Rampion 2 Wind Farm

Category 6: Environmental Statement

Volume 4, Appendix 12.1: Offshore and intertidal ornithology baseline technical report

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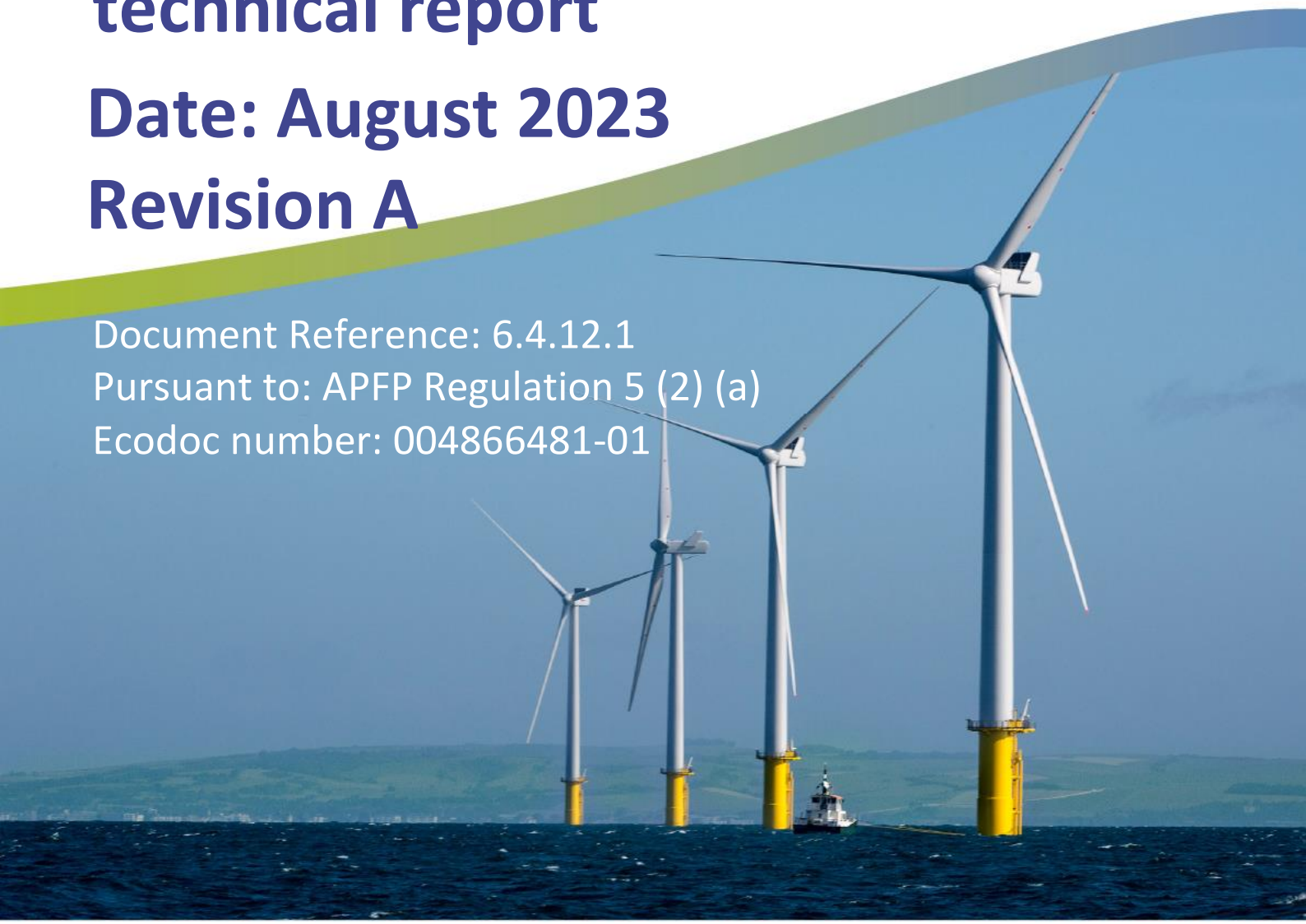
Revision A



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1. Introduction

1.1 Purpose of this report

1.1.1 This technical report has been produced for the purpose of providing a detailed technical account of the methods and results used to establish the baseline characteristics of the offshore and intertidal ornithology aspects of the Rampion 2 Offshore Wind Farm ('Rampion 2'). This technical report provides supporting information to **Chapter 12: Offshore and intertidal ornithology, Volume 2** of the ES (Document Reference 6.2.12).

1.2 Project background

1.2.1 Rampion Extension Development Ltd ('the Applicant' or 'RED') is proposing to develop the Rampion 2 Offshore Wind Farm (OWF). Rampion 2 will be sited adjacent to the existing Rampion OWF ('Rampion 1'), located in the English Channel, 14km off the coast of Brighton & Hove and approximately 30km east of the Isle of Wight.

1.2.2 Rampion 2 will comprise both offshore and onshore infrastructure including offshore wind turbine generators (WTGs) and associated foundations and inter-array cabling, offshore substations, offshore export cables within a defined cable corridor, a landfall site, and an onshore substation for connection to the electricity transmission network. The offshore element of Rampion 2 will be located within an Area of Search adjacent to the west and south of the existing Rampion 1 site, together with a small link or 'bridge' area between the two areas for cabling. The location of Rampion 2 is illustrated in **Figure 12-1-1, Volume 3** of the ES (Document Reference 6.3.12). The Rampion 2 proposed DCO Order Limits combines the assessment boundaries for the onshore and offshore infrastructure.

1.2.3 APEM Ltd (hereafter APEM) was commissioned to undertake a study of the offshore and intertidal ornithology that characterise the area in order to inform consideration of the potential likely significant effects on birds in the offshore and intertidal environment.

1.3 Aims and objectives

1.3.1 The aim of this technical report is to present the findings of offshore and intertidal ornithology data and to determine those receptors that characterise the baseline and are of relevance to the assessment of the potential impacts from Rampion 2. Those receptors are primarily the bird species that are collectively called seabirds and shorebirds. A small number of other birds were detected, which are of relevance to **Chapter 23: Terrestrial ecology and nature conservation, Volume 2** of the ES (Document Reference 6.2.22). The data used to define the baseline characterisation are from site-specific aerial digital surveys for offshore ornithology and from desk study for the intertidal ornithology (i.e. birds that are seaward of the Mean High Water Springs (MHWS) tide level) and from site-specific waterbird surveys along the coastal strip.

1.3.2 This technical report presents information on offshore birds derived from 24 consecutive months of aerial digital surveys undertaken between April 2019 and March 2021, inclusive. The information that is presented within this report and its appendices for both the offshore and intertidal ornithology receptors includes the following:

- summary of desk study findings from intertidal bird data;
- details of site-specific offshore survey data, including:
  - bird abundance and density estimates (monthly and for bio-seasons);
  - behaviour of birds (flying and sitting on the water);
  - age classification of key seabirds; and
  - spatial distribution maps of key seabirds (for bio-seasons).

1.4 Study Area

1.4.1 The Study Area for the offshore and intertidal ornithology receptors includes all of the sea within the Rampion 2 array area, a 4km buffer surrounding the array area (but excluding Rampion 1 from this buffer), the offshore export cable corridor, and the cable landfall area. Account also has to be taken of the mobility of birds, noting that for instance, birds that nest outside the Study Area might fly in to or across the Study Area to feed during the breeding season, might fly into the Study Area outside of the breeding season to spend the winter or might fly across the Study Area on migration.

1.4.2 For the purposes of this section a split between offshore and intertidal is required in order to refine the focus of the ornithological assessments. The intertidal area and related assessments consider birds using the habitat mostly between MHWS and Mean Low Water Spring (MLWS), recognising that some of these birds might nest or roost on the shore landward of MHWS. The offshore area and related assessments consider birds using the habitat seaward of MLWS within the export cable corridor out to the Rampion 2 array area of the proposed DCO Order Limits and a 4km buffer surrounding it.

1.4.3 The aerial digital survey data for the Study Area within the Rampion 2 array area have been refined for this assessment from a wider data set, which was collected through a survey programme of the wider Rampion 2 Area of Search. The Area of Search and its relation to the Study Area is shown in **Figure 12-1-1, Volume 3** of the ES (Document Reference 6.3.12).

1.5 Bird names

1.5.1 Throughout this technical report the bird species names that are used are those that are in common use amongst English ornithologists and this corresponds to the "British (English) vernacular name 2017" column of the list of English and scientific names prepared by the British Ornithologists' Union (BOU, 2022). The corresponding scientific names from that publication are listed in the glossary on scientific bird names in **Annex A**.

2. Intertidal ornithology

2.1 Introduction

2.1.1 The intertidal Study Area is a stretch of vegetated shingle beach, on the south coast of England. The beach is backed by a sand dune system. The east of the Study Area is bounded by the mouth of the River Arun. The beach system extends west from the Study Area, eventually forming the pleasure beaches of resort towns including Bognor Regis. Shingle beaches are common on the south coast of England, although many are heavily influenced by human activities and developments. There are some notable areas of intertidal and estuarine habitats to the west, including the areas around Pagham Harbour and Chichester Harbour. The intertidal Study Area is fronted by the English Channel, which separates the island of Britain from France and the rest of continental Europe.

2.1.2 An initial desk-based review of appropriate literature and data sources was undertaken for the Scoping Report (RED, 2020). The data sources listed in **Table 2-1**, which were identified in the Scoping Report (RED, 2020), provide coverage of the Study Area and the wider region of interest for nearshore and intertidal bird species. These data sources and reports were confirmed through the Scoping Opinion (Planning Inspectorate, 2020) as the most appropriate sources to use to determine the baseline for intertidal and nearshore ornithology receptors to provide an account of all the information required for the impact assessments.

2.1.3 Additional data sources were highlighted during the consultation period following the publication of the Preliminary Environmental Impact Report (PEIR; RED 2021) and have been incorporated into the baseline.

2.1.4 A programme of site-specific through-the-tide-cycle surveys was undertaken along the coastal strip to provide further data during the non-breeding season. Data collection took place from September 2020 to March 2021.

Table 2-1 Key sources of intertidal ornithology data for Rampion 2.

Source	Date	Summary	Coverage of Study Area
Site specific surveys	September 2020 – March 2021	A programme of through-the-tide-cycle surveys of the intertidal study.	Covers the ECC Landfall area.
BTO Non-Estuarine Waterbird Surveys (NEWS)	1984 – 2016	NEWS were conducted in 1984/1985, 1997/98, 2006/07 and 2015/16 and provide records focused on intertidal habitats along the UK coastline.	Covers the ECC Landfall area.

Source	Date	Summary	Coverage of Study Area
Wetland Bird Survey (WeBS)	Annual Reports	Annual survey reports of wetland waterbirds, the most recent being Frost *et al.* (2021).	Coverage of UK intertidal and wetland zones. Source contains information which can be drawn upon at a Rampion 2 specific scale, or a wider regional scale.
Local / County bird reports and atlases	Annual Reports	Annual publications produced by local birdwatching groups (e.g. Sussex Ornithological Society) which summarise sightings and surveys results for Sussex and the wider south coast region. County atlases covering breeding and non-breeding birds within Sussex and the surrounding south coast counties.	Coverage across region at various intertidal and wetland and coastal areas.
Wildfowl and Wetlands Trust – Aerial surveys of waterbirds in the UK	2004 – 2009	Aerial surveys of waterbirds around the UK. Surveys undertaken by WWT on behalf of DTI (now BEIS but also previously referred to as BERR and DECC).	Coverage of inshore waters relevant to Rampion 2 from survey grids SE3, SE4 and SE5.
Existing offshore wind farm grey literature	Various dates	Information obtained from various offshore wind farm Environmental Statements (i.e. Thanet Extension, Kentish Flats, Greater Gabbard).	No coverage of Rampion 2 Study Area but provides information on birds in the context of the English south east coast.

Source	Date	Summary	Coverage of Study Area
Designated sites	Various dates	Information of Special Protection Areas (SPAs) and other designations relevant to IOFs with potential connectivity to Rampion 2. Key source of information will be Natural England designated sites portal. Available from: https://designatedsites.naturalengland.org.uk/SiteSearch.aspx	Country wide information on designated sites.
National Bird Atlas (Balmer *et al.*, 2013)	2007 – 2011	Results of five years of breeding season and wintering surveys across the UK at a 10km resolution.	Cable route scoping boundary overlaps with 20km squares TQ_A and TQ_F.
Sussex Ornithological Society Records	2011 – 2020	Records of birds from Climping Gap and vicinity	Records cover intertidal Study Area and a region around it.

2.2 Results

Site specific surveys

2.2.1 The monthly peak counts from the site-specific intertidal surveys are presented in **Table 2-2** (survey dates are given in **Table 2-3**). The only counts which exceeded the threshold for significance based on 1% of the GB population (see **Table 2-4**) were Mediterranean gull, which had a peak count of 149 in September 2020, and Sandwich tern, which had a peak count of three in September 2020.

2.2.2 It is notable that although historically a winter migrant and only a very rare breeding species, numbers of breeding Mediterranean gulls have increased rapidly, especially at colonies on the south coast of England such as Langstone Harbour (Eaton *et al*., 2020) and therefore a high count in September may indicate a post-breeding aggregation rather than wintering individuals. Furthermore, the 1% threshold presented in Frost *et al.* (2021) is based on a five-year average and therefore may not fully reflect significant recent population changes.

Table 2-2 Peak count per month from the site-specific intertidal surveys (September 2020 – March 2021).

Species	September	October	November	December	January	February	March	1% GB Population (Frost *et al.*, 2021)
Dark-bellied Brent goose	1	1	620	640	187	160	188	980
Mute swan	-	-	-	-	-	3	-	500
Shelduck	-	-	2	-	-	-	1	470
Gadwall	-	1	-	-	2	-	-	310
Wigeon	13	2	-	-	18	19	-	4,500
Pintail	15	-	-	-	18	-	-	200
Teal	-	-	-	-	2	1	-	4,300
Common scoter	19	1	1	4	18	4	1	1,300
Red-breasted merganser	-	-	3	8	28	7	46	100
Great crested grebe	-	1	1	6	24	3	18	170
Slavonian grebe	-	-	1	-	-	-	2	9
Oystercatcher	6	16	7	4	12	8	15	2,900
Lapwing	-	-	-	-	-	16	-	6,200
Grey plover	3	6	71	47	37	-	7	330
Ringed plover	14	4	19	27	4	7	3	420
Turnstone	48	37	73	100	60	13	48	400
Knot	-	-	1	-	-	-	-	2,600
Sanderling	3	15	80	19	60	32	12	200

Species	September	October	November	December	January	February	March	1% GB Population (Frost *et al.*, 2021)
Dunlin	6	1	3	5	6	-	4	3,400
Purple sandpiper	-	1	-	-	-	-	-	97
Snipe	-	-	-	-	-	1	-	10,000
Black-headed gull	-	145	43	-	1	6	50	22,000
Little gull	-	1	-	-	-	-	-	4
Mediterranean gull	149	56	26	9	13	20	6	40
Common gull	-	178	18	-	-	70	2	7,000
Herring gull	-	-	-	-	-	2	26	7,300
Lesser black-backed gull	-	-	-	-	-	-	7	1,200
Sandwich tern	3	2	-	-	-	-	-	1
Guillemot	-	-	-	1	1	-	-	8,850*
Guillemot/ Razorbill	-	-	-	-	1	-	-	N/A
Red-throated diver	1	-	1	12	7	2	1	210
Great Northern diver	-	1	-	-	-	-	-	43
Gannet	5	-	-	2	1	14	2	2,950*
Cormorant	2	3	2	-	6	2	9	620
Grey heron	-	-	-	1	-	-	-	450
Little egret	2	2	-	-	-	-	-	110

Species	September	October	November	December	January	February	March	1% GB Population (Frost *et al.*, 2021)
Kingfisher	1	-	1	-	-	-	-	37*
Kestrel	-	1	-	-	-	-	-	300*
Black redstart	-	1	-	-	-	-	-	4*

* Not included in Frost *et al.* (2021) and therefore used 1% of GB wintering population from Woodward *et al.* (2020)

Table 2-3 Dates of site-specific intertidal surveys

Survey Number	Date
1	24/09/2020
2	02/10/2020
3	05/10/2020
4	26/10/2020
5	03/11/2020
6	25/11/2020
7	03/12/2020
8	09/12/2020
9	08/01/2021
10	13/01/2021
11	12/02/2021
12	22/02/2021
13	08/03/2021
14	15/03/2021

Non-estuarine waterbird surveys

2.2.3 A programme of national counts of birds along the UK's non-estuarine shoreline was conducted in 1984/85, 1997/98, 2006/07 and 2015/16, originally under the title of the 'Winter Shorebird Count' and thereafter as the 'Non-Estuarine Waterbird Survey' (Frost *et al.*, 2017). The stretch of coast from Climping Beach to West Beach, Littlehampton was included in the most recent three surveys with consistent and complete coverage of the intertidal Study Area. The results for this sector are presented in **Table 2-4**, which represent peak winter count of birds (expressed as a range of values in the manner published by the BTO) from that programme of non-estuarine waterbird counts. Also included in **Table 2-4** are the 1% thresholds for identifying a site of national importance for each species. Only sanderling reach the 1% of the national populations for any species in the given season, the common threshold for consideration within impact assessments.

Table 2-4 NEWS results between Climping Beach and West Beach, Littlehampton

Species	Survey			GB 1% threshold (Frost *et al.*, 2021)
	1997/98	2006/07	2015/16	
Dark-bellied brent goose	0	0	0	980
Mute swan	0	0	0	500
Wigeon	0	0	0	4,500
Teal	0	0	0	4,300
Red-breasted merganser	1 - 3	0	0	100
Little grebe	0	0	0	150
Great crested grebe	0	0	0	170
Oystercatcher	81 - 120	21 - 40	1 - 30	2,900
Grey plover	0	1 - 50	1 - 50	330
Ringed plover	21 - 30	31 - 60	0	420
Curlew	0	0	0	1,200
Turnstone	1 - 30	121 - 180	1 - 60	400
Sanderling	121 - 180	61 - 120	1 - 200	200
Dunlin	1 - 400	0	0	3,400
Redshank	1 - 4	1 - 10	0	940
Black-headed gull	nc	nc	1 - 200	22,000
Mediterranean gull	nc	nc	11 - 20	40
Common gull	nc	nc	1 - 30	7,000
Great black-backed gull	nc	nc	1 - 10	760
Herring gull	nc	nc	1 - 300	7,300
Lesser black-backed gull	nc	nc	0	1,200
Cormorant	0	1 - 10	0	620
Grey heron	0	0	0	450

Species	Survey			GB 1% threshold (Frost *et al.*, 2021)
	1997/98	2006/07	2015/16	
Little egret	0	0	0	110

nc = Not counted

Designated sites

2.2.4 There is partial overlap between Climping Beach Site of Special Scientific Interest (SSSI) and the intertidal Study Area (**Figure 12-1, Volume 3** of the ES (Document Reference 6.3.12). The citation for Climping Beach SSSI describes the intertidal zone as "consisting of soft mud and sands and supporting important populations of wintering birds[1]. In particular, the citation notes that "*up to 300 sanderling have been recorded from this site in winter; a figure which represents 1% of the West European population of this bird.* […] *Other wintering birds include grey plover and oystercatcher".*

Local/county bird reports and atlases

2.2.5 The 2016 and 2018 Sussex Bird Reports (SOS, 2017 and 2019) provide information on all species recorded in the county. The reports provide an overview of birds recorded with the intertidal and nearshore environment, with records of breeding and wintering numbers highlighted where considered of significance locally or regionally. However, records within county bird reports are, often, focused on particular locations that birdwatchers frequent on a regular basis and do not systematically cover entire stretches of coastline, so should not be the sole source of data used in order to evaluate bird populations for impact assessment purposes.

2.2.6 Generally, The Sussex Bird Report 2018 (SOS, 2019) suggests very few ducks, waders, gulls or terns breed within or in close proximity to the intertidal zone along the coast in the intertidal Study Area. The only exception is one pair of ringed plovers, which are reported to have fledged one chick at West Beach (Littlehampton). The nesting location itself would have been above MHWS, but it is likely that this pair would have been foraging in the intertidal zone during the breeding season.

2.2.7 Notable records of birds recorded on migration or during the non-breeding (wintering period) are referred to throughout the report. The notable counts recorded within The Sussex Bird Reports (SOS, 2017 and 2019) are presented in **Table 2-5**, with commentary with regards to the time of year and location of the records. Of those species recorded in peak numbers only sanderling and Mediterranean gull were recorded reaching the 1% of the national populations for the given season within the intertidal Study Area, the common threshold for

[1] SSSI Citation available at https://designatedsites.naturalengland.org.uk/PDFsForWeb/Citation/1004174.pdf [accessed 25/02/2021]

consideration within impact assessments. Mediterranean gull peak counts occurred during the period of post-breeding dispersal in August and September.

Table 2-5 Notable counts of birds relevant to the intertidal Study Area given in the Sussex Bird Report 2018 (SOS, 2019).

Species	Month (2018)	Count	GB 1% Threshold (Frost *et al.*, 2021; Woodward *et al.*, 2020)	Comments
Slavonian grebe	February	3	9	Observed from Climping Gap / Middleton; not recorded using intertidal area. Counts are monthly minimum totals.
	March	5		
Oystercatcher	September	44	2,900	Peak count at Climping
Grey plover	March	75	330	Peak count at Climping
Ringed plover	N/A	N/A	N/A	One pair reported to have fledged at least one chick on West Beach (Littlehampton).
Turnstone	January	29	400	WeBS counts for Climping Gap (not exclusively intertidal)
	February	193		
	March	40		
	August	58		
	September	23		
	October	10		
	November	14		

Species	Month (2018)	Count	GB 1% Threshold (Frost *et al.*, 2021; Woodward *et al.*, 2020)	Comments
	December	39		
	October	100		Climping Gap notable count (non-WeBS)
Sanderling	January	10	200	WeBS counts for Climping Gap (not exclusively intertidal)
	February	153		
	March	30		
	August	2		
	September	4		
	November	110		
	December	20		
Sanderling	January	90	200	Minimum monthly counts for Littlehampton/Rustington/Climping
	February	153		
	March	155		
	November	110		
	December	250		

Species	Month (2018)	Count	GB 1% Threshold (Frost *et al.*, 2021; Woodward *et al.*, 2020)	Comments
Mediterranean gull	September	1,000	40	Observed from Climping Gap. Counts are monthly peak.
	October	500		
	November	100		
Black tern	May	2	N/A[2]	Observed from Climping; not recorded using intertidal area

[2] No population estimate given – regularly seen on passage, but no established breeding or wintering population

2.2.8 The Hampshire Bird Report 2018 (Chalmers, 2019) was also reviewed; however, it did not present any evidence relevant to the intertidal Study Area (as the intertidal Study Area lies approximately 24km from the Hampshire border at the nearest point). No additional data were identified in local atlases.

Rampion 1 Environmental Statement (ES)

2.2.9 For Rampion 1, the intertidal zone was included within the onshore (rather than offshore) ecology assessment. The Rampion 1 cable landfall location is at Lancing Beach, approximately 15km west from the Rampion 2 intertidal Area of Search. In the Rampion 1 ES (E.ON, 2012), it was mentioned that Adur Estuary SSSI lies close to the Rampion 1 cable landfall site and this SSSI is important for wading bird populations. Due to the distance between the cable landfall Area of Search for Rampion 2 and the area used for Rampion 1 no bird records were considered of relevance for this baseline report.

3. Offshore ornithology

This section describes the approach to baseline characterisation of offshore ornithological aspects. The offshore Study Area consists of the array area and export cable corridor (up to Mean Low Water Springs at the landfall site).

3.1 Key data sources

3.1.1 An initial desk-based review of appropriate literature and data sources was undertaken for the Scoping Report (RED, 2020). The data sources, listed in **Table 3-1**, provide coverage of the Study Area and the wider region of interest for offshore ornithology. These data sources and reports were confirmed through the Scoping Opinion (PINS, 2020) and consultation responses to the PEIR (RED, 2021) as the most appropriate sources to use to determine the baseline for offshore ornithology receptors to provide an account of all the information required for the impact assessments.

Table 3-1 Key sources of offshore ornithology data for Rampion 2

Source	Date	Summary	Coverage of Study Area
Rampion 2 – aerial digital survey data	2019 – 2021	Aerial digital surveys conducted by APEM Ltd. on a monthly basis between April 2019 and March 2021.	Rampion 2 array area plus 4km buffer.
Rampion Offshore Wind Farm – Baseline characterisation surveys	2010 – 2012	Boat-based surveys across the Rampion zone and 5km buffer plus an adjacent control zone to the east of the project. Data collection initiated in March 2010 for two years (end date February 2012).	Approximately 40% coverage of the Rampion 2 array area.
	2010 – 2011	Aerial visual surveys across Rampion zone and 5km buffer plus an adjacent control zone to the east of the project. Data collected for one year (August 2010 – August 2011).	Approximately 40% coverage of the Rampion 2 array area.

Source	Date	Summary	Coverage of Study Area
Local bird reports	Annual Reports	Annual publications produced by local birdwatching groups (e.g. Sussex Ornithological Society) which summarise sightings and surveys results for Sussex and the wider south coast region.	Coverage across region at various intertidal and wetland and coastal areas.
Wildfowl and Wetlands Trust – Aerial surveys of waterbirds in the UK	2004 – 2009	Aerial visual surveys of waterbirds around the UK. Surveys undertaken by WWT on behalf of DTI (now BEIS but also previously referred to as BERR and DECC).	Coverage of inshore waters relevant to Rampion 2 from survey grids SE3, SE4 and SE5.
Existing offshore wind farm grey literature	Various dates	Information obtained from various offshore wind farm Environmental Statements (i.e. Thanet Extension, Kentish Flats, Greater Gabbard).	No coverage of Rampion 2 Study Area but provides information on birds in the context of the English south east coast.
Designated sites	Various dates	Information of Special Protection Areas (SPAs) and other designations relevant to IOFs with potential connectivity to Rampion 2. Key source of information will be Natural England designated sites portal. Available from: https://designatedsites.naturalengland.org.uk/SiteSearch.aspx	Country wide information on designated sites.
National Bird Atlas (Balmer *et al.*, 2013)	2007 – 2011	Results of five years of breeding season and wintering surveys across the UK at a 10km resolution.	Cable route scoping boundary overlaps with 20km squares TQ_A and TQ_F.
Potential impacts of	Various dates	Published, peer reviewed scientific literature on bird behaviour and potential	Generic information applicable to Rampion 2 IOFs.

Source	Date	Summary	Coverage of Study Area
offshore wind farms on birds		impacts from OWF e.g. Garthe and Hüppop (2004); Drewitt and Langston (2006); Stienen *et al.* (2007); Speakman *et al.* (2009); Langston (2010); Band (2012); Cook *et al.* (2012); Furness and Wade (2012); Wright *et al.* (2012); Furness *et al.* (2013); Johnston *et al.* (2014a,b); Bradbury *et al.* (2014); Cook *et al.* (2014); Dierschke *et al.* (2016); Dierschke *et al.* (2017); SNCB (2017); Jarrett *et al.* (2018); Leopold & Verdaat (2018); Fliessbach *et al.* (2019); Mendel *et al.* (2019).	
Large scale survey data sets	2014	Large scale seabird sensitivity mapping as part of the SeaMaST project (Bradbury *et al.*, 2014).	UK wide coverage with information that can be drawn upon at a Rampion 2 specific scale, or a wider regional scale.
Bird distribution	Various dates	Publicly available reports of seabird distribution in UK waters e.g. Stone *et al.* (1995); Brown and Grice (2005); Kober *et al.* (2010); Waggitt *et al.* (2019); Cleasby *et al.* (2020).	UK wide coverage with information that can be drawn upon at a Rampion 2 specific scale, or a wider regional scale.
Bird breeding ecology	Various dates	Information on the breeding ecology of various bird species e.g. Cramp and Simmons (1977-94); Del Hoyo *et al.* (1992-2011); Robinson (2005).	Generic information applicable to Rampion 2 IOFs.
Bird population estimates and	Various dates	Data on seabird populations and	These sources contain information which can be

Source	Date	Summary	Coverage of Study Area
demographic rates		demographic rates for use in assessments e.g. Mitchell *et al.*, 2004; BirdLife International, 2004; Holling *et al.*, 2011; Frost *et al.*, 2021; Musgrove *et al.*, 2013; Furness, 2015; Horswill and Robinson 2015; Horswill *et al.*, 2017, JNCC, 2020.	drawn upon at a Rampion 2 specific scale, or a wider regional scale.
Bird migration and foraging movements	Various dates	Bird movements during breeding season foraging trips and migratory movements e.g. Wernham *et al.*, 2002; Thaxter *et al.*, 2012; Wright *et al.*, 2012; Furness *et al.*, 2018; Woodward *et al.*, 2019; Wakefield *et al.*, 2017; Wakefield *et al.*, 2013; RSPB FAME and STAR tracking data.	These sources contain information which can be drawn upon at a Rampion 2 specific scale, or a wider regional scale.

Review of bird data available for use in the Rampion 2 EIA

Rampion 1 – baseline characterisation surveys

3.1.2 Site-specific boat-based and aerial visual surveys were undertaken in the pre-application phase for Rampion 1 to provide the ornithological baseline for ES assessment. Boat-based surveys were carried out at approximately monthly intervals from March 2010 to February 2012. Aerial visual surveys were carried out at approximately monthly intervals from August 2010 to August 2011. Both survey methods used observation teams and were based on transect distance sampling protocols. These surveys covered an area extending from the wind farm site that cover approximately 40% of the Rampion 2 array area. The evaluation of the conservation value of the bird populations recorded within 4km of the project site (excluding those which occurred in very low numbers) included:

- SPA species – gannet, lesser black-backed gull and common tern;
- EU Birds Directive Annex 1 species – little gull and Arctic tern; and
- Species present in regionally important numbers and/or UK BAP priority species – fulmar, great skua, common gull, herring gull, great black-backed gull, kittiwake, guillemot and razorbill.

3.1.3 Review of the occurrence and distribution of these species from the ES baseline data suggested that only two of the above species (fulmar and herring gull) were recorded within the breeding season on a regular basis in numbers considered of importance. These data suggest that the area surveyed is of most ornithological interest during the migratory and non-breeding seasons for the majority of bird species and not during the breeding season. During the spring migratory season, notable species were common gull, little gull, auks and terns. During the winter season, the only species in notable numbers was great black-backed gull.

WWT waterbird surveys

3.1.4 WWT carried out a programme of comprehensive surveys of UK nearshore waters between 2004 and 2009. Surveys were carried out using an aerial observer approach and covered the area from the shore to approximately 40km offshore. Results were presented by irregularly shaped blocks, where each block consisted of the area that could be surveyed in a single day (approximately 600km of flight lines). The most relevant blocks for this study were SE3 (covering Selsey Bill to Worthing) and SE4 (Worthing to Peacehaven). Waterbird surveys were carried out at various points during the year, between 2004 and 2008. A map showing the location of the SE3 and SE4 blocks and exact survey dates are given in WWT (2009).

3.1.5 Although the surveys are not specific to the Rampion 2 Study Area, they give a useful overview of the species present in the region at different times of year. The results suggest that key species present all year round include fulmar, gannet, kittiwake, herring gull, great black-backed gull and auk species (it is assumed that most auks were guillemots or razorbills). Tern species and skua species were recorded in generally small numbers and only in some periods, which are likely to represent migratory movements through the area.

3.1.6 The raw count results are presented in **Annex B**. Note that these are raw counts and no analysis has been carried out.

Local bird reports

3.1.7 Local bird reports can be a valuable source of information regarding bird species in the near-shore environment, although as they rarely (if ever) incorporate boat-based or aerial observations, they provide less information on birds in the offshore environment. Local bird reports also tend to focus on rare or unusual sightings which are less likely to be relevant from an EIA perspective, although they also include a comprehensive systematic list.

3.1.8 The Sussex Bird Report 2016 and 2018 (SOS, 2017 and 2019) and the Hampshire Bird Report 2016 and 2018 (HOS, 2017 and 2019) were reviewed for species of relevance to the export cable corridor and array area (species relevant to the intertidal area are discussed in **Section 2: Intertidal ornithology**). **Table 3-2** gives the peak seawatching counts from the Sussex Bird Report 2018, being the most recent available report and most relevant to the export cable corridor and array area. Non-seabirds are also listed if clearly linked to the offshore environment through e.g., migratory movements. Vagrants recorded offshore are not included as of no relevance for EIA purposes. Typically, seawatching from the coast may identify birds out to approximately 10km and therefore provides

information on birds flying over the offshore cable corridor; however, it would not identify birds in the array area.

