannet	*Morus bassanus*	9					1		3	42	1	3		3	1	
Gannet	*Morus bassanus*	10					3			8	1	30	1	1	4	
Gannet	*Morus bassanus*	11	1				7	1	1	12	4	22		33	4	
Gannet	*Morus bassanus*	12					25	17	12	15	39	5			38	3
Grey heron	*Ardea cinerea*	3														1
Grey heron	*Ardea cinerea*	5								1						
Marsh harrier	*Circus aeruginosus*	7		1												
Marsh harrier	*Circus aeruginosus*	12								1						
Hobby	*Falco subbuteo*	1					2		1							
Hobby	*Falco subbuteo*	7							1							
Hobby	*Falco subbuteo*	8							1							
Hobby	*Falco subbuteo*	11							1							
Peregrine	*Falco peregrinus*	11										1				
Peregrine	*Falco peregrinus*	12								1						
Oystercatcher	*Haematopus ostralegus*	1				1										
Oystercatcher	*Haematopus ostralegus*	2		1												7
Oystercatcher	*Haematopus ostralegus*	3							2		1					
Oystercatcher	*Haematopus ostralegus*	4				1		2	3							
Oystercatcher	*Haematopus ostralegus*	5						3			1					
Oystercatcher	*Haematopus ostralegus*	7	1					12								

Species common name	Species biological name	VP	Mar -11	Apr-11	May-11	Jun-11	Jul -11	Aug -11	Sep-11	Oct-11	Nov-11	Dec-11	Jan-12	Feb-12	Mar-12	Apr -12
Oystercatcher	*Haematopus ostralegus*	8				1		1								
Oystercatcher	*Haematopus ostralegus*	10		3												
Oystercatcher	*Haematopus ostralegus*	11								1						
Oystercatcher	*Haematopus ostralegus*	12						4								
Avocet	*Recurvirostra avosetta*	1				5										
Avocet	*Recurvirostra avosetta*	2			1	3										
Avocet	*Recurvirostra avosetta*	3														2
Avocet	*Recurvirostra avosetta*	4				3										2
Avocet	*Recurvirostra avosetta*	5				2										
Avocet	*Recurvirostra avosetta*	6		55					7							6
Avocet	*Recurvirostra avosetta*	8				2										
Avocet	*Recurvirostra avosetta*	9		2											2	
Ringed plover	*Charadrius hiaticula*	1								4						
Ringed plover	*Charadrius hiaticula*	8								1						
Ringed plover	*Charadrius hiaticula*	9							3							
Ringed plover	*Charadrius hiaticula*	10						1								
Ringed plover	*Charadrius hiaticula*	11	1					1	1	1						
Ringed plover	*Charadrius hiaticula*	12						13	25							
Golden plover	*Pluvialis apricaria*	11						3								
Grey plover	*Pluvialis squatarola*	2							1							
Grey plover	*Pluvialis squatarola*	4							2							
Grey plover	*Pluvialis squatarola*	12								1						

Species common name	Species biological name	VP	Mar -11	Apr-11	May-11	Jun-11	Jul -11	Aug -11	Sep-11	Oct-11	Nov-11	Dec-11	Jan-12	Feb-12	Mar-12	Apr -12
Lapwing	*Vanellus vanellus*	4												11		
Knot	*Calidris canutus*	1													1	
Knot	*Calidris canutus*	9												1		
Knot	*Calidris canutus*	11								2						
Knot	*Calidris canutus*	12							3							
Sanderling	*Calidris alba*	4						6								
Sanderling	*Calidris alba*	5				1										
Sanderling	*Calidris alba*	9							2							
Sanderling	*Calidris alba*	12						1								
Curlew sandpiper	*Calidris ferruginea*	12							1							
Dunlin	*Calidris alpina*	1			8			7	7	2				12	8	
Dunlin	*Calidris alpina*	2							15							
Dunlin	*Calidris alpina*	3						3						2		
Dunlin	*Calidris alpina*	4						5								
Dunlin	*Calidris alpina*	5				3			6							
Dunlin	*Calidris alpina*	6							8							
Dunlin	*Calidris alpina*	7							2							
Dunlin	*Calidris alpina*	8				7				1						
Dunlin	*Calidris alpina*	9												1		
Dunlin	*Calidris alpina*	11								1				1		
Dunlin	*Calidris alpina*	12							8	1						
Bar-tailed godwit	*Limosa lapponica*	6							4							

