

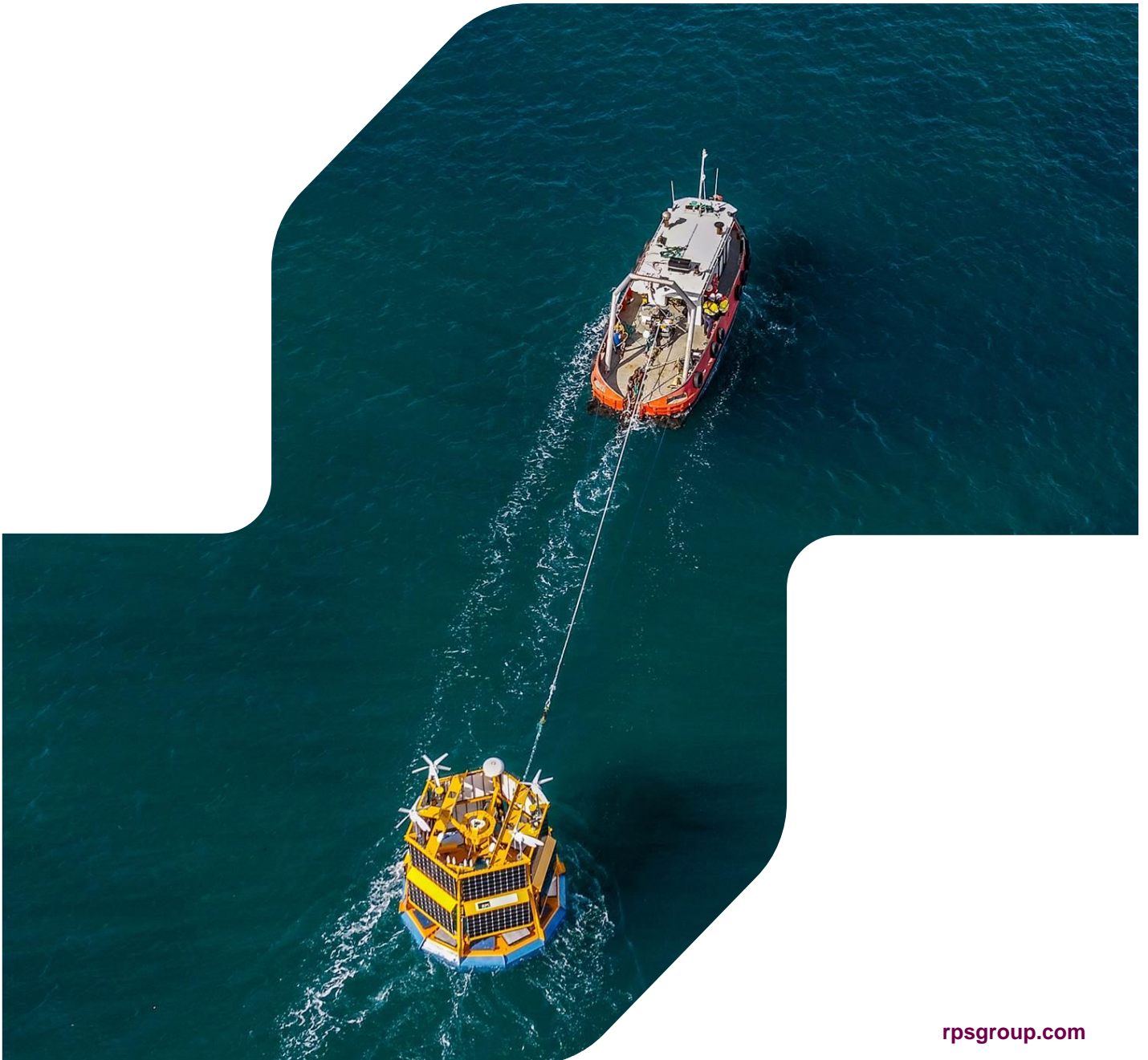
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MARINE ENERGY WALES

MARINE ENERGY TEST AREA (META)

Environmental Impact Baseline Information - Redacted
Marine Ornithology

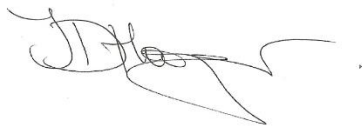


REPORT

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Jessica Hooper
12/12/19

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1 INTRODUCTION

On behalf of Marine Energy Wales (MEW), this report has been produced in order to provide details of the baseline data proposed to be used in the Environmental Impact Assessment (EIA) for the Marine Ornithology receptor group. It seeks to consult and agree with Natural Resources Wales (NRW) advisory services on the suitability of the proposed baseline data to support the Environmental Statement (ES).

No specific Marine Ornithology baseline studies were proposed within the META Scoping Report (16/11/2018) (section 6.5 - Marine Ornithology) with the baseline characterised through the collation and assessment of desk-based studies. This report describes the sources and findings of the information used to inform the marine ornithology baseline.