Table 3-2 Peak seawatching counts of waterbirds and seabirds in Sussex Bird Report 2018 with relevance to the export cable corridor and array area

Species	Peak count	Month	Location/Notes
Dark-bellied Brent goose	5,248	March	Splash Point
Light-bellied Brent goose	1	April	Selsey Bill
Pink-footed goose	10	March	Telscombe Cliffs
White-fronted goose	1	April	Selsey Bill
Egyptian goose	2	April	Splash Point
Shelduck	23	April	Birling Gap
Garganey	6	April	Goring Gap
Shoveler	154	March	Splash Point
Gadwall	11	October	Selsey Bill
Wigeon	187	October	Selsey Bill
Mallard	12	March	Birling Gap
Pintail	31	March	Splash Point
Teal	66	October	Selsey Bill
Pochard	46	March	Barcombe Res
Tufted duck	7	April	Splash Point
Scaup	4	March	Selsey Bill
Eider duck	13	March	Worthing & Goring
Common scoter	3,020	April	Splash Point
Velvet scoter	8	April	Splash Point
Long-tailed duck	1	April	Splash Point
Red-breasted merganser	90	December	Worthing

Species	Peak count	Month	Location/Notes
Goosander	1	March	Goring Gap
Red-throated diver	155	April	Splash Point
Black-throated diver	12	May	Splash Point
Fulmar	34	April	Splash Point
Cory's shearwater	1	June	Selsey Bill
Manx shearwater	61	May	Selsey Bill
Balearic shearwater	1	August	Selsey Bill
Gannet	823	May	Selsey Bill
Cormorant	140	January	Selsey Bill
Shag	3	March	Splash Point
Avocet	6	March	Splash Point
Oystercatcher	26	April	Splash Point
Grey plover	345	April	Selsey Bill
Golden plover	23	March	Selsey Bill
Whimbrel	280	May	Splash Point
Curlew	31	March	Splash Point
Bar-tailed godwit	458	May	Splash Point
Turnstone	50	March	Selsey Bill
Knot	504	May	Splash Point
Sanderling	30	April	Selsey Bill
Kittiwake	700	April	Birling Gap
Black-headed gull	281	March	Splash Point
Little gull	183	April	Splash Point
Mediterranean gull	133	April	Splash Point
Common gull	353	March	Splash Point
Lesser black-backed gull	40	April	Selsey Bill

Species	Peak count	Month	Location/Notes
Herring gull	400	March	Splash Point
Caspian gull	1	March	Climping Gap
Great black-backed gull			No seawatching results reported; high count of 4,000 at Seaford/Cuckmere Haven in December.
Pomarine skua	34	May	Splash Point
Arctic skua	55	April	Splash Point
Great skua	53	April	Splash Point
Razorbill	134	April	Splash Point
Guillemot	8	April	(Unspecified)
Auk species	258	February	Fairlight
Little tern	110	April	Selsey Bill
Black tern	8	May	Selsey Bill
Sandwich tern	760	April	Selsey Bill
Common tern	194	April	Splash Point
Arctic tern	42	April	Splash Point
Common / Arctic tern	1,257	May	Birling Gap
Roseate tern	1	May	Selsey Bill

European Seabirds at Sea

3.1.9 The European Seabirds at Sea database (Camphuysen *et al.*, 2004) consists of observations collected through aerial and boat-based surveys between 1979 and 1996. **Table 3-3** shows the total number of birds recorded in the European Seabirds at Sea database within the area covered by the digital aerial surveys (see **Figure 12-1, Volume 3** of the ES (Document Reference 6.3.12). Note that this total number is compiled from numerous different surveys carried out across several years, and in various months. The most recent survey in the data included in the array area plus 4km buffer was in 1985, and therefore the data are 35 years old. The numbers of birds in **Table 3-3** should therefore be treated with caution, but may give some indication of the relative abundances of common species.

Table 3-3 Total number of birds of each species recorded by ESAS surveys in the digital aerial survey area

Species	Total number of birds
Black-headed gull	1
Common gull	6
Fulmar	1
Gannet	4
Great black-backed gull	47
Guillemot	25
Guillemot / razorbill	14
Herring gull	43
Kittiwake	59
Lesser black-backed gull	17

3.2 Rampion 2 Aerial Digital Surveys

Overview

3.2.1 Offshore ornithology data has been collected for multiple purposes within the English Channel and wider UK waters that provide regional and national generic and species-specific information on the distribution, abundance, biological seasons, behaviour and characteristics of birds in the offshore environment. These data sources and additional sources identified through the Evidence Plan Process in consultation with Natural England and the Royal Society for the Protection of Birds (RSPB) were considered to characterise the wider region for the purpose of impact assessments.

Methodology

3.2.2 A programme of 24 monthly aerial digital surveys was undertaken between April 2019 and March 2021. Surveys were carried out using APEM's high-resolution camera system to capture digital still imagery, to assess the abundance and distribution of birds and marine mammals of the Rampion 2 Survey Area. For this report, results are presented for the Rampion 2 array area and a 4km buffer around it. As any effects on birds within the Rampion 1 array area were accounted for with the impact assessments for that project bird data from with Rampion 1 have been excluded from the 4km buffer around Rampion 2 for abundance estimate calculations in order to reduce any instances of double counting (see **Figure 12-3, Volume 3** of the ES (Document Reference 6.3.12)).The survey

method has been designed to optimise the data collection for all bird species using a grid-based survey design at 2cm ground sampling distance (GSD) to achieve a minimum of 10% coverage of Rampion 2 and a 4km buffer. The survey dates, start and finish times and percentage coverage are given in **Table 3-4**.

Table 3-4 Dates, times and coverage of the 24 aerial digital surveys of the Rampion 2 Study Area

Survey	Survey Date	Survey Flight Times (UTC)	Coverage (%)
April 2019	26/04/2019	09:32 – 12:47	11.58
May 2019	14/05/2019	08:08 – 10:10	11.59
June 2019	14/06/2019	12:55 – 15:05	11.59
July 2019	09/07/2019	13:44 – 16:00	12.10
August 2019	05/08/2019	15:48 – 17:58	12.17
September 2019	02/09/2019	07:41 – 09:50	12.24
October 2019	02/10/2019	14:05 – 16:02	12.24
November 2019	01/12/2019*	11:00 – 13:09	12.24
December 2019	22/12/2019	11:29 – 13:34	12.22
January 2020	15/01/2020	13:02 – 15:14	12.24
February 2020	07/02/2020	12:03 – 13:55	12.24
March 2020	09/03/2020	09:40 – 11:57	12.24
April 2020	26/03/2020†	11:09 – 13:20	11.16
May 2020	29/05/2020	10:48 – 12:51 13:39 – 13:50	10.84
June 2020	13/06/2020	10:22 – 10:59 13:19 – 14:48	11.20
July 2020	14/07/2020	12:19 – 14:38	11.20
August 2020	04/08/2020	08:15 – 10:13	11.18
September 2020	01/09/2020	15:15 – 17:16	11.19
October 2020	07/10/2020	11:14 – 13:19	11.19
November 2020	11/11/2020	10:22 – 12:43	11.21

Survey	Survey Date	Survey Flight Times (UTC)	Coverage (%)
December 2020	02/12/2020	09:48 – 11:53	10.62
January 2021	18/01/2021	10:48 – 12:51	10.62
February 2021	26/02/2021	09:58 – 12:01	10.62
March 2021	08/03/2021	15:30 – 17:19	10.62

* The November 2019 survey was delayed and undertaken on 1st December due to poor weather conditions, though for clarity, it is referred to as the November 2019 survey throughout this report.

† A decision was made to conduct the April 2020 earlier than planned in late March due to the COVID-19 pandemic and uncertainty as to whether Government restrictions would prevent the survey being undertaken at a later date. For clarity, it is referred to as the April 2020 survey throughout this report.

3.2.3 Note that on 8 and 9 of February 2020, 'Storm Ciara' disrupted travel networks, caused power cuts, and also caused flooding in particular regions of the UK. The February 2020 survey was conducted on 7 February 2020 (i.e., immediately before Storm Ciara made landfall in the UK) and results from this survey have shown a noteworthy increase in birds when compared with other survey months. It is considered that the meteorological conditions preceding the storm may have altered the behaviour of seabirds, for example by altering the timing of their migration and/or causing them to travel nearer to shore in order to avoid the worst impacts of the storm. This may have contributed to uncharacteristically high densities of seabirds in the survey area on the survey date.

Data analysis

Image Analysis

3.2.4 The aerial digital still images were analysed to locate, identify and record all birds in the image. Internal quality assurance (QA) was carried out on the data collected from each survey. Images were assessed in batches with a different staff member responsible for each batch. Each image containing birds was reviewed and checked by APEM's dedicated QA team, ensuring that 100% of birds found were subject to internal QA to ensure that species identification was correct. Images containing no birds were removed and kept separately for further internal QA. Of these 'blank' images, 10% were randomly selected for QA. If there was less than 90% agreement, the entire batch was re-analysed independently by a different staff member than who initially analysed the imagery.

Bird abundance and density estimates

3.2.5 For each monthly aerial digital survey, geo-referenced locations of all birds are recorded within each individual digital still image, which were used to generate raw counts. Bird locations contained within the Study Area were then extracted using ArcGIS or QGIS, providing raw count data.

3.2.6 The raw counts were then divided by the number of images collected to give the mean number of birds per image (i). Population estimates (N) for each survey month were then generated by multiplying the mean number of animals per image by the total number of images required to cover the entire Study Area (A):

$$N = iA$$

3.2.7 Non-parametric bootstrap methods were used for variance estimation. A variability statistic was generated by re-sampling 999 times with replacement from the raw count data. The statistic was evaluated from each of these 999 bootstrap samples and upper and lower 95% confidence intervals of these 999 values were taken as the variability of the statistic over the population (Efron & Tibshirani, 1993).

3.2.8 A measure of precision was calculated using a Poisson estimator, suitable for a pseudo-Poisson over-dispersed distribution. This produced a CV based on the relationship of the standard error to the mean.

3.2.9 All analyses and data manipulation carried out by APEM were conducted in the R programming language (R Development Core Team, 2012) and non-parametric 95% confidence intervals were generated using the 'boot' library of function (Canty & Ripley, 2010). This results in species-specific monthly abundance estimates being calculated from the raw count data, with upper and lower confidence limits. Where appropriate, a level of precision is also presented for each monthly abundance estimate. Dividing the monthly abundance estimates by the size of the area covered calculates the associated density (e.g. birds per km^2) for any given species.

Species identification

3.2.10 All birds were first assigned to a species group and where possible, each of these then further identified to species level. Birds which could not be positively identified to species level remained assigned to the broader species group level. For example, a bird first assigned to the species group 'auk species' if not identified as a guillemot, will remain as an 'auk species' if no species level identification was determined. The grouping for unidentified birds and the species of which they comprise are listed in **Table 3-5**.

Attribution and apportionment of unidentified birds

3.2.11 There were occasions when it was not possible to identify a particular bird on the aerial digital survey image to the species level and the image is identified as belonging to a higher level group. To avoid underestimating species abundance due to the omission of birds which could not be identified to species level, the density of each unidentified species grouping (e.g. large gulls, small gulls, etc.) was estimated (using the methods described above) and then added proportionately to each member species of that group. The proportions were calculated from the ratios of positively identified birds in that group. This was undertaken on a survey-by-survey basis. For example, the number of unidentified birds in a group (such as 'large gulls') is proportioned to the specific species that are contained within that group (great black-backed gull, herring gull and lesser black-backed gull) based on the relative abundance of the positively identified

species in that month's survey. The grouping for unidentified birds and the species of which they comprise are listed in **Table 3-5**.

3.2.12 Instances can occur when there are no positively identified species in months where group level identified individuals have been recorded. The following rules were applied to such cases, in order of preference:

1) use same month from a different year; or
2) use the average bio-season proportions.

3.2.13 Where no species were positively identified across all surveys, apportionment was not possible and so results have been presented for the group only. Examples where this occurred include storm petrel species and large grebe species.

Table 3-5 Grouping levels for birds with no species level identification

Species	Species Grouping Level 1	Species Grouping Level 2	Species Grouping Level 3
N/A	Large grebe species	N/A	N/A
Kittiwake	Small gull species	N/A	Unknown gull species
Little gull			
Common gull			
Mediterranean gull			
Great black-backed gull	Black-backed gull species	Large gull species	
Lesser black-backed gull			
Herring gull	N/A		
Sandwich tern	N/A	Tern species	N/A
Common tern	Arctic / common ('commic') tern		
Artic tern			
Guillemot	Guillemot / razorbill	Auk species	N/A
Razorbill			
Red-throated diver	Diver species	N/A	N/A
Great northern diver			
N/A	Storm petrel species	N/A	N/A

Species	Species Grouping Level 1	Species Grouping Level 2	Species Grouping Level 3
Cormorant	Cormorant / shag	N/A	N/A
Shag			

3.2.14 Abundance estimates in **Section 3.3: Species accounts** are inclusive of apportionment. Additional tables in **Annex D** provide abundance estimates of each species and species group prior to apportionment, as well as behaviour information relating to flying and sitting birds.

3.2.15 As common terns and Arctic terns are very difficult to distinguish either in the field or from using aerial digital survey imagery, recordings to species level were limited and therefore 'commic' tern has been treated as comparable to a species-level unit for analysis.

Correction for availability bias

3.2.16 For auk species such as guillemot and razorbill that make foraging dives underwater, a proportion will not be detectable at the surface during the analysis of the survey images. Density and abundance estimates need to be adjusted to allow for this 'availability bias'.

3.2.17 A fixed species-specific correction factor was applied to the number of each auk species recorded on the sea surface. The correction factors are derived from time spent under water (during the chick-rearing stage) from Thaxter *et al.* (2010) for guillemots and razorbills.

3.2.18 The correction factors used to multiply the relative abundance estimate of guillemots and razorbills sitting on the sea surface are 1.311 and 1.211, respectively.

3.2.19 Abundance estimates in **Section 3.3** are the corrected monthly abundance and density estimates, having been subjected to this process. Additional tables in **Annex D** provide abundance estimates of each species and species group prior to correction for availability bias.

Consideration of biological seasons

3.2.20 Bird behaviour and abundance is recognised to differ across a calendar year dependent upon the bio-season. Separate bio-seasons are recognised in this baseline technical report in order to establish the level of importance any seabird species has within the Study Area during any particular period of time. The biologically defined minimum population scales (BDMPS) bio-seasons are based on those in Furness (2015), hereafter referred to as BDMPS bio-seasons or bio-seasons (**Table 3-6**). For most species, four bio-seasons are defined within this baseline technical report as: return (spring) migration, migration-free breeding, post-breeding (autumn) migration and migration-free winter. These four bio-seasons can be applied to different periods within the annual cycle for most

species, though not all four are applicable for all seabird species, with different combinations used depending on the biology and life history of a species:

- return migration: when birds are migrating to breeding grounds;
- migration-free breeding: when birds are attending colonies, nesting and provisioning young;
- post-breeding migration: when birds are migrating to wintering areas or dispersing from colonies; and
- migration-free winter: when non-breeding birds are over-wintering in an area.

3.2.21 For herring gull and guillemot, due to the extensive overlap between breeding, migration and wintering periods, two bio-seasons have been used: breeding and non-breeding. For guillemot, the bio-seasons have been modified from those presented in Furness (2015) by including March in the non-breeding bio-season. This modification was made due to a high number of guillemots moving through the survey area in the March 2021 survey, which cannot plausibly represent birds from local breeding colonies and is therefore deemed to represent a migratory pulse of birds.

Species accounts

3.2.22 The species accounts below summarise the key information for species identified as important ornithological features in **Chapter 12: Offshore and intertidal ornithology, Volume 2** of the ES (Document Reference 6.2.12). Species recorded in trivial numbers are not afforded detailed species accounts, but full results for all species/groups are presented in **Annex D**.

Table 3-6 BDMPS bio-seasons (based on Furness 2015) used as the basis for the species accounts presented in Section 3.3

Species	Return Migration	Migration-free Breeding	Post-breeding Migration	Migration-free Winter	Breeding	Non-breeding
Fulmar	December to March	April to August	September to October	November	N/A	N/A
Gannet	December to March	April to August	September to November	N/A	N/A	N/A
Kittiwake	January to April	May to July	August to December	N/A	N/A	N/A
Common gull[1]	January to April	May to July	August to December	N/A	N/A	N/A
Herring gull	N/A	N/A	N/A	N/A	March to August	September to February
Great black-backed gull	N/A	N/A	N/A	N/A	April to August	September to March
Lesser black-backed gull	March to April	May to July	August to October	November to February	N/A	N/A
Guillemot[2]	N/A	N/A	N/A	N/A	April to July	August to March
Razorbill	January to March	April to July	August to October	November to December	N/A	N/A

[1] Common gull is not included in Furness (2015); based on kittiwake as closely related and have a similar life history.

[2] For guillemot, the bio-seasons have been modified from those presented in Furness (2015) by including March in the non-breeding bio-season (see **3.2.21**).

Results

Species accounts

3.2.23 The species accounts below summarise the key information for species identified as important ornithological features in **Chapter 12: Offshore and intertidal ornithology, Volume 2** of the ES (Document Reference 6.2.12). For species identified as being at risk of collision, this includes abundances and densities within the array area only. For species identified as being at risk from displacement, this includes abundances and densities in the array area and selected buffers around it, as described in **Appendix 12.2: Offshore and intertidal ornithology displacement analysis, Volume 4** of the ES (Document Reference 6.4.12.2). Only months with records of each species are presented. Results are inclusive of apportionment of unidentified individuals and correction for availability bias.

3.2.24 Full results for all species and species groups, prior to apportionment of unidentified individuals and correction for availability bias, in both the Rampion 2 array area and array area plus 4km buffer, are presented in **Annex D**.

Spatial distribution

3.2.25 For the purpose of this report the spatial distribution of seabirds within the Rampion 2 survey are presented in the form of heatmaps within each species account. The heatmaps present data on a bio-season basis, pooling multiple months over separate bio-seasons (using the definitions in **Table 3-6**) in order to account for species-specific spatial and temporal distribution for the purpose of defining the Rampion 2 ornithological baseline.

3.2.26 To create the heatmaps, the point shapefiles were loaded into QGIS and the heatmap plugin for QGIS was installed. The shapefiles were then inputted to the heatmap plugin and a kernel radius of 3km was selected, which was determined to provide the most appropriate smoothing between the data points leaving no gaps in the model outputs. The output raster pixel size was set to 10m. All other default settings within the QGIS heatmap plugin were accepted. The heatmap plugin for each species was then run to generate GeoTIFF heatmaps, which were then loaded into ArcMap to produce the heatmaps presented in this report. Note that heatmaps were produced using data from the entire survey area, which includes some birds recorded outside of the array area plus 4km buffer. Heatmaps were generated using observations of birds identified to species level and therefore exclude birds identified to group level that are subsequently apportioned to species (although given significant numbers of birds identified to the group “guillemot/razorbill” a heatmap for that group is also presented).

Flight height/direction

3.2.27 Data were provided on flight direction from the aerial digital surveys, which are presented in **Annex C**. Note that flight direction data were recorded from birds across the entire survey area, which may include a small number of birds outside the Rampion 2 array area plus 4km buffer as a result of refinements to the array

area boundary and excluding Rampion 1 from the buffer zone for abundance estimate purposes.

3.2.28 Bird flight height data were also collected, with estimates provided, where possible. It was determined using bespoke APEM software that applies a set of rules developed in-house as well as trigonometry to provide an estimate of flight height above mean sea level (MSL). However, due to the small sample sizes currently available for the majority of seabirds recorded, for the purpose of assessing collision risk impacts at this stage flight height data will be based on generic flight height data from Johnston *et al.* (2014).

Age classification

3.2.29 The knowledge of the different ages of each species of bird present within the proposed area for an offshore wind farm can contribute to the assessment of the significance of potential impacts. This can include consideration of whether that potential impact might occur to an adult bird that is part of the breeding population of a particular SPA or if it might occur to an immature bird that is not associated with the breeding population of a particular SPA. A detailed breakdown of seabird age classification for individuals recorded in the aerial digital surveys is presented in **Annex E**.

Species recorded

3.2.30 The following bird species (**Table 3-7**) were recorded within the Study Area between April 2019 and March 2021. A number of species were only recorded in the Study Area in trivial numbers or numbers determined by expert judgement to be too low to warrant detailed species accounts (these species are in italic font within the table). For the purpose of this baseline technical report these species are omitted from the main species accounts, but data are included for these species in the form of raw counts, abundance and density estimates and behaviour within **Annex D**. Those species highlighted in bold in **Table 3-7** form the basis of detailed accounts for this baseline technical report.

Table 3-7 Bird species recorded in site-specific aerial digital surveys of Rampion 2 Study Area

Divers and pelagic species	Gulls	Terns	Auks	Other
Red-throated diver	**Kittiwake**	*Sandwich tern*	**Guillemot**	*Cormorant*
Great northern diver	*Little gull*	*Common tern*	**Razorbill**	
Gannet	**Common gull**	**'Commic' tern*		
Fulmar	*Mediterranean gull*			
Manx shearwater	**Herring gull**			
	Great black-backed gull			
	Lesser black-backed gull			

* 'Commic' tern represents tern sightings of unidentified Arctic tern and common tern.

3.3 Species accounts

Fulmar

Rampion 1 survey data (boat-based and aerial visual surveys 2010 – 2012)

3.3.1 Fulmars were widely distributed across the Rampion 1 survey area, with the highest densities recorded in the south, partially overlapping with the Rampion 2 array area. The mean peak density within the baseline data for Rampion 1 within the array area and 4km buffer was 0.299 individuals/km^2 in May 2011.The peak counts across the survey programmes were in May 2011 (n = 1,774) in the boat-based surveys and August 2011 (n = 262) in the aerial surveys. Fulmars were recorded in 29 of the 30 2010/12 boat-based surveys and in 10 of the 11 2010/11 aerial surveys. During the breeding season fulmars were recorded in regionally important numbers.

Rampion 2 survey data (aerial digital surveys 2019 – 2021)

3.3.2 Fulmars were only recorded in one month within the Rampion 2 array area, in February 2020, with an estimated abundance of 9 in February (**Table 3-8**). From the small number of fulmars recorded across the survey programme all were observed sitting (**Table 3-8**).

Table 3-8 Fulmar monthly raw counts, estimated abundance and densities (individuals per km^2) within the Rampion 2 array area

	Rampion 2 array area								
	All behaviours			Flying			Sitting		
Survey	Raw Count	Abundance	Density	Raw Count	Abundance	Density	Raw Count	Abundance	Density
Feb-20	1	9	0.06	0	0	0.00	1	9	0.06

Fulmar spatial distribution and flight direction

3.3.3 Fulmars were recorded in one of the four relevant bio-seasons, with very low densities in the return migration bio-season (**Figure 12-1-3-1** (located in this document)). Fulmars were loosely distributed throughout the survey area with the greatest densities recorded to the southwest outside of the Rampion 2 array area.

3.3.4 Data presented in rose diagrams (**Figure 12-1-C-1** (located in this document)) of monthly flight directions within the survey seasons show no predominant flight heading within the survey area for any bio-season.

Figure 12-1-3-1 Heatmaps of fulmar spatial and temporal distribution (in each bio-season).

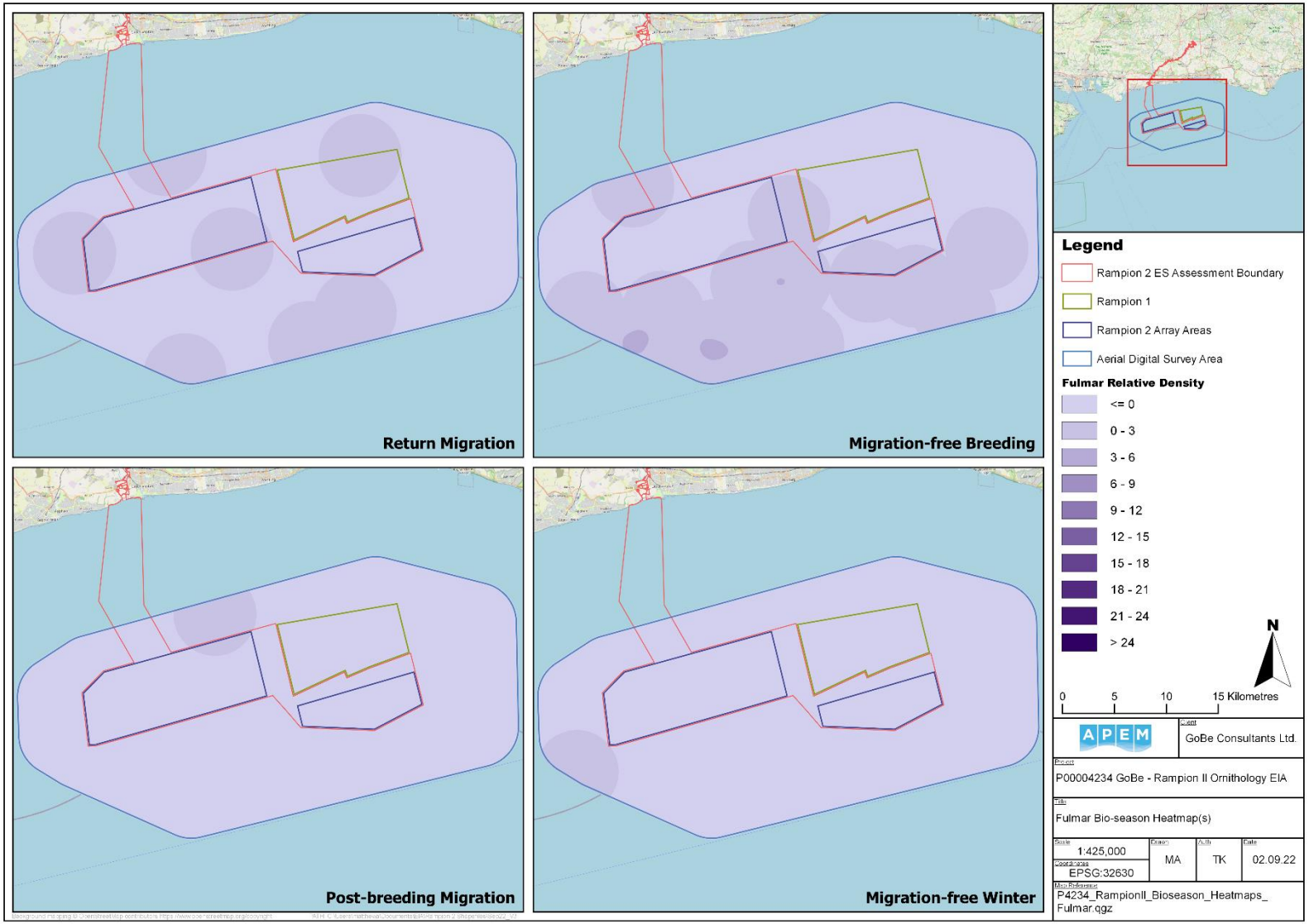


Table 3-9 Fulmar bio-season mean peak abundance and density (individuals per km^2) estimates in Rampion 2 array area

	Rampion 2 array area					
	All behaviours		Flying		Sitting	
Bio-season	Mean peak abundance	Mean peak density	Mean peak abundance	Mean peak density	Mean peak abundance	Mean peak density
Return (spring) migration	5	0.03	0	0.00	5	0.03
Migration-free breeding	0	0.00	0	0.00	0	0.00
Post-breeding (autumn) migration	0	0.00	0	0.00	0	0.00
Migration-free winter	0	0.00	0	0.00	0	0.00

Gannet

Rampion 1 survey data (boat-based and aerial visual surveys 2010 – 2012)

3.3.5 Gannets were widely distributed across the survey area with large flocks recorded to the south of Rampion 1. The mean peak density for the whole survey area was 0.768 individuals/km^2 in May 2011.The peak counts across the survey programmes were in January 2011 (n=2,861) and November 2011 (n=6,524) in the boat-based surveys and October 2010 (n=2,020) in the aerial surveys. Gannets occurred in all 30 surveys in the 2010/12 boat-based surveys and in all 11 surveys in the 2010/11 aerial surveys. Gannet peak densities were recorded during the migratory seasons.

Rampion 2 survey data (aerial digital surveys 2019 – 2021)

3.3.6 Gannets were recorded within the Rampion 2 array area in 18 of the 24 surveys, with a peak estimated abundance of 60 individuals in April 2020 (**Table 3-10**). In the Rampion 2 array area plus 4km buffer, gannets were recorded in 23 out of 24 surveys, with a peak estimated abundance of 405 individuals in January 2021 (**Table 3-10**). Gannets were slightly more likely to be observed flying than sitting.

Table 3-10 **Gannet raw counts, total estimated abundance and total estimated density (individuals per km^2) in: a) Rampion 2 array area, b) Rampion 2 array area plus 4km buffer and c) Rampion 2 array area plus 2km buffer**

a) Rampion 2 array area									
	All behaviours			Flying			Sitting		
Survey	Raw Count	Abundance	Density	Raw Count	Abundance	Density	Raw Count	Abundance	Density
May-19	2	20	0.13	2	20	0.23	0	0	0.00
Jun-19	1	10	0.06	1	10	0.06	0	0	0.00
Jul-19	5	45	0.28	1	9	0.06	4	36	0.14
Aug-19	4	36	0.23	3	27	0.17	1	9	0.06
Sep-19	4	37	0.23	3	28	0.18	1	9	0.06
Oct-19	4	34	0.21	3	26	0.16	1	9	0.06
Nov-19	4	35	0.22	4	35	0.22	0	0	0.00
Mar-20	1	8	0.05	1	8	0.05	0	0	0.00
Apr-20	7	60	0.38	7	60	0.38	0	0	0.00
May-20	2	17	0.11	1	9	0.06	1	9	0.06
Jun-20	5	43	0.27	2	17	0.11	3	26	0.16
Jul-20	1	10	0.06	1	10	0.06	0	0	0.00
Aug-20	1	10	0.06	1	10	0.06	0	0	0.00
Sep-20	2	20	0.13	1	10	0.06	1	10	0.06
Oct-20	2	20	0.13	1	10	0.06	1	10	0.06
Nov-20	1	10	0.06	0	0	0.00	1	10	0.06
Dec-20	4	34	0.21	3	25	0.16	1	8	0.05
Jan-21	6	51	0.32	1	9	0.06	5	43	0.27
b) Rampion 2 array area + 4km buffer									

a) Rampion 2 array area

Survey	All behaviours			Flying			Sitting		
	Raw Count	Abundance	Density	Raw Count	Abundance	Density	Raw Count	Abundance	Density
Apr-19	1	10	0.02	0	0	0.00	1	10	0.02
May-19	3	29	0.06	3	29	0.06	0	0	0.00
Jun-19	5	48	0.10	3	29	0.06	2	19	0.04
Jul-19	25	219	0.44	6	52	0.10	19	166	0.33
Aug-19	45	389	0.78	22	190	0.38	23	199	0.40
Sep-19	5	45	0.09	3	27	0.05	2	18	0.04
Oct-19	35	296	0.59	22	186	0.37	13	110	0.22
Nov-19	8	68	0.14	6	51	0.10	2	17	0.03
Dec-19	1	8	0.02	0	0	0.00	1	8	0.02
Feb-20	5	45	0.09	4	36	0.07	1	9	0.02
Mar-20	2	17	0.03	2	17	0.03	0	0	0.00
Apr-20	9	75	0.15	8	67	0.13	1	8	0.02
May-20	18	152	0.30	6	51	0.10	12	101	0.20
Jun-20	11	92	0.18	6	50	0.10	5	42	0.08
Jul-20	5	48	0.10	3	29	0.06	2	19	0.04
Aug-20	2	19	0.04	1	10	0.02	1	10	0.02
Sep-20	3	29	0.06	1	10	0.02	2	19	0.04
Oct-20	3	29	0.06	2	19	0.04	1	10	0.02
Nov-20	3	29	0.06	1	10	0.02	2	19	0.04
Dec-20	5	41	0.08	3	25	0.05	2	16	0.03
Jan-21	49	405	0.81	11	91	0.18	38	314	0.63
Feb-21	5	41	0.08	3	24	0.05	2	16	0.03

a) Rampion 2 array area									
Mar-21	21	172	0.34	4	33	0.07	17	139	0.28
c) Rampion 2 array area + 2km buffer									
	All behaviours			Flying			Sitting		
Survey	Raw Count	Abundance	Density	Raw Count	Abundance	Density	Raw Count	Abundance	Density
May-19	2	20	0.06	2	20	0.06	0	0	0.00
Jun-19	2	20	0.06	1	10	0.03	1	10	0.02
Jul-19	16	144	0.44	5	45	0.14	11	99	0.30
Aug-19	18	161	0.49	9	81	0.25	9	81	0.25
Sep-19	4	37	0.11	3	28	0.08	1	9	0.03
Oct-19	21	183	0.55	10	87	0.26	11	96	0.29
Nov-19	6	53	0.16	5	44	0.13	1	9	0.03
Dec-19	1	9	0.03	0	0	0.00	1	9	0.03
Feb-20	1	9	0.03	0	0	0.00	1	9	0.03
Mar-20	2	17	0.05	2	17	0.05	0	0	0.00
Apr-20	7	60	0.18	7	60	0.18	0	0	0.00
May-20	2	17	0.05	1	9	0.03	1	9	0.03
Jun-20	5	43	0.13	2	17	0.05	3	26	0.08
Jul-20	3	30	0.09	2	20	0.06	1	10	0.03
Aug-20	2	20	0.06	1	10	0.03	1	10	0.03
Sep-20	2	20	0.06	1	10	0.03	1	10	0.03
Oct-20	1	10	0.03	1	10	0.03	0	0	0.00
Nov-20	2	20	0.06	1	10	0.03	1	10	0.03
Dec-20	5	42	0.13	3	25	0.08	2	17	0.05
Jan-21	27	229	0.69	7	59	0.18	20	170	0.52

				a) Rampion 2 array area					
Mar-21	1	8	0.02	0	0	0.00	1	8	0.02

Gannet spatial distribution and flight direction

3.3.7 Gannets were loosely distributed throughout the survey area in very low densities within all bio-seasons, with the majority of hotspots being to the south either within the 4km buffer or further afield in the wider survey area (**Figure 12-1-3-2** (located in this document)).