Species common name	Species biological name	VP	Mar -11	Apr-11	May-11	Jun-11	Jul -11	Aug -11	Sep-11	Oct-11	Nov-11	Dec-11	Jan-12	Feb-12	Mar-12	Apr -12
Bar-tailed godwit	*Limosa lapponica*	10										1				
Bar-tailed godwit	*Limosa lapponica*	12							1							
Whimbrel	*Numenius phaeopus*	1		1												
Whimbrel	*Numenius phaeopus*	3						1								1
Whimbrel	*Numenius phaeopus*	4						1	1							
Whimbrel	*Numenius phaeopus*	12					2	1								
Curlew	*Numenius arquata*	1		1		6	3									
Curlew	*Numenius arquata*	2				2	8									3
Curlew	*Numenius arquata*	3					4						1			
Curlew	*Numenius arquata*	4						15						1		
Curlew	*Numenius arquata*	6				1										
Curlew	*Numenius arquata*	7				1										
Curlew	*Numenius arquata*	8				1		1							1	
Curlew	*Numenius arquata*	9				4								1		
Curlew	*Numenius arquata*	10		2		4										
Curlew	*Numenius arquata*	11				3										
Curlew	*Numenius arquata*	12													2	
Redshank	*Tringa totanus*	3						6								
Redshank	*Tringa totanus*	4						4								
Redshank	*Tringa totanus*	10							1							
Turnstone	*Arenaria interpres*	1											5			
Turnstone	*Arenaria interpres*	2								1	3					

Species common name	Species biological name	VP	Mar -11	Apr-11	May-11	Jun-11	Jul -11	Aug -11	Sep-11	Oct-11	Nov-11	Dec-11	Jan-12	Feb-12	Mar-12	Apr -12
Turnstone	*Arenaria interpres*	3						2								
Turnstone	*Arenaria interpres*	5						2								
Turnstone	*Arenaria interpres*	6												3		
Turnstone	*Arenaria interpres*	8								9		5				
Turnstone	*Arenaria interpres*	9									19			1	1	
Turnstone	*Arenaria interpres*	10										1	1			
Turnstone	*Arenaria interpres*	11											13			
Turnstone	*Arenaria interpres*	12					1	6								
Grey phalarope	*Phalaropus fulicarius*	8							1							
Pomarine skua	*Stercorarius pomarinus*	2										1				
Pomarine skua	*Stercorarius pomarinus*	10										1				
Pomarine skua	*Stercorarius pomarinus*	11										1				
Pomarine skua	*Stercorarius pomarinus*	12									1	1				
Arctic skua	*Stercorarius parasiticus*	1						1								
Arctic skua	*Stercorarius parasiticus*	2								1						
Arctic skua	*Stercorarius parasiticus*	5								2						
Arctic skua	*Stercorarius parasiticus*	6								1						
Arctic skua	*Stercorarius parasiticus*	8								4						
Arctic skua	*Stercorarius parasiticus*	9							1	4		1				
Arctic skua	*Stercorarius parasiticus*	10					2			1		1				
Arctic skua	*Stercorarius parasiticus*	12							2							
Great skua	*Stercorarius skua*	1							1							

Species common name	Species biological name	VP	Mar -11	Apr- 11	May- 11	Jun- 11	Jul -11	Aug -11	Sep- 11	Oct- 11	Nov- 11	Dec- 11	Jan- 12	Feb- 12	Mar- 12	Apr -12
Great skua	*Stercorarius skua*	5														1
Great skua	*Stercorarius skua*	6														1
Great skua	*Stercorarius skua*	9								6						
Great skua	*Stercorarius skua*	10								1	2					
Great skua	*Stercorarius skua*	12							1	1	1					
Kittiwake	*Rissa tridactyla*	1			21		26						21	1	1	47
Kittiwake	*Rissa tridactyla*	2		5	7		28		1					1	4	32
Kittiwake	*Rissa tridactyla*	3			37		15	3					29	3	14	
Kittiwake	*Rissa tridactyla*	4			10	17	39						82		2	5
Kittiwake	*Rissa tridactyla*	5		10	8		36								1	7
Kittiwake	*Rissa tridactyla*	6	15	8			41					1	2		1	55
Kittiwake	*Rissa tridactyla*	7	58	1			14						5			17
Kittiwake	*Rissa tridactyla*	8	6				25						1		1	2
Kittiwake	*Rissa tridactyla*	9								1	1	8			13	
Kittiwake	*Rissa tridactyla*	10										28				
Kittiwake	*Rissa tridactyla*	11								1		59		1		
Kittiwake	*Rissa tridactyla*	12									12	109		1		
Little gull	*Hydrocoloeus minutus*	1						16	7							
Little gull	*Hydrocoloeus minutus*	2						48	1							
Little gull	*Hydrocoloeus minutus*	3						10								
Little gull	*Hydrocoloeus minutus*	4						27								
Little gull	*Hydrocoloeus minutus*	5						29								