Although section 5.1 of the META Scoping Report lists the following site-specific surveys relating to ornithological features:

- Ornithology surveys, including over-wintering red-billed chough survey (to be undertaken Winter 2018/19).

as the META project design envelope now encompasses only offshore works (as discussed and agreed with NRW PS) and has no onshore component, the scope of any onshore surveys are no longer within the scope of the META project and are therefore no longer within the remit of Marine Energy Wales. No chough surveys have therefore been undertaken as part of the META project. No other ornithology surveys were proposed as part of the META Scoping Report.

Consultation with regulators and relevant stakeholders (NRW, PCC, and RSPB) has taken place in relation to Marine Ornithology (see Table 10.4 in Chapter 10). Further to consultation undertaken on 29 July 2019, NRW Advisory Services and RPSB requested that further context is provided in relation to the ESAS data presented in this report to illustrate general trends in relevant seabird populations in Wales and the UK and how these relate to numbers of animals within proximity of the Milford Haven Waterway (the Waterway). In addition, NRW Advisory Services requested further data on Little Grebe as a notified interest feature of the Milford Haven Waterway SSSI was provided in relation to Warrior Way (site 6).

2 STUDY AREA

The marine ornithology data search study area consists of a five km buffer (Figure 2.1) around the development, considered sufficient to encompass the zone of influence (Zoi) of the development on seabirds, taking account of the limited scale and duration of the works. The five km buffer encompasses marine habitats as this study is focused on marine birds.

Where Annex I species are identified within the marine ornithology data search study area, mean maximum foraging ranges of these species has been used to identify potentially connected designated sites for which they are qualifying interest features. This search area is referred to as the marine ornithology search area and extends up to 400 km around the proposed META project, based on fulmar mean-maximum foraging distance (Thaxter *et al.*, 2012; Soanes *et al.*, 2018).

The species identified during the desk-study and then considered within the Marine Ornithology EIA chapter (chapter 10) were those listed as notified interest features of any designated sites within the marine ornithology search area or marine ornithology data search study search area, as well as those that are listed under Schedule 1 of the WCA, Section 7 of the Environment Act (Wales) 2016, Red and Amber-listed Bird of Conservation Concern (Johnstone and Bladwell, 2016) or those that have occurred within the marine ornithology data search study area in numbers considered of national or international importance.