3.3.8 Data presented in rose diagrams (**Figure 12-1-C-2** (located in this document)) of monthly flight directions within the survey area indicates that in the migration-free breeding bio-season, gannets were generally observed flying in a southernly direction, although direction of travel was found to be significant in only one month (Aug 2019). During the post breeding migratory bio-seasons the flight directions were more loosely parallel to the coast, suggesting migratory movements. During the return migration bio-season no dominant flight direction was noted.

Figure 12-1-3-2 Heatmaps of gannet spatial and temporal distribution (in each bio-season)

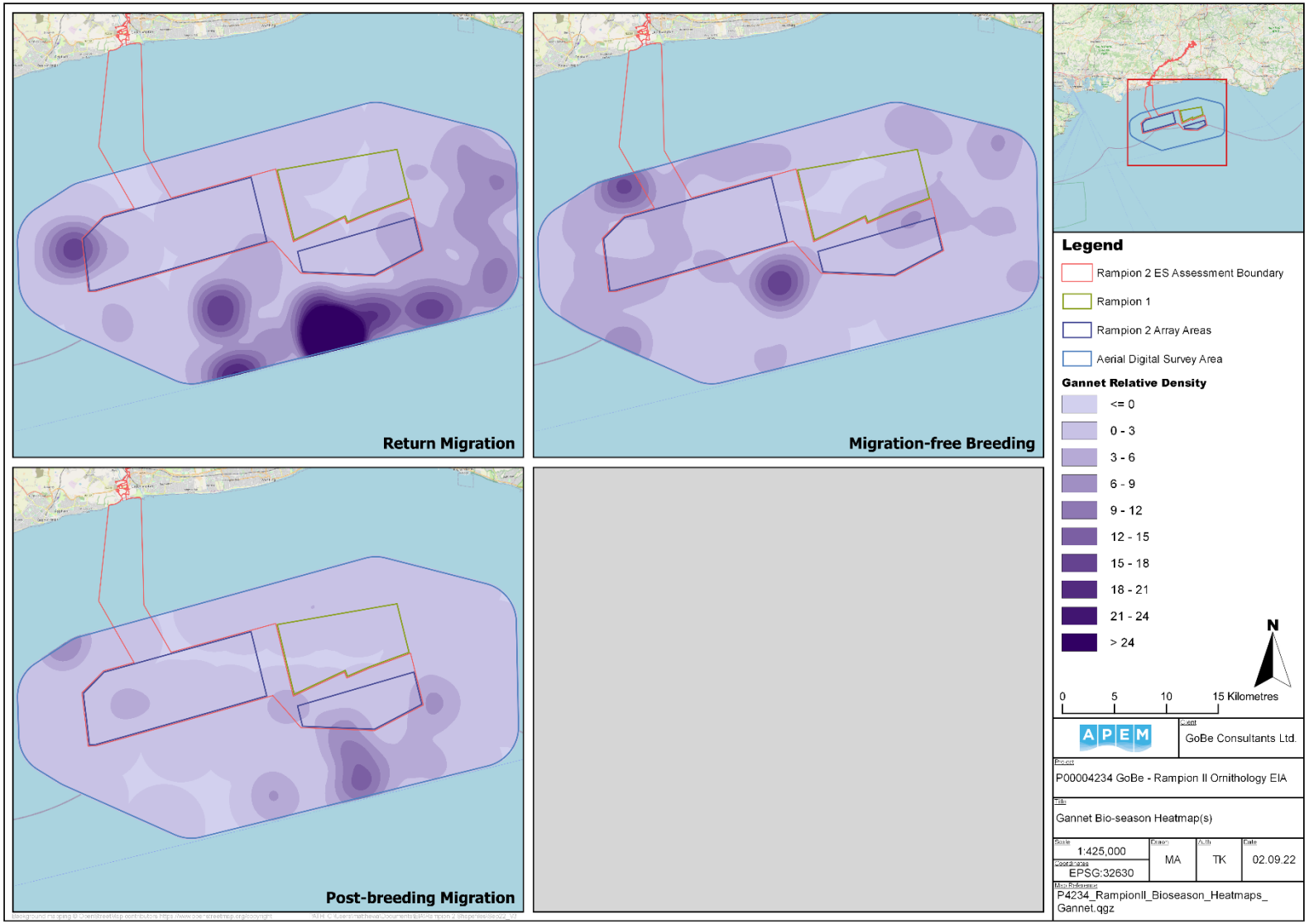


Table 3-11 **Gannet bio-season mean peak abundance and density (individuals per km^2) in: a) Rampion 2 array area, b) Rampion 2 array area plus 4km buffer and c) Rampion 2 array area plus 2km buffer**

a) Rampion 2 array area

	All behaviours		Flying		Sitting	
Bio-season	**Bio-season mean peak abundance**	**Bio-season mean peak density**	**Bio-season mean peak abundance**	**Bio-season mean peak density**	**Bio-season mean peak abundance**	**Bio-season mean peak density**
Return (spring) migration	30	0.18	17	0.10	22	0.13
Migration-free breeding	53	0.33	44	0.27	31	0.19
Post-breeding (autumn) migration	29	0.18	23	0.14	10	0.06

b) Rampion 2 array area plus 4km buffer

	All behaviours		Flying		Sitting	
Bio-season	**Bio-season mean peak abundance**	**Bio-season mean peak density**	**Bio-season mean peak abundance**	**Bio-season mean peak density**	**Bio-season mean peak abundance**	**Bio-season mean peak density**
Return (spring) migration	225	0.45	64	0.13	162	0.32
Migration-free breeding	271	0.54	129	0.26	150	0.30
Post-breeding (autumn) migration	163	0.32	103	0.20	65	0.13

c) Rampion 2 array area plus 2km buffer

a) Rampion 2 array area						
	All behaviours		Flying		Sitting	
Bio-season	Bio-season mean peak abundance	Bio-season mean peak density	Bio-season mean peak abundance	Bio-season mean peak density	Bio-season mean peak abundance	Bio-season mean peak density
Return (spring) migration	123	0.37	39	0.12	43	0.27
Migration-free breeding	138	0.34	79	0.21	85	0.19
Post-breeding (autumn) migration	119	0.31	57	0.15	62	0.16

Kittiwake

Rampion 1 survey data (boat-based and aerial visual surveys 2010 – 2012)

3.3.9 Kittiwakes were widely distributed across the survey area with the largest flock recorded to the south of Rampion 1. The mean peak density for the whole survey area was 0.773 individuals/km^2 in October 2010.The peak counts across the survey programmes were in January 2011 (n=1,207) and June 2011 (n=1,329) in the boat-based surveys and October 2010 (n=2,183) in the aerial surveys. Kittiwakes were recorded in 28 of the 30 surveys in the 2010/12 boat-based surveys and in all 11 surveys in the 2010/11 aerial surveys. Kittiwake was recorded in national important numbers in all seasons.

Rampion 2 survey data (aerial digital surveys 2019 – 2021)

3.3.10 Kittiwakes were recorded in the Rampion 2 array area in 10 of the 24 surveys, with a peak estimated abundance of 426 in January 2021 (**Table 3-12**). Overall, more kittiwakes were observed flying than sitting, although this was not the case in every month (**Table 3-12**). Note that as described in **Section 3.2.3** above, the February 2020 survey was conducted immediately before Storm Ciara hit the UK and this may have led to unusually high concentrations of birds being present.

Table 3-12 Kittiwake raw counts, total estimated abundance (including apportionment, as appropriate) and total estimated density (individuals per km^2) in Rampion 2 array area

	Rampion 2 array area								
	All behaviours			Flying			Sitting		
Survey	Raw Count	Abundance	Density	Raw Count	Abundance	Density	Raw Count	Abundance	Density
May-19	1	10	0.06	1	10	0.06	0	0	0.00
Nov-19	2	17	0.11	2	17	0.11	0	0	0.00
Feb-20	15	135	0.85	4	36	0.23	11	99	0.62
Sep-20	1	10	0.06	1	10	0.06	0	0	0.00
Nov-20	4	40	0.25	2	20	0.13	2	20	0.13
Dec-20	21	176	1.10	21	176	1.10	0	0	0.00
Jan-21	51	436	2.73	28	239	1.50	23	196	1.23
Feb-21	1	8	0.05	0	0	0.00	1	8	0.05
Mar-21	41	346	2.17	15	126	0.79	26	219	1.37

Kittiwake Spatial Distribution and Flight Direction

3.3.11 Kittiwakes were loosely distributed throughout the survey area within all three bio-seasons (**Figure 12-1-3-3** (located in this document)). Highest densities of birds with greatest number of hotspots were recorded in the return migration bio-season with majority of birds recorded in the south and east of the survey area. Density of kittiwakes significantly dropped in the migration-free breeding bio-season with only a single hotspot observed intersecting the southern Rampion 1 and Rampion 2 array area boundary. Lowest densities were recorded in the post-breeding migration bio-season, with the largest congregation of kittiwakes observed in the Rampion 1 array area.

3.3.12 Data presented in rose diagrams (**Figure 12-1-C-3** (located in this document)) of monthly flight directions within the survey area indicates during the migration-free breeding bio-season kittiwakes were recorded flying in a north east flight direction, which could suggest flights from the array area towards the nearby colony at Seaford, although birds passing through on migration are likely to be travelling in a similar direction. During the post-breeding migration bio-season flight direction was generally in a Northerly direction and in the return migration bio-season no predominant flight heading was observed.

Figure 12-1-3-3 Heatmaps of kittiwake spatial and temporal distribution (in each bio-season)

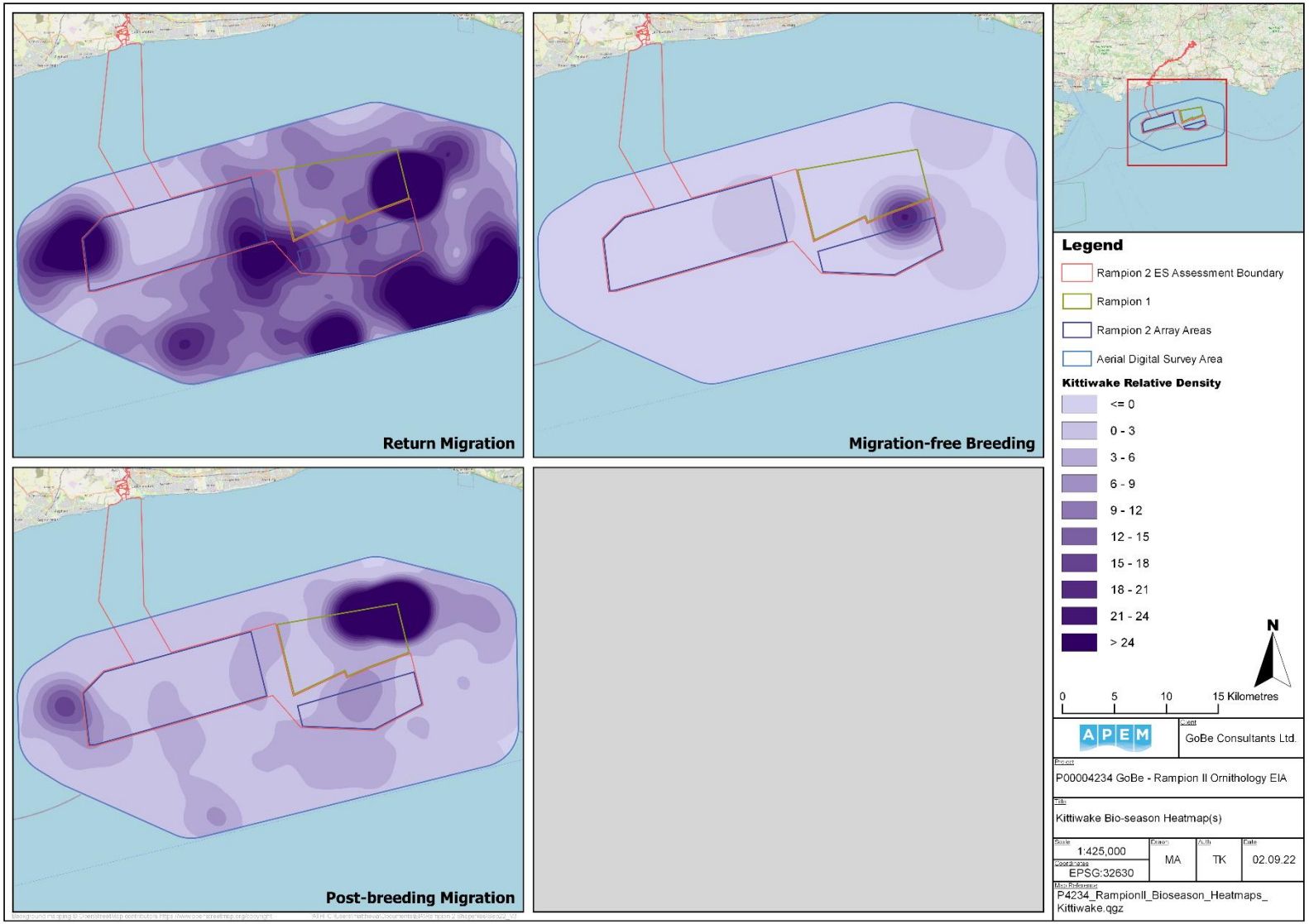


Table 3-13 Kittiwake bio-season mean peak abundance and density (individuals per km^2) in Rampion 2 array area

	Rampion 2 array area					
	All behaviours		Flying		Sitting	
Bio-season	Bio-season mean peak abundance	Bio-season mean peak density	Bio-season mean peak abundance	Bio-season mean peak density	Bio-season mean peak abundance	Bio-season mean peak density
Return (spring) migration	286	1.79	138	0.86	159	1.0
Migration-free breeding	5	0.03	5	0.03	0	0.00
Post-breeding (autumn) migration	97	0.60	97	0.60	10	0.06

Common gull

Rampion 1 survey data (boat-based and aerial visual surveys 2010 – 2012)

3.3.13 Common gulls were distributed across the survey but with high densities strongly concentrated in shallower waters to the north of Rampion 1. The mean peak density for the whole survey area was 0.192 individuals/km^2 in November 2011.The peak counts across the survey programmes were in April 2010 (n=1,534) and April 2011 (n=2,510) in the boat-based surveys and November 2011 (n=132) in the aerial surveys. Common gulls were recorded in 19 of the 30 surveys in the 2010/12 boat-based surveys and in seven of the 11 surveys in the 2010/11 aerial surveys. Common gulls were recorded in regionally important numbers in the breeding season.

Rampion 2 survey data (aerial digital surveys 2019 – 2021)

3.3.14 Common gulls were recorded within the Rampion 2 array area in five of the 24 surveys, with a peak estimated abundance of 65 individuals in February 2020 (including apportioned individuals; **Table 3-14**). Overall, more common gulls were observed flying than sitting (**Table 3-14**).

Table 3-14 Common gull raw counts, total estimated abundance (including apportionment, as appropriate) and total estimated density (individuals per km^2) in Rampion 2 array area

Rampion 2 array area									
	All behaviours			Flying			Sitting		
Survey	Raw Count	Abundance	Density	Raw Count	Abundance	Density	Raw Count	Abundance	Density
Feb-20	7	65	0.41	6	54	0.34	1	11	0.07
Apr-20	0	3	0.02	0	0	0.00	0	3	0.02
Dec-20	3	25	0.16	3	25	0.16	0	0	0.00
Feb-21	6	50	0.31	6	50	0.31	0	0	0.00
Mar-21	1	8	0.05	1	8	0.05	0	0	0.00

Common gull spatial distribution and flight direction

3.3.15 Common gulls were recorded in migratory bio-seasons only, with all common gulls recorded within the Rampion 1 array area **(Figure 12-1-3-4** (located in this document)). Highest densities were recorded in the return migration bio-season, with a single high density hotspot recorded intersecting the eastern Rampion 1 and Rampion 2 array area boundary. Densities were lower in the post-breeding migration bio-season with a low density hotspot recorded within the Rampion 1 array area.

3.3.16 Common gulls were observed flying within the survey area in the migratory bio-seasons only. Data presented in rose diagrams (**Figure 12-1-C-4** (located in this document)) of monthly flight directions within the survey area indicates in the post-breeding migration bio-season common gulls were observed flying in only two months only with no predominant flight direction. In the return migration bio-season common gulls were also only recorded flying in two months with a general southernly direction.

Figure 12-1-3-4 Heatmaps of common gull spatial and temporal distribution (in each bio-season)

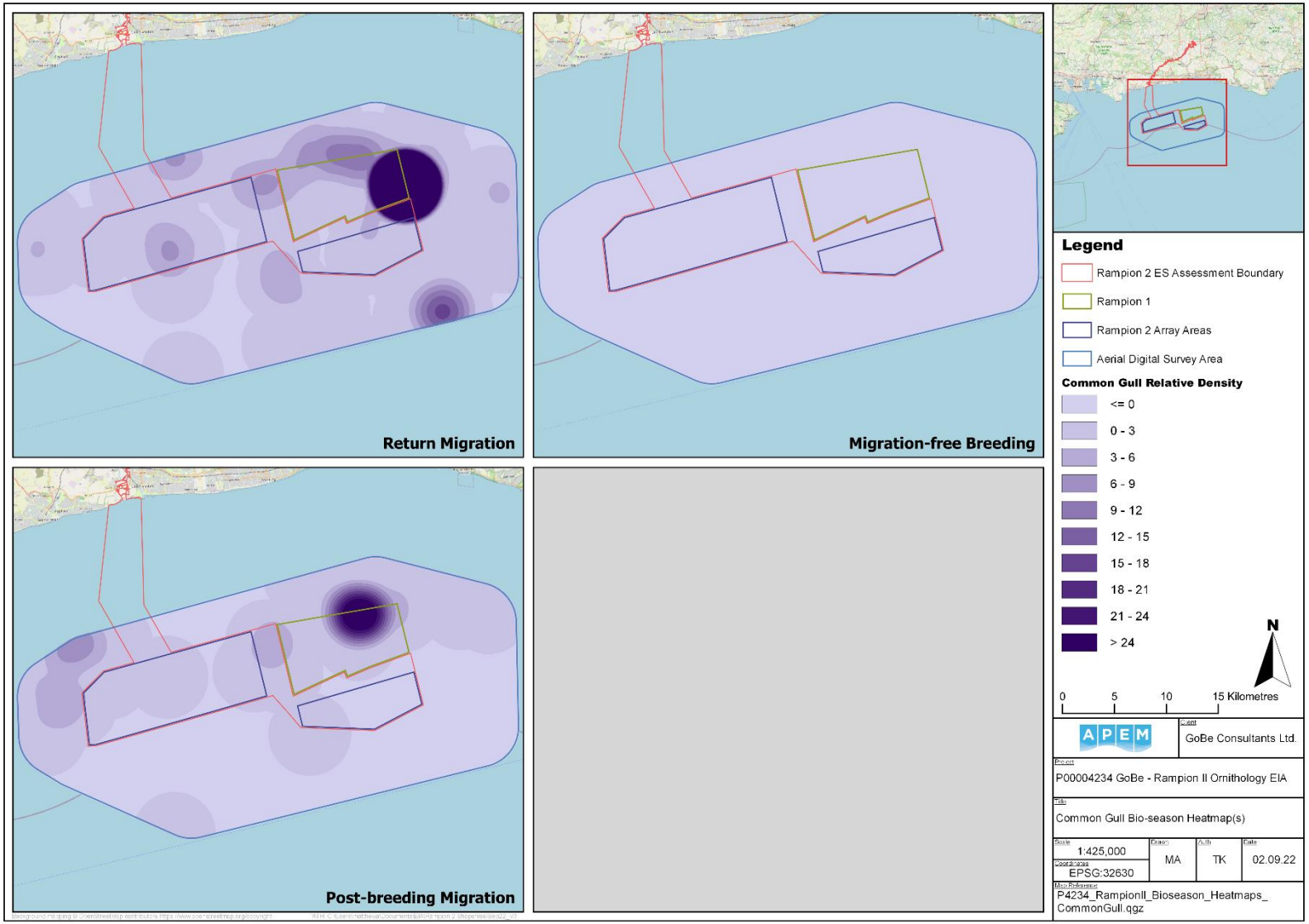


Table 3-15 Common gull bio-season mean peak abundance and density (individuals per km^2) in Rampion 2 array area.

Rampion 2 array area						
	All behaviours		Flying		Sitting	
Bio-season	Bio-season mean peak abundance	Bio-season mean peak density	Bio-season mean peak abundance	Bio-season mean peak density	Bio-season mean peak abundance	Bio-season mean peak density
Return (spring) migration	58	0.36	52	0.33	6	0.04
Migration-free breeding	0	0.00	0	0.00	0	0.00
Post-breeding (autumn) migration	13	0.08	13	0.08	0	0.00

Great black-backed gull

Rampion 1 survey data (boat-based and aerial visual surveys 2010 – 2012)

3.3.17 Great black-backed gulls were widely distributed across the survey area with one larger concentration recorded to the east of Rampion 1. The mean peak density for the whole survey area was 0.513 individuals/km^2 in May 2011.The peak counts across the survey programmes were in January 2011 (n=3,365) and September 2011 (n=2,724) in the boat-based surveys and November 2010 (n=239) in the aerial surveys. Great black-backed gulls were recorded in 29 of the 30 surveys in the 2010/12 boat-based surveys and in nine of the 11 surveys in the 2010/11 aerial surveys. Outside the breeding season great black-backed gull was recorded in national important numbers.

Rampion 2 survey data (aerial digital surveys 2019 – 2021)

3.3.18 Great black-backed gulls were recorded within the Rampion 2 array area in 11 of the 24 surveys, with a peak estimated abundance of 173 individuals in January 2021 (including apportioned individuals; **Table 3-16**). Overall, significantly more great black-backed gulls were observed sitting than flying, although this was not the case in every month (**Table 3-16**).

Table 3-16 Great black-backed gull raw counts, total estimated abundance (including apportionment, as appropriate) and total estimated density (individuals per km^2) in Rampion 2 array area

Survey	Rampion 2 array area								
	All behaviours			Flying			Sitting		
	Raw Count	Abundance	Density	Raw Count	Abundance	Density	Raw Count	Abundance	Density
Jul-19	1	9	0.06	0	0	0.00	1	9	0.06
Sep-19	5	55	0.34	0	0	0.00	5	55	0.34
Nov-19	1	9	0.06	0	0	0.00	1	9	0.06
Jan-20	3	26	0.16	1	9	0.06	2	17	0.11
Apr-20	1	9	0.06	1	9	0.06	0	0	0.00
Jul-20	1	10	0.06	1	10	0.06	0	0	0.00
Aug-20	3	30	0.19	1	10	0.06	2	20	0.13
Sep-20	1	20	0.13	1	20	0.13	0	0	0.00
Oct-20	1	20	0.13	1	20	0.13	0	0	0.00
Dec-20	7	59	0.37	2	17	0.11	5	42	0.26
Jan-21	6	73	0.46	2	17	0.11	4	56	0.35

Great black-backed gull spatial distribution and flight direction

3.3.19 Great black-backed gulls were widely distributed throughout the survey areas, with a high density area recorded in and around the Rampion 1 array area in both bio-seasons, and another area of high density to the south of the survey area in the non-breeding bio-season (**Figure 12-1-3-5** (located in this document)). The highest densities were recorded in the non-breeding bio-season. In the breeding bio-season, great black-backed gulls were recorded mainly in the east of the array area with a single hotspot within the Rampion 1 array area.

3.3.20 Data presented in rose diagrams (**Figure 12-1-C-5** (located in this document)) of monthly flight directions within the survey area indicates no predominant flight direction in either the breeding or non-breeding bio-seasons.

Figure 12-1-3-5 Heatmaps of great black-backed gull spatial and temporal distribution (in each bio-season)

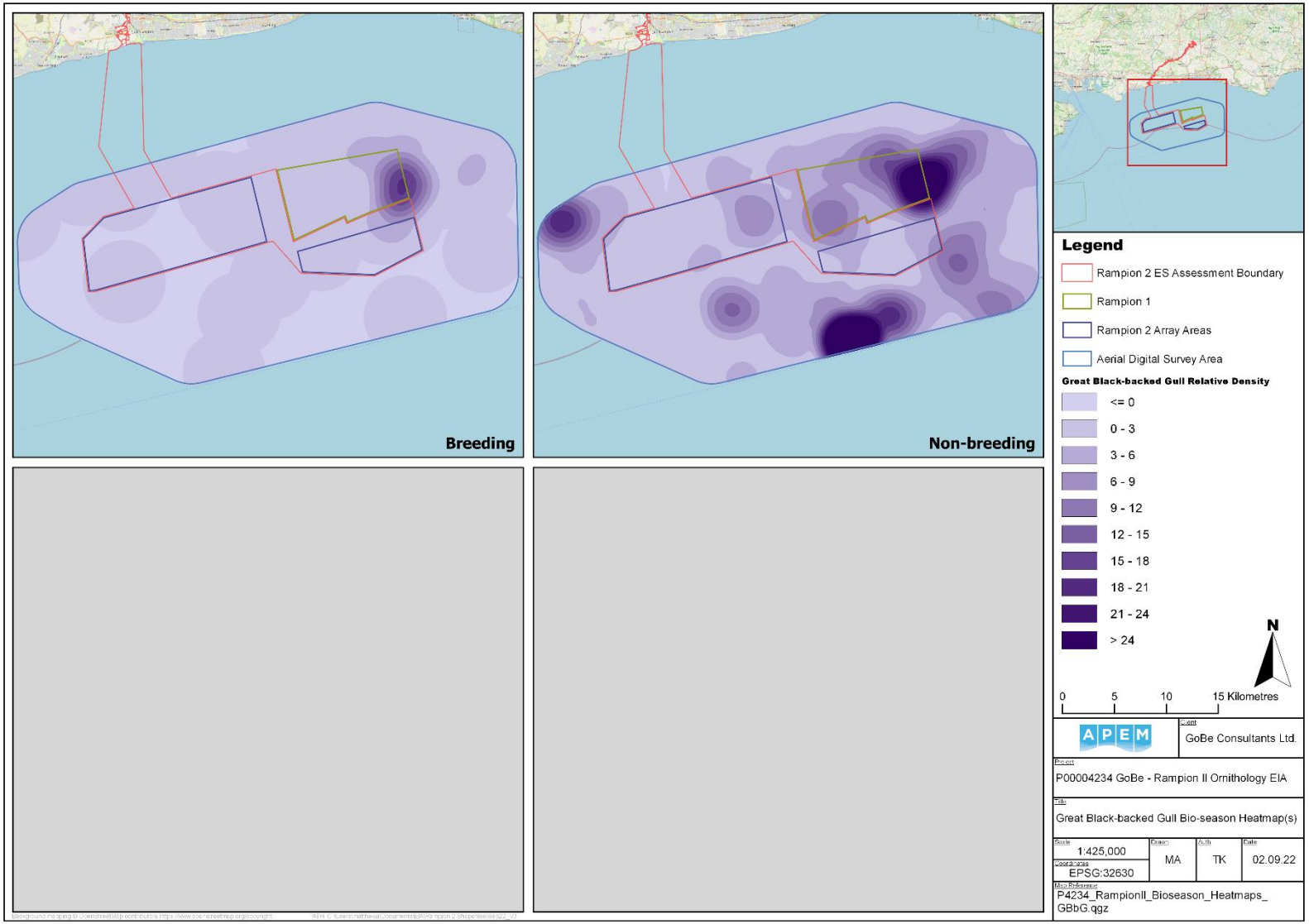


Table 3-17 Great black-backed gull bio-season mean peak abundance and density (individuals per km^2) in Rampion 2 array area.

	Rampion 2 array area					
	All behaviours		Flying		Sitting	
Bio-season	Bio-season mean peak abundance	Bio-season mean peak density	Bio-season mean peak abundance	Bio-season mean peak density	Bio-season mean peak abundance	Bio-season mean peak density
Breeding	20	0.12	5	0.03	15	0.09
Non-breeding	64	0.40	15	0.09	56	0.35

Herring gull

Rampion 1 survey data (boat-based and aerial visual surveys 2010 – 2012)

3.3.21 Herring gulls were widespread across the survey area, with the largest flock recorded to the south of Rampion 1. The mean peak density for the whole survey area was 1.586 individuals/km^2 in July 2011.The peak counts across the survey programmes were in June 2010 (n=2,524) and July 2011 (n=17820) in the boat-based surveys and July 2011 (n=3,449) in the aerial surveys. Herring gulls were recorded in all 30 surveys in the 2010/12 boat-based surveys and in all 11 surveys in the 2010/11 aerial surveys. Peak numbers recorded during the 2011 breeding season are considered of national importance.

Rampion 2 survey data (aerial digital surveys 2019 – 2021)

3.3.22 Herring gulls were recorded in the Rampion 2 array area in 9 of the 24 surveys, with a peak estimated abundance of 126 individuals in December 2020 and January 2021 (including apportioned individuals; **Table 3-18**). Overall, significantly more herring gulls were observed sitting than flying, although this was not the case in every month (**Table 3-18**).

Table 3-18 Herring gull raw counts, total estimated abundance (including apportionment, as appropriate) and total estimated density (individuals per km^2) in Rampion 2 array area

Survey	Rampion 2 array area								
	All behaviours			Flying			Sitting		
	Raw Count	Abundance	Density	Raw Count	Abundance	Density	Raw Count	Abundance	Density
Jul-19	2	18	0.11	2	18	0.11	0	0	0.00
Jan-20	1	9	0.06	1	9	0.06	0	0	0.00
May-20	4	34	0.21	4	34	0.21	0	0	0.00
Jun-20	10	103	0.65	9	94	0.59	1	9	0.06
Jul-20	3	30	0.19	3	30	0.19	0	0	0.00
Dec-20	15	126	0.79	15	126	0.79	0	0	0.00
Jan-21	14	126	0.79	13	111	0.70	1	15	0.06
Feb-21	1	8	0.05	1	8	0.05	0	0	0.00
Mar-21	5	42	0.26	5	42	0.26	0	0	0.00

Herring gull spatial distribution and flight diagram

3.3.23 Herring gulls were recorded in both relevant bio-seasons, with distribution within the survey area mainly focused in and around the Rampion 1 array area (**Figure 12-1-3-6** (located in this document)). The highest density of herring gulls were recorded in the breeding bio-season with several hotspots recorded within or in close proximity to the Rampion 1 array area. Densities in the non-breeding bio-season was similar to the breeding bio-season. Distribution within the survey area was also similar to that of the breeding bio-season with majority of herring gulls recorded within or in close proximity to the Rampion 1 array area.

3.3.24 Data presented in rose diagrams (**Figure 12-1-C-6** (located in this document)) of monthly flight directions within the survey area indicates during the breeding bio-season that no predominant flight direction occurred. During the non-breeding season flights were generally observed along the east-west axis of travel, suggesting migratory movements through the channel to wintering areas.