Species common name	Species biological name	VP	Mar -11	Apr-11	May-11	Jun-11	Jul -11	Aug -11	Sep-11	Oct-11	Nov-11	Dec-11	Jan-12	Feb-12	Mar-12	Apr -12
Little gull	*Hydrocoloeus minutus*	6						2			16					
Little gull	*Hydrocoloeus minutus*	7					1	1								
Little gull	*Hydrocoloeus minutus*	9										1				
Little gull	*Hydrocoloeus minutus*	11									1	1				
Mediterranean gull	*Larus melanocephalus*	1		2											2	
Mediterranean gull	*Larus melanocephalus*	5														1
Mediterranean gull	*Larus melanocephalus*	9								1						
Mediterranean gull	*Larus melanocephalus*	10										1				
Little tern	*Sternula albifrons*	1			51											
Little tern	*Sternula albifrons*	2			14											
Little tern	*Sternula albifrons*	3			4											
Little tern	*Sternula albifrons*	5				4										
Little tern	*Sternula albifrons*	7			1											
Little tern	*Sternula albifrons*	10			18	1										
Little tern	*Sternula albifrons*	11			6											
Little tern	*Sternula albifrons*	12				1										
Sandwich tern	*Sterna sandvicensis*	1			4	2		8	13							1
Sandwich tern	*Sterna sandvicensis*	2		4				5	10							
Sandwich tern	*Sterna sandvicensis*	3		2			2	4	17							
Sandwich tern	*Sterna sandvicensis*	4			1	2	7	4	3							
Sandwich tern	*Sterna sandvicensis*	5					1	2	2							
Sandwich tern	*Sterna sandvicensis*	6					4	1	2							

Species common name	Species biological name	VP	Mar -11	Apr-11	May-11	Jun-11	Jul -11	Aug -11	Sep-11	Oct-11	Nov-11	Dec-11	Jan-12	Feb-12	Mar-12	Apr -12
Sandwich tern	*Sterna sandvicensis*	7					1	1	3							
Sandwich tern	*Sterna sandvicensis*	8					3	2	7							
Sandwich tern	*Sterna sandvicensis*	9					6	1	6							
Sandwich tern	*Sterna sandvicensis*	10				2	1	1	7							1
Sandwich tern	*Sterna sandvicensis*	11					11	2								
Sandwich tern	*Sterna sandvicensis*	12			3		13	5	9							
Common tern	*Sterna hirundo*	1			28	81	183	146	16							1
Common tern	*Sterna hirundo*	2			8	75	39	16	20							
Common tern	*Sterna hirundo*	3			1	8	25	16	20	1						
Common tern	*Sterna hirundo*	4				18	2	15	23							
Common tern	*Sterna hirundo*	5					26	42	19							2
Common tern	*Sterna hirundo*	6			3		20	79	7							
Common tern	*Sterna hirundo*	7				3	15	20	2							
Common tern	*Sterna hirundo*	8				2	17	28	5	1						
Common tern	*Sterna hirundo*	9					2									
Common tern	*Sterna hirundo*	10					12	2								
Common tern	*Sterna hirundo*	11					21	4	3							
Common tern	*Sterna hirundo*	12			3		5	9	5							
Guillemot	*Uria aalge*	1				1										
Guillemot	*Uria aalge*	3												1		
Guillemot	*Uria aalge*	4										1				
Razorbill	*Alca torda*	4										1				