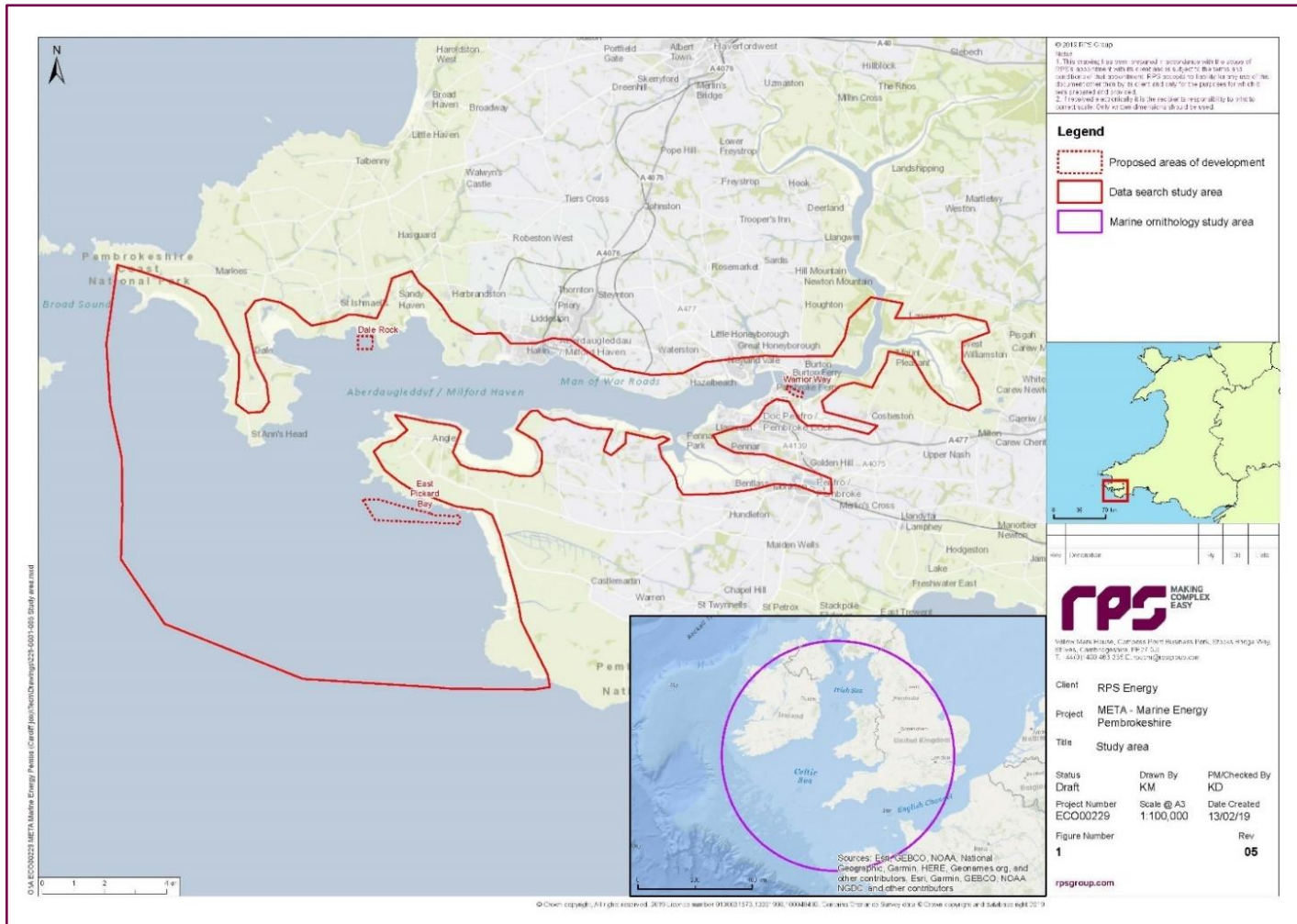


Figure 2.1: Marine ornithology data search area and marine ornithology search area

3 METHODS

3.1 Desk-based review

Information on birds within the marine ornithology search area and marine ornithology data search study area was collected through a detailed desktop review of existing studies and datasets. These are summarised in Table 3.1 below.

Table 3.1: Summary of key desktop reports.

Title	Source	Year	Author
Seabirds at Sea	Welsh Government & NRW: Lle – A Geo Portal for Wales	2017	NRW
West Wales Biodiversity Information Centre WWBIC sea and coastal bird data search	WWBIC	2009 - 2018	WWBIC
British Trust for Ornithology (BTO) Wetland Bird Survey	BTO	Low tide 2013/2014 Core counts 2012-2016	BTO
Wildfowl and wader counts on the Milford Haven Waterway 2017-18	Milford Haven Waterway Environmental Surveillance Group	2018	Annie Haycock
A review of the status of wetland birds in the Milford Haven Waterway and Daugleddau Estuary	Milford Haven Waterway Environmental Surveillance Group	2016	Annie Haycock

3.2 Identification of designated sites

All designated sites within the marine ornithology search area and marine ornithology data search study area that have qualifying interest features which could be affected by the installation, operation and maintenance, and decommissioning of the META project were identified using the three-step process described below:

- Step 1: All designated sites of international, national and local importance within the META project marine ornithology and data search study areas were identified (using sources including Lle maps, plus a data request search from WWBIC);
- Step 2: Information was compiled on the relevant features for each of these sites; and
- Step 3: Using the above information and expert judgement, sites were included for further consideration if:
 - *A designated site directly overlaps with the META project;*
 - *The ecology of a feature of an internationally designated site (i.e. species foraging range) directly overlaps with the META project; and*
 - *Sites and associated notified interest features are located within the potential ZoI for impacts associated with the META project.*

3.3 Identification of Species Data

In order to inform the marine ornithology impact assessment, a search was carried out for relevant species information within the data search study area, using the sources listed in Table 3.1. Further information regarding these data sources can be found in the following sections.

3.3.1 Seabirds at Sea

The Seabirds at Sea data are available as GIS layers showing the abundance and distribution of seabirds in Welsh waters and comprises data collated from European Seabirds at Sea (ESAS) and Wildfowl & Wetlands

Trust (WWT) Consulting databases. The datasets consist of the observations of all seabirds and derived grids, showing the density of flying and sitting species on a three km grid scale within the area covered¹.

3.3.2 Wetland Bird Survey Data

The Wetland Bird Survey (WeBS) monitors non-breeding water birds in the UK and follows standard methodology for both core counts and low tide counts. WeBS data was obtained from the British Trust for Ornithology (BTO) to inform this baseline. Visits are usually made once per month and records the numbers of water birds using the surveys sectors. The principal aims of WeBS are to identify population sizes, determine trends in numbers and distribution, and identify important sites for water birds. Both high tide core count data and low tide data were obtained Table 3.1).

Core count data were available at the Cleddau estuary scale. Due to the lack of small-scale spatial data associated with the BTO high tide core count data it was not possible to identify the individual locations of important high tide roosts within the estuary and in close proximity to the META project. However, the data provide a useful context for the assessment regarding the number of each receptor species present in the area surrounding the development.