Figure 12-1-3-6 Heatmaps of herring gull spatial and temporal distribution (in each bio-season)

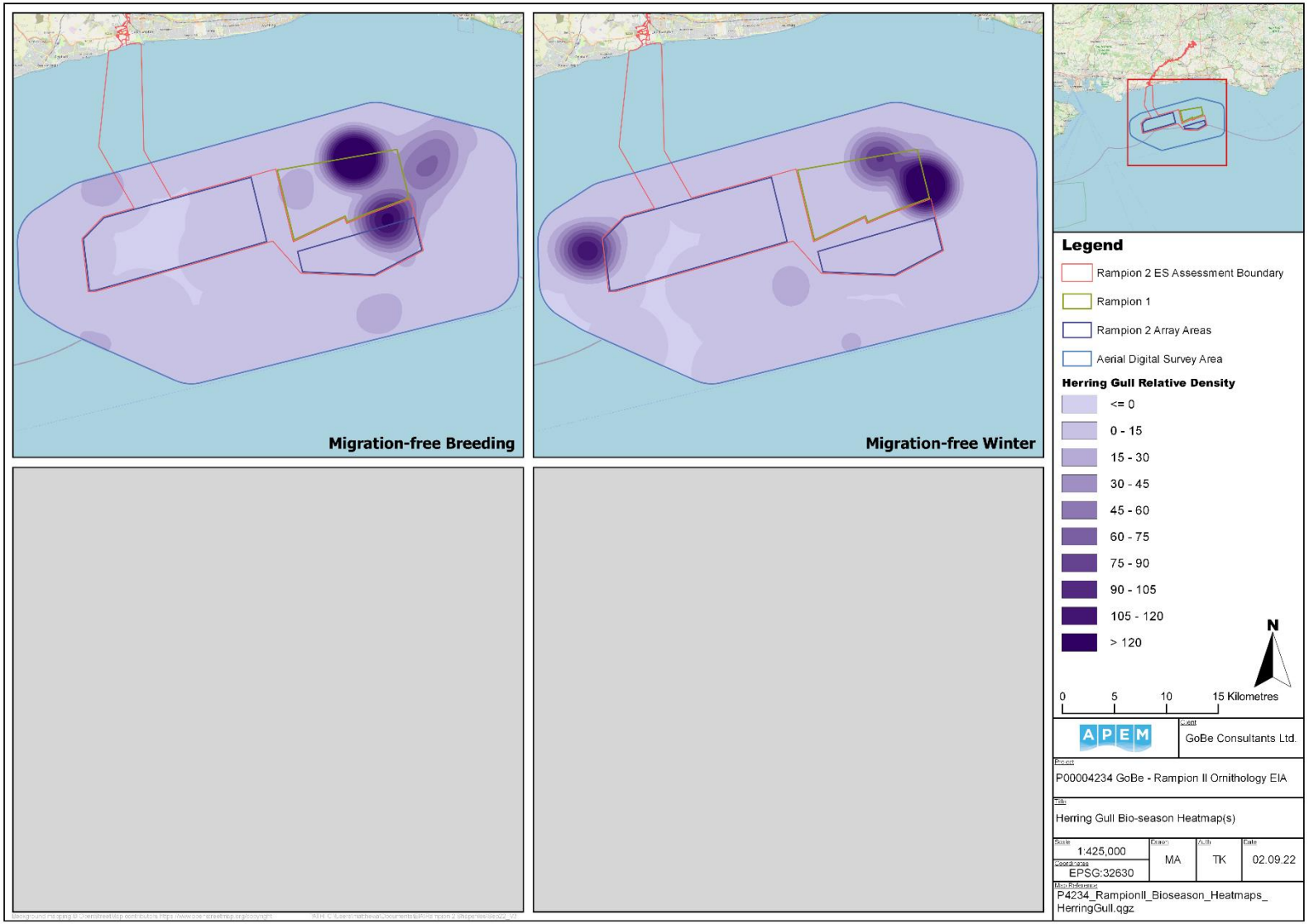


Table 3-19 Herring gull bio-season mean peak abundance and density (individuals per km^2) in Rampion 2 array area

	Rampion 2 array area					
	All behaviours		Flying		Sitting	
Bio-season	Bio-season mean peak abundance	Bio-season mean peak density	Bio-season mean peak abundance	Bio-season mean peak density	Bio-season mean peak abundance	Bio-season mean peak density
Breeding	73	0.45	68	0.43	5	0.03
Non-breeding	68	0.42	68	0.42	67	0.05

Lesser black-backed gull

Rampion 1 survey data (boat-based and aerial visual surveys 2010 – 2012)

3.3.25 Lesser black-backed gulls were sparse but widely distributed across the survey area, with the largest groups recorded to the south of the Rampion 1 survey area. The mean peak density for the whole survey area was 0.053 individuals/km^2 in March 2011.The peak counts across the survey programmes were in March 2011 (n=319) and September 2011 (n=227) in the boat-based surveys and July 2011 (n=163) in the aerial surveys. Lesser black-backed gulls were recorded in 24 of the 30 boat-based surveys between 2010/12 and in 10 of the 11 surveys in the 2010/11 aerial surveys. Peak numbers recorded during the 2011 breeding season are considered of local importance.

Rampion 2 survey data (aerial digital surveys (2019 – 2021)

3.3.26 Lesser black-backed gulls were recorded in the Rampion 2 array area in four of the 24 surveys, with a peak estimated abundance of 10 individuals in September 2020 (including apportioned individuals; **Table 3-20**). Overall, more lesser black-backed gulls were observed flying than sitting, although this was not the case in every month (**Table 3-20**).

Table 3-20 Lesser black-backed gull raw counts, total estimated abundance (including apportionment, as appropriate) and total estimated density (individuals per km^2) in Rampion 2 array area

Survey	Rampion 2 array area								
	All behaviours			Flying			Sitting		
	Raw Count	Abundance	Density	Raw Count	Abundance	Density	Raw Count	Abundance	Density
Jul-19	1	9	0.06	0	0	0.00	1	9	0.06
May-20	1	9	0.06	1	9	0.06	0	0	0.00
Aug-20	1	10	0.06	1	10	0.06	0	0	0.00
Mar-21	1	8	0.05	1	8	0.05	0	0	0.00

Lesser black-backed gull spatial distribution

3.3.27 Lesser black-backled gull were recorded sparsely throughout the survey areas, although mostly in the outer areas (**Figure 12-1-3-7** (located in this document)). The highest denstities were recorded in the return migration and migration-free breeding bioseasons in the northeast and northwest of the survey areas respectively. Records of lesser black-backed gull were sparse in the post-breeding migration bioseason and lesser black-backed gull was absent from the survey area during the migration-free winter bioseason.

Figure 12-1-3-7 Heatmaps of lesser black-backed gull spatial and temporal distribution (in each bio-season)

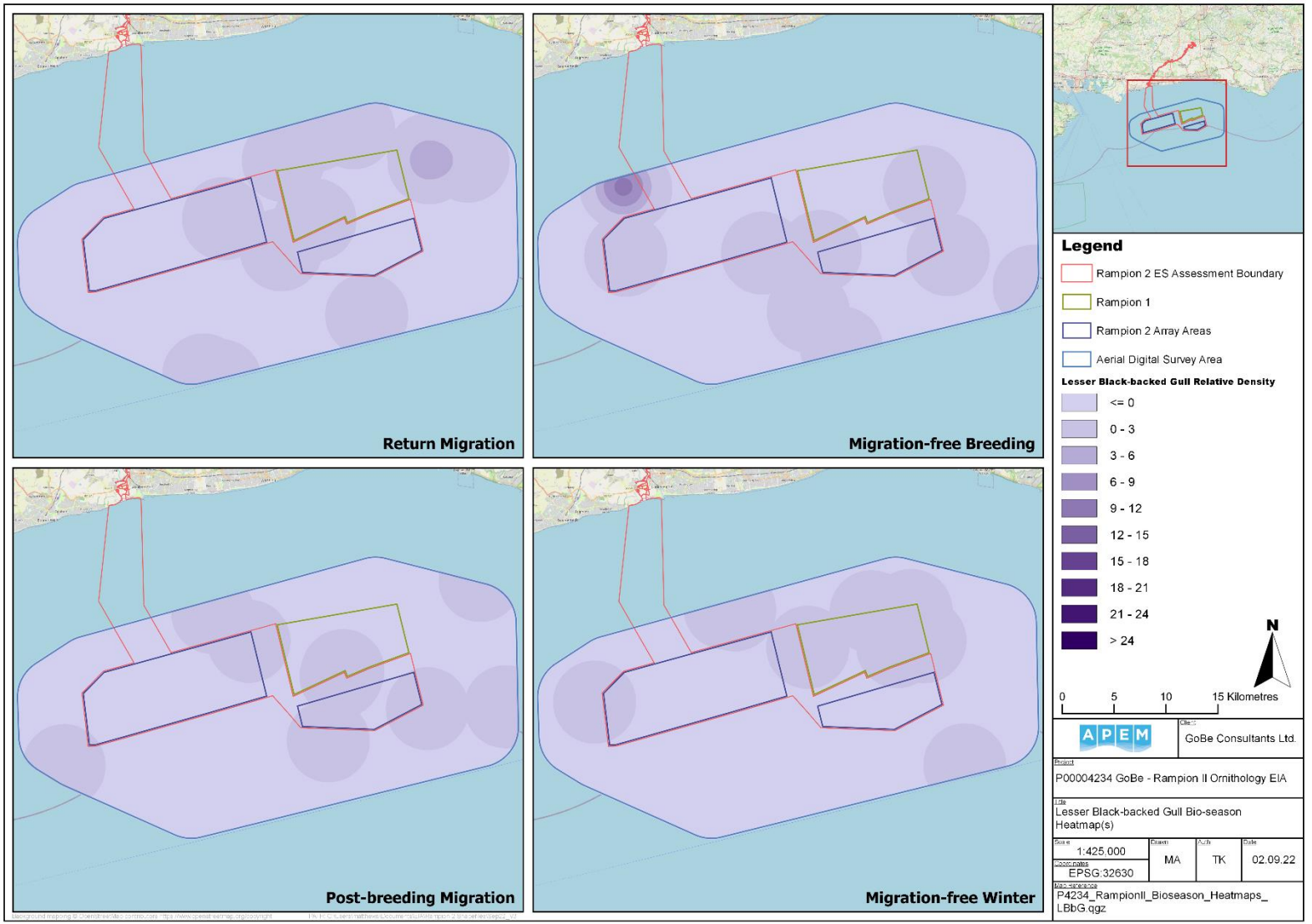


Table 3-21 Lesser black-backed gull bio-season mean peak abundance and density (individuals per km^2) in Rampion 2 array area

Rampion 2 array area						
	All behaviours		Flying		Sitting	
Bio-season	Bio-season mean peak abundance	Bio-season mean peak density	Bio-season mean peak abundance	Bio-season mean peak density	Bio-season mean peak abundance	Bio-season mean peak density
Return (spring) migration	4	0.03	4	0.03	0	0.00
Migration-free breeding	9	0.06	5	0.03	5	0.03
Post-breeding (autumn) migration	5	0.03	5	0.03	0	0.00
Migration-free winter	0	0.00	0	0.00	0	0.00

Guillemot

Rampion 1 survey data (boat-based and aerial visual surveys 2010 – 2012)

3.3.28 Guillemots were distributed across the survey area but with larger concentrations in shallower waters to the north of Rampion 1. The mean peak density for the whole survey area was 3.212 individuals/km^2 in February 2012.The peak counts across the survey programmes were in January 2011 (n=10,143) and February 2012 (n=18,496) in the boat-based surveys. In the aerial surveys guillemots were predominantly recorded to the level of auk species with a peak in March 2011 (n=4,430). Guillemot occurred in 27 of the 30 surveys in the 2010/12 boat-based surveys and auk species in all 11 surveys in the 2010/11 aerial surveys. Guillemot were recorded in regionally important numbers in the return migratory and early breeding seasons.

Rampion 2 survey data (aerial digital surveys 2019 – 2021)

3.3.29 Guillemots were identified to species level in 11 of the 24 surveys in the Rampion 2 array area; however, individuals identified to higher level and apportioned to guillemot (guillemot/razorbill or auk species) were recorded in a further four

surveys, and accordingly guillemots were deemed to be present in 15 of the 24 surveys. Peak estimated abundance was in January 2021, with 4,153 guillemots (including apportioned individuals; **Table 3-22**). In the wider Rampion 2 array area plus 4km buffer, guillemots or individuals apportioned to guillemot were recorded in 17 of the 24 surveys, with a peak estimated abundance of 8,309 individuals in January 2021 (**Table 3-22**). The vast majority of guillemots observed were sitting, with only small numbers of flying birds (**Table 3-22**).

Table 3-22 Guillemot raw counts, total estimated abundance (including correction and apportionment, as appropriate) and total estimated density (individuals per km^2) in: a) Rampion 2 array area, b) Rampion 2 array area plus 4km buffer and c) Rampion array area plus 2km buffer

a) Rampion 2 array area									
	All behaviours			Flying			Sitting		
Survey	Raw Count	Abundance	Density	Raw Count	Abundance	Density	Raw Count	Abundance	Density
Apr-19	5	92	0.58	0	0	0.00	5	92	0.58
May-19	5	79	0.49	0	0	0.00	5	79	0.49
Jul-19	1	12	0.07	0	0	0.00	1	12	0.07
Nov-19	0	8	0.05	0	0	0.00	0	8	0.05
Dec-19	0	47	0.30	0	0	0.00	0	47	0.30
Jan-20	1	261	1.63	0	9	0.06	1	252	1.58
Feb-20	54	1,906	11.94	2	81	0.51	52	1,825	11.44
Mar-20	0	22	0.14	0	0	0.00	0	22	0.14
May-20	0	22	0.14	0	0	0.00	0	22	0.14
Jun-20	1	12	0.07	0	0	0.00	1	12	0.07
Nov-20	6	79	0.49	0	0	0.00	6	79	0.49
Dec-20	16	833	5.22	0	39	0.25	16	793	4.97

a) Rampion 2 array area									
Jan-21	73	4,153	26.03	0	0	0.00	73	4,153	26.03
Feb-21	23	536	3.36	0	0	0.00	23	536	3.36
Mar-21	19	862	5.40	0	8	0.05	19	854	5.35

b) Rampion 2 array area + 4km buffer									
	All behaviours			**Flying**			**Sitting**		
Survey	**Raw Count**	**Abundance**	**Density**	**Raw Count**	**Abundance**	**Density**	**Raw Count**	**Abundance**	**Density**
Apr-19	13	256	0.51	0	0	0.00	13	256	0.51
May-19	6	97	0.19	0	0	0.00	6	97	0.19
Jun-19	1	26	0.05	0	0	0.00	1	26	0.05
Jul-19	3	34	0.07	0	0	0.00	3	34	0.07
Oct-19	4	106	0.21	2	17	0.03	2	89	0.18
Nov-19	0	58	0.12	0	0	0.00	0	58	0.12
Dec-19	0	130	0.26	0	0	0.00	0	130	0.26
Jan-20	5	849	1.69	1	42	0.08	4	807	1.61
Feb-20	232	7,246	14.45	8	120	0.24	224	7,126	14.21
Mar-20	1	185	0.37	0	0	0.00	1	185	0.37

a) Rampion 2 array area									
May-20	10	155	0.31	0	0	0.00	10	155	0.31
Jun-20	6	98	0.20	0	0	0.00	6	98	0.20
Nov-20	24	307	0.61	2	19	0.04	22	288	0.57
Dec-20	70	3,472	6.93	4	82	0.16	66	3,390	6.76
Jan-21	202	8,309	16.58	11	203	0.40	191	8,107	16.17
Feb-21	80	1,785	3.56	1	24	0.05	79	1,761	3.51
Mar-21	346	7,840	15.64	1	16	0.03	345	7,824	15.61

c) Rampion 2 array area + 2km buffer									
	All behaviours			**Flying**			**Sitting**		
Survey	**Raw Count**	**Abundance**	**Density**	**Raw Count**	**Abundance**	**Density**	**Raw Count**	**Abundance**	**Density**
Apr-19	11	210	0.64	0	0	0.00	11	210	0.64
May-19	5	79	0.24	0	0	0.00	5	79	0.24
Jul-19	3	35	0.11	0	0	0.00	3	35	0.11
Oct-19	2	90	0.27	0	0	0.00	2	90	0.27
Jan-20	3	486	1.47	0	9	0.03	3	477	1.45

				a) Rampion 2 array area					
Feb-20	147	5,002	15.16	2	91	0.28	145	4,911	14.89
Mar-20	0	89	0.27	0	0	0.00	0	89	0.27
May-20	1	58	0.17	0	0	0.00	1	58	0.17
Jun-20	1	34	0.10	0	0	0.00	1	34	0.10
Nov-20	13	176	0.53	1	10	0.03	12	166	0.50
Dec-20	41	2,193	6.65	4	79	0.24	37	2,115	6.41
Jan-21	144	6,445	19.54	3	83	0.25	141	6,361	19.29
Feb-21	39	867	2.63	0	17	0.05	39	850	2.58
Mar-21	120	3,208	9.73	1	16	0.05	119	3,192	9.68

Guillemot spatial distribution

3.3.30 Guillemots were widely distributed throughout the survey area during the breeding bio-season with the greatest densities observed in the south west of the survey area (**Figure 12-1-3-8** (located in this document)). Due to the difficulty in distinguishing between guillemots and razorbills in winter plumage, relatively few guillemots were recorded to species level within the Rampion 2 Array Area in the non-breeding bio-season. There were significant numbers of birds identified as guillemot/razorbill, and the distribution of those birds is considered in a subsequent section.

Figure 12-1-3-8 Heatmaps of guillemot spatial and temporal distribution (in each bio-season)

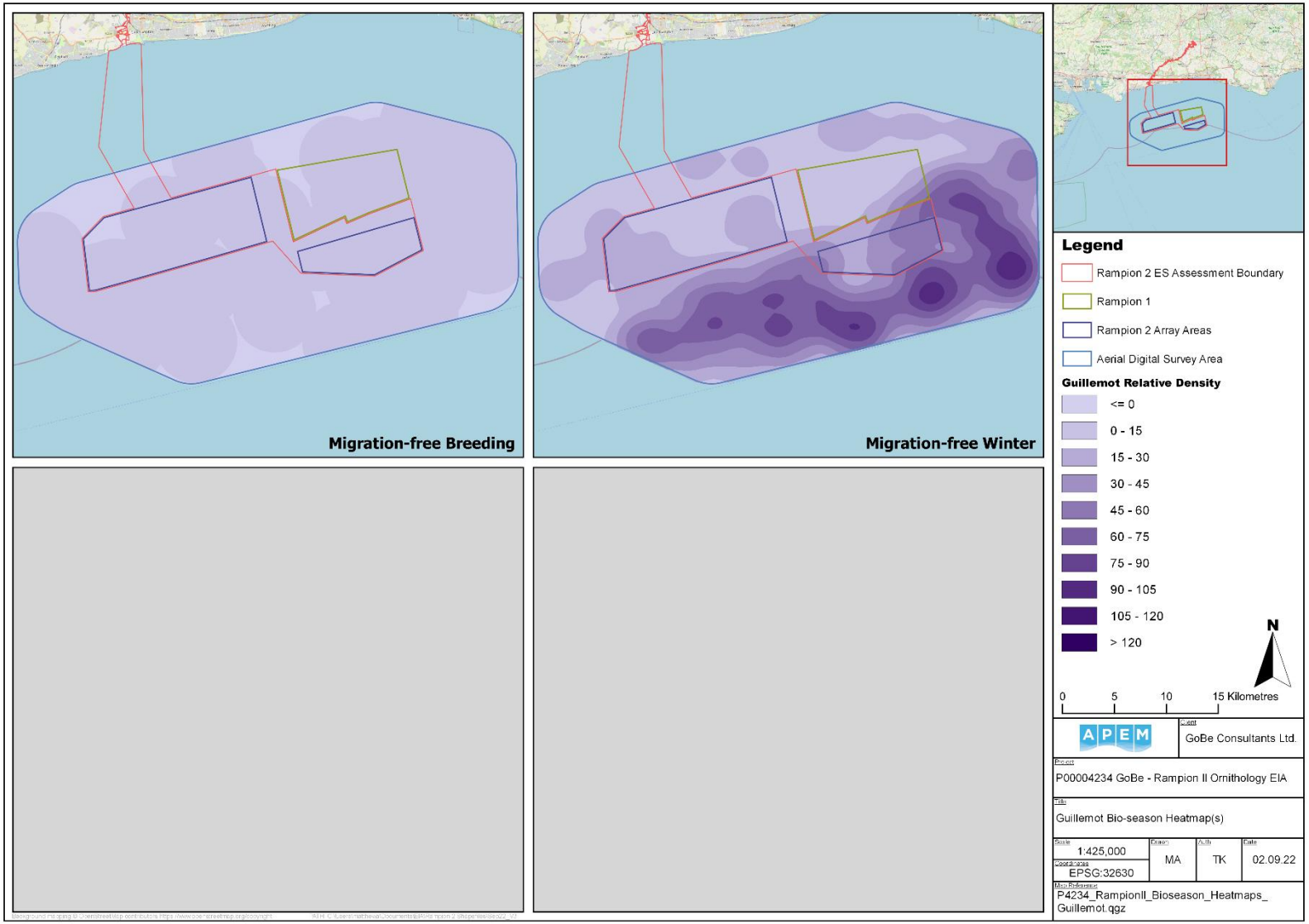


Table 3-23 Guillemot bio-season mean peak abundance and density (individuals per km^2) in: a) Rampion 2 array area, b) Rampion 2 array area plus 4km buffer and c) Rampion 2 array area plus 2km buffer

a) Rampion 2 array area						
	All behaviours		Flying		Sitting	
Bio-season	Bio-season mean peak abundance	Bio-season mean peak density	Bio-season mean peak abundance	Bio-season mean peak density	Bio-season mean peak abundance	Bio-season mean peak density
Breeding	57	0.36	0	0.00	57	0.36
Non-breeding	3,029	18.99	60	0.38	2,989	18.73
b) Rampion 2 array area plus 4km buffer						
	All behaviours		Flying		Sitting	
Bio-season	Bio-season mean peak abundance	Bio-season mean peak density	Bio-season mean peak abundance	Bio-season mean peak density	Bio-season mean peak abundance	Bio-season mean peak density
Breeding	205	0.41	0	0.00	205	0.41
Non-breeding	7,778	15.51	161	0.32	7,616	15.19
c) Rampion 2 array area plus 2km buffer						
	All behaviours		Flying		Sitting	
Bio-season	Bio-season mean peak abundance	Bio-season mean peak density	Bio-season mean peak abundance	Bio-season mean peak density	Bio-season mean peak abundance	Bio-season mean peak density
Breeding	134	0.41	0	0.00	134	0.41
Non-breeding	5,723	17.35	87	0.26	5,636	17.09

Razorbill

Rampion 1 survey data (boat-based and aerial visual surveys 2010 – 2012)

3.3.31 Razorbills were distributed across the survey area but with larger concentrations in shallower waters to the north of Rampion 1. The mean peak density for the whole survey area was 0.495 birds/km^2 in February 2012.The peak counts across the survey programmes were in January 2011 (n=2,843) and February 2012 (n=3,883) in the boat-based surveys. In the aerial surveys razorbills were predominantly recorded to the level of auk species with a peak in March 2011 (n=4,430). Razorbills were recorded in 22 of the 30 surveys in the 2010/12 boat-based surveys and auk species in all 11 surveys in the 2010/11 aerial surveys. Razorbills were recorded in regionally important numbers in the return migratory and early breeding seasons.

Rampion 2 survey data (aerial digital surveys 2019 – 2021)

3.3.32 Razorbills were identified to species level in nine of the 24 surveys in the Rampion 2 array area; however, individuals identified to higher level and apportioned to razorbill (guillemot/razorbill or auk species) were recorded in a further three surveys, so overall razorbill were deemed to be present in 12 of the 24 surveys. Peak estimated abundance was in February 2020, with 3,855 individuals (including apportioned individuals; **Table 3-24**). In the wider Rampion 2 array area plus 4km buffer, razorbills or individuals apportioned to razorbills were recorded in 13 of the 24 surveys, with a peak estimated abundance of 10,718 individuals in February 2020 (**Table 3-24**). The majority of razorbills observed were sitting, with only a small number flying (**Table 3-24**).

Table 3-24 **Razorbill raw counts, total estimated abundance (including correction and apportionment, as appropriate) and total estimated density (individuals per km^2) in: a) Rampion 2 array area, b) Rampion 2 array area plus 4km buffer and c) Rampion 2 array area plus 2km buffer**

a) Rampion 2 array area

	All behaviours			Flying			Sitting		
Survey	**Raw Count**	**Abundance**	**Density**	**Raw Count**	**Abundance**	**Density**	**Raw Count**	**Abundance**	**Density**
Jul-19	2	22	0.14	0	0	0.00	2	22	0.14
Aug-19	1	11	0.07	0	0	0.00	1	11	0.07
Oct-19	1	73	0.46	0	0	0.00	1	73	0.46
Nov-19	0	13	0.08	0	0	0.00	0	13	0.08
Dec-19	0	52	0.33	0	0	0.00	0	52	0.33
Feb-20	119	3,855	24.16	0	0	0.00	119	3,855	24.16
Apr-20	0	11	0.07	0	0	0.00	0	11	0.07
Nov-20	10	121	0.76	0	0	0.00	10	121	0.76
Dec-20	19	889	5.57	0	20	0.12	19	869	5.45
Jan-21	41	1,822	11.42	12	299	1.87	29	1,523	9.55
Feb-21	20	430	2.70	0	0	0.00	20	430	2.70
Mar-21	12	498	3.12	0	0	0.00	12	498	3.12

a) Rampion 2 array area									
	All behaviours			Flying			Sitting		
Survey	Raw Count	Abundance	Density	Raw Count	Abundance	Density	Raw Count	Abundance	Density
b) Rampion 2 array area + 4km buffer									
	All behaviours			Flying			Sitting		
Survey	Raw Count	Abundance	Density	Raw Count	Abundance	Density	Raw Count	Abundance	Density
May-19	1	15	0.03	0	0	0.00	1	15	0.03
Jul-19	3	31	0.06	0	0	0.00	3	31	0.06
Aug-19	1	11	0.02	0	0	0.00	1	11	0.02
Oct-19	2	48	0.10	1	8	0.02	1	40	0.08
Nov-19	1	98	0.20	1	59	0.12	0	39	0.08
Dec-19	0	137	0.27	0	0	0.00	0	137	0.27
Feb-20	367	10,718	21.38	4	60	0.12	363	10,658	21.26
Apr-20	1	30	0.06	0	0	0.00	1	30	0.06
Nov-20	16	193	0.38	0	0	0.00	16	193	0.38
Feb-21	58	1,193	2.38	0	0	0.00	58	1,193	2.38

a) Rampion 2 array area									
	All behaviours			Flying			Sitting		
Survey	Raw Count	Abundance	Density	Raw Count	Abundance	Density	Raw Count	Abundance	Density
Mar-21	44	921	1.84	0	0	0.00	44	921	1.84
c) Rampion 2 array area + 2km buffer									
	All behaviours			Flying			Sitting		
Survey	Raw Count	Abundance	Density	Raw Count	Abundance	Density	Raw Count	Abundance	Density
Jul-19	3	33	0.10	0	0	0.00	3	33	0.13
Aug-19	1	11	0.03	0	0	0.00	1	11	0.04
Oct-19	2	51	0.16	1	9	0.03	1	42	0.17
Nov-19	0	78	0.24	0	53	0.16	0	25	0.10
Dec-19	0	74	0.22	0	0	0.00	0	74	0.31
Feb-20	226	7,064	21.42	0	0	0.00	226	7,064	29.07
Apr-20	1	31	0.10	0	0	0.00	1	31	0.13
Nov-20	11	140	0.42	0	0	0.00	11	140	0.58
Dec-20	45	2,307	7.00	2	39	0.12	43	2,268	9.33

a) Rampion 2 array area

Survey	All behaviours			Flying			Sitting		
	Raw Count	Abundance	Density	Raw Count	Abundance	Density	Raw Count	Abundance	Density
Jan-21	139	5,541	16.80	18	503	1.52	121	5,039	20.73
Feb-21	48	966	2.93	0	0	0.00	48	966	3.97
Mar-21	31	767	2.33	0	0	0.00	31	767	3.16

Razorbill spatial distribution

3.3.33 Razorbills were scarcely distributed throughout the survey area, with low densities and no obvious hot spots occurring (**Figure 12-1-3-9** (located in this document)). Due to the difficulty in distinguishing between guillemots and razorbills in winter plumage, limited numbers of razorbills were recorded in the migratory and winter bio-seasons to species level. The distribution of the guillemot / razorbill species group in the non-breeding season is detailed separately below.

Figure 12-1-3-9 Heatmaps of razorbill spatial and temporal distribution (in each bio-season)

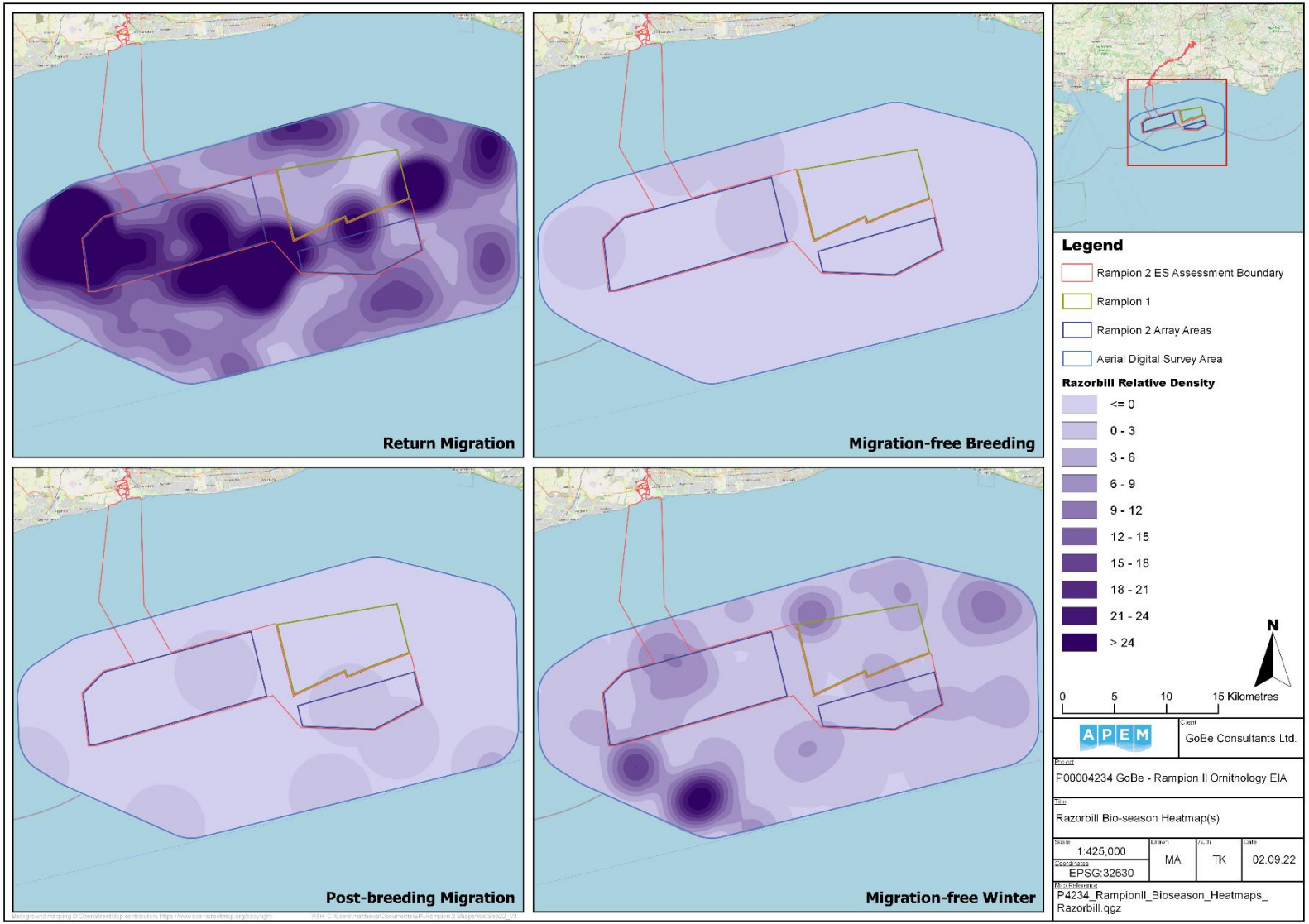


Table 3-25 **Razorbill bio-season mean peak abundance and density (individuals per km^2) in: a) Rampion 2 array area, b) Rampion 2 array area plus 4km buffer and c) Rampion 2 array area plus 2km buffer**

a) Rampion 2 array area

	All behaviours		Flying		Sitting	
Bio-season	**Bio-season mean peak abundance**	**Bio-season mean peak density**	**Bio-season mean peak abundance**	**Bio-season mean peak density**	**Bio-season mean peak abundance**	**Bio-season mean peak density**
Return (spring) migration	2,839	17.79	150	0.94	2,689	16.86
Migration-free breeding	16	0.10	0	0.00	16	0.1
Post-breeding (autumn) migration	36	0.23	0	0.00	36	0.23
Migration-free winter	470	2.95	10	0.06	461	2.89

b) Rampion 2 array area plus 4km buffer

	All behaviours		Flying		Sitting	
Bio-season	**Bio-season mean peak abundance**	**Bio-season mean peak density**	**Bio-season mean peak abundance**	**Bio-season mean peak density**	**Bio-season mean peak abundance**	**Bio-season mean peak density**
Return (spring) migration	8,817	17.59	334	0.67	8,483	16.92
Migration-free breeding	31	0.06	0	0.00	31	0.06
Post-breeding	24	0.05	4	0.01	20	0.04

a) Rampion 2 array area

	All behaviours		Flying		Sitting	
Bio-season	**Bio-season mean peak abundance**	**Bio-season mean peak density**	**Bio-season mean peak abundance**	**Bio-season mean peak density**	**Bio-season mean peak abundance**	**Bio-season mean peak density**
(autumn) migration						
Migration-free winter	1,866	3.72	50	0.10	1,846	3.68

c) Rampion 2 array area plus 2km buffer

	All behaviours		Flying		Sitting	
Bio-season	**Bio-season mean peak abundance**	**Bio-season mean peak density**	**Bio-season mean peak abundance**	**Bio-season mean peak density**	**Bio-season mean peak abundance**	**Bio-season mean peak density**
Return (spring) migration	6,303	19.11	251	0.76	6,051	18.35
Migration-free breeding	32	0.10	0	0.00	32	0.10
Post-breeding (autumn) migration	26	0.08	5	0.01	21	0.06
Migration-free winter	1,193	3.62	46	0.14	1,171	3.55

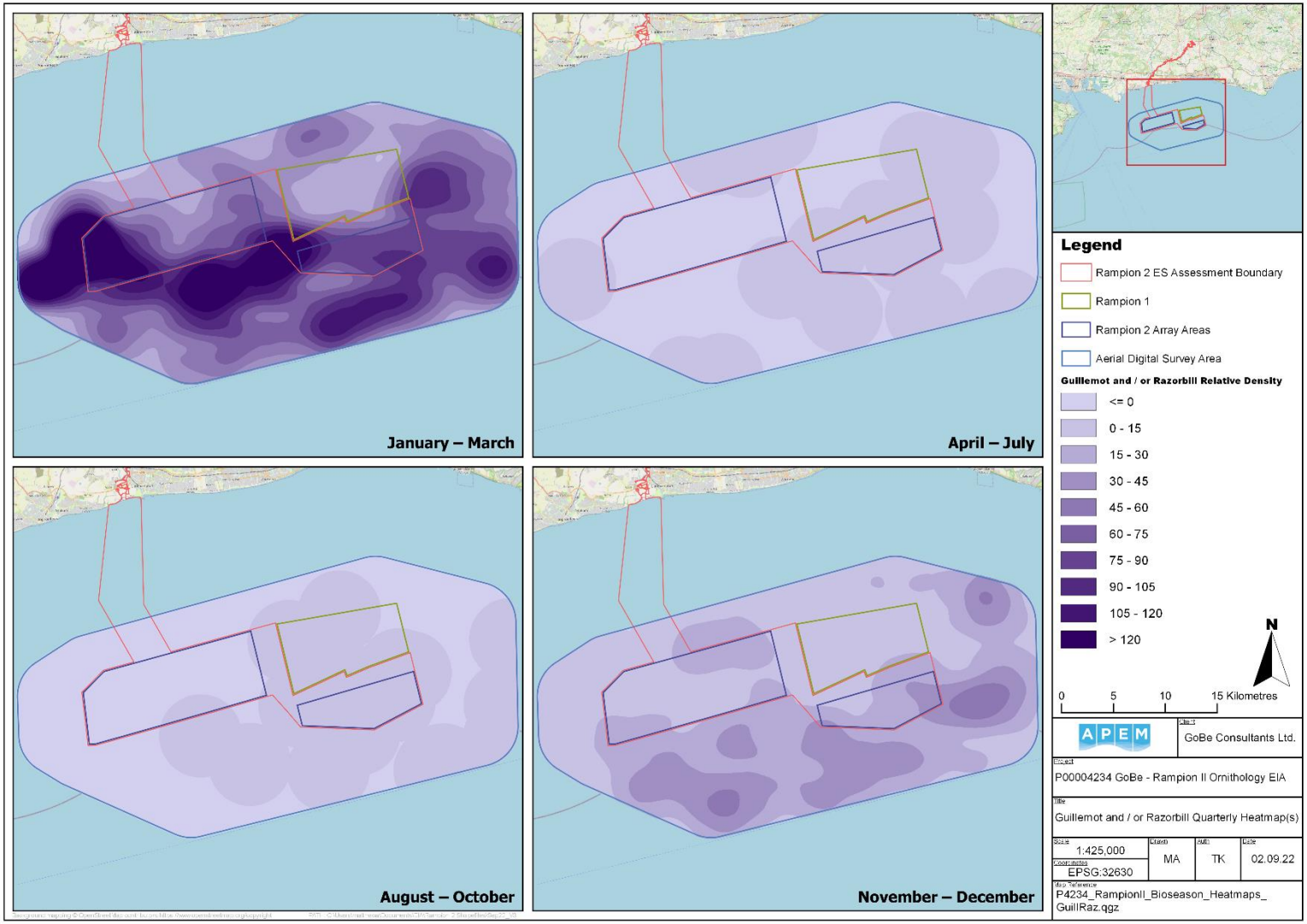
Guillemot/razorbill

3.3.34 It can be difficult to distinguish between guillemots and razorbills from aerial digital imagery, especially outside of the breeding season. The heatmaps within the individual guillemot and razorbill species accounts above are based on positively identified individuals only, and therefore do not include individuals identified to the group level guillemot / razorbill. As the number of birds identified only as guillemot / razorbill was significant in some months, the heatmaps presented above for the individual species should therefore be considered alongside **Figure 12-1-3-10**

(located in this document), which presents the heatmap of birds identified as guillemot/razorbill between January and March inclusive.