Species common name	Species biological name	VP	Mar -11	Apr-11	May-11	Jun-11	Jul -11	Aug -11	Sep-11	Oct-11	Nov-11	Dec-11	Jan-12	Feb-12	Mar-12	Apr -12
Razorbill	*Alca torda*	7			2				1		1					
Razorbill	*Alca torda*	9								2						
Razorbill	*Alca torda*	11								1						
Razorbill	*Alca torda*	12								4	16	1				
Razorbill / guillemot		1								1						
Razorbill / guillemot		5								1						
Razorbill / guillemot		6										1				
Razorbill / guillemot		7								2						
Razorbill / guillemot		8								1		1				
Razorbill / guillemot		9								1						
Razorbill / guillemot		10								2		4				
Razorbill / guillemot		11								3	1	7				
Razorbill / guillemot		12								1	1	6				
Little auk	*Alle alle*	11									1					

Species common name	Species biological name	VP	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11	Jan-12	Feb-12	Mar-12	Apr-12
Pink-footed goose	*Anser brachyrhynchus*	9									2					
Greylag goose	*Anser anser*	2														2
Greylag goose	*Anser anser*	5										20				
Greylag goose	*Anser anser*	12													3	
Brent goose	*Branta bernicla*	1							1					50		
Brent goose	*Branta bernicla*	2							21		21					2
Brent goose	*Branta bernicla*	3							9		6		6			1
Brent goose	*Branta bernicla*	4							24		8					
Brent goose	*Branta bernicla*	5							5		72					
Brent goose	*Branta bernicla*	6							85	12	59	1			11	
Brent goose	*Branta bernicla*	7		1							3					
Brent goose	*Branta bernicla*	8								7	55					
Brent goose	*Branta bernicla*	9								13	127		1			
Brent goose	*Branta bernicla*	10								17	50					
Brent goose	*Branta bernicla*	11								5	14					
Brent goose	*Branta bernicla*	12								4	9		2	2		
Shelduck	*Tadorna tadorna*	1												2		2
Shelduck	*Tadorna tadorna*	2										1				1
Shelduck	*Tadorna tadorna*	3											10			
Shelduck	*Tadorna tadorna*	4								2		4				
Shelduck	*Tadorna tadorna*	5		1										2		

Species common name	Species biological name	VP	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11	Jan-12	Feb-12	Mar-12	Apr-12
Shelduck	*Tadorna tadorna*	6									1					
Shelduck	*Tadorna tadorna*	7										3				
Shelduck	*Tadorna tadorna*	8											1			1
Shelduck	*Tadorna tadorna*	12										2				
Wigeon	*Anas penelope*	1								7	5					
Wigeon	*Anas penelope*	2										2				
Wigeon	*Anas penelope*	3									14		3			
Wigeon	*Anas penelope*	4								7	30					
Wigeon	*Anas penelope*	5							3	9						
Wigeon	*Anas penelope*	6								12	10					
Wigeon	*Anas penelope*	7										7				23
Wigeon	*Anas penelope*	9											8		1	
Wigeon	*Anas penelope*	11											3			
Wigeon	*Anas penelope*	12									1	2				
Gadwall	*Anas strepera*	6									20					
Teal	*Anas crecca*	1									6		1			
Teal	*Anas crecca*	2							8							
Teal	*Anas crecca*	4	3						3	19						
Teal	*Anas crecca*	5									1					
Teal	*Anas crecca*	6									1					
Teal	*Anas crecca*	7					1					10				
Teal	*Anas crecca*	10										230	215			

Species common name	Species biological name	VP	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11	Jan-12	Feb-12	Mar-12	Apr-12
Teal	*Anas crecca*	11						5								
Teal	*Anas crecca*	12						21				56				
Mallard	*Anas platyrhynchos*	1						2								
Mallard	*Anas platyrhynchos*	2									1					
Mallard	*Anas platyrhynchos*	9												5		
Pintail	*Anas acuta*	3											5			
Pintail	*Anas acuta*	8										1				
Pintail	*Anas acuta*	11										6				
Pintail	*Anas acuta*	12										4				
Shoveler	*Anas clypeata*	1									1					
Shoveler	*Anas clypeata*	7										16	2			
Shoveler	*Anas clypeata*	9												2		
Tufted duck	*Aythya fuligula*	2													1	
Eider	*Somateria mollissima*	1													8	
Eider	*Somateria mollissima*	5									1					
Eider	*Somateria mollissima*	6									2					
Eider	*Somateria mollissima*	11										2				
Eider	*Somateria mollissima*	12									1					
Common scoter	*Melanitta nigra*	1							5					2		
Common scoter	*Melanitta nigra*	2					4					2				
Common scoter	*Melanitta nigra*	3		3				20				8	7			11
Common scoter	*Melanitta nigra*	5							15		10		1			