3.3.3 Milford Haven Waterway Environmental Surveillance Group

Data were also obtained from the Milford Haven Waterway Environmental Surveillance Group (MHWESG). These data included wetland bird survey reports of the estuary compiled using data that followed BTO WeBS methodology. The following reports were used to inform this baseline (complete reports available in Appendix A):

- Haycock, A. (2019). A review of the status of wetland birds in the Milford Haven Waterway and Daugleddau Estuary, 2019. A report to the Milford Haven Waterway Environmental Surveillance Group;
- Haycock, A. (2018). Wildfowl and wader counts on the Milford Haven Waterway, 2017-18. A report to the Milford Haven Waterway Environmental Surveillance Group; and
- Haycock, A. (2016). A review of the status of wetland birds in the Milford Haven Waterway and Daugleddau Estuary, 2016. A report to the Milford Haven Waterway Environmental Surveillance Group.

These reports provided additional data to complement the WeBS data and included additional information regarding the spatial distribution of some species at high tide. The core count sectors are illustrated in Figure 3.1. Due to the geographic separation of many of the sectors from the vicinity of the development, all sectors, with the exception of Coshaston Pill, were discounted from this assessment.

¹ For the detailed methodology and the approach taken, see WWT Report “*Collating seabird distribution and abundance data in Welsh waters to support provision of strategic advice on the relative risk of deployment of tidal stream devices*”.

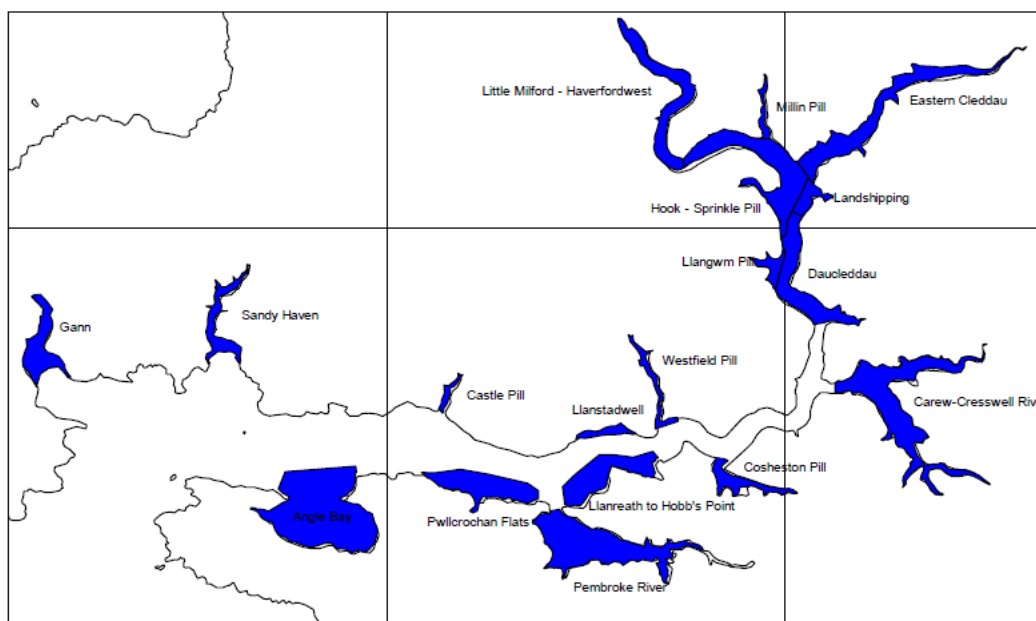


Figure 3.1 Location of core count sectors (indicated by shaded blue areas)

Further information regarding data sources can be found in Table 3.2 as informed by RSPB guidance on the use of bird data in marine planning.

Table 3.2: Further information regarding data sources used within marine ornithology assessment.

Title	Description	Dataset Owner	Relevant Season	What it shows	Confidence and Limitations
<i>European Seabirds at Sea (ESAS)</i>	ESAS data was amalgamated from a long-running programme of survey and research work on seabirds in the marine environment in the north-east Atlantic since 1979, and in the southwest Atlantic between 1998 and 2002 (cetacean data collected during this period is also available from JNCC). This data set recorded a wide range of seabirds, divers and seaducks.	JNCC/NRW	All – can be split into spring passage, breeding, post breeding autumn passage and wintering. Data from all seasons must be used in marine planning.	Location and seasonality of important aggregations of seabirds offshore, including spring passage, breeding, autumn passage and wintering.	Medium confidence - this data was collected over a large time period and remains one of the most comprehensive and important data sets on seabird distribution, which is a major strength. It was, however, traditionally collected on an ad-hoc basis, which means that there are significant spatial and temporal gaps, including large areas of sea that have never been surveyed, and the dataset is also relatively old. Can be supplemented by more detailed data, e.g. tern-at sea data.
The Wetland Bird Survey (WeBS)	An annual scheme of counts at 2,000 coastal and wetland sites between September and March. At least 1,100 of these sites are monitored regularly (monthly) during this period and some sites are monitored year-round.	British Trust for Ornithology (BTO), RSPB and JNCC in association with the Wildfowl and Wetlands Trust.	Spring passage, autumn passage, winter	Abundance and distribution of waterbird populations, coastal and wetland locations of importance for waterbirds.	Medium to high confidence – some less visible species likely to be underrepresented and counts of gulls are optional.