3.3.35 There is no strong pattern of occurrence within this species pair aside from the highest densities occurring between January and March. This can be attributed to two factors, firstly, proportionately the fewest birds are identified to species during the non-breeding periods due to increased similarity of plumage, and lower light levels causing reduced image quality; and secondly the occurrence of Storm Ciara on the 8-9 February which was preceded by strong westerly-backed winds which encouraged an early movement of seabirds including large auks along the English channel and into the southern North Sea as recorded at Dungeness (Trektellen, 2020) and Portland Bird Observatories on 7 February (PBO, 2020), concurrent with the survey. This led to unusually high numbers of guillemot/razorbills within the survey area. Birds were recorded in greatest densities in the south-west quadrant of the survey area with an additional cluster around the south-eastern corner of the existing Rampion 1 project.

Figure 12-1-3-10 Heatmaps showing spatial and temporal distribution of birds identified as guillemot / razorbill (grouped by month based on razorbill bio-seasons)



4. Glossary of terms and abbreviations

Table 4-1 Glossary of terms and abbreviations

Term (acronym)	Definition
BEIS	Department for Business, Energy and Industrial Strategy
BOU	British Ornithologists Union
DCO	An order made under the Planning Act 2008 granting development consent for one or more Nationally Significant Infrastructure Projects (NSIP).
Development Consent Order (DCO)	An order made under the Planning Act 2008 granting development consent for one or more Nationally Significant Infrastructure Projects (NSIP).
ES	Environmental Statement
kHz	Kilo Hertz
km	Kilometres
MHWS	Mean High Water Springs
MLWS	Mean Low Water Springs
QA	Quality Assurance
RED	Rampion Extension Development Limited (the Applicant)
RSPB	Royal Society for the Protection of Birds
SSSI	Site of Special Scientific Interest
OWF	Offshore Wind Farm
WCS	Worst-case scenario
WTG	Wind Turbine Generators

5. References

Balmer, D., Gillings, S., Caffrey, B., Swann, B., Downie, I. and Fuller, R. (2013) Bird Atlas 2007-11: The Breeding and Wintering Birds of Britain and Ireland. BTO Books, Thetford.

Band, W. (2012) Using a collision risk model to assess bird collision risks for offshore wind farms. The Crown Estate Strategic Ornithological Support Services (SOSS) report SOSS-02. SOSS Website. Original published Sept 2011, extended to deal with flight height distribution data March 2012.

BirdLife International. (2004) Birds in Europe: population estimates, trends and conservation status. (Birdlife Conservation Series No. 12). BirdLife, Cambridge.

Bradbury G, Trinder M, Furness B, Banks AN, Caldow RWG, *et al.* (2014) Mapping Seabird Sensitivity to Offshore Wind farms. PLoS ONE 9(9): e106366. doi:10.1371/journal.pone.0106366

Brown, A. and Grice, P. (2005) Birds in England. T and AD Poyser, London.

British Ornithologists' Union. (2022). The British List: A Checklist of Birds of Britain (10th edition). Ibis 164: 860-910. Available at: https://bou.org.uk/british-list/ (Accessed: 14 September 2022).

Camphuysen, K.J., Fox, A.D., Leopold, M.F. & Petersen, I.K. 2004. Towards standardised seabirds at sea census techniques in connection with environmental impact assessments for offshore wind farms in the U.K.: a comparison of ship and aerial sampling methods for marine birds, and their applicability to offshore wind farm assessments, NIOZ report to COWRIE (BAM – 02-2002), Texel, 37pp. Available at https://tethys.pnnl.gov/sites/default/files/publications/Camphuysen-et-al-2004-COWRIE.pdf [Date accessed 30 September 2020]

Canty, A. & Ripley, B. 2010. boot: bootstrap R (S-Plus) functions. R package version 1.2-42.

Chalmers M. (Ed.) (2019). Hampshire Bird Report 2018. Hampshire Ornithological Society.

Cleasby, I.R., Owen, E., Wilson, L., Wakefield, E.D., O'Connell, P. and Bolton, M., (2020). Identifying important at-sea areas for seabirds using species distribution models and hotspot mapping. Biological Conservation, 241, p.108375.

Cook, A.S.C.P., Wright, L.J., and Burton, N.H.K. (2012) A review of flight heights and avoidance rates of birds in relation to offshore wind farms. The Crown Estate Strategic Ornithological Support Services (SOSS). SOSS Website.

Cook, A.S.C.P., Humphries, E.M., Masden, E.A., and Burton, N.H.K. (2014). The avoidance rates of collision between birds and offshore turbines. BTO research Report No 656 to Marine Scotland Science

Cramp S. and Simmons K.E.L. (Eds.) (1977 - 1994). The Birds of the Western Palearctic. Oxford University Press, Oxford.

Del Hoyo, J., Elliott, A. and Sargatal, J. (Eds.) (1992 – 2011) Handbook of the Birds of the World. Lynx Editions, Madrid.

Dierschke, V., Furness, R.W., Gray, C.E., Petersen, I.K., Schmutz, J., Zydelis, R. and Daunt, F. 2017. Possible behavioural, energetic and demographic effects of displacement of red-throated divers. JNCC Report No 605. JNCC, Peterborough.

Drewitt, A.L. and Langston, R.H.W. (2006) Assessing the impacts of wind farms on birds. Ibis, 148 (Suppl. 1), 4-7.

E.ON (2012). Rampion Offshore Wind Farm ES Section 24 – Terrestrial Ecology. Document 6.1.24

Eaton, M., Holling, M. and the Rare Breeding Birds Panel (2020). Rare breeding birds in the UK in 2018. British Birds **113**(12), pp 737–791

Efron, B. & Tibshirani, R.J. 1993. An introduction to the bootstrap. Chapman & Hall, London.

Frost, T.M., Austin, G.E., Calbrade, N.A., Mellan, H.J., Hall, C., Hearn, R.D., Stroud, D.A., Wotton, S.R. & Balmer, D.E. (2017). Waterbirds in the UK 2015/16: The Wetland Bird Survey. BTO, RSPB and JNCC, in association with WWT. British Trust for Ornithology, Thetford.

Frost, T.M., Calbrade, N.A., Birtles, G.A., Mellan, H.J., Hall, C., Robinson, A.E., Wotton, S.R., Balmer, D.E., and Austin, G.E. (2020). Waterbirds in the UK 2018/19: The Wetland Bird Survey. BTO, RSPB and JNCC, in association with WWT. British Trust for Ornithology, Thetford.

Frost, T.M., Calbrade, N.A., Birtles, G.A., Hall, C., Robinson, A.E., Wotton, S.R., Balmer, D.E. and Austin, G.E. 2021. Waterbirds in the UK 2019/20: The Wetland Bird Survey. BTO/RSPB/JNCC. Thetford.

Furness, R.W. and Wade, H. (2012). Vulnerability of Scottish seabirds to offshore wind turbines. The Scottish Government, Edinburgh. [Online] http://www.scotland.gov.uk/Resource/0040/00401641.pdf (Date accessed: 3 August 2023)

Furness, R.W., Wade, H.M. and Masden, E.A. (2013) Assessing vulnerability of marine bird populations to offshore wind farms. Journal of Environmental Management, 119, 56-66.

Furness, R.W. (2015) Non-breeding season populations of seabirds in UK waters: Population sizes for Biologically Defined Minimum Population Scales (BDMPS). Natural England Commissioned Report Number 164.

Furness, R.W., Garthe, S., Trinder, M., Matthiopoulos, J., Wanless, S. & Jeglinski, J., (2018). Nocturnal flight activity of northern gannets Morus bassanus and implications for modelling collision risk at offshore wind farms. Environmental Impact Assessment Review. [e-journal] 73, pp. 1-6. https://doi.org/10.1016/j.eiar.2018.06.006 (Date accessed: 3 August 2023)

Garthe, S and Hüppop, O. (2004) Scaling possible adverse effects of marine wind farms on seabirds: developing and applying a vulnerability index. Journal of Applied Ecology, 41, 724-734.

Gill, F. & Donsker, D. (eds). 2012 IOC World Bird Names (version 2.11) [accessed 15 Han 2012]. Available at http://www.worldbirdnames.org/ (Date accessed: 3 August 2023)

Holling, M. and the Rare Breeding Birds Panel. (2011) Rare breeding birds in the United Kingdom in 2009. British Birds, 104, 476–537.

Horswill, C., O'Brien, S.H. and Robinson, R.A. 2017. Density dependence and marine bird populations: are wind farm assessments precautionary? Journal of Applied Ecology 54, 1406-1414.

Jarrett, D., Cook, A.S.C.P., Woodward, I., Ross, K., Horswill, C., Dadam, D. and Humphreys, E.M. (2018). Short-term behavioural responses of wintering waterbirds to marine activity. Scottish Marine and Freshwater Science 9 (7).

JNCC, 2020. Seabird Monitoring Programme Online Database. [online]. Available at: http://jncc.defra.gov.uk/smp/ (Date accessed: March 2020).

Johnston, A., Cook, A.S.C.P., Wright, L.J., Humphreys, E.M. and Burton, E.H.K. (2014a) Modelling flight heights of marine birds to more accurately assess collision risk with offshore wind turbines. Journal of Applied Ecology, 51, 31-41.

Johnston, A., Cook, A.S.C.P., Wright, L.J., Humphreys, E.M. and Burton, N.H.K. (2014b) corrigendum. Journal of Applied Ecology, 51, doi: 10.1111/1365-2664.12260.

Kober, K., Webb, A., Win, I., Lewis, M., O'Brien, S., Wilson, L.J. and Reid, J.B. (2010) An analysis of the numbers and distribution of seabirds within the British Fishery Limit aimed at identifying areas that qualify as possible marine SPAs. JNCC Report, No. 431. JNCC, Peterborough.

Langston, R.H.W. (2010) Offshore wind farms and birds: Round 3 zones, extensions to Round 1 and Round 2 sites and Scottish Territorial Waters. RSPB Research Report No. 39. RSPB, Sandy.

Leopold, M.F. and Verdaat, H.J.P. 2018. Pilot field study: observations from a fixed platform on occurrence and behaviour of common guillemots and other seabirds in offshore wind farm Luchterduinen (WOZEP Birds-2). Wageningen Marine Research Report C068/18.

Mendel, B., Schwemmer, P., Peschko, V., Müller, S., Schwemmer, H., Mercker, M. and Garthe, S. 2019. Operational offshore wind farms and associated ship traffic cause profound changes in distribution patterns of loons (*Gavia spp*.). Journal of Environmental Management 231, 429-438.

Mitchell, P.I., Newton, S.F., Ratcliffe, N. & Dunn, T.E. 2004. Seabird Populations of Britain and Ireland, JNCC, Peterborough, ISBN 0 7136 6901 2.

Musgrove, A.J., Aebischer, N.J., Eaton, M.A., Hearn, R.D., Newson, S.E., Noble, D.G., Parsons, M., Risely, K. and Stroud, D.A. (2013) Population estimates on birds in Great Britain and the United Kingdom. British Birds, 106, 64–100.

PBO (2020). Portland Bird Observatory and Field Centre: February 2020. Available at: http://www.portlandbirdobs.com/2020/02/ (Date accessed: 19 February 2021)

R Development Core Team (2012). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. ISBN 3-900051-07-0, http://www.R-project.org/.

Robinson, R.A. (2005) Bird Facts: profiles of birds occurring in Britain and Ireland. BTO Research Report 407, BTO, Thetford.

SNCB 2017. Joint SNCB Interim Displacement Advice Note. Advice on how to present assessment information on the extent and potential consequences of seabird displacement from offshore wind farm (OWF) developments.

Speakman, J., Gray, H. and Furness, L. (2009) University of Aberdeen report on effects of offshore wind farms on the energy demands of seabirds. Report to the Department of Energy and Climate Change.

Spencer SM. (2012). Diving behavior and identification of sex of breeding Atlantic puffins (*Fratercula arctica*), and nest-site characteristics of alcids on Petit Manan Island, Maine. M.Sc. thesis, University of Massachusetts, Amherst. 75 p.

Stienen, E.W., Waeyenberge, V., Kuijken, E. and Seys, J. (2007) Trapped within the corridor of the southern North Sea: the potential impact of offshore wind farms on seabirds. In Birds and Wind farms. de Lucas, M., Janss, G.F.E. and Ferrer, M. (Eds). Quercus, Madrid.

Stone, C.J. Webb, A., Barton, C., Ratcliffe, N., Reed, T.C. Tasker, M.L. Camphuysen, C.J. and Pienkowski, M.W. (1995) An atlas of seabird distribution in north-west European waters. JNCC, Peterborough.

Sussex Ornithological Society (2017) The Sussex Bird Report: Number Sixty-nine, 2016. Sussex Ornithological Society.

Sussex Ornithological Society (2019) The Sussex Bird Report: Number Seventy-one, 2018. Sussex Ornithological Society.

Thaxter CB, Wanless S, Daunt F, Harris MP, Benvenuti S, Watanuki Y, Grémillet D, Hamer KC (2010) Influence of wing loading on the trade-off between pursuit-diving and flight in common guillemots and razorbills. J Exp Biol 213:1018–1025

Thaxter, C.B., Lascelles, B., Sugar, K., Cook, A.S.C.P., Roos, S., Bolton, M., Langston, R.H.W. and Burton, N.H.K. (2012) Seabird foraging ranges as a preliminary tool for identifying Marine Protected Areas. Biological Conservation, 156, 53-61.

The Planning Inspectorate (PINS) (2020). Scoping Opinion: Proposed Rampion 2 Offshore Wind Farm. https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010117/EN010117-000045-EN010117%20Scoping%20Opinion.pdf (Date accessed: 3 August 2023)

Trektellen (2020) Dungeness Seawatch Migration Counts and Captures. Available at https://www.trektellen.org/count/view/2389/20200207 [Accessed 19/02/2021]

Waggitt, J.J., Evans, P.G., Andrade, J., Banks, A.N., Boisseau, O., Bolton, M., Bradbury, G., Brereton, T., Camphuysen, C.J., Durinck, J. and Felce, T., (2020). Distribution maps of cetacean and seabird populations in the North-East Atlantic. Journal of Applied Ecology, 57(2), pp.253-269.

Wakefield, E.D., Bodey, T.W., Bearhop, S., Blackburn, J., Colhoun, K., Davies, R., Dwyer, R.G., Green, J.A., Grémillet, D., Jackson, A.L., Jessopp, M.J., Kane, A., Langston, R.H.W., Lescroël, A., Murray, S., Le Nuz, M., Patrick, S.C., Péron, C., Soanes, L.M., Wanless, S., Votier, S.C. and Hamer, K.C. (2013). Space Partitioning Without Territoriality in Gannets. Science, 341 (6141), 68-70.

Wakefield, E.D. , Owen, E. , Baer, J. , Carroll, M.J. , Daunt, F. , Dodd, S.G. , Green, J.A. , Guil-ford, T. , Mavor, R.A. , Miller, P.I. , Newell, M.A. , Newton, S.F. , Robertson, G.S. ,

Shoji, A. , Soanes, L.M. , Votier, S.C. , Wanless, S. and Bolton, M. (2017). Breeding density, fine-scale tracking, and large-scale modeling reveal the regional distribution of four seabird species. Eco-logical Applications, 27 (7). 2074 - 2091. ISSN 1051-0761

Wernham, C.V., Toms, M.P., Marchant, J.H., Clark, J.A., Siriwardena, G.M. and Baillie, S.R. (eds). (2002) The Migration Atlas: Movements of the birds of Britain and Ireland. T. and A.D. Poyser, London.

Wood Environment & Infrastructure Solutions UK Limited (2020). Rampion 2 Offshore Wind Farm Environmental Impact Assessment Scoping Report.

Woodward, I., Thaxter, C.B., Owen, E. and Cook, A.S.C.P. (2019). Desk-based revision of seabird foraging ranges used for HRA screening. Report of work carried out by the British Trust for Ornithology on behalf of NIRAS and The Crown Estate. BTO Research Report No. 724. The British Trust for Ornithology, Thetford.

Wright, L.J., Ross-Smith, V.H., Massimino, D., Dadam, D., Cook, A.S.C.P. and Burton, N.H.K. (2012) Assessing the risk of offshore windfarm development to migratory birds designated as features of UK Special Protection Areas (and other Annex I species). Strategic Ornithological Support Services. Project SOSS-05. BTO Research Report No. 592.

WWT (2009). Aerial Surveys of Waterbirds in the UK: 2007/08 Final Report. WWT Consulting Report to Department of Energy and Climate Change. Available at https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/196490/OES_Aerial_Surveys_2007_08.pdf [accessed 24/09/2020].

Annex A Scientific names and taxonomy

Table A-1 Common name and scientific name of species mentioned in this report, listed in taxonomic order as per BOU (2022).

Common name	Scientific Name
Dark-bellied Brent goose	*Branta bernicla*
Light-bellied Brent goose	*Branta bernicla*
Pink-footed goose	*Anser brachyrhynchus*
White-fronted goose	*Anser albifrons*
Egyptian goose	*Alopochen aegyptiaca*
Shelduck	*Tadorna tadorna*
Garganey	*Anas querquedula*
Shoveler	*Anas clypeata*
Gadwall	*Anas strepera*
Wigeon	*Anas penelope*
Mallard	*Anas platyrhynchos*
Pintail	*Anas acuta*
Teal	*Anas crecca*
Pochard	*Aythya ferina*
Tufted duck	*Aythya fuligula*
Scaup	*Aythya marila*
Eider	*Somateria mollissima*
Velvet scoter	*Melanitta fusca*
Common scoter	*Melanitta nigra*
Long-tailed duck	*Clangula hyemalis*

Common name	Scientific Name
Goosander	*Mergus merganser*
Red-breasted merganser	*Mergus serrator*
Great crested grebe	*Podiceps cristatus*
Slavonian grebe	*Podiceps auritus*
Black-necked grebe	*Podiceps nigricollis*
Oystercatcher	*Haematopus ostralegus*
Avocet	*Recurvirostra avosetta*
Lapwing	*Vanellus vanellus*
Golden plover	*Pluvialis apricaria*
Grey plover	*Pluvialis squatarola*
Ringed plover	*Charadrius hiaticula*
Little ringed plover	*Charadrius dubius*
Whimbrel	*Numenius phaeopus*
Curlew	*Numenius arquata*
Bar-tailed godwit	*Limosa lapponica*
Turnstone	*Arenaria interpres*
Knot	*Calidris canutus*
Ruff	*Philomachus pugnax*
Sanderling	*Calidris alba*
Dunlin	*Calidris alpina*
Redshank	*Tringa totanus*
Kittiwake	*Rissa tridactyla*
Black-headed gull	*Chroicocephalus ridibundus*
Little gull	*Hydrocoloeus minutus*

Common name	Scientific Name
Mediterranean gull	*Larus melanocephalus*
Common gull	*Larus canus*
Great black-backed gull	*Larus ichthyaetus*
Glaucous gull	*Larus hyperboreus*
Iceland gull	*Larus glaucoides*
Herring gull	*Larus argentatus*
Caspian gull	*Larus cachinnans*
Yellow-legged gull	*Larus michahellis*
Lesser black-backed gull	*Larus fuscus*
Sandwich tern	*Sterna sandvicensis*
Little tern	*Sternula albifrons*
Roseate tern	*Sterna dougallii*
Common tern	*Sterna hirundo*
Arctic tern	*Sterna paradisaea*
Black tern	*Chlidonias niger*
Great skua	*Stercorarius skua*
Pomarine skua	*Stercorarius pomarinus*
Arctic skua	*Stercorarius parasiticus*
Little auk	*Alle alle*
Guillemot	*Uria aalge*
Razorbill	*Alca torda*
Black guillemot	*Cepphus grylle*
Red-throated diver	*Gavia stellata*
Great northern diver	*Gavia immer*

Common name	Scientific Name
Storm petrel	*Hydrobates pelagicus*
Fulmar	*Fulmarus glacialis*
Cory's shearwater	*Calonectris diomedea*
Manx shearwater	*Puffinus puffinus*
Balearic shearwater	*Puffinus mauretanicus*
Gannet	*Morus bassanus*
Cormorant	*Phalacrocorax carbo*
Shag	*Phalacrocorax aristotelis*
Grey heron	*Ardea cinerea*
Little egret	*Egretta garzetta*

Annex B WWT waterbird survey results

Table B-1 Raw counts from WWT Waterbird Surveys of block SE3. Full details of the surveys including dates, locations and methodology are given in WWT (2009).

Species	Period		
	Mid-winter	Breeding (incubation)	Post fledging / moult
Red-breasted merganser	7		
Diver species		1	
Fulmar	15	17	24
Manx shearwater			1
Gannet	1,137	104	168
Cormorant	6		1
Cormorant / shag	3		1
Arctic skua		1	
Great skua	2	2	
Skua species		2	
Kittiwake	119	62	45
Common gull	14		4
Herring gull	29	64	56
Great black-backed gull	31	2	3
Grey gull species (herring / common)	14	70	130
Black-backed gull species	11	3	8
Large gull species	141	22	12
Small gull species	14	2	31
Gull species	63	519	271
Sandwich tern		1	

Species	Period		
	Mid-winter	Breeding (incubation)	Post fledging / moult
Arctic / common tern		12	5
Tern species		14	
Guillemot	2		
Auk species	77	46	2

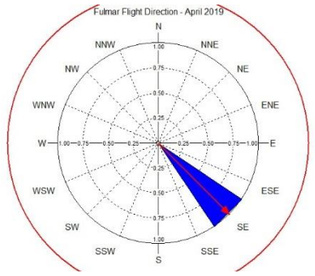
Table B-2 Raw counts from WWT Waterbird Surveys of block SE4. Full details of the surveys including dates, locations and methodology are given in WWT (2009).

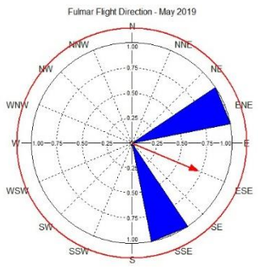
Species	Mid winter (1)	Mid winter (2)	Breeding (incubation)	Breeding (chick-rearing)	Post fledging / moult
Red-throated diver	4	1			
Diver species	24	4	1		
Grebe species	1				
Fulmar	30	32	14	9	11
Gannet	268	1,048	60	73	138
Cormorant	1				
Arctic skua			3		
Great skua					1
Skua species			2		
Kittiwake	90	254	68	42	181
Black-headed gull		2	1	2	
Common gull	11	35		8	
Lesser black-backed gull	3	5		1	
Herring gull	16	53	30	55	82

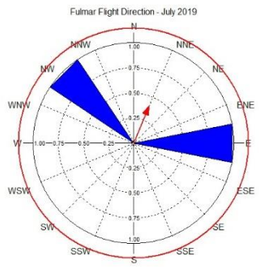
Species	Mid winter (1)	Mid winter (2)	Breeding (incubation)	Breeding (chick-rearing)	Post fledging / moult
Great black-backed gull	7	57	1	1	2
Grey gull species (herring / common)	45	62	173	44	18
Black-backed gull species	72	55		2	4
Large gull species	34	458	20	21	10
Small gull species	104	182	2		19
Gull species	659	819	113	775	129
Little tern			1		
Sandwich tern			2		
Arctic / common tern			41		1
Tern species			15		3
Razorbill		1	1		
Auk species	945	679	124	1	1

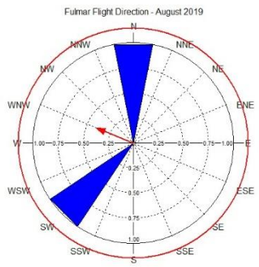
Annex C Flight Direction Rose Diagrams

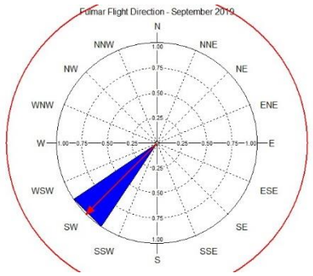
Figure 12-1-C-1 Summary of flight direction of fulmars during the survey period.

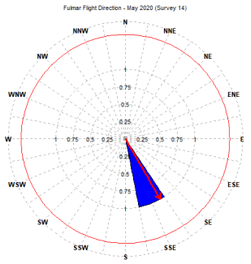


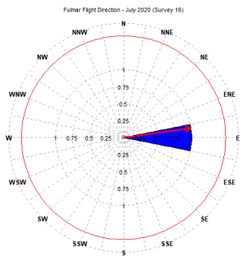


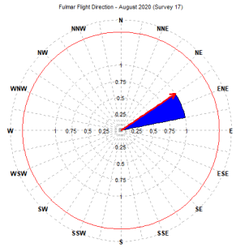












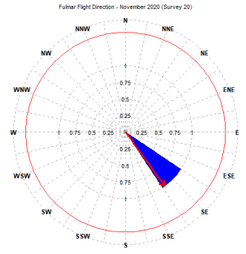


Figure 12-1-C-2 Summary of flight direction of gannets during the survey period.

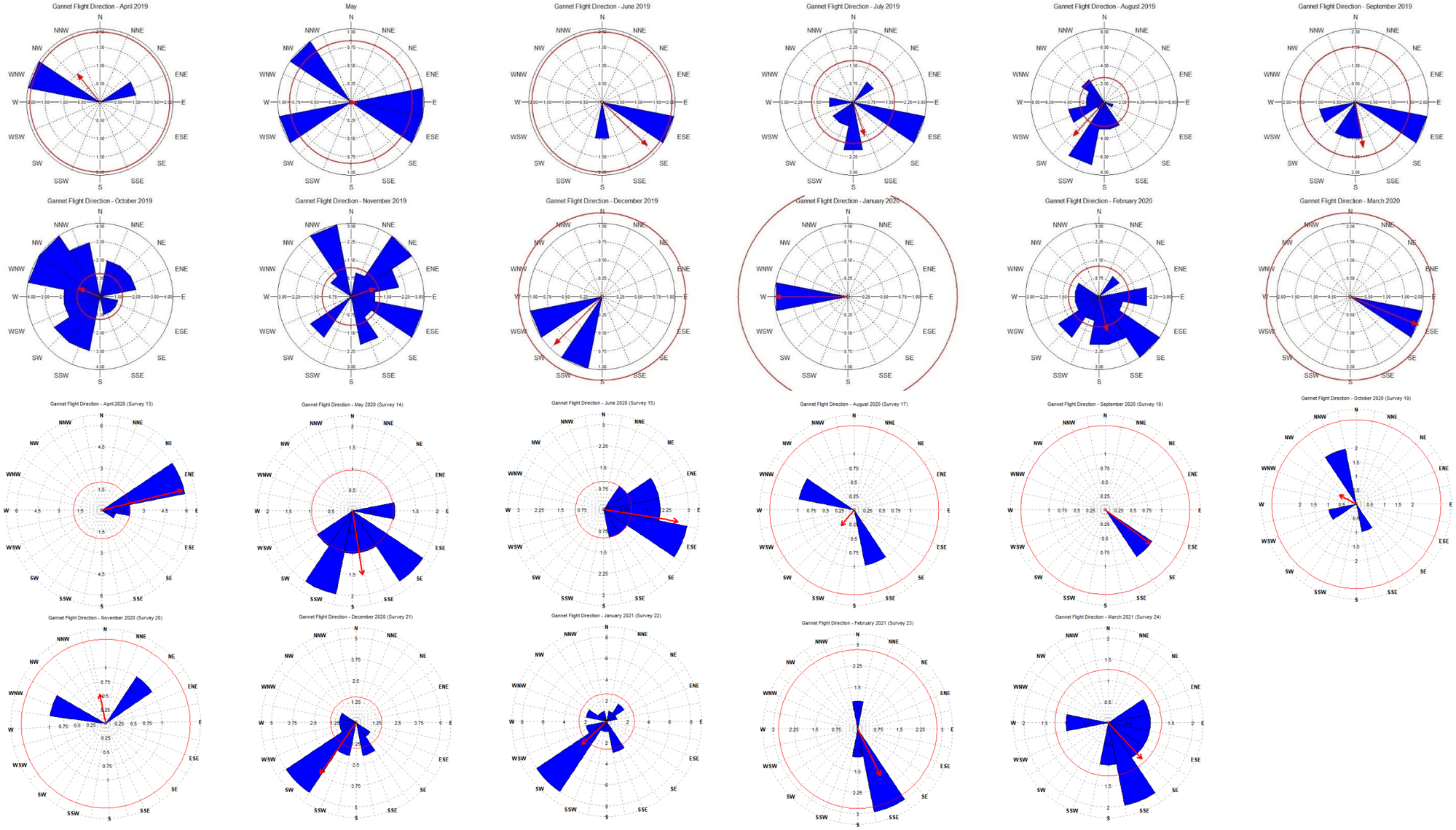


Figure 12-1-C-3 Summary of flight direction of kittiwakes during the survey period.