Species common name	Species biological name	VP	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11	Jan-12	Feb-12	Mar-12	Apr-12
Common scoter	*Melanitta nigra*	6		7					1		8					
Common scoter	*Melanitta nigra*	7			5		15	11	4		29					
Common scoter	*Melanitta nigra*	8		22	2		6		3							
Common scoter	*Melanitta nigra*	9										2				
Common scoter	*Melanitta nigra*	10								8						
Common scoter	*Melanitta nigra*	11					16				16					
Common scoter	*Melanitta nigra*	12		20			1		3			15	2		2	
Goldeneye	*Bucephala clangula*	11											3			
Goldeneye	*Bucephala clangula*	12										2				
Red-breasted merganser	*Mergus serrator*	2										2				
Red-breasted merganser	*Mergus serrator*	4											1			
Red-breasted merganser	*Mergus serrator*	5									2					
Red-breasted merganser	*Mergus serrator*	6														7
Red-breasted merganser	*Mergus serrator*	12										1	1			
Red-throated diver	*Gavia stellata*	1	22	2				1	1		1	95	7	69	2	13
Red-throated diver	*Gavia stellata*	2	1							1	2	23	14	11	150	6
Red-throated diver	*Gavia stellata*	3	4	2								10	24	49	13	10
Red-throated diver	*Gavia stellata*	4	61	1							10	13	156	202	20	1
Red-throated diver	*Gavia stellata*	5	3	1							2	19	8	173	3	1

Species common name	Species biological name	VP	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11	Jan-12	Feb-12	Mar-12	Apr-12
Red-throated diver	*Gavia stellata*	6	31	5							2	35	14	21	151	11
Red-throated diver	*Gavia stellata*	7	24						1			40	10	225	22	
Red-throated diver	*Gavia stellata*	8	7	2						2		276	1	40	51	
Red-throated diver	*Gavia stellata*	9	1	3					1	1		12	3	1	80	
Red-throated diver	*Gavia stellata*	10	1	1							4	3	39	224	46	4
Red-throated diver	*Gavia stellata*	11	17	1						1	1	12	330	37	45	1
Red-throated diver	*Gavia stellata*	12	11	4							1	159	710	51	20	
Black-throated diver	*Gavia arctica*	1										1				
Great crested grebe	*Podiceps cristatus*	1										5	2	13		
Great crested grebe	*Podiceps cristatus*	2	2									6				
Great crested grebe	*Podiceps cristatus*	3												2		2
Great crested grebe	*Podiceps cristatus*	4										2	3	1		
Great crested grebe	*Podiceps cristatus*	5									3	1		1	1	
Great crested grebe	*Podiceps cristatus*	6										1		2		1
Great crested grebe	*Podiceps cristatus*	7										1			1	
Great crested grebe	*Podiceps cristatus*	8												5		
Great crested grebe	*Podiceps cristatus*	10												4		
Great crested grebe	*Podiceps cristatus*	11											1	4		
Great crested grebe	*Podiceps cristatus*	12										1	9	7		
Fulmar	*Fulmarus glacialis*	1												1		2
Fulmar	*Fulmarus glacialis*	3													1	4
Fulmar	*Fulmarus glacialis*	5			1											