3.3.4 Site specific surveys

No site-specific surveys have been undertaken to inform the EIA for marine ornithology, as per the META Scoping Report (November 2018).

4 BASELINE INFORMATION

4.1 Designated Sites

Designated sites identified for the META project marine ornithology impact assessment are described in Table 4.1 below and illustrated in Figure 4.1 (Note that only those Sites of Special Scientific Interest (SSSIs) with ornithological features within the Zone of Influence (ZoI) were considered within this report).

Those features shaded in grey in Table 4.1 are species whose foraging ranges do not overlap with the META project and so have been screened out due to lack of receptor-impact pathway. All other features are species whose foraging range does overlap with the META project and are considered further in this baseline review.

The distance of the designated sites from the proposed developments were then measured using QGIS².

² QGIS Development Team (2019). QGIS Geographic Information System. Open Source Geospatial Foundation Project. <http://qgis.osgeo.org>

Table 4.1: Designated sites and relevant qualifying interest features for the META project marine ornithology.

Designated Site	Relevant qualifying marine bird interest features	Mean Max foraging range for relevant season (where available) based on Thaxter <i>et al.</i> (2012)	Closest Distance to META sites (km)		
			Warrior Way	Dale Roads	East Pickard Bay
Skomer, Skokholm and the seas off Pembrokeshire/Sgomer, Sgogwm a Moroedd Penfro SPA	Atlantic puffin <i>Fratercula arctica</i>	105.4 km	6.5	4.5	8
	European storm petrel <i>Hydrobates pelagicus</i>	65 km			
	Lesser black-backed gull <i>Larus fuscus</i>	141 km			
	Manx shearwater <i>Puffinus puffinus</i>	330 km			
	Razorbill <i>Alca torda</i>	48.5 km			
	Common guillemot <i>Uria aalge</i>	84.2 km			
Black-legged kittiwake <i>Rissa tridactyla</i>	60 km				
Grassholm SPA	Gannet <i>Morus bassanus</i>	229.4 km	36	22	23
Aberdaron Coast and Bardsey Island/Glannau Aberdaron ac Ynys Enlli SPA	Manx shearwater <i>Puffinus puffinus</i>	330 km	116	117	121
Irish Sea Front SPA	Manx shearwater <i>Puffinus puffinus</i>	330 km	212	211	216
Lambay Island SPA	Fulmar <i>Fulmarus glacialis</i>	400 km	211	205	210
	Cormorant <i>Phalacrocorax carbo</i>	25 km			
	Shag <i>Phalacrocorax aristotelis</i>	14.5 km			
	Lesser Black-backed Gull <i>Larus fuscus</i>	141 km			
	Herring Gull <i>Larus argentatus</i>	61.1 km			
	Kittiwake <i>Rissa tridactyla</i>	60 km			
	Guillemot <i>Uria aalge</i>	84.2 km			
	Razorbill <i>Alca torda</i>	48.5 km			
Puffin <i>Fratercula arctica</i>	105.4 km				

Designated Site	Relevant qualifying marine bird interest features	Mean Max foraging range for relevant season (where available) based on Thaxter <i>et al.</i> (2012)	Closest Distance to META sites (km)		
Saltee Islands SPA	Fulmar <i>Fulmarus glacialis</i>	400 km	123	110	113
	Gannet <i>Morus bassanus</i>	229.4 km			
	Cormorant <i>Phalacrocorax carbo</i>	25 km			
	Shag <i>Phalacrocorax aristotelis</i>	14.5 km			
	Lesser Black-backed Gull <i>Larus fuscus</i>	141 km			
	Herring Gull <i>Larus argentatus</i>	61.1 km			
	Kittiwake <i>Rissa tridactyla</i>	60 km			
	Guillemot <i>Uria aalge</i>	84.2 km			
	Razorbill <i>Alca torda</i>	48.5 km			
	Puffin <i>Fratercula arctica</i>	105.4 km			
Rathlin Island SPA	Guillemot <i>Uria aalge</i>	84.2 km	405	400	404
	Razorbill <i>Alca torda</i>	48.5 km			
	Kittiwake <i>Rissa tridactyla</i>	60 km			
	Puffin <i>Fratercula arctica</i>	105.4 km			
	Herring gull <i>Larus argentatus</i> ,	61.1 km			
	Lesser black-backed gull <i>Larus fuscus</i>	141 km			
	Common gull <i>Larus canus</i>	50 km			
	Fulmar <i>Fulmarus glacialis</i> ,	400 km			
Carmarthen Bay/Bae Caerfyrddin SPA	Common scoter <i>Melanitta nigra</i> (Winter)	No data. Birds restricted to low disturbance suitable foraging habitat in winter (shallow <20 m sandy substrate). Unlikely to be connected.	15.5	29	26
Northern Cardigan Bay/Gogledd Bae Ceredigion pSPA	Red-throated diver <i>Gavia stellata</i> (Winter)	N/A Winter habitats include sheltered inshore waters, sandy bays and sandbanks offshore, as well as tidal rips and fronts. They forage where water depth is less than 30 m. Winter home ranges vary significantly but can be very large (Dierschke <i>et al.</i> , 2017; LPO, 2018). They are sensitive to disturbance and avoid human activity. As	88	94	98