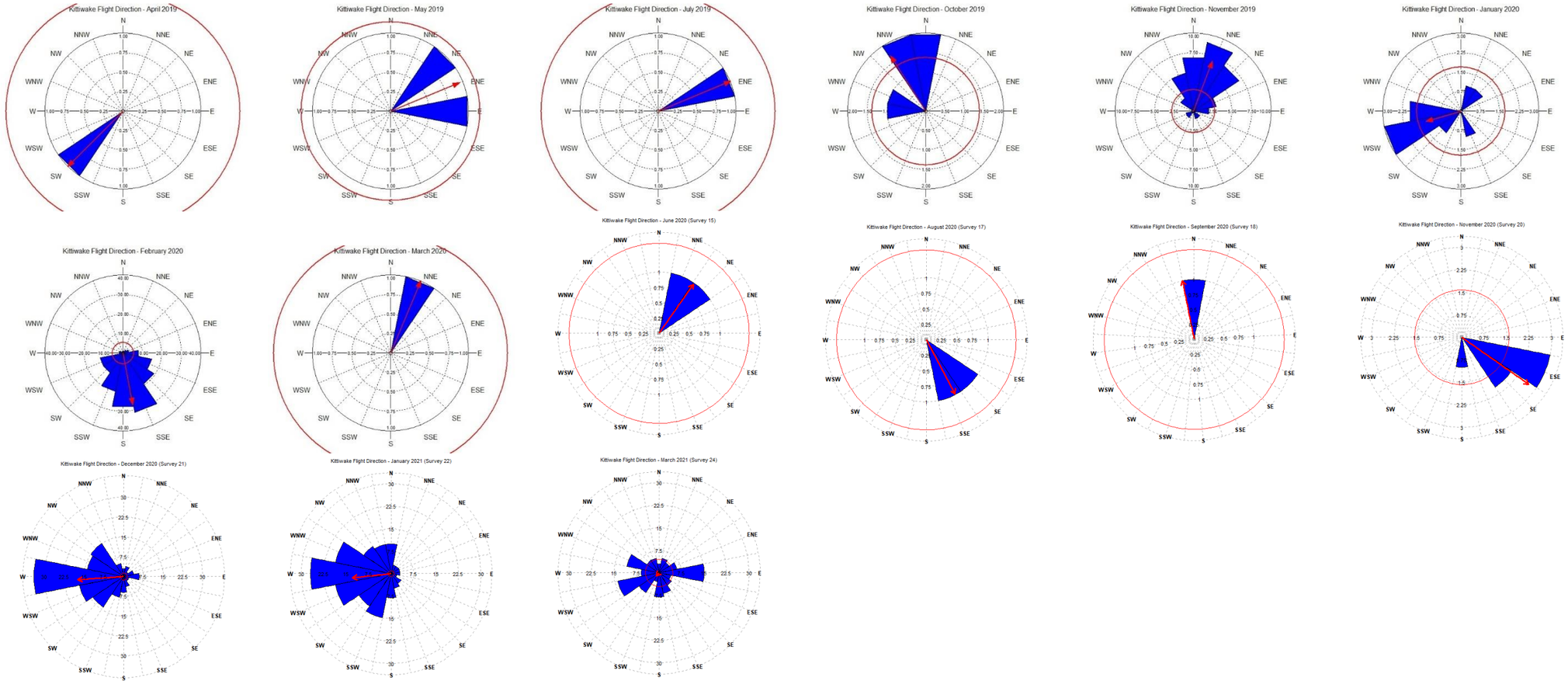
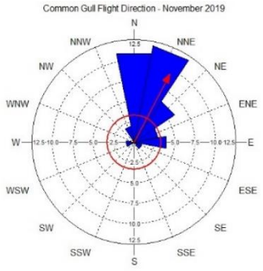
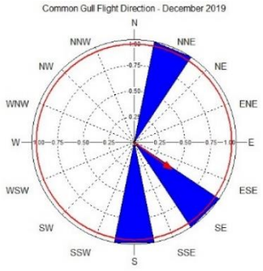
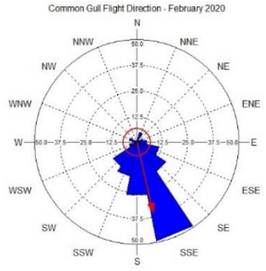
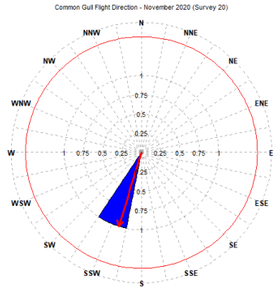


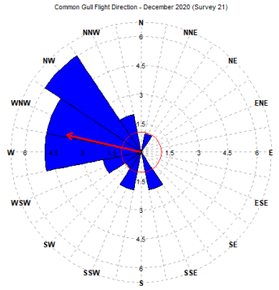
Figure 12-1-C-4 Summary of flight direction of common gulls during the survey period.

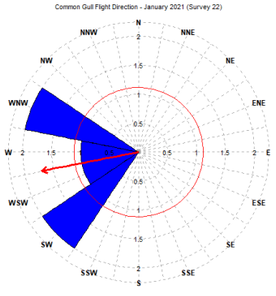


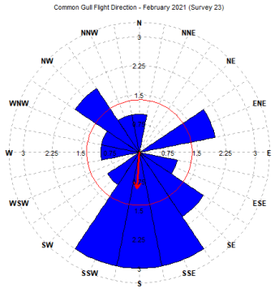












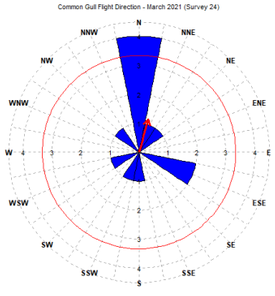


Figure 12-1-C-5 Summary of flight direction of great black-backed gulls during the survey period.

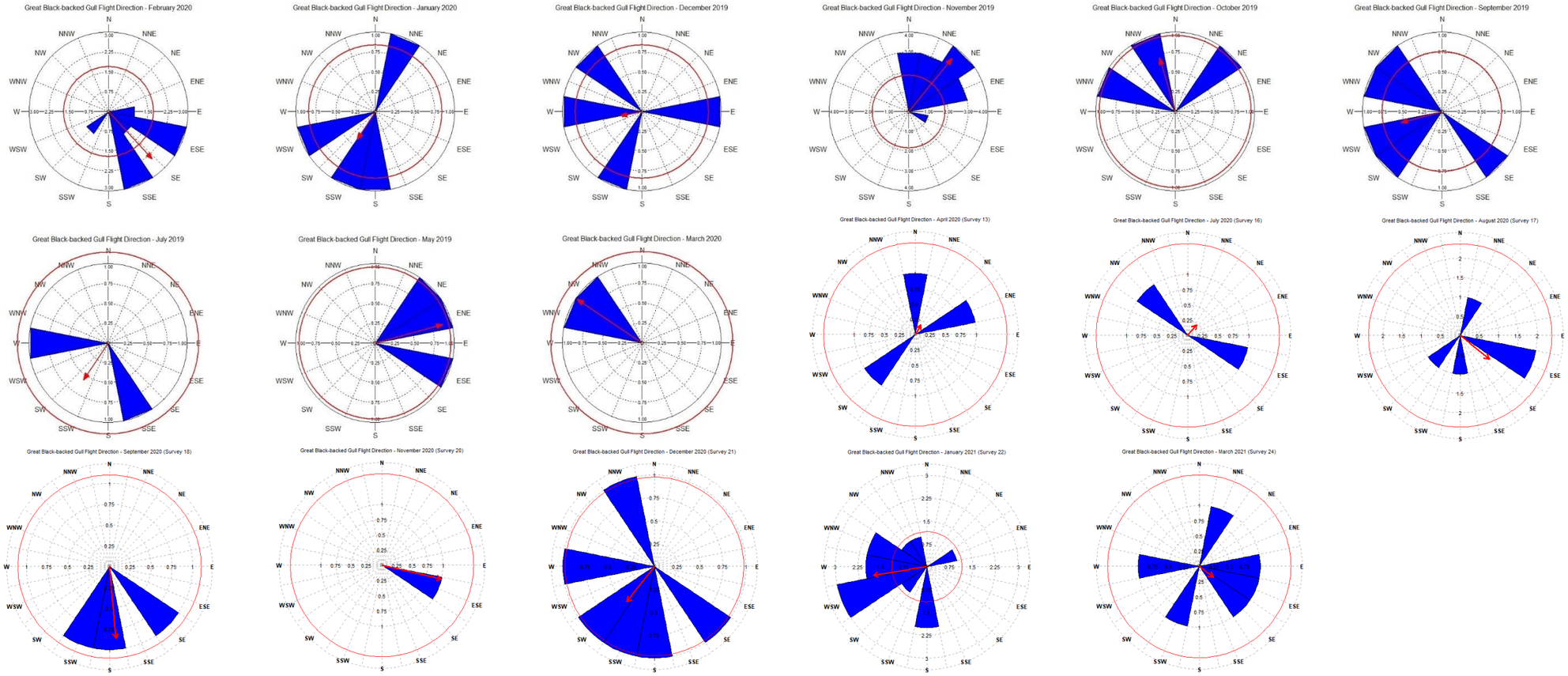
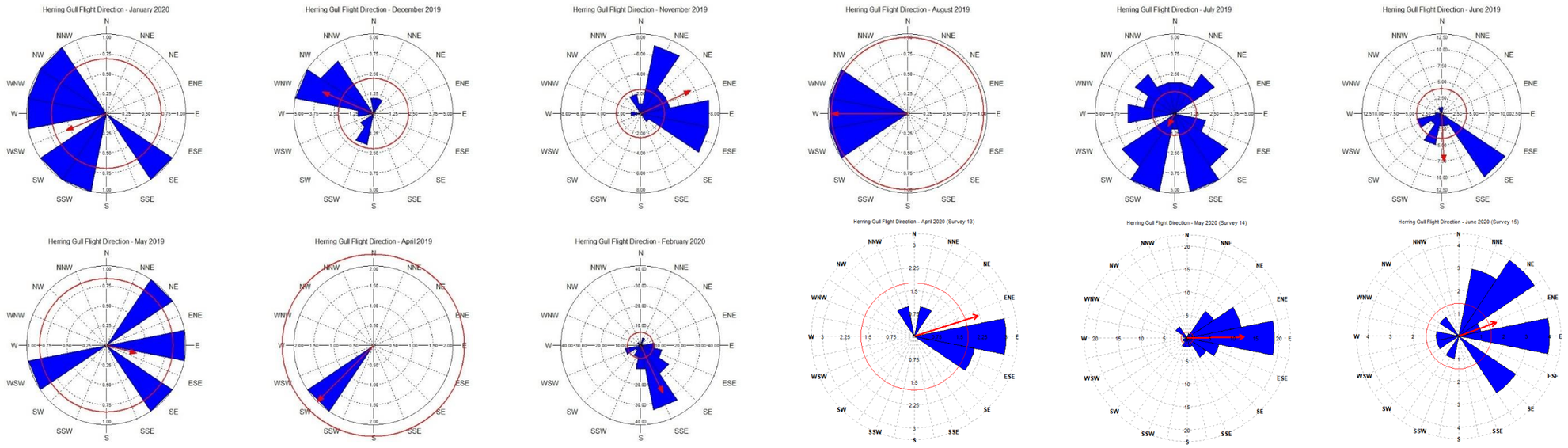
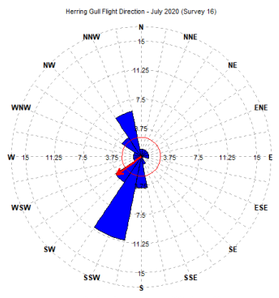
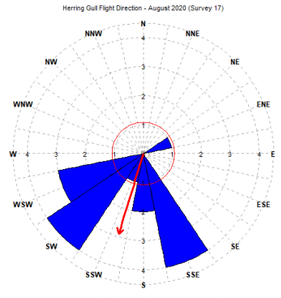
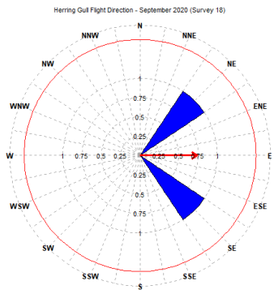


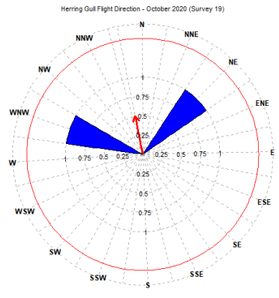
Figure 12-1-C-6 Summary of flight direction of herring gulls during the survey period.

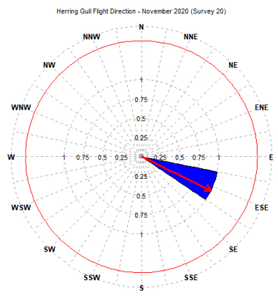


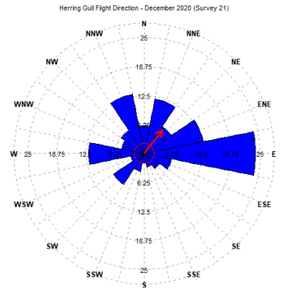


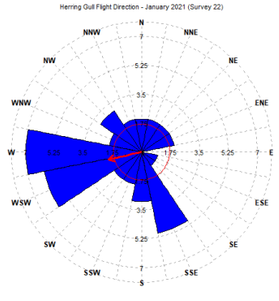


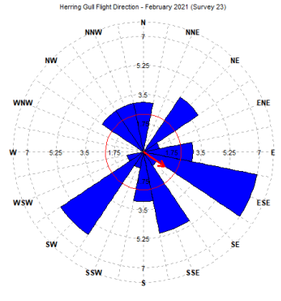


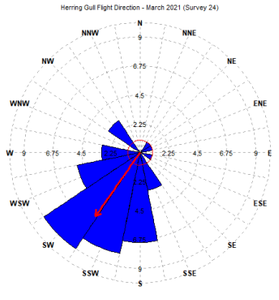












Annex D Abundance and behaviour information for all birds from site-specific surveys (excluding apportionment and correction for availability bias)

Table D-1 Common scoter raw count, mean abundance estimates, lower and upper 95% confidence interval abundance estimates, precision (Coefficient of Variance, CV) and mean density estimate (prior to apportionment and correction).

a) Rampion 2 array area

Survey	All behaviours						Flying						Sitting					
	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Apr-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Mar-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Apr-20	7	60	7	179	0.38	0.38	7	60	7	179	0.38	0.38	0	0	0	0	0.00	0.00
May-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

a) Rampion 2 array area

Survey	All behaviours						Flying						Sitting					
	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Oct-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Mar-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

b) Rampion 2 array area + 4km buffer

Survey	All behaviours						Flying						Sitting					
	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Apr-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Mar-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Apr-20	7	59	7	176	0.38	0.12	7	59	7	176	0.38	0.12	0	0	0	0	0.00	0.00
May-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

a) Rampion 2 array area

Survey	All behaviours						Flying						Sitting					
	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Jun-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Mar-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

Table D-2 Red-throated diver raw count, mean abundance estimates, lower and upper 95% confidence interval abundance estimates, precision (Coefficient of Variance, CV) and mean density estimate (prior to apportionment and correction).

a) Rampion 2 array area

Survey	All behaviours						Flying						Sitting					
	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Apr-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-19	1	10	1	29	1.00	0.04	0	0	0	0	0.00	0.00	1	10	1	329	1.00	0.04
Jun-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

a) Rampion 2 array area

Survey	All behaviours						Flying						Sitting					
	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Oct-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-20	1	9	1	26	1.00	0.04	0	0	0	0	0.00	0.00	1	9	1	26	1.00	0.04
Feb-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Mar-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Apr-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-21	1	8	1	25	1.00	0.05	0	0	0	0	0.00	0.00	1	8	1	25	1.00	0.05
Mar-21	1	8	1	25	1.00	0.05	0	0	0	0	0.00	0.00	1	8	1	25	1.00	0.05

b) Rampion 2 array area + 4km buffer

Survey	All behaviours						Flying						Sitting					
	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Apr-19	2	20	2	59	0.71	0.04	0	0	0	0	0.00	0.00	2	20	2	59	0.71	0.04
May-19	1	10	1	39	1.00	0.02	0	0	0	0	0.00	0.00	1	10	1	39	1.00	0.02

a) Rampion 2 array area

Survey	All behaviours						Flying						Sitting					
	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Jun-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-20	4	34	4	76	0.50	0.07	0	0	0	0	0.00	0.00	4	34	4	84	0.50	0.07
Feb-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Mar-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Apr-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-20	3	25	3	98	0.58	0.05	3	25	3	74	0.58	0.05	0	0	0	0	0.00	0.00
Jan-21	2	17	2	50	0.71	0.03	0	0	0	0	0.00	0.00	2	17	2	50	0.71	0.03
Feb-21	2	16	2	41	0.71	0.03	0	0	0	0	0.00	0.00	2	16	2	41	0.71	0.03
Mar-21	2	16	2	41	0.71	0.03	0	0	0	0	0.00	0.00	2	16	2	41	0.71	0.03

Table D-3 Great northern diver raw count, mean abundance estimates, lower and upper 95% confidence interval abundance estimates, precision (Coefficient of Variance, CV) and mean density estimate (prior to apportionment and correction).

a) Rampion 2 array area

Survey	All behaviours						Flying						Sitting					
	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Apr-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Mar-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Apr-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

a) Rampion 2 array area

Survey	All behaviours						Flying						Sitting					
	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Feb-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Mar-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

b) Rampion 2 array area + 4km buffer

Survey	All behaviours						Flying						Sitting					
	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Apr-19	1	10	1	29	1.00	0.02	0	0	0	0	0.00	0.00	1	10	1	29	1.00	0.02
May-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Mar-20	2	17	2	41	0.71	0.03	0	0	0	0	0.00	0.00	2	17	2	41	0.71	0.03
Apr-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

a) Rampion 2 array area

Survey	All behaviours						Flying						Sitting					
	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Oct-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Mar-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

Table D-4 Diver species raw count, mean abundance estimates, lower and upper 95% confidence interval abundance estimates, precision (Coefficient of Variance, CV) and mean density estimate (prior to apportionment and correction).

a) Rampion 2 array area

Survey	All behaviours						Flying						Sitting					
	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Apr-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

a) Rampion 2 array area

Survey	All behaviours						Flying						Sitting					
	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Feb-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Mar-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Apr-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Mar-21	1	8	1	25	1.00	0.05	0	0	0	0	0.00	0.00	1	8	1	25	1.00	0.05

b) Rampion 2 array area + 4km buffer

Survey	All behaviours						Flying						Sitting					
	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Apr-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

a) Rampion 2 array area

Survey	All behaviours						Flying						Sitting					
	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Oct-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Mar-20	1	8	1	25	1.00	0.02	0	0	0	0	0.00	0.00	1	8	1	25	1.00	0.02
Apr-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-21	1	8	1	24	1.00	0.02	0	0	0	0	0.00	0.00	1	8	1	24	1.00	0.02
Mar-21	1	8	1	25	1.00	0.02	0	0	0	0	0.00	0.00	1	8	1	25	1.00	0.02

Table D-5 Fulmar raw count, mean abundance estimates, lower and upper 95% confidence interval abundance estimates, precision (Coefficient of Variance, CV) and mean density estimate (prior to apportionment and correction).

a) Rampion 2 array area

Survey	All behaviours						Flying						Sitting					
	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Apr-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-20	1	9	1	27	1.00	0.06	0	0	0	0	0.00	0.00	1	9	1	27	1.00	0.06
Mar-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Apr-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

a) Rampion 2 array area

Survey	All behaviours						Flying						Sitting					
	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Feb-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Mar-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

b) Rampion 2 array area + 4km buffer

Survey	All behaviours						Flying						Sitting					
	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Apr-19	1	10	1	39	1.00	0.02	1	10	1	29	1.00	0.02	0	0	0	0	0.00	0.00
May-19	1	10	1	29	1.00	0.02	0	0	0	0	0.00	0.00	1	10	1	29	1.00	0.02
Jun-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-19	1	9	1	26	1.00	0.02	1	9	1	26	1.00	0.02	0	0	0	0	0.00	0.00
Aug-19	6	52	9	112	0.41	0.10	2	17	2	43	0.71	0.03	4	35	4	86	0.50	0.07
Sep-19	1	9	1	27	1.00	0.02	1	9	1	27	1.00	0.02	0	0	0	0	0.00	0.00
Oct-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-20	3	27	3	72	0.58	0.05	0	0	0	0	0.00	0.00	3	27	3	72	0.58	0.05
Mar-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Apr-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-20	1	8	1	25	1.00	0.02	0	0	0	0	0.00	0.00	1	8	1	25	1.00	0.02
Jun-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-20	1	10	1	29	1.00	0.02	1	10	1	29	1.00	0.02	0	0	0	0	0.00	0.00
Aug-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

a) Rampion 2 array area

Survey	All behaviours						Flying						Sitting					
	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Oct-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-20	1	10	1	29	1.00	0.02	1	10	1	29	1.00	0.02	0	0	0	0	0.00	0.00
Dec-20	1	8	1	25	1.00	0.02	0	0	0	0	0.00	0.00	1	8	1	25	1.00	0.02
Jan-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Mar-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

Table D-6 Manx shearwater raw count, mean abundance estimates, lower and upper 95% confidence interval abundance estimates, precision (Coefficient of Variance, CV) and mean density estimate (prior to apportionment and correction).

a) Rampion 2 array area

Survey	All behaviours						Flying						Sitting					
	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Apr-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

a) Rampion 2 array area

Survey	All behaviours						Flying						Sitting					
	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Feb-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Mar-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Apr-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Mar-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

b) Rampion 2 array area + 4km buffer

Survey	All behaviours						Flying						Sitting					
	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Apr-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-19	1	9	1	26	1.00	0.02	1	9	1	26	1.00	0.02	0	0	0	0	0.00	0.00
Sep-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

a) Rampion 2 array area

Survey	All behaviours						Flying						Sitting					
	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Oct-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Mar-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Apr-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Mar-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

Table D-7 Storm-petrel species raw count, mean abundance estimates, lower and upper 95% confidence interval abundance estimates, precision (Coefficient of Variance, CV) and mean density estimate (prior to apportionment and correction).

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Apr-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-19	1	9	1	26	1.00	0.06	1	9	1	26	1.00	0.06	0	0	0	0	0.00	0.00
Nov-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Mar-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Apr-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Mar-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

b) Rampion 2 array area + 4km buffer

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Apr-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-19	4	34	4	101	0.50	0.07	3	25	3	68	0.58	0.05	1	8	1	25	1.00	0.02
Nov-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Mar-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Apr-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Dec-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Mar-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

Table D-8 Gannet raw count, mean abundance estimates, lower and upper 95% confidence interval abundance estimates, precision (Coefficient of Variance, CV) and mean density estimate (prior to apportionment and correction).

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Apr-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-19	2	20	2	50	0.71	0.13	2	20	2	50	0.71	0.13	0	0	0	0	0.00	0.00
Jun-19	1	10	1	30	1.00	0.06	1	10	1	30	1.00	0.06	0	0	0	0	0.00	0.00
Jul-19	5	45	9	81	0.45	0.28	1	9	1	27	1.00	0.06	4	36	9	72	0.50	0.23
Aug-19	4	36	4	89	0.50	0.23	3	27	3	71	0.58	0.17	1	9	1	27	1.00	0.06
Sep-19	4	37	4	83	0.50	0.23	3	28	3	74	0.58	0.18	1	9	1	28	1.00	0.06
Oct-19	4	34	4	69	0.50	0.21	3	26	3	60	0.58	0.16	1	9	1	26	1.00	0.06
Nov-19	4	35	4	87	0.50	0.22	4	35	4	78	0.50	0.22	0	0	0	0	0.00	0.00
Dec-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Mar-20	1	8	1	34	1.00	0.05	1	8	1	25	1.00	0.05	0	0	0	0	0.00	0.00
Apr-20	7	60	9	128	0.38	0.38	7	60	9	128	0.38	0.38	0	0	0	0	0.00	0.00
May-20	2	17	2	43	0.71	0.11	1	9	1	26	1.00	0.06	1	9	1	26	1.00	0.06

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Jun-20	5	43	9	94	0.45	0.27	2	17	2	43	0.71	0.11	3	26	3	69	0.58	0.16
Jul-20	1	10	1	30	1.00	0.06	1	10	1	30	1.00	0.06	0	0	0	0	0.00	0.00
Aug-20	1	10	1	30	1.00	0.06	1	10	1	40	1.00	0.06	0	0	0	0	0.00	0.00
Sep-20	2	20	2	50	0.71	0.13	1	10	1	30	1.00	0.06	1	10	1	30	1.00	0.06
Oct-20	2	20	2	50	0.71	0.13	1	10	1	30	1.00	0.06	1	10	1	30	1.00	0.06
Nov-20	1	10	1	30	1.00	0.06	0	0	0	0	0.00	0.00	1	10	1	30	1.00	0.06
Dec-20	4	34	4	84	0.50	0.21	3	25	3	67	0.58	0.16	1	8	1	25	1.00	0.05
Jan-21	6	51	9	103	0.41	0.32	1	9	1	26	1.00	0.06	5	43	9	94	0.45	0.27
Feb-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Mar-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

b) Rampion 2 array area + 4km buffer

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Apr-19	1	10	1	29	1.00	0.02	0	0	0	0	0.00	0.00	1	10	1	29	1.00	0.02
May-19	3	29	3	68	0.58	0.06	3	29	3	68	0.58	0.06	0	0	0	0	0.00	0.00
Jun-19	5	48	10	96	0.45	0.10	3	29	3	77	0.58	0.06	2	19	2	48	0.71	0.04
Jul-19	25	219	140	306	0.20	0.44	6	52	17	96	0.41	0.10	19	166	96	245	0.23	0.33
Aug-19	45	389	216	639	0.15	0.78	22	190	95	311	0.21	0.38	23	199	86	354	0.21	0.40
Sep-19	5	45	9	99	0.45	0.09	3	27	3	81	0.58	0.05	2	18	2	45	0.71	0.04
Oct-19	35	296	144	456	0.17	0.59	22	186	93	304	0.21	0.37	13	110	25	228	0.28	0.22
Nov-19	8	68	26	128	0.35	0.14	6	51	9	111	0.41	0.10	2	17	2	43	0.71	0.03
Dec-19	1	8	1	25	1.00	0.02	0	0	0	0	0.00	0.00	1	8	1	34	1.00	0.02
Jan-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-20	5	45	9	99	0.45	0.09	4	36	4	90	0.50	0.07	1	9	1	27	1.00	0.02

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Apr-20	2	17	2	41	0.71	0.03	2	17	2	41	0.71	0.03	0	0	0	0	0.00	0.00
Jun-20	9	75	17	159	0.33	0.15	8	67	8	134	0.35	0.13	1	8	1	25	1.00	0.02
Jul-20	18	152	18	404	0.24	0.30	6	51	6	118	0.41	0.10	12	101	12	278	0.29	0.20
Aug-20	11	92	34	159	0.30	0.18	6	50	8	92	0.41	0.10	5	42	8	84	0.45	0.08
Oct-20	5	48	10	96	0.45	0.10	3	29	3	67	0.58	0.06	2	19	2	48	0.71	0.04
Nov-20	2	19	2	48	0.71	0.04	1	10	1	29	1.00	0.02	1	10	1	29	1.00	0.02
Dec-20	3	29	3	68	0.58	0.06	1	10	1	29	1.00	0.02	2	19	2	48	0.71	0.04
Jan-21	3	29	3	68	0.58	0.06	2	19	2	48	0.71	0.04	1	10	1	29	1.00	0.02
Feb-21	3	29	3	68	0.58	0.06	1	10	1	29	1.00	0.02	2	19	2	49	0.71	0.04
Mar-21	5	41	8	90	0.45	0.08	3	25	3	65	0.58	0.05	2	16	2	41	0.71	0.03

c) Rampion 2 array area + 2km buffer

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Apr-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-19	2	20	2	50	0.71	0.06	2	20	2	50	0.71	0.06	0	0	0	0	0.00	0.00
Jun-19	2	20	2	50	0.71	0.06	1	10	1	30	1.00	0.03	1	10	1	30	1.00	0.03
Jul-19	16	144	81	216	0.25	0.44	5	45	9	90	0.45	0.14	11	99	45	162	0.30	0.30
Aug-19	18	161	90	233	0.24	0.49	9	81	27	143	0.33	0.25	9	81	36	134	0.33	0.25
Sep-19	4	37	4	83	0.50	0.11	3	28	3	74	0.58	0.08	1	9	1	28	1.00	0.03
Oct-19	21	183	61	330	0.22	0.55	10	87	26	165	0.32	0.26	11	96	11	200	0.30	0.29
Nov-19	6	53	9	105	0.41	0.16	5	44	9	96	0.45	0.13	1	9	1	26	1.00	0.03
Dec-19	1	9	1	26	1.00	0.03	0	0	0	0	0.00	0.00	1	9	1	35	1.00	0.03
Jan-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-20	1	9	1	27	1.00	0.03	0	0	0	0	0.00	0.00	1	9	1	27	1.00	0.03

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Apr-20	2	17	2	43	0.71	0.05	2	17	2	43	0.71	0.05	0	0	0	0	0.00	0.00
Jun-20	7	60	9	137	0.38	0.18	7	60	9	129	0.38	0.18	0	0	0	0	0.00	0.00
Jul-20	2	17	2	44	0.71	0.05	1	9	1	26	1.00	0.03	1	9	1	26	1.00	0.03
Aug-20	5	43	9	95	0.45	0.13	2	17	2	43	0.71	0.05	3	26	3	69	0.58	0.08
Oct-20	3	30	3	70	0.58	0.09	2	20	2	50	0.71	0.06	1	10	1	30	1.00	0.03
Nov-20	2	20	2	50	0.71	0.06	1	10	1	30	1.00	0.03	1	10	1	30	1.00	0.03
Dec-20	2	20	2	50	0.71	0.06	1	10	1	30	1.00	0.03	1	10	1	30	1.00	0.03
Jan-21	1	10	1	30	1.00	0.03	1	10	1	30	1.00	0.03	0	0	0	0	0.00	0.00
Feb-21	2	20	2	50	0.71	0.06	1	10	1	30	1.00	0.03	1	10	1	30	1.00	0.03
Mar-21	5	42	8	92	0.45	0.13	3	25	3	67	0.58	0.08	2	17	2	42	0.71	0.05

Table D-9 Cormorant raw count, mean abundance estimates, lower and upper 95% confidence interval abundance estimates, precision (Coefficient of Variance, CV) and mean density estimate (prior to apportionment and correction).

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Apr-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Dec-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Mar-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Apr-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Mar-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

b) Rampion 2 array area + 4km buffer

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Apr-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-19	1	9	1	26	1.00	0.02	0	0	0	0	0.00	0.00	1	9	1	26	1.00	0.02
Aug-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Sep-19	1	9	1	27	1.00	0.02	0	0	0	0	0.00	0.00	1	9	1	27	1.00	0.02
Oct-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Mar-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Apr-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-21	6	49	6	146	0.41	0.10	0	0	0	0	0.00	0.00	6	49	6	122	0.41	0.10
Mar-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

Table D-10 Cormorant/shag raw count, mean abundance estimates, lower and upper 95% confidence interval abundance estimates, precision (Coefficient of Variance, CV) and mean density estimate (prior to apportionment and correction).

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Apr-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Mar-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Apr-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Mar-21	0	0	0	0	0.00	0.00	0	0	0	0	0,00	000	0	0	0	0	0.	0.00

b) Rampion 2 array area + 4km buffer

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Apr-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-19	1	9	1	26	1.00	0.02	0	0	0	0	0.00	0.00	1	9	1	26	1.00	0.02
Sep-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Mar-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Apr-20	1	8	1	25	1.00	0.02	0	0	0	0	0.00	0.00	1	8	1	25	1.00	0.01
May-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Dec-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Mar-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

Table D-11 Grebe species raw count, mean abundance estimates, lower and upper 95% confidence interval abundance estimates, precision (Coefficient of Variance, CV) and mean density estimate (prior to apportionment and correction).

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Apr-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Mar-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Apr-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Jun-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Mar-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

b) Rampion 2 array area + 4km buffer

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Apr-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-19	1	8	1	25	1.00	0.02	0	0	0	0	0.00	0.00	1	8	1	25	1.00	0.02
Jan-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Mar-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Apr-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Mar-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

Table D-12 Kittiwake raw count, mean abundance estimates, lower and upper 95% confidence interval abundance estimates, precision (Coefficient of Variance, CV) and mean density estimate of kittiwake (prior to apportionment and correction).

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Apr-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-19	1	10	1	30	1.00	0.06	1	10	1	30	1.00	0.06	0	0	0	0	0.00	0.00
Jun-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Sep-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-19	2	17	2	52	0.71	0.11	2	17	2	52	0.71	0.11	0	0	0	0	0.00	0.00
Dec-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-20	15	135	45	261	0.26	0.85	4	36	9	72	0.50	0.23	11	99	18	216	0.30	0.62
Mar-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Apr-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-20	1	10	1	30	1.00	0.06	1	10	1	30	1.00	0.06	0	0	0	0	0.00	0.00
Oct-20	1	10	1	30	1.00	0.06	1	10	1	30	1.00	0.06	0	0	0	0	0.00	0.00
Nov-20	4	40	4	90	0.50	0.25	2	20	2	60	0.71	0.13	2	20	2	50	0.71	0.13
Dec-20	21	176	92	276	0.22	1.10	21	176	92	276	0.22	1.10	0	0	0	0	0.00	0.00
Jan-21	51	436	196	726	0.14	2.73	28	239	128	359	0.19	1.50	23	196	43	436	0.21	1.23
Feb-21	1	8	1	25	1.00	0.05	0	0	0	0	0.00	0.00	1	8	1	25	1.00	0.05
Mar-21	41	346	194	523	0.16	2.17	15	126	67	202	0.26	0.79	26	219	101	371	0.20	1.37

b) Rampion 2 array area + 4km buffer

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Apr-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-19	1	10	1	29	1.00	0.02	1	10	1	29	1.00	0.02	0	0	0	0	0.00	0.00

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Jun-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-19	5	44	5	122	0.45	0.09	1	9	1	26	1.00	0.02	4	35	4	140	0.50	0.07
Aug-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-19	6	51	17	93	0.41	0.10	5	42	8	76	0.45	0.08	1	8	1	25	1.00	0.02
Nov-19	5	43	9	85	0.45	0.09	4	34	4	77	0.50	0.07	1	8	1	26	1.00	0.02
Dec-19	4	34	4	135	0.50	0.07	0	0	0	0	0.00	0.00	4	34	4	102	0.50	0.07
Jan-20	5	42	8	93	0.45	0.08	4	34	4	76	0.50	0.07	1	8	1	25	1.00	0.02
Feb-20	95	858	343	1698	0.10	1.71	37	334	190	506	0.16	0.67	58	524	108	1238	0.13	1.05
Mar-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Apr-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-20	20	168	20	503	0.22	0.34	2	17	2	50	0.71	0.03	18	151	18	603	0.24	0.30
Jul-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-20	2	19	2	48	0.71	0.04	1	10	1	29	1.00	0.02	1	10	1	29	1.00	0.02
Oct-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-20	6	58	10	126	0.41	0.12	4	39	4	97	0.50	0.08	2	19	2	49	0.71	0.04
Dec-20	85	695	491	908	0.11	1.39	72	589	442	761	0.12	1.17	13	106	13	270	0.28	0.21
Jan-21	146	1208	836	1605	0.08	2.41	101	836	620	1142	0.10	1.67	45	372	165	645	0.15	0.74
Feb-21	5	41	8	81	0.45	0.08	3	24	3	57	0.58	0.05	2	16	2	41	0.71	0.03
Mar-21	149	1222	902	1567	0.08	2.44	56	459	312	623	0.13	0.92	93	763	525	993	0.10	1.52

Table D-13 Little gull raw count, mean abundance estimates, lower and upper 95% confidence interval abundance estimates, precision (Coefficient of Variance, CV) and mean density estimate of little gull (prior to apportionment and correction).