Species common name	Species biological name	VP	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11	Jan-12	Feb-12	Mar-12	Apr-12
Fulmar	*Fulmarus glacialis*	6			1											
Fulmar	*Fulmarus glacialis*	7			1											
Fulmar	*Fulmarus glacialis*	8														1
Fulmar	*Fulmarus glacialis*	10					1									
Fulmar	*Fulmarus glacialis*	12													1	
Manx shearwater	*Puffinus puffinus*	12									1					
Gannet	*Morus bassanus*	1					3	1	1	3			27	6	2	3
Gannet	*Morus bassanus*	2					11		5	1		1	24		10	1
Gannet	*Morus bassanus*	3					1		7					2	4	
Gannet	*Morus bassanus*	4				1	8		11		2		9		2	
Gannet	*Morus bassanus*	5			6			2	3	3	4		1		2	1
Gannet	*Morus bassanus*	6		2	29		33			3		2	2		15	2
Gannet	*Morus bassanus*	7	4	2	22		8		5	54	1					
Gannet	*Morus bassanus*	8	1	1			18		7	91				26		
Gannet	*Morus bassanus*	9					1		3	42	1	3		3	1	
Gannet	*Morus bassanus*	10					3			8	1	30	1	1	4	
Gannet	*Morus bassanus*	11	1				7	1	1	12	4	22		33	4	
Gannet	*Morus bassanus*	12					25	17	12	15	39	5			38	3
Grey heron	*Ardea cinerea*	3														1
Grey heron	*Ardea cinerea*	5								1						
Marsh harrier	*Circus aeruginosus*	7		1												
Marsh harrier	*Circus aeruginosus*	12								1						

Species common name	Species biological name	VP	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11	Jan-12	Feb-12	Mar-12	Apr-12
Hobby	*Falco subbuteo*	1					2		1							
Hobby	*Falco subbuteo*	7							1							
Hobby	*Falco subbuteo*	8							1							
Hobby	*Falco subbuteo*	11							1							
Peregrine	*Falco peregrinus*	11										1				
Peregrine	*Falco peregrinus*	12								1						
Oystercatcher	*Haematopus ostralegus*	1				1										
Oystercatcher	*Haematopus ostralegus*	2		1												7
Oystercatcher	*Haematopus ostralegus*	3							2		1					
Oystercatcher	*Haematopus ostralegus*	4				1		2	3							
Oystercatcher	*Haematopus ostralegus*	5						3			1					
Oystercatcher	*Haematopus ostralegus*	7	1					12								
Oystercatcher	*Haematopus ostralegus*	8				1		1								
Oystercatcher	*Haematopus ostralegus*	10		3												
Oystercatcher	*Haematopus ostralegus*	11								1						
Oystercatcher	*Haematopus ostralegus*	12						4								
Avocet	*Recurvirostra avosetta*	1				5										
Avocet	*Recurvirostra avosetta*	2			1	3										
Avocet	*Recurvirostra avosetta*	3														2
Avocet	*Recurvirostra avosetta*	4				3										2
Avocet	*Recurvirostra avosetta*	5				2										
Avocet	*Recurvirostra avosetta*	6		55					7							6

Species common name	Species biological name	VP	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11	Jan-12	Feb-12	Mar-12	Apr-12
Avocet	*Recurvirostra avosetta*	8				2										
Avocet	*Recurvirostra avosetta*	9		2											2	
Ringed plover	*Charadrius hiaticula*	1								4						
Ringed plover	*Charadrius hiaticula*	8								1						
Ringed plover	*Charadrius hiaticula*	9							3							
Ringed plover	*Charadrius hiaticula*	10						1								
Ringed plover	*Charadrius hiaticula*	11	1					1	1	1						
Ringed plover	*Charadrius hiaticula*	12						13	25							
Golden plover	*Pluvialis apricaria*	11						3								
Grey plover	*Pluvialis squatarola*	2							1							
Grey plover	*Pluvialis squatarola*	4							2							
Grey plover	*Pluvialis squatarola*	12								1						
Lapwing	*Vanellus vanellus*	4												11		
Knot	*Calidris canutus*	1													1	
Knot	*Calidris canutus*	9												1		
Knot	*Calidris canutus*	11								2						
Knot	*Calidris canutus*	12							3							
Sanderling	*Calidris alba*	4						6								
Sanderling	*Calidris alba*	5				1										
Sanderling	*Calidris alba*	9							2							
Sanderling	*Calidris alba*	12						1								
Curlew sandpiper	*Calidris ferruginea*	12							1							