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Designated Site	Relevant qualifying marine bird interest features	Mean Max foraging range for relevant season (where available) based on Thaxter <i>et al.</i> (2012)	Closest Distance to META sites (km)		
Milford Haven Waterway SSSI	The saltmarsh and mudflats within the Haven support significant numbers of over-wintering wildfowl and waders, including Curlew, Dunlin, Little Grebe, Shelduck, Teal and Wigeon. Little Grebe is listed as a feature of this site.	such they are considered unlikely to be connected based on habitat and the existing levels of disturbance.	0	0.1	1.6
Broomhill Burrows SSSI	Lapwings breed within the dune slacks		8.6	7.5	0.5
Castlemartin Range SSSI	Outside the breeding season, significant numbers of waders and gulls roost and feed in the sandy bays at Frainslake and Bluckspool. These often include up to several hundred lesser black-backed gulls, and smaller flocks of oystercatcher <i>Haematopus ostralegus</i> , curlew <i>Numenius arquata</i> , dunlin <i>Calidris alpina</i> and grey plover <i>Pluvialis squatarola</i> . Migratory flocks of whimbrel <i>N. phaeopus</i> and other wader species regularly occur along the coast and, in winter, large numbers of lapwing <i>Vanellus vanellus</i> and golden plover <i>P. apricaria</i> feed and roost within the Range.		10.8	7.4	1.1