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Apr-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-20	1	9	1	27	1.00	0.06	1	9	1	36	1.00	0.06	0	0	0	0	0.00	0.00
Mar-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Apr-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Mar-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

b) Rampion 2 array area + 4km buffer

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Apr-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-20	1	9	1	27	1.00	0.02	1	9	1	27	1.00	0.02	0	0	0	0	0.00	0.00
Mar-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Apr-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Dec-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

Table D-14 Mediterranean gull raw count, mean abundance estimates, lower and upper 95% confidence interval abundance estimates, precision (Coefficient of Variance, CV) and mean density estimate (prior to apportionment and correction).

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Apr-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Mar-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Apr-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Jul-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

b) Rampion 2 array area + 4km buffer

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Apr-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Mar-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Apr-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
May-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-21	1	8	1	24	1.00	0.02	1	8	1	24	1.00	0.02	0	0	0	0	0.00	0.00
Mar-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

Table D-15 Small gull species raw count, mean abundance estimates, lower and upper 95% confidence interval abundance estimates, precision (Coefficient of Variance, CV) and mean density estimate (prior to apportionment and correction).

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Apr-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Nov-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-20	3	27	3	63	0.58	0.17	0	0	0	0	0.00	0.00	3	27	3	63	0.58	0.17
Mar-20	1	8	1	34	1.00	0.05	0	0	0	0	0.00	0.00	1	8	1	25	1.00	0.05
Apr-20	1	9	1	26	1.00	0.06	0	0	0	0	0.00	0.00	1	9	1	26	1.00	0.06
May-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-20	2	17	2	51	0.71	0.11	1	9	1	26	1.00	0.06	1	9	1	26	1.00	0.06
Jul-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-20	1	10	1	30	1.00	0.06	0	0	0	0	0.00	0.00	1	10	1	30	1.00	0.06
Sep-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-21	13	111	13	308	0.28	0.70	0	0	0	0	0.00	0.00	13	111	13	299	0.28	0.70
Feb-21	1	8	1	34	1.00	0.05	0	0	0	0	0.00	0.00	1	8	1	25	1.00	0.05
Mar-21	2	17	2	51	0.71	0.11	0	0	0	0	0.00	0.00	2	17	2	51	0.71	0.11

b) Rampion 2 array area + 4km buffer

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Apr-19	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-19	1.00	10.00	1.00	29.00	1.00	0.02	0	0	0	0	0.00	0.00	1	10	1	29	1.00	0.02
Jun-19	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-19	1.00	9.00	1.00	35.00	1.00	0.02	1	9	1	26	1.00	0.02	0	0	0	0	0.00	0.00

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Aug-19	1.00	9.00	1.00	26.00	1.00	0.02	0	0	0	0	0.00	0.00	1	9	1	26	1.00	0.02
Sep-19	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-19	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-19	2.00	17.00	2.00	43.00	0.71	0.03	1	8	1	26	1.00	0.02	1	8	1	26	1.00	0.02
Dec-19	1.00	8.00	1.00	25.00	1.00	0.02	0	0	0	0	0.00	0.00	1	8	1	25	1.00	0.02
Jan-20	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-20	6.00	54.00	9.00	108.00	0.41	0.11	0	0	0	0	0.00	0.00	6	54	9	108	0.41	0.11
Mar-20	5.00	41.00	8.00	83.00	0.45	0.08	0	0	0	0	0.00	0.00	5	41	8	83	0.45	0.08
Apr-20	1.00	8.00	1.00	25.00	1.00	0.02	0	0	0	0	0.00	0.00	1	8	1	33	1.00	0.02
May-20	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-20	2.00	17.00	2.00	50.00	0.71	0.03	1	8	1	25	1.00	0.02	1	8	1	25	1.00	0.02
Jul-20	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-20	1.00	10.00	1.00	29.00	1.00	0.02	0	0	0	0	0.00	0.00	1	10	1	29	1.00	0.02
Sep-20	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-20	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-20	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-20	2.00	16.00	2.00	41.00	0.71	0.03	1	8	1	25	1.00	0.02	1	8	1	25	1.00	0.02
Jan-21	24.00	199.00	50.00	414.00	0.20	0.40	0	0	0	0	0.00	0.00	24	199	41	422	0.20	0.40
Feb-21	10.00	81.00	10.00	203.00	0.32	0.16	0	0	0	0	0.00	0.00	10	81	10	203	0.32	0.16
Mar-21	5.00	41.00	8.00	90.00	0.45	0.08	1	8	1	25	1.00	0.02	4	33	4	74	0.50	0.07

Table D-16 Common gull raw count, mean abundance estimates, lower and upper 95% confidence interval abundance estimates, precision (Coefficient of Variance, CV) and mean density estimate (prior to apportionment and correction).

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Apr-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-20	7	63	9	144	0.38	0.39	6	54	6	126	0.41	0.34	1	9	1	27	1.00	0.06
Mar-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Apr-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-20	3	25	3	59	0.58	0.16	3	25	3	59	0.58	0.16	0	0	0	0	0.00	0.00
Jan-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-21	6	50	8	117	0.41	0.31	6	50	8	117	0.41	0.31	0	0	0	0	0.00	0.00

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Mar-21	1	8	1	25	1.00	0.05	1	8	1	25	1.00	0.05	0	0	0	0	0.00	0.00

b) Rampion 2 array area + 4km buffer

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Apr-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-19	6	51	6	128	0.41	0.10	4	34	4	85	0.50	0.07	2	17	2	51	0.71	0.03
Dec-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-20	34	307	90	641	0.17	0.61	16	145	54	271	0.25	0.29	18	163	18	443	0.24	0.33
Mar-20	7	58	7	149	0.38	0.12	7	58	7	141	0.38	0.12	0	0	0	0	0.00	0.00
Apr-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Dec-20	21	172	82	270	0.22	0.34	20	164	74	270	0.22	0.33	1	8	1	25	1.00	0.02
Jan-21	3	25	3	66	0.58	0.05	3	25	3	66	0.58	0.05	0	0	0	0	0.00	0.00
Feb-21	18	146	65	236	0.24	0.29	18	146	65	236	0.24	0.29	0	0	0	0	0.00	0.00
Mar-21	8	66	25	115	0.35	0.13	6	49	16	98	0.41	0.10	2	16	2	49	0.71	0.03

Table D-17 Great black-backed gull raw count, mean abundance estimates, lower and upper 95% confidence interval abundance estimates, precision (Coefficient of Variance, CV) and mean density estimate (prior to apportionment and correction).

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Apr-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-19	1	9	1	27	1.00	0.06	0	0	0	0	0.00	0.00	1	9	1	27	1.00	0.06
Aug-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-19	5	46	5	138	0.45	0.29	0	0	0	0	0.00	0.00	5	46	5	185	0.45	0.29
Oct-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-19	1	9	1	26	1.00	0.06	0	0	0	0	0.00	0.00	1	9	1	26	1.00	0.06
Dec-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-20	3	26	3	61	0.58	0.16	1	9	1	26	1.00	0.06	2	17	2	44	0.71	0.11
Feb-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Mar-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Apr-20	1	9	1	26	1.00	0.06	1	9	1	26	1.00	0.06	0	0	0	0	0.00	0.00
May-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Jun-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-20	1	10	1	40	1.00	0.06	1	10	1	30	1.00	0.06	0	0	0	0	0.00	0.00
Aug-20	3	30	3	70	0.58	0.19	1	10	1	30	1.00	0.06	2	20	2	50	0.71	0.13
Sep-20	1	10	1	30	1.00	0.06	1	10	1	30	1.00	0.06	0	0	0	0	0.00	0.00
Oct-20	1	10	1	30	1.00	0.06	1	10	1	30	1.00	0.06	0	0	0	0	0.00	0.00
Nov-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-20	7	59	25	101	0.38	0.37	2	17	2	42	0.71	0.11	5	42	8	84	0.45	0.26
Jan-21	6	51	17	94	0.41	0.32	2	17	2	43	0.71	0.11	4	34	9	77	0.50	0.21
Feb-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Mar-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

b) Rampion 2 array area + 4km buffer

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Apr-19	1	10	1	29	1.00	0.02	1	10	1	29	1.00	0.02	0	0	0	0	0.00	0.00
May-19	1	10	1	29	1.00	0.02	0	0	0	0	0.00	0.00	1	10	1	29	1.00	0.02
Jun-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-19	7	61	9	149	0.38	0.12	0	0	0	0	0.00	0.00	7	61	9	149	0.38	0.12
Aug-19	2	17	2	43	0.71	0.03	0	0	0	0	0.00	0.00	2	17	2	52	0.71	0.03
Sep-19	11	99	18	206	0.30	0.20	3	27	3	63	0.58	0.05	8	72	9	197	0.35	0.14
Oct-19	3	25	3	59	0.58	0.05	3	25	3	59	0.58	0.05	0	0	0	0	0.00	0.00
Nov-19	11	94	43	153	0.30	0.19	6	51	9	102	0.41	0.10	5	43	9	85	0.45	0.09
Dec-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-20	6	51	8	109	0.41	0.10	3	25	3	59	0.58	0.05	3	25	3	59	0.58	0.05
Feb-20	4	36	4	108	0.50	0.07	0	0	0	0	0.00	0.00	4	36	4	108	0.50	0.07

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Mar-20	4	33	8	66	0.50	0.07	0	0	0	0	0.00	0.00	4	33	8	75	0.50	0.07
Apr-20	4	33	4	84	0.50	0.07	1	8	1	33	1.00	0.02	3	25	3	67	0.58	0.05
May-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-20	2	19	2	48	0.71	0.04	2	19	2	58	0.71	0.04	0	0	0	0	0.00	0.00
Aug-20	5	48	10	97	0.45	0.10	1	10	1	29	1.00	0.02	4	39	10	77	0.50	0.08
Sep-20	12	116	29	222	0.29	0.23	1	10	1	29	1.00	0.02	11	106	29	213	0.30	0.21
Oct-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-20	11	90	41	139	0.30	0.18	5	41	8	82	0.45	0.08	6	49	16	90	0.41	0.10
Jan-21	23	190	116	281	0.21	0.38	8	66	25	124	0.35	0.13	15	124	66	190	0.26	0.25
Feb-21	9	73	16	163	0.33	0.15	2	16	2	41	0.71	0.03	7	57	8	138	0.38	0.11
Mar-21	16	131	16	304	0.25	0.26	2	16	2	41	0.71	0.03	14	115	14	312	0.27	0.23

Table D-18 Herring gull raw count, mean abundance estimates, lower and upper 95% confidence interval abundance estimates, precision (Coefficient of Variance, CV) and mean density estimate (prior to apportionment and correction).

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Apr-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-19	2	18	2	45	0.71	0.11	2	18	2	45	0.71	0.11	0	0	0	0	0.00	0.00
Aug-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Sep-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-20	1	9	1	26	1.00	0.06	1	9	1	26	1.00	0.06	0	0	0	0	0.00	0.00
Feb-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Mar-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Apr-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-20	4	34	9	68	0.50	0.21	4	34	9	68	0.50	0.21	0	0	0	0	0.00	0.00
Jun-20	10	86	10	214	0.32	0.54	9	77	9	197	0.33	0.48	1	9	1	34	1.00	0.06
Jul-20	3	30	3	90	0.58	0.19	3	30	3	119	0.58	0.19	0	0	0	0	0.00	0.00
Aug-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-20	15	126	17	302	0.26	0.79	15	126	15	285	0.26	0.79	0	0	0	0	0.00	0.00
Jan-21	14	120	43	214	0.27	0.75	13	111	43	196	0.28	0.70	1	9	1	26	1.00	0.06
Feb-21	1	8	1	25	1.00	0.05	1	8	1	25	1.00	0.05	0	0	0	0	0.00	0.00
Mar-21	5	42	8	93	0.45	0.26	5	42	8	93	0.45	0.26	0	0	0	0	0.00	0.00

b) Rampion 2 array area + 4km buffer

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Apr-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-19	1	10	1	29	1.00	0.02	0	0	0	0	0.00	0.00	1	10	1	29	1.00	0.02

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Jun-19	22	212	22	482	0.21	0.42	20	193	20	492	0.22	0.38	2	19	2	58	0.71	0.04
Jul-19	105	919	157	2117	0.10	1.83	24	210	79	376	0.20	0.42	81	709	81	1671	0.11	1.41
Aug-19	1	9	1	26	1.00	0.02	0	0	0	0	0.00	0.00	1	9	1	26	1.00	0.02
Sep-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-19	10	85	10	230	0.32	0.17	9	77	9	230	0.33	0.15	1	8	1	26	1.00	0.02
Dec-19	1	8	1	25	1.00	0.02	1	8	1	25	1.00	0.02	0	0	0	0	0.00	0.00
Jan-20	1	8	1	25	1.00	0.02	1	8	1	25	1.00	0.02	0	0	0	0	0.00	0.00
Feb-20	27	244	45	524	0.19	0.49	19	172	27	388	0.23	0.34	8	72	8	181	0.35	0.14
Mar-20	6	50	6	149	0.41	0.10	6	50	6	149	0.41	0.10	0	0	0	0	0.00	0.00
Apr-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-20	31	261	34	683	0.18	0.52	26	219	26	590	0.20	0.44	5	42	5	110	0.45	0.08
Jun-20	53	444	53	1190	0.14	0.89	9	75	9	193	0.33	0.15	44	369	44	1072	0.15	0.74
Jul-20	22	212	67	385	0.21	0.42	19	183	48	366	0.23	0.37	3	29	3	87	0.58	0.06
Aug-20	4	39	4	97	0.50	0.08	4	39	4	87	0.50	0.08	0	0	0	0	0.00	0.00
Sep-20	1	10	1	29	1.00	0.02	1	10	1	29	1.00	0.02	0	0	0	0	0.00	0.00
Oct-20	1	10	1	29	1.00	0.02	1	10	1	29	1.00	0.02	0	0	0	0	0.00	0.00
Nov-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-20	150	1227	532	2069	0.08	2.45	116	949	344	1669	0.09	1.89	34	278	34	671	0.17	0.55
Jan-21	33	273	124	496	0.17	0.54	23	190	99	298	0.21	0.38	10	83	10	240	0.32	0.17
Feb-21	36	293	73	643	0.17	0.58	15	122	57	203	0.26	0.24	21	171	21	488	0.22	0.34
Mar-21	38	312	123	558	0.16	0.62	26	213	90	394	0.20	0.42	12	98	12	279	0.29	0.20

Table D-19 Lesser black-backed gull raw count, mean abundance estimates, lower and upper 95% confidence interval abundance estimates, precision (Coefficient of Variance, CV) and mean density estimate of (prior to apportionment and correction).

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Apr-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-19	1	9	1	27	1.00	0.06	0	0	0	0	0.00	0.00	1	9	1	27	1.00	0.06
Aug-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Mar-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Apr-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-20	1	9	1	26	1.00	0.06	1	9	1	26	1.00	0.06	0	0	0	0	0.00	0.00
Jun-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-20	1	10	1	30	1.00	0.06	1	10	1	30	1.00	0.06	0	0	0	0	0.00	0.00
Sep-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Mar-21	1	8	1	25	1.00	0.05	1	8	1	25	1.00	0.05	0	0	0	0	0.00	0.00

b) Rampion 2 array area + 4km buffer

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Apr-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-19	1	9	1	26	1.00	0.02	0	0	0	0	0.00	0.00	1	9	1	26	1.00	0.02
Aug-19	1	9	1	26	1.00	0.02	1	9	1	35	1.00	0.02	0	0	0	0	0.00	0.00
Sep-19	1	9	1	27	1.00	0.02	0	0	0	0	0.00	0.00	1	9	1	27	1.00	0.02
Oct-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Mar-20	1	8	1	25	1.00	0.02	1	8	1	25	1.00	0.02	0	0	0	0	0.00	0.00
Apr-20	1	8	1	25	1.00	0.02	1	8	1	25	1.00	0.02	0	0	0	0	0.00	0.00
May-20	13	110	13	312	0.28	0.22	8	67	8	169	0.35	0.13	5	42	5	126	0.45	0.08
Jun-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-20	1	10	1	39	1.00	0.02	0	0	0	0	0.00	0.00	1	10	1	29	1.00	0.02
Aug-20	2	19	2	48	0.71	0.04	2	19	2	48	0.71	0.04	0	0	0	0	0.00	0.00
Sep-20	2	19	2	48	0.71	0.04	1	10	1	29	1.00	0.02	1	10	1	29	1.00	0.02
Oct-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Dec-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-21	1	8	1	33	1.00	0.02	1	8	1	25	1.00	0.02	0	0	0	0	0.00	0.00
Feb-21	2	16	2	41	0.71	0.03	2	16	2	49	0.71	0.03	0	0	0	0	0.00	0.00
Mar-21	2	16	2	41	0.71	0.03	1	8	1	25	1.00	0.02	1	8	1	25	1.00	0.02

Table D-20 Black-backed gull species raw count, mean abundance estimates, lower and upper 95% confidence interval abundance estimates, precision (Coefficient of Variance, CV) and mean density estimate (prior to apportionment and correction).

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Apr-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Mar-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Apr-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Jun-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Mar-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

b) Rampion 2 array area + 4km buffer

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Apr-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Mar-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Apr-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-20	7	59	7	236	0.38	0.12	0	0	0	0	0.00	0.00	7	59	7	177	0.38	0.12
Jun-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Mar-21	2	16	2	41	0.71	0.03	2	16	2	41	0.71	0.03	0	0	0	0	0.00	0.00

Table D-21 Large gull species raw count, mean abundance estimates, lower and upper 95% confidence interval abundance estimates, precision (Coefficient of Variance, CV) and mean density estimate (prior to apportionment and correction).

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Apr-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Sep-19	1	9	1	28	1.00	0.06	0	0	0	0	0.00	0.00	1	9	1	28	1.00	0.06
Oct-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Mar-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Apr-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-20	2	17	2	43	0.71	0.11	2	17	2	43	0.71	0.11	0	0	0	0	0.00	0.00
Jul-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-20	1	10	1	40	1.00	0.06	1	10	1	30	1.00	0.06	0	0	0	0	0.00	0.00
Oct-20	1	10	1	30	1.00	0.06	1	10	1	30	1.00	0.06	0	0	0	0	0.00	0.00
Nov-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-21	3	26	3	77	0.58	0.16	0	0	0	0	0.00	0.00	3	26	3	77	0.58	0.16
Feb-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Mar-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

b) Rampion 2 array area + 4km buffer

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Apr-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Jun-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-19	2	17	2	52	0.71	0.03	0	0	0	0	0.00	0.00	2	17	2	52	0.71	0.03
Aug-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-19	1	9	1	27	1.00	0.02	0	0	0	0	0.00	0.00	1	9	1	27	1.00	0.02
Oct-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Mar-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Apr-20	1	8	1	25	1.00	0.02	0	0	0	0	0.00	0.00	1	8	1	25	1.00	0.02
May-20	107	902	107	2680	0.10	1.80	1	8	1	25	1.00	0.02	106	893	106	2680	0.10	1.78
Jun-20	6	50	8	101	0.41	0.10	3	25	3	59	0.58	0.05	3	25	3	67	0.58	0.05
Jul-20	1	10	1	29	1.00	0.02	0	0	0	0	0.00	0.00	1	10	1	29	1.00	0.02
Aug-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-20	1	10	1	29	1.00	0.02	1	10	1	29	1.00	0.02	0	0	0	0	0.00	0.00
Oct-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-21	4	33	4	91	0.50	0.07	0	0	0	0	0.00	0.00	4	33	4	91	0.50	0.07
Feb-21	27	220	27	537	0.19	0.44	0	0	0	0	0.00	0.00	27	220	27	545	0.19	0.44
Mar-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

Table D-22 Gull species raw count, mean abundance estimates, lower and upper 95% confidence interval abundance estimates, precision (Coefficient of Variance, CV) and mean density estimate (prior to apportionment and correction).

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	**Raw Count**	**Abundance**	**Lower CL**	**Upper CL**	**CV**	**Density**	**Raw Count**	**Abundance**	**Lower CL**	**Upper CL**	**CV**	**Density**	**Raw Count**	**Abundance**	**Lower CL**	**Upper CL**	**CV**	**Density**
Apr-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Mar-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Apr-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-21	1	9	1	26	1.00	0.06	0	0	0	0	0.00	0.00	1	9	1	26	1.00	0.06
Feb-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Mar-21	2	17	2	51	0.71	0.11	0	0	0	0	0.00	0.00	2	17	2	51	0.71	0.11

b) Rampion 2 array area + 4km buffer

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Apr-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-20	6	54	6	136	0.41	0.11	0	0	0	0	0.00	0.00	6	54	6	136	0.41	0.11
Mar-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Apr-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-20	3	25	3	75	0.58	0.05	0	0	0	0	0.00	0.00	3	25	3	75	0.58	0.05
Jul-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Dec-20	4	33	4	82	0.50	0.07	3	25	3	57	0.58	0.05	1	8	1	25	1.00	0.02
Jan-21	1	8	1	25	1.00	0.02	0	0	0	0	0.00	0.00	1	8	1	33	1.00	0.02
Feb-21	5	41	5	98	0.45	0.08	1	8	1	24	1.00	0.02	4	33	4	81	0.50	0.07
Mar-21	2	16	2	49	0.71	0.03	0	0	0	0	0.00	0.00	2	16	2	66	0.71	0.03

Table D-23 Sandwich tern raw count, mean abundance estimates, lower and upper 95% confidence interval abundance estimates, precision (Coefficient of Variance, CV) and mean density estimate (prior to apportionment and correction).

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Apr-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-19	1	9	1	27	1.00	0.06	1	9	1	27	1.00	0.06	0	0	0	0	0.00	0.00
Sep-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Mar-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Apr-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-20	1	9	1	26	1.00	0.06	1	9	1	26	1.00	0.06	0	0	0	0	0.00	0.00

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Jun-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Mar-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

b) Rampion 2 array area + 4km buffer

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Apr-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-19	2	19	2	58	0.71	0.04	2	19	2	58	0.71	0.04	0	0	0	0	0.00	0.00
Jul-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-19	3	26	3	60	0.58	0.05	3	26	3	52	0.58	0.05	0	0	0	0	0.00	0.00
Sep-19	2	18	2	54	0.71	0.04	2	18	2	54	0.71	0.04	0	0	0	0	0.00	0.00
Oct-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Mar-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Apr-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-20	2	17	2	42	0.71	0.03	2	17	2	42	0.71	0.03	0	0	0	0	0.00	0.00
Jun-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Mar-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

Table D-24 Little tern raw count, mean abundance estimates, lower and upper 95% confidence interval abundance estimates, precision (Coefficient of Variance, CV) and mean density estimate (prior to apportionment and correction).

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Apr-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Sep-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Mar-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Apr-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Mar-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

b) Rampion 2 array area + 4km buffer

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Apr-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Jun-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Mar-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Apr-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-20	3	25	3	75	0.58	0.05	3	25	3	75	0.58	0.05	0	0	0	0	0.00	0.00
Jul-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Mar-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

Table D-25 Common tern raw count, mean abundance estimates, lower and upper 95% confidence interval abundance estimates, precision (Coefficient of Variance, CV) and mean density estimate (prior to apportionment and correction).

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Apr-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Mar-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Apr-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Mar-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

b) Rampion 2 array area + 4km buffer

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Apr-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-19	2	17	2	44	0.71	0.03	2	17	2	44	0.71	0.03	0	0	0	0	0.00	0.00
Aug-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Mar-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Apr-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-20	36	302	36	871	0.17	0.60	36	302	36	838	0.17	0.60	0	0	0	0	0.00	0.00
Jul-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Dec-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Mar-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

Table D-26 Common / Arctic (‘commic’) tern raw count, mean abundance estimates, lower and upper 95% confidence interval abundance estimates, precision (Coefficient of Variance, CV) and mean density estimate (prior to apportionment and correction).

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Apr-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-19	2	18	2	55	0.71	0.11	2	18	2	55	0.71	0.11	0	0	0	0	0.00	0.00
Oct-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Mar-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Apr-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-20	1	9	1	26	1.00	0.06	1	9	1	26	1.00	0.06	0	0	0	0	0.00	0.00

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Jun-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Mar-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

b) Rampion 2 array area + 4km buffer

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Apr-19	1	10	1	29	1.00	0.02	1	10	1	29	1.00	0.02	0	0	0	0	0.00	0.00
May-19	6	58	6	174	0.41	0.12	6	58	6	164	0.41	0.12	0	0	0	0	0.00	0.00
Jun-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-19	4	36	4	90	0.50	0.07	4	36	4	90	0.50	0.07	0	0	0	0	0.00	0.00
Oct-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Mar-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Apr-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-20	8	67	17	143	0.35	0.13	8	67	17	143	0.35	0.13	0	0	0	0	0.00	0.00
Jun-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-20	1	10	1	29	1.00	0.02	1	10	1	29	1.00	0.02	0	0	0	0	0.00	0.00
Sep-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-20	1	10	1	29	1.00	0.02	1	10	1	29	1.00	0.02	0	0	0	0	0.00	0.00
Nov-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Mar-21	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

Table D-27 Guillemot raw count, mean abundance estimates, lower and upper 95% confidence interval abundance estimates, precision (Coefficient of Variance, CV) and mean density estimate (prior to apportionment and correction).

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	**Raw Count**	**Abundance**	**Lower CL**	**Upper CL**	**CV**	**Density**	**Raw Count**	**Abundance**	**Lower CL**	**Upper CL**	**CV**	**Density**	**Raw Count**	**Abundance**	**Lower CL**	**Upper CL**	**CV**	**Density**
Apr-19	5	50	10	100	0.45	0.31	0	0	0	0	0.00	0.00	5	50	10	90	0.45	0.31
May-19	5	50	10	109	0.45	0.31	0	0	0	0	0.00	0.00	5	50	10	109	0.45	0.31
Jun-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-19	1	9	1	27	1.00	0.06	0	0	0	0	0.00	0.00	1	9	1	27	1.00	0.06
Aug-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-20	1	9	1	26	1.00	0.06	0	0	0	0	0.00	0.00	1	9	1	26	1.00	0.06
Feb-20	54	487	324	685	0.14	3.05	2	18	2	54	0.71	0.11	52	468	288	676	0.14	2.93
Mar-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Apr-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-20	1	9	1	26	1.00	0.06	0	0	0	0	0.00	0.00	1	9	1	34	1.00	0.06
Jul-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-20	6	60	6	140	0.41	0.38	0	0	0	0	0.00	0.00	6	60	6	150	0.41	0.38
Dec-20	16	134	59	235	0.25	0.84	0	0	0	0	0.00	0.00	16	134	59	226	0.25	0.84
Jan-21	73	624	410	871	0.12	3.91	0	0	0	0	0.00	0.00	73	624	402	897	0.12	3.91
Feb-21	23	193	67	369	0.21	1.21	0	0	0	0	0.00	0.00	23	193	67	394	0.21	1.21

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Mar-21	19	160	76	253	0.23	1.00	0	0	0	0	0.00	0.00	19	160	76	253	0.23	1.00

b) Rampion 2 array area + 4km buffer

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Apr-19	13	127	59	205	0.28	0.25	0	0	0	0	0.00	0.00	13	127	59	195	0.28	0.25
May-19	6	58	10	116	0.41	0.12	0	0	0	0	0.00	0.00	6	58	10	116	0.41	0.12
Jun-19	1	10	1	29	1.00	0.02	0	0	0	0	0.00	0.00	1	10	1	29	1.00	0.02
Jul-19	3	26	3	70	0.58	0.05	0	0	0	0	0.00	0.00	3	26	3	70	0.58	0.05
Aug-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-19	4	34	4	84	0.50	0.07	2	17	2	51	0.71	0.03	2	17	2	51	0.71	0.03
Nov-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-20	5	42	8	84	0.45	0.08	1	8	1	25	1.00	0.02	4	34	8	67	0.50	0.07
Feb-20	232	2096	1635	2602	0.07	4.18	8	72	8	163	0.35	0.14	224	2024	1500	2511	0.07	4.04
Mar-20	1	8	1	33	1.00	0.02	0	0	0	0	0.00	0.00	1	8	1	25	1.00	0.02
Apr-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-20	10	84	17	177	0.32	0.17	0	0	0	0	0.00	0.00	10	84	17	169	0.32	0.17
Jun-20	6	50	8	109	0.41	0.10	0	0	0	0	0.00	0.00	6	50	8	101	0.41	0.10
Jul-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-20	24	233	126	359	0.20	0.46	2	19	2	49	0.71	0.04	22	214	126	330	0.21	0.43

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Dec-20	70	573	384	785	0.12	1.14	4	33	4	98	0.50	0.07	66	540	368	728	0.12	1.08
Jan-21	202	1671	1307	2027	0.07	3.33	11	91	17	182	0.30	0.18	191	1580	1249	1969	0.07	3.15
Feb-21	80	651	415	952	0.11	1.30	1	8	1	24	1.00	0.02	79	643	399	920	0.11	1.28
Mar-21	346	2838	2108	3601	0.05	5.66	1	8	1	25	1.00	0.02	345	2830	2117	3642	0.05	5.65

c) Rampion 2 array area + 2km buffer

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Apr-19	11	110	50	180	0.30	0.35	0	0	0	0	0.00	0.00	11	110	50	180	0.30	0.33
May-19	5	50	10	110	0.45	0.12	0	0	0	0	0.00	0.00	5	50	10	110	0.45	0.15
Jun-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-19	3	27	3	72	0.58	0.11	0	0	0	0	0.00	0.00	3	27	3	72	0.58	0.08
Aug-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-19	2	17	2	52	0.71	0.04	0	0	0	0	0.00	0.00	2	17	2	52	0.71	0.05
Nov-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-20	3	26	3	61	0.58	0.11	0	0	0	0	0.00	0.00	3	26	3	52	0.58	0.08
Feb-20	147	1336	927	1736	0.08	4.17	2	18	2	55	0.71	0.05	145	1318	945	1763	0.08	4.00
Mar-20	0	0	0	0	0.00	0.02	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Apr-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-20	1	9	1	26	1.00	0.11	0	0	0	0	0.00	0.00	1	9	1	26	1.00	0.03
Jun-20	1	9	1	26	1.00	0.06	0	0	0	0	0.00	0.00	1	9	1	26	1.00	0.03
Jul-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Sep-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-20	13	131	50	221	0.28	0.45	1	10	1	30	1.00	0.03	12	121	40	221	0.29	0.37
Dec-20	41	344	210	503	0.16	1.24	4	34	4	92	0.50	0.10	37	310	193	444	0.16	0.94
Jan-21	144	1223	909	1563	0.08	3.87	3	25	3	68	0.58	0.08	141	1198	883	1537	0.08	3.63
Feb-21	39	326	142	552	0.16	1.18	0	0	0	0	0.00	0.00	39	326	151	569	0.16	0.99
Mar-21	120	1012	641	1442	0.09	5.35	1	8	1	25	1.00	0.02	119	1003	632	1475	0.09	3.04

Table D-28 Razorbill raw count, mean abundance estimates, lower and upper 95% confidence interval abundance estimates, precision (Coefficient of Variance, CV) and mean density estimate (prior to apportionment and correction).