Species common name	Species biological name	VP	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11	Jan-12	Feb-12	Mar-12	Apr-12
Dunlin	*Calidris alpina*	1			8			7	7	2				12	8	
Dunlin	*Calidris alpina*	2							15							
Dunlin	*Calidris alpina*	3						3						2		
Dunlin	*Calidris alpina*	4						5								
Dunlin	*Calidris alpina*	5				3			6							
Dunlin	*Calidris alpina*	6							8							
Dunlin	*Calidris alpina*	7							2							
Dunlin	*Calidris alpina*	8				7				1						
Dunlin	*Calidris alpina*	9												1		
Dunlin	*Calidris alpina*	11								1				1		
Dunlin	*Calidris alpina*	12							8	1						
Bar-tailed godwit	*Limosa lapponica*	6							4							
Bar-tailed godwit	*Limosa lapponica*	10										1				
Bar-tailed godwit	*Limosa lapponica*	12							1							
Whimbrel	*Numenius phaeopus*	1		1												
Whimbrel	*Numenius phaeopus*	3						1								1
Whimbrel	*Numenius phaeopus*	4						1	1							
Whimbrel	*Numenius phaeopus*	12					2	1								
Curlew	*Numenius arquata*	1		1		6	3									
Curlew	*Numenius arquata*	2				2	8									3
Curlew	*Numenius arquata*	3					4						1			
Curlew	*Numenius arquata*	4						15						1		

Species common name	Species biological name	VP	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11	Jan-12	Feb-12	Mar-12	Apr-12
Curlew	*Numenius arquata*	6				1										
Curlew	*Numenius arquata*	7				1										
Curlew	*Numenius arquata*	8				1		1							1	
Curlew	*Numenius arquata*	9				4								1		
Curlew	*Numenius arquata*	10		2		4										
Curlew	*Numenius arquata*	11				3										
Curlew	*Numenius arquata*	12													2	
Redshank	*Tringa totanus*	3						6								
Redshank	*Tringa totanus*	4						4								
Redshank	*Tringa totanus*	10							1							
Turnstone	*Arenaria interpres*	1											5			
Turnstone	*Arenaria interpres*	2								1	3					
Turnstone	*Arenaria interpres*	3						2								
Turnstone	*Arenaria interpres*	5						2								
Turnstone	*Arenaria interpres*	6												3		
Turnstone	*Arenaria interpres*	8								9		5				
Turnstone	*Arenaria interpres*	9									19			1	1	
Turnstone	*Arenaria interpres*	10										1	1			
Turnstone	*Arenaria interpres*	11											13			
Turnstone	*Arenaria interpres*	12					1	6								
Grey phalarope	*Phalaropus fulicarius*	8							1							
Pomarine skua	*Stercorarius pomarinus*	2										1				

Species common name	Species biological name	VP	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11	Jan-12	Feb-12	Mar-12	Apr-12
Pomarine skua	*Stercorarius pomarinus*	10										1				
Pomarine skua	*Stercorarius pomarinus*	11										1				
Pomarine skua	*Stercorarius pomarinus*	12									1	1				
Arctic skua	*Stercorarius parasiticus*	1						1								
Arctic skua	*Stercorarius parasiticus*	2								1						
Arctic skua	*Stercorarius parasiticus*	5								2						
Arctic skua	*Stercorarius parasiticus*	6								1						
Arctic skua	*Stercorarius parasiticus*	8								4						
Arctic skua	*Stercorarius parasiticus*	9							1	4		1				
Arctic skua	*Stercorarius parasiticus*	10					2			1		1				
Arctic skua	*Stercorarius parasiticus*	12							2							
Great skua	*Stercorarius skua*	1							1							
Great skua	*Stercorarius skua*	5														1
Great skua	*Stercorarius skua*	6														1
Great skua	*Stercorarius skua*	9								6						
Great skua	*Stercorarius skua*	10								1	2					
Great skua	*Stercorarius skua*	12							1	1	1					
Kittiwake	*Rissa tridactyla*	1			21		26						21	1	1	47
Kittiwake	*Rissa tridactyla*	2		5	7		28		1					1	4	32
Kittiwake	*Rissa tridactyla*	3			37		15	3					29	3	14	
Kittiwake	*Rissa tridactyla*	4			10	17	39						82		2	5
Kittiwake	*Rissa tridactyla*	5		10	8		36								1	7