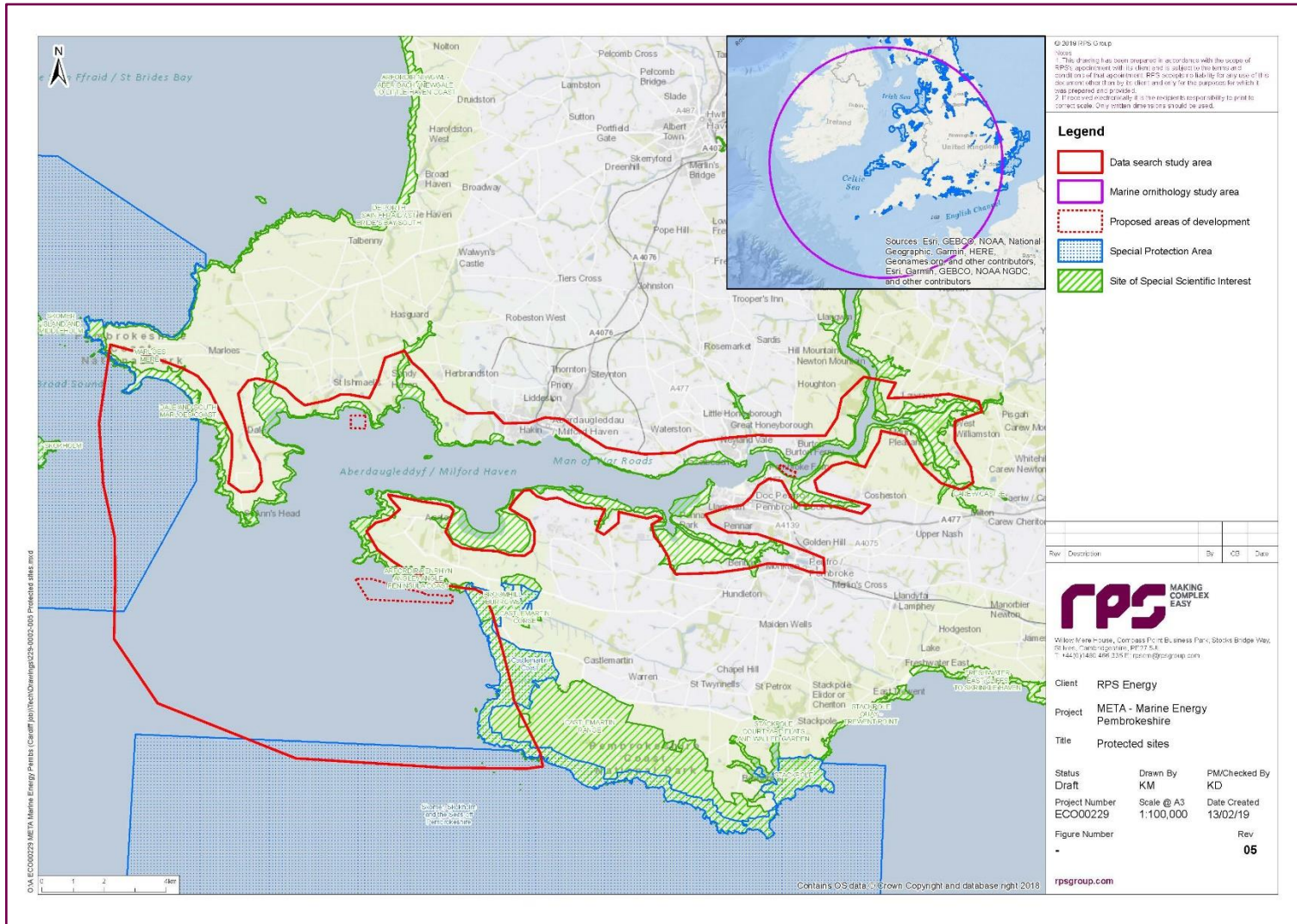


Figure 4.1: Protected sites located within marine ornithology study area and data search study area.

4.2 Species Data

4.2.1 Overview

Species records identified within the marine ornithology desk study search area are detailed in Table 4.2. A total of nine species were identified that are also notified interest features of the SPAs as outlined in Table 4.2, either qualifying under (i) Article 4.1 of the Directive (2009/147/EC) by supporting populations of European importance listed on Annex I of the Directive; (ii) Article 4.2 of the Directive (2009/147/EC) by supporting populations of European importance of migratory species; or (iii) forming part of a seabird assemblage of international importance under Article 4.2. Further, little grebe was identified as a species of interest within the study search areas as it is listed as a wintering feature of Milford Haven Waterway SSSI, which is located within the search area.

An overview of results from all data sources can be found in Table 4.1, with further detailed results from each data set in the following sections.

Table 4.2: Overview of species data results

Species	Data source (Peak values in study area)					Closest distance to META sites (km). Density of birds (number per 3 km ²) at closest distance is given in brackets for ESAS data and peak counts for BTO / WWBIC data.			Qualifying Interest Feature of a SPA (Y/N)	Species legislation/ conservation status ³	Nationally important numbers (number of animals) ⁴
	ESAS (densities per 3km ²)	WWBIC (Counts)	BTO WeBS Peak Count (low tide count)	BTO WeBS Peak Count ⁵ (core count)	MHWESG Report 2017-2018 (high tide)	East Pickard Bay (site 8)	Dale Roads (site 7)	Warrior Way (site 6)			
Guillemot	1.2					0.0 (0.4)	0.0 (0.5)	7.3 (0.4)	Y	Amber	Not Available
Puffin	14.5					1.5 (0.5)	0.0 (0.5)	13.7 (0.5)	Y	Red	Not Available
Razorbill	1.8					2.5 (0.2)	3.8 (0.2)	11.2 (2.8)	Y	Amber	Not Available
Shag	0.2					0.3 (0.2)	5.9 (0.2)	11.2 (0.2)	N	Amber	No 1100/2000
		3				1.7 (3)	8.0 (3)	10.1 (3)			
Cormorant	2					0.3 (1)	6.0 (1)	11 (2)	N	Amber	No 350/1200
			24			4.5 (2)	2.0 (2)	0.0 (2)			
				28							
Gannet	2					0.0 (0.1)	0.0 (0.04)	7.3 (0.2)	Y	Amber	Not Available

³ WCA Sch1: Wildlife and Countryside Act 1981 Schedule 1; BirdsDir: Birds Directive (Annexes 1, 2.1 and 2.2); Env (Wales) Act S7: Species of Principal Importance in Wales (section 7); Bern: Bern Convention (Appendices 1, 2 and 3); Red/Amber: Birds of Conservation Concern in Wales 3 (Johnstone and Bladwell, 2016)

⁴ Obtained from BTO (2019) available here <https://www.bto.org/our-science/projects/webs/data/species-threshold-levels>

⁵ Data considered includes records from birds regularly using the site i.e. present in 75% of records

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Species	Data source (Peak values in study area)	Closest distance to META sites (km). Density of birds (number per 3 km ²) at closest distance is given in brackets for ESAS data and peak counts for BTO / WWBIC data.			Qualifying Interest Feature of a SPA (Y/N)	Species legislation/ conservation status ³	Nationally important numbers (number of animals) ⁴	
		6	0.3 (1)	6.0 (1)				10.4 (6)
Kittiwake	1		0.0 (0.08)	0.0 (0.02)	13.3 (0.02)	Y	Red	Not Available
Little Egret	2		1.3 (2)	7.3 (2)	10.5 (2)	N	BirdsDir-A1	Yes 35/140
		27	1.8 (1)	1.5 (2)	0 (2)			
		39						
Grey Heron		11	2 (1)	5.5 (1)	0 (2)	N		No 610/2700
		18						
Little Grebe		26	1.6 (2)	1.5 (1)	0 (2)	N		No 160/3900
		34						
Great Crested Grebe		36	2.1 (24)	4.5 (24)	3.5 (12)	N		No 190/3500
		28						
Slavonian Grebe							BirdsDir-A1; WACA-Sch1_part1; Red	No 11/55
Moorhen		1	6.5 (1)	2.8 (1)	16.6 (1)	N		No 3200/20000
		20						
Herring Gull	8.7		0.25 (0.21)	0 (0.58)	0 (8.7)	Y	BirdsDir-A2.2	No

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Species	Data source (Peak values in study area)	Closest distance to META sites (km). Density of birds (number per 3 km ²) at closest distance is given in brackets for ESAS data and peak counts for BTO / WWBIC data.			Qualifying Interest Feature of a SPA (Y/N)	Species legislation/ conservation status ³	Nationally important numbers (number of animals) ⁴
		2000	2005	2010			
Lesser Black-backed Gull	28	1.7 (25)	8 (25)	11 (25)	Y	BirdsDir-A2.2 ; Amber	No 1200/5500
	304	5.1 (33)	1.5 (33)	0 (14)			
	2647						
Great Black-backed Gull	0.8	0 (0.5)	0 (0.14)	0.2 (7.4)	N	BirdsDir-A1; Red	No 760/4200
	120	1.7 (120)	8 (120)	11 (120)			
	166	5.1 (68)	1.5 (68)	1.9 (29)			
	655						
Mediterranean Gull	1.2	0 (0.08)	0 (0.3)	4.3 (1.2)	Y	BirdsDir-A1; WACA-Sch1_part1	No 18/770
	80	2.8 (80)	9 (80)	11 (80)			
	49	5.1 (58)	1.5 (68)	1.9 (29)			
	39						
Common Gull	0.27	0.4 (0.15)	0 (0.24)	4.3 (0.2)	Y	BirdsDir-A1; Red	No 7000/16400
	3	1.7 (3)	8 (3)	11 (25)			
Black-headed Gull	0.6	0.4 (0.07)	0 (0.02)	4.3 (0.6)	N	Red	No 22000/20000
	28	1.7 (28)	8 (28)	11(28)			
	520	1.7 (28)	8 (28)	10.1 (28)			

Species	Data source (Peak values in study area)	Closest distance to META sites (km). Density of birds (number per 3 km ²) at closest distance is given in brackets for ESAS data and peak counts for BTO / WWBIC data.			Qualifying Interest Feature of a SPA (Y/N)	Species legislation/ conservation status ³	Nationally important numbers (number of animals) ⁴
	2281						
Iceland Gull							
Common/Arctic Tern	0.03	4.6 (0.03)	6.3 (0.01)	18 (0.03)	N	Common: BirdsDir-A1; Amber Arctic: Bern-A2; BirdsDir-A1; Red	No Common – International 1800 Arctic – International 20000
Sandwich Tern	3	1.3 (2)	7.3 (2)	10.5 (2)	N	BirdsDir-A1; Amber	No International - 1700
Manx Shearwater	0.6	0 (0.4)	2.5 (0.1)	13.5 (0.4)	Y	Amber	Not Available
Fulmar	0.3	0 (0.3)	0 (0.04)	10.3 (0.2)	Y	Amber	Not Available
Red-throated Diver	1	1.7 (1)	8.0 (1)	11 (1)	N	WCA Sch1 part1; BirdsDir-A1; Amber	No 170
Great Northern Diver	2	2.3 (2)	8.3 (2)	12.5 (2)	N	WCA Sch1; BirdsDir-A1; Amber	No 25/50
Curlew	75	1.4 (55)	7.5 (55)	10.5 (55)	N	BirdsDir-A2.2; Env (Wales) Act S7; Red	Yes 1400/8400
	798	1.6 (73)	1.5 (5)	0.0 (8)			
	1795						
Whimbrel	1	0.1 (1)	5.2 (1)	10.1 (1)	N	WCA Sch1 part1; BirdsDir-A2.2; Amber	Yes 1/6700

Species	Data source (Peak values in study area)	Closest distance to META sites (km). Density of birds (number per 3 km ²) at closest distance is given in brackets for ESAS data and peak counts for BTO / WWBIC data.	Qualifying Interest