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Apr-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-19	2	18	2	72	0.71	0.11	0	0	0	0	0.00	0.00	2	18	2	54	0.71	0.11
Aug-19	1	9	1	27	1.00	0.06	0	0	0	0	0.00	0.00	1	9	1	27	1.00	0.06
Sep-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-19	1	9	1	26	1.00	0.06	0	0	0	0	0.00	0.00	1	9	1	34	1.00	0.06
Nov-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-20	119	1072	694	1523	0.09	6.72	0	0	0	0	0.00	0.00	119	1072	685	1577	0.09	6.72

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Mar-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Apr-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-20	10	100	10	249	0.32	0.63	0	0	0	0	0.00	0.00	10	100	10	239	0.32	0.63
Dec-20	19	159	67	276	0.23	1.00	0	0	0	0	0.00	0.00	19	159	67	268	0.23	1.00
Jan-21	41	350	41	829	0.16	2.19	12	103	12	308	0.29	0.65	29	248	29	624	0.19	1.55
Feb-21	20	168	42	344	0.22	1.05	0	0	0	0	0.00	0.00	20	168	42	336	0.22	1.05
Mar-21	12	101	17	202	0.29	0.63	0	0	0	0	0.00	0.00	12	101	17	202	0.29	0.63

b) Rampion 2 array area + 4km buffer

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Apr-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-19	1	10	1	39	1.00	0.02	0	0	0	0	0.00	0.00	1	10	1	29	1.00	0.02
Jun-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-19	3	26	3	70	0.58	0.05	0	0	0	0	0.00	0.00	3	26	3	70	0.58	0.05
Aug-19	1	9	1	26	1.00	0.02	0	0	0	0	0.00	0.00	1	9	1	26	1.00	0.02
Sep-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-19	2	17	2	42	0.71	0.03	1	8	1	34	1.00	0.02	1	8	1	25	1.00	0.02
Nov-19	1	8	1	26	1.00	0.02	1	8	1	26	1.00	0.02	0	0	0	0	0.00	0.00

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Dec-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-20	367	3316	2358	4400	0.05	6.61	4	36	4	99	0.50	0.07	363	3279	2376	4318	0.05	6.54
Mar-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Apr-20	1	8	1	25	1.00	0.02	0	0	0	0	0.00	0.00	1	8	1	25	1.00	0.02
May-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-20	16	155	49	311	0.25	0.31	0	0	0	0	0.00	0.00	16	155	39	320	0.25	0.31
Dec-20	77	630	376	916	0.11	1.26	2	16	2	49	0.71	0.03	75	613	344	941	0.12	1.22
Jan-21	194	1605	711	2714	0.07	3.20	33	273	66	554	0.17	0.54	161	1332	496	2490	0.08	2.66
Feb-21	58	472	260	716	0.13	0.94	0	0	0	0	0.00	0.00	58	472	252	732	0.13	0.94
Mar-21	44	361	197	558	0.15	0.72	0	0	0	0	0.00	0.00	44	361	189	566	0.15	0.72

c) Rampion 2 array area + 2km buffer

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Apr-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
May-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-19	3	27	3	72	0.58	0.08	0	0	0	0	0.00	0.00	3	27	3	72	0.58	0.08
Aug-19	1	9	1	27	1.00	0.03	0	0	0	0	0.00	0.00	1	9	1	27	1.00	0.03

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Sep-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-19	2	17	2	43	0.71	0.05	1	9	1	26	1.00	0.03	1	9	1	26	1.00	0.03
Nov-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jan-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Feb-20	226	2054	1436	2718	0.07	6.23	0	0	0	0	0.00	0.00	226	2054	1445	2699	0.07	6.23
Mar-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Apr-20	1	9	1	26	1.00	0.03	0	0	0	0	0.00	0.00	1	9	1	26	1.00	0.03
May-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jun-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-20	11	111	11	252	0.30	0.34	0	0	0	0	0.00	0.00	11	111	11	262	0.30	0.34
Dec-20	45	377	210	562	0.15	1.14	2	17	2	50	0.71	0.05	43	360	201	553	0.15	1.09
Jan-21	139	1181	340	2378	0.08	3.58	18	153	18	391	0.24	0.46	121	1028	229	2319	0.09	3.12
Feb-21	48	401	217	611	0.14	1.22	0	0	0	0	0.00	0.00	48	401	201	627	0.14	1.22
Mar-21	31	261	110	455	0.18	0.79	0	0	0	0	0.00	0.00	31	261	110	455	0.18	0.79

Table D-29 Guillemot/razorbill raw count, mean abundance estimates, lower and upper 95% confidence interval abundance estimates, precision (Coefficient of Variance, CV) and mean density estimate (prior to apportionment and correction).

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	**Raw Count**	**Abundance**	**Lower CL**	**Upper CL**	**CV**	**Density**	**Raw Count**	**Abundance**	**Lower CL**	**Upper CL**	**CV**	**Density**	**Raw Count**	**Abundance**	**Lower CL**	**Upper CL**	**CV**	**Density**
Apr-19	2	20	2	60	0.71	0.13	0	0	0	0	0.00	0.00	2	20	2	60	0.71	0.13
May-19	1	10	1	30	1.00	0.06	0	0	0	0	0.00	0.00	1	10	1	30	1.00	0.06
Jun-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-19	6	51	9	111	0.41	0.32	0	0	0	0	0.00	0.00	6	51	9	103	0.41	0.32
Nov-19	2	17	2	44	0.71	0.11	0	0	0	0	0.00	0.00	2	17	2	44	0.71	0.11
Dec-19	9	79	35	140	0.33	0.50	0	0	0	0	0.00	0.00	9	79	26	140	0.33	0.50
Jan-20	22	192	96	314	0.21	1.20	1	9	1	26	1.00	0.06	21	183	87	305	0.22	1.15
Feb-20	344	3099	2225	4027	0.05	19.42	7	63	7	153	0.38	0.39	337	3036	2189	3982	0.05	19.03
Mar-20	2	17	2	42	0.71	0.11	0	0	0	0	0.00	0.00	2	17	2	42	0.71	0.11
Apr-20	1	9	1	26	1.00	0.06	0	0	0	0	0.00	0.00	1	9	1	26	1.00	0.06
May-20	2	17	2	51	0.71	0.11	0	0	0	0	0.00	0.00	2	17	2	51	0.71	0.11
Jun-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-20	130	1089	829	1382	0.09	6.83	7	59	7	176	0.38	0.37	123	1030	804	1282	0.09	6.46
Jan-21	433	3699	2059	5903	0.05	23.19	23	196	43	410	0.21	1.23	410	3502	1896	5732	0.05	21.95
Feb-21	48	403	226	638	0.14	2.53	0	0	0	0	0.00	0.00	48	403	218	629	0.14	2.53

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Mar-21	96	810	523	1147	0.10	5.08	1	8	1	25	1.00	0.05	95	801	489	1164	0.10	5.02

b) Rampion 2 array area + 4km buffer

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Apr-19	7	68	10	156	0.38	0.14	0	0	0	0	0.00	0.00	7	68	10	156	0.38	0.14
May-19	2	19	2	48	0.71	0.04	0	0	0	0	0.00	0.00	2	19	2	48	0.71	0.04
Jun-19	1	10	1	29	1.00	0.02	0	0	0	0	0.00	0.00	1	10	1	29	1.00	0.02
Jul-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-19	9	76	25	144	0.33	0.15	0	0	0	0	0.00	0.00	9	76	25	135	0.33	0.15
Nov-19	15	128	43	230	0.26	0.26	6	51	6	136	0.41	0.10	9	77	26	128	0.33	0.15
Dec-19	25	212	93	390	0.20	0.42	0	0	0	0	0.00	0.00	25	212	93	364	0.20	0.42
Jan-20	73	615	404	851	0.12	1.23	4	34	4	76	0.50	0.07	69	581	379	800	0.12	1.16
Feb-20	997	9007	7363	10723	0.03	17.97	8	72	9	181	0.35	0.14	989	8935	7363	10615	0.03	17.82
Mar-20	16	133	66	199	0.25	0.27	0	0	0	0	0.00	0.00	16	133	66	215	0.25	0.27
Apr-20	2	17	2	42	0.71	0.03	0	0	0	0	0.00	0.00	2	17	2	42	0.71	0.03
May-20	4	34	4	84	0.50	0.07	0	0	0	0	0.00	0.00	4	34	4	84	0.50	0.07
Jun-20	3	25	3	67	0.58	0.05	0	0	0	0	0.00	0.00	3	25	3	67	0.58	0.05
Jul-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Dec-20	543	4441	3713	5178	0.04	8.86	9	74	9	213	0.33	0.15	534	4368	3664	5112	0.04	8.71
Jan-21	1069	8844	6478	11706	0.03	17.64	54	447	207	720	0.14	0.89	1015	8397	6205	11135	0.03	16.75
Feb-21	151	1229	895	1620	0.08	2.45	2	16	2	41	0.71	0.03	149	1213	895	1571	0.08	2.42
Mar-21	432	3544	2904	4307	0.05	7.07	1	8	1	25	1.00	0.02	431	3536	2855	4192	0.05	7.05

c) Rampion 2 array area + 2km buffer

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Apr-19	5	50	5	130	0.45	0.15	0	0	0	0	0.00	0.00	5	50	5	140	0.45	0.15
May-19	1	10	1	30	1.00	0.03	0	0	0	0	0.00	0.00	1	10	1	30	1.00	0.03
Jun-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Jul-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Sep-19	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-19	9	78	26	139	0.33	0.24	0	0	0	0	0.00	0.00	9	78	26	148	0.33	0.24
Nov-19	11	96	18	201	0.30	0.29	6	53	6	140	0.41	0.16	5	44	9	96	0.45	0.13
Dec-19	13	114	53	184	0.28	0.35	0	0	0	0	0.00	0.00	13	114	53	184	0.28	0.35
Jan-20	40	346	208	502	0.16	1.05	1	9	1	35	1.00	0.03	39	338	208	494	0.16	1.02
Feb-20	691	6280	4981	7662	0.04	19.04	8	73	9	173	0.35	0.22	683	6208	4926	7653	0.04	18.82
Mar-20	8	68	17	128	0.35	0.21	0	0	0	0	0.00	0.00	8	68	17	136	0.35	0.21
Apr-20	2	17	2	43	0.71	0.05	0	0	0	0	0.00	0.00	2	17	2	43	0.71	0.05
May-20	4	35	4	87	0.50	0.11	0	0	0	0	0.00	0.00	4	35	4	78	0.50	0.11
Jun-20	2	17	2	69	0.71	0.05	0	0	0	0	0.00	0.00	2	17	2	52	0.71	0.05
Jul-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Aug-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00

a) Rampion 2 array area

	All behaviours						Flying						Sitting					
Survey	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density	Raw Count	Abundance	Lower CL	Upper CL	CV	Density
Sep-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Oct-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Nov-20	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00	0	0	0	0	0.00	0.00
Dec-20	344	2883	2355	3537	0.05	8.74	8	67	8	201	0.35	0.20	336	2816	2229	3495	0.05	8.54
Jan-21	837	7110	4850	9905	0.03	21.56	48	408	161	722	0.14	1.24	789	6702	4553	9378	0.04	20.32
Feb-21	88	736	468	1020	0.11	2.23	2	17	2	42	0.71	0.05	86	719	468	1004	0.11	2.18
Mar-21	215	1813	1391	2268	0.07	5.50	1	8	1	25	1.00	0.02	214	1804	1383	2268	0.07	5.47

Annex E Age Categories

Table E-1 Raw counts of fulmars by age classification across entire survey area.

Survey	Adult	Juvenile	First winter	Second winter	Third winter	Fourth winter	First summer	Second summer	Third Summer	Fourth summer	Unknown
Apr-19	0	0	0	0	0	0	0	0	0	0	1
May-19	0	0	0	0	0	0	0	0	0	0	5
Jun-19	0	0	0	0	0	0	0	0	0	0	0
Jul-19	0	0	0	0	0	0	0	0	0	0	2
Aug-19	0	0	0	0	0	0	0	0	0	0	12
Sep-19	0	0	0	0	0	0	0	0	0	0	1
Oct-19	0	0	0	0	0	0	0	0	0	0	0
Nov-19	0	0	0	0	0	0	0	0	0	0	0
Dec-19	0	0	0	0	0	0	0	0	0	0	0
Jan-20	0	0	0	0	0	0	0	0	0	0	1
Feb-20	0	0	0	0	0	0	0	0	0	0	4
Mar-20	0	0	0	0	0	0	0	0	0	0	0
Apr-20	0	0	0	0	0	0	0	0	0	0	0

Survey	Adult	Juvenile	First winter	Second winter	Third winter	Fourth winter	First summer	Second summer	Third Summer	Fourth summer	Unknown
May-20	0	0	0	0	0	0	0	0	0	0	2
Jun-20	0	0	0	0	0	0	0	0	0	0	0
Jul-20	0	0	0	0	0	0	0	0	0	0	1
Aug-20	0	0	0	0	0	0	0	0	0	0	1
Sep-20	0	0	0	0	0	0	0	0	0	0	0
Oct-20	0	0	0	0	0	0	0	0	0	0	0
Nov-20	0	0	0	0	0	0	0	0	0	0	1
Dec-20	0	0	0	0	0	0	0	0	0	0	1
Jan-21	0	0	0	0	0	0	0	0	0	0	1
Feb-21	0	0	0	0	0	0	0	0	0	0	0
Mar-21	0	0	0	0	0	0	0	0	0	0	2

Table E-2 Raw counts of gannets by age classification across entire survey area.

Survey	Adult	Juvenile	First winter	Second winter	Third winter	Fourth winter	First summer	Second summer	Third Summer	Fourth summer	Unknown
Apr-19	3	0	0	0	0	0	0	0	0	1	0
May-19	8	0	0	0	0	0	0	0	0	0	0

Survey	Adult	Juvenile	First winter	Second winter	Third winter	Fourth winter	First summer	Second summer	Third Summer	Fourth summer	Unknown
Jun-19	9	0	0	0	0	0	0	0	0	0	0
Jul-19	39	0	0	0	0	0	0	2	3	0	1
Aug-19	49	0	0	0	0	0	3	3	1	0	3
Sep-19	6	0	0	0	0	0	1	1	1	0	1
Oct-19	41	0	0	1	6	3	0	0	0	0	0
Nov-19	24	0	0	0	0	0	0	0	0	0	0
Dec-19	4	0	0	0	0	0	0	0	0	0	1
Jan-20	1	0	0	0	0	0	0	0	0	0	0
Feb-20	85	0	0	0	0	0	0	0	0	0	0
Mar-20	2	0	0	0	0	0	0	0	0	0	0
Apr-20	10	0	0	0	0	0	0	0	0	0	0
May-20	9	0	0	0	0	0	0	0	0	0	13
Jun-20	16	0	0	0	0	0	0	0	2	1	1
Jul-20	4	0	0	0	0	0	1	0	0	0	2
Aug-20	2	0	0	0	0	0	0	0	0	1	1
Sep-20	4	0	0	0	0	0	0	0	0	0	0

Survey	Adult	Juvenile	First winter	Second winter	Third winter	Fourth winter	First summer	Second summer	Third Summer	Fourth summer	Unknown
Oct-20	14	0	0	0	0	0	0	1	0	0	0
Nov-20	5	0	0	0	0	0	0	0	0	0	1
Dec-20	21	0	0	0	0	0	0	0	0	0	1
Jan-21	116	0	0	0	0	1	0	0	0	0	4
Feb-21	10	0	0	0	0	0	0	0	0	0	2
Mar-21	70	0	0	0	0	0	0	0	0	0	0

Table E-3 Raw counts of kittiwakes by age classification across entire survey area.

Survey	Adult	Juvenile	First winter	Second winter	Third winter	Fourth winter	First summer	Second summer	Third Summer	Fourth summer	Unknown
Apr-19	1	0	0	0	0	0	0	0	0	0	0
May-19	2	0	0	0	0	0	0	0	0	0	0
Jun-19	0	0	0	0	0	0	0	0	0	0	0
Jul-19	6	0	0	0	0	0	0	0	0	0	0
Aug-19	0	0	0	0	0	0	0	0	0	0	0
Sep-19	0	0	0	0	0	0	0	0	0	0	0
Oct-19	7	0	0	0	0	0	0	0	0	0	0

Survey	Adult	Juvenile	First winter	Second winter	Third winter	Fourth winter	First summer	Second summer	Third Summer	Fourth summer	Unknown
Nov-19	41	0	0	0	0	0	0	0	0	0	0
Dec-19	6	0	0	0	0	0	0	0	0	0	0
Jan-20	8	0	0	0	0	0	0	0	0	0	8
Feb-20	148	0	6	0	0	0	0	0	0	0	177
Mar-20	1	0	0	0	0	0	0	0	0	0	5
Apr-20	0	0	0	0	0	0	0	0	0	0	0
May-20	0	0	0	0	0	0	0	0	0	0	0
Jun-20	2	0	0	0	0	0	0	0	0	0	18
Jul-20	0	0	0	0	0	0	0	0	0	0	0
Aug-20	0	0	0	0	0	0	0	0	0	0	2
Sep-20	1	0	0	0	0	0	0	0	0	0	2
Oct-20	0	0	0	0	0	0	0	0	0	0	0
Nov-20	8	0	1	0	0	0	0	0	0	0	3
Dec-20	140	0	3	0	0	0	0	0	0	0	93
Jan-21	176	0	5	0	0	0	0	0	0	0	40
Feb-21	26	0	5	0	0	0	0	0	0	0	23

Survey	Adult	Juvenile	First winter	Second winter	Third winter	Fourth winter	First summer	Second summer	Third Summer	Fourth summer	Unknown
Mar-21	217	0	10	0	0	0	0	0	0	0	82

Table E-4 Raw counts of little gulls by age classification across entire survey area.

Survey	Adult	Juvenile	First winter	Second winter	Third winter	Fourth winter	First summer	Second summer	Third Summer	Fourth summer	Unknown
Apr-19	0	0	0	0	0	0	0	0	0	0	0
May-19	0	0	0	0	0	0	0	0	0	0	0
Jun-19	0	0	0	0	0	0	0	0	0	0	0
Jul-19	0	0	0	0	0	0	0	0	0	0	0
Aug-19	0	0	0	0	0	0	0	0	0	0	0
Sep-19	0	0	0	0	0	0	0	0	0	0	0
Oct-19	2	0	0	0	0	0	0	0	0	0	0
Nov-19	0	0	0	0	0	0	0	0	0	0	0
Dec-19	0	0	0	0	0	0	0	0	0	0	0
Jan-20	0	0	0	0	0	0	0	0	0	0	0
Feb-20	1	0	0	0	0	0	0	0	0	0	0
Mar-20	0	0	0	0	0	0	0	0	0	0	0

Survey	Adult	Juvenile	First winter	Second winter	Third winter	Fourth winter	First summer	Second summer	Third Summer	Fourth summer	Unknown
Apr-20	0	0	0	0	0	0	0	0	0	0	0
May-20	0	0	0	0	0	0	0	0	0	0	0
Jun-20	0	0	0	0	0	0	0	0	0	0	0
Jul-20	0	0	0	0	0	0	0	0	0	0	0
Aug-20	0	0	0	0	0	0	0	0	0	0	0
Sep-20	0	0	0	0	0	0	0	0	0	0	0
Oct-20	0	0	0	0	0	0	0	0	0	0	0
Nov-20	0	0	0	0	0	0	0	0	0	0	0
Dec-20	0	0	0	0	0	0	0	0	0	0	0
Jan-21	0	0	0	0	0	0	0	0	0	0	0
Feb-21	0	0	0	0	0	0	0	0	0	0	0
Mar-21	0	0	0	0	0	0	0	0	0	0	0

Table E-5 Raw counts of common gulls by age classification across entire survey area.

Survey	Adult	Juvenile	First winter	Second winter	Third winter	Fourth winter	First summer	Second summer	Third Summer	Fourth summer	Unknown
Apr-19	0	0	0	0	0	0	0	0	0	0	0
May-19	0	0	0	0	0	0	0	0	0	0	0
Jun-19	0	0	0	0	0	0	0	0	0	0	0
Jul-19	0	0	0	0	0	0	0	0	0	0	0
Aug-19	0	0	0	0	0	0	0	0	0	0	0
Sep-19	0	0	0	0	0	0	0	0	0	0	0
Oct-19	0	0	0	0	0	0	0	0	0	0	0
Nov-19	38	0	5	0	0	0	0	0	0	0	1
Dec-19	2	0	1	0	0	0	0	0	0	0	0
Jan-20	0	0	0	0	0	0	0	0	0	0	0
Feb-20	152	0	2	0	0	0	0	0	0	0	200
Mar-20	11	0	1	0	0	0	0	0	0	0	3
Apr-20	0	0	0	0	0	0	0	0	0	0	0
May-20	0	0	0	0	0	0	0	0	0	0	0
Jun-20	0	0	0	0	0	0	0	0	0	0	0

Survey	Adult	Juvenile	First winter	Second winter	Third winter	Fourth winter	First summer	Second summer	Third Summer	Fourth summer	Unknown
Jul-20	0	0	0	0	0	0	0	0	0	0	0
Aug-20	0	0	0	0	0	0	0	0	0	0	0
Sep-20	0	0	0	0	0	0	0	0	0	0	0
Oct-20	0	0	0	0	0	0	0	0	0	0	0
Nov-20	1	0	0	0	0	0	0	0	0	0	0
Dec-20	24	0	0	0	0	0	0	0	0	0	4
Jan-21	4	0	0	0	0	0	0	0	0	0	2
Feb-21	17	0	2	0	0	0	0	0	0	0	4
Mar-21	13	0	0	1	0	0	0	0	0	0	0

Table E-6 Raw counts of great black-backed gulls by age classification across entire survey area.

Survey	Adult	Juvenile	First winter	Second winter	Third winter	Fourth winter	First summer	Second summer	Third Summer	Fourth summer	Unknown
Apr-19	0	0	0	0	0	0	0	0	1	0	0
May-19	0	0	0	0	0	0	2	0	0	0	5
Jun-19	2	0	0	0	0	0	0	0	0	0	0
Jul-19	17	0	0	0	0	0	0	2	0	0	0

Survey	Adult	Juvenile	First winter	Second winter	Third winter	Fourth winter	First summer	Second summer	Third Summer	Fourth summer	Unknown
Aug-19	5	0	0	0	0	0	1	0	0	0	1
Sep-19	17	2	0	0	0	0	0	0	0	0	2
Oct-19	7	0	1	0	0	0	0	0	0	0	0
Nov-19	24	0	2	0	1	0	0	0	0	0	1
Dec-19	7	0	0	0	0	0	0	0	0	0	0
Jan-20	12	0	1	0	1	0	0	0	0	0	0
Feb-20	41	0	2	0	0	0	0	0	0	0	1
Mar-20	23	0	0	0	0	0	0	0	0	0	1
Apr-20	6	0	1	0	1	0	0	0	0	0	0
May-20	0	0	0	0	0	0	0	0	0	0	0
Jun-20	0	0	0	0	0	0	0	0	0	0	0
Jul-20	9	0	0	0	0	0	0	0	0	0	3
Aug-20	13	0	0	0	0	0	0	0	0	0	3
Sep-20	15	1	0	0	0	0	0	1	0	0	18
Oct-20	3	0	0	0	0	0	0	0	0	0	0
Nov-20	1	0	1	0	0	0	0	0	0	0	0

Survey	Adult	Juvenile	First winter	Second winter	Third winter	Fourth winter	First summer	Second summer	Third Summer	Fourth summer	Unknown
Dec-20	19	0	0	0	2	0	0	0	0	0	4
Jan-21	21	0	2	3	2	0	0	0	0	0	62
Feb-21	15	0	0	1	2	0	0	0	0	0	16
Mar-21	23	0	0	3	2	0	0	0	0	0	1

Table E-7 Raw counts of herring gulls by age classification across entire survey area.

Survey	Adult	Juvenile	First winter	Second winter	Third winter	Fourth winter	First summer	Second summer	Third Summer	Fourth summer	Unknown
Apr-19	6	0	0	0	0	0	0	0	0	0	3
May-19	6	0	0	0	0	0	0	1	0	0	4
Jun-19	42	0	0	0	0	0	0	1	4	0	0
Jul-19	148	0	0	0	0	0	1	0	0	0	2
Aug-19	5	0	0	0	0	0	0	0	0	0	3
Sep-19	0	0	0	0	0	0	0	0	0	0	0
Oct-19	0	0	1	0	0	0	0	0	0	0	0
Nov-19	41	0	1	6	3	0	0	0	0	0	6
Dec-19	4	0	0	3	0	1	0	0	0	0	7

Survey	Adult	Juvenile	First winter	Second winter	Third winter	Fourth winter	First summer	Second summer	Third Summer	Fourth summer	Unknown
Jan-20	4	0	0	3	0	0	0	0	0	0	0
Feb-20	107	0	14	11	0	0	0	0	0	0	135
Mar-20	26	0	1	0	1	0	0	0	0	0	34
Apr-20	2	0	2	2	0	0	0	0	0	0	3
May-20	38	0	0	0	0	0	0	5	3	0	218
Jun-20	12	0	0	0	0	0	0	0	0	0	66
Jul-20	45	0	0	0	0	0	0	0	0	0	9
Aug-20	13	0	0	0	0	0	0	0	0	0	5
Sep-20	1	0	0	0	0	0	0	1	0	0	0
Oct-20	0	0	0	0	0	0	0	0	0	0	3
Nov-20	0	0	0	0	0	0	0	0	0	0	1
Dec-20	3	0	0	0	0	0	0	0	0	0	166
Jan-21	17	0	1	11	15	0	0	0	0	0	26
Feb-21	20	0	3	6	12	0	0	1	0	0	30
Mar-21	14	0	8	18	16	0	0	0	0	0	7

Table E-8 Raw counts of lesser black-backed gulls by age classification across entire survey area.

Survey	Adult	Juvenile	First winter	Second winter	Third winter	Fourth winter	First summer	Second summer	Third Summer	Fourth summer	Unknown
Apr-19	0	0	0	0	0	0	0	0	0	0	0
May-19	0	0	0	0	0	0	0	0	0	0	0
Jun-19	1	0	0	0	0	0	0	0	0	0	0
Jul-19	0	0	0	0	0	0	0	0	0	0	1
Aug-19	0	1	0	0	0	0	0	0	0	0	0
Sep-19	1	0	0	0	0	0	0	0	0	0	0
Oct-19	0	0	0	0	0	0	0	0	0	0	1
Nov-19	2	0	0	0	0	0	0	0	0	0	0
Dec-19	0	0	0	0	0	0	0	0	0	0	0
Jan-20	0	0	0	0	0	0	0	0	0	0	0
Feb-20	1	0	0	0	0	0	0	0	0	0	3
Mar-20	4	0	0	0	0	0	0	0	0	0	2
Apr-20	5	0	0	0	0	0	0	0	0	0	1
May-20	5	0	0	0	0	0	0	0	2	0	6
Jun-20	2	0	0	0	0	0	0	0	0	0	0

Survey	Adult	Juvenile	First winter	Second winter	Third winter	Fourth winter	First summer	Second summer	Third Summer	Fourth summer	Unknown
Jul-20	1	0	0	0	0	0	0	0	0	0	0
Aug-20	2	0	0	0	0	0	0	0	0	0	1
Sep-20	0	1	0	0	0	0	1	0	0	0	1
Oct-20	0	0	0	0	0	0	0	0	0	0	1
Nov-20	0	0	0	0	0	0	0	0	0	0	0
Dec-20	0	0	0	0	0	0	0	0	0	0	0
Jan-21	0	0	0	0	1	0	0	0	0	0	0
Feb-21	0	0	0	2	2	0	0	0	0	0	1
Mar-21	3	0	0	0	0	0	0	0	0	0	0

Table E-9 Raw counts of 'commic' terns by age classification across entire survey area.

Survey	Adult	Juvenile	First winter	Second winter	Third winter	Fourth winter	First summer	Second summer	Third Summer	Fourth summer	Unknown
Apr-19	0	0	0	0	0	0	0	0	0	0	19
May-19	0	0	0	0	0	0	0	0	0	0	6
Jun-19	0	0	0	0	0	0	0	0	0	0	0
Jul-19	0	0	0	0	0	0	0	0	0	0	0

Survey	Adult	Juvenile	First winter	Second winter	Third winter	Fourth winter	First summer	Second summer	Third Summer	Fourth summer	Unknown
Aug-19	0	0	0	0	0	0	0	0	0	0	0
Sep-19	0	0	0	0	0	0	0	0	0	0	5
Oct-19	0	0	0	0	0	0	0	0	0	0	0
Nov-19	0	0	0	0	0	0	0	0	0	0	0
Dec-19	0	0	0	0	0	0	0	0	0	0	0
Jan-20	0	0	0	0	0	0	0	0	0	0	0
Feb-20	0	0	0	0	0	0	0	0	0	0	0
Mar-20	0	0	0	0	0	0	0	0	0	0	0
Apr-20	0	0	0	0	0	0	0	0	0	0	0
May-20	0	0	0	0	0	0	0	0	0	0	10
Jun-20	0	0	0	0	0	0	0	0	0	0	0
Jul-20	0	0	0	0	0	0	0	0	0	0	0
Aug-20	0	0	0	0	0	0	0	0	0	0	1
Sep-20	0	0	0	0	0	0	0	0	0	0	0
Oct-20	0	0	0	0	0	0	0	0	0	0	1
Nov-20	0	0	0	0	0	0	0	0	0	0	0

Survey	Adult	Juvenile	First winter	Second winter	Third winter	Fourth winter	First summer	Second summer	Third Summer	Fourth summer	Unknown
Dec-20	0	0	0	0	0	0	0	0	0	0	0
Jan-21	0	0	0	0	0	0	0	0	0	0	0
Feb-21	0	0	0	0	0	0	0	0	0	0	0
Mar-21	0	0	0	0	0	0	0	0	0	0	0

Table E-10 Raw counts of guillemot by age classification across entire survey area.

Survey	Adult	Juvenile	First winter	Second winter	Third winter	Fourth winter	First summer	Second summer	Third Summer	Fourth summer	Unknown
Apr-19	0	0	0	0	0	0	0	0	0	0	25
May-19	0	0	0	0	0	0	0	0	0	0	8
Jun-19	0	0	0	0	0	0	0	0	0	0	1
Jul-19	0	0	0	0	0	0	0	0	0	0	5
Aug-19	0	0	0	0	0	0	0	0	0	0	0
Sep-19	0	0	0	0	0	0	0	0	0	0	0
Oct-19	0	0	0	0	0	0	0	0	0	0	0
Nov-19	0	0	0	0	0	0	0	0	0	0	0
Dec-19	0	0	0	0	0	0	0	0	0	0	0

Survey	Adult	Juvenile	First winter	Second winter	Third winter	Fourth winter	First summer	Second summer	Third Summer	Fourth summer	Unknown
Jan-20	0	0	0	0	0	0	0	0	0	0	0
Feb-20	0	0	0	0	0	0	0	0	0	0	0
Mar-20	0	0	0	0	0	0	0	0	0	0	0
Apr-20	0	0	0	0	0	0	0	0	0	0	0
May-20	0	0	0	0	0	0	0	0	0	0	15
Jun-20	0	0	0	0	0	0	0	0	0	0	8
Jul-20	0	0	0	0	0	0	0	0	0	0	0
Aug-20	0	0	0	0	0	0	0	0	0	0	0
Sep-20	0	0	0	0	0	0	0	0	0	0	2
Oct-20	0	0	0	0	0	0	0	0	0	0	0
Nov-20	0	0	0	0	0	0	0	0	0	0	35
Dec-20	0	0	0	0	0	0	0	0	0	0	403
Jan-21	0	0	0	0	0	0	0	0	0	0	54
Feb-21	0	0	0	0	0	0	0	0	0	0	86
Mar-21	0	0	0	0	0	0	0	0	0	0	115

Table E-11 Raw counts of razorbill by age classification across entire survey area.

Survey	Adult	Juvenile	First winter	Second winter	Third winter	Fourth winter	First summer	Second summer	Third Summer	Fourth summer	Unknown
Apr-19	0	0	0	0	0	0	0	0	0	0	0
May-19	0	0	0	0	0	0	0	0	0	0	1
Jun-19	0	0	0	0	0	0	0	0	0	0	0
Jul-19	0	0	0	0	0	0	0	0	0	0	4
Aug-19	0	0	0	0	0	0	0	0	0	0	1
Sep-19	0	0	0	0	0	0	0	0	0	0	0
Oct-19	0	0	0	0	0	0	0	0	0	0	4
Nov-19	0	0	0	0	0	0	0	0	0	0	0
Dec-19	0	0	0	0	0	0	0	0	0	0	0
Jan-20	0	0	0	0	0	0	0	0	0	0	0
Feb-20	0	0	0	0	0	0	0	0	0	0	0
Mar-20	0	0	0	0	0	0	0	0	0	0	0
Apr-20	0	0	0	0	0	0	0	0	0	0	3
May-20	0	0	0	0	0	0	0	0	0	0	0
Jun-20	0	0	0	0	0	0	0	0	0	0	0

Survey	Adult	Juvenile	First winter	Second winter	Third winter	Fourth winter	First summer	Second summer	Third Summer	Fourth summer	Unknown
Jul-20	0	0	0	0	0	0	0	0	0	0	0
Aug-20	0	0	0	0	0	0	0	0	0	0	1
Sep-20	0	0	0	0	0	0	0	0	0	0	1
Oct-20	0	0	0	0	0	0	0	0	0	0	0
Nov-20	0	0	0	0	0	0	0	0	0	0	31
Dec-20	0	0	0	0	0	0	0	0	0	0	463
Jan-21	0	0	0	0	0	0	0	0	0	0	1124
Feb-21	0	0	0	0	0	0	0	0	0	0	476
Mar-21	0	0	0	0	0	0	0	0	0	0	252

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Rampion 2
WIND FARM