Species common name	Species biological name	VP	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11	Jan-12	Feb-12	Mar-12	Apr-12
Kittiwake	*Rissa tridactyla*	6	15	8			41					1	2		1	55
Kittiwake	*Rissa tridactyla*	7	58	1			14						5			17
Kittiwake	*Rissa tridactyla*	8	6				25						1		1	2
Kittiwake	*Rissa tridactyla*	9								1	1	8			13	
Kittiwake	*Rissa tridactyla*	10										28				
Kittiwake	*Rissa tridactyla*	11								1		59		1		
Kittiwake	*Rissa tridactyla*	12									12	109		1		
Little gull	*Hydrocoloeus minutus*	1						16	7							
Little gull	*Hydrocoloeus minutus*	2						48	1							
Little gull	*Hydrocoloeus minutus*	3						10								
Little gull	*Hydrocoloeus minutus*	4						27								
Little gull	*Hydrocoloeus minutus*	5						29								
Little gull	*Hydrocoloeus minutus*	6						2			16					
Little gull	*Hydrocoloeus minutus*	7					1	1								
Little gull	*Hydrocoloeus minutus*	9										1				
Little gull	*Hydrocoloeus minutus*	11									1	1				
Mediterranean gull	*Larus melanocephalus*	1		2											2	
Mediterranean gull	*Larus melanocephalus*	5														1
Mediterranean gull	*Larus melanocephalus*	9								1						
Mediterranean gull	*Larus melanocephalus*	10										1				
Little tern	*Sternula albifrons*	1			51											
Little tern	*Sternula albifrons*	2			14											

Species common name	Species biological name	VP	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11	Jan-12	Feb-12	Mar-12	Apr-12
Little tern	*Sternula albifrons*	3			4											
Little tern	*Sternula albifrons*	5				4										
Little tern	*Sternula albifrons*	7			1											
Little tern	*Sternula albifrons*	10			18	1										
Little tern	*Sternula albifrons*	11			6											
Little tern	*Sternula albifrons*	12				1										
Sandwich tern	*Sterna sandvicensis*	1			4	2		8	13							1
Sandwich tern	*Sterna sandvicensis*	2		4				5	10							
Sandwich tern	*Sterna sandvicensis*	3		2			2	4	17							
Sandwich tern	*Sterna sandvicensis*	4			1	2	7	4	3							
Sandwich tern	*Sterna sandvicensis*	5					1	2	2							
Sandwich tern	*Sterna sandvicensis*	6					4	1	2							
Sandwich tern	*Sterna sandvicensis*	7					1	1	3							
Sandwich tern	*Sterna sandvicensis*	8					3	2	7							
Sandwich tern	*Sterna sandvicensis*	9					6	1	6							
Sandwich tern	*Sterna sandvicensis*	10				2	1	1	7							1
Sandwich tern	*Sterna sandvicensis*	11					11	2								
Sandwich tern	*Sterna sandvicensis*	12			3		13	5	9							
Common tern	*Sterna hirundo*	1			28	81	183	146	16							1
Common tern	*Sterna hirundo*	2			8	75	39	16	20							
Common tern	*Sterna hirundo*	3			1	8	25	16	20	1						
Common tern	*Sterna hirundo*	4				18	2	15	23							

Species common name	Species biological name	VP	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11	Jan-12	Feb-12	Mar-12	Apr-12
Common tern	*Sterna hirundo*	5					26	42	19							2
Common tern	*Sterna hirundo*	6			3		20	79	7							
Common tern	*Sterna hirundo*	7				3	15	20	2							
Common tern	*Sterna hirundo*	8				2	17	28	5	1						
Common tern	*Sterna hirundo*	9					2									
Common tern	*Sterna hirundo*	10					12	2								
Common tern	*Sterna hirundo*	11					21	4	3							
Common tern	*Sterna hirundo*	12			3		5	9	5							
Guillemot	*Uria aalge*	1				1										
Guillemot	*Uria aalge*	3												1		
Guillemot	*Uria aalge*	4										1				
Razorbill	*Alca torda*	4										1				
Razorbill	*Alca torda*	7			2				1		1					
Razorbill	*Alca torda*	9								2						
Razorbill	*Alca torda*	11								1						
Razorbill	*Alca torda*	12								4	16	1				
Razorbill / guillemot		1								1						
Razorbill / guillemot		5								1						
Razorbill / guillemot		6										1				
Razorbill / guillemot		7								2						
Razorbill / guillemot		8								1		1				
Razorbill / guillemot		9								1						

Species common name	Species biological name	VP	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11	Jan-12	Feb-12	Mar-12	Apr-12
Razorbill / guillemot		10								2		4				
Razorbill / guillemot		11								3	1	7				
Razorbill / guillemot		12								1	1	6				
Little auk	*Alle alle*	11									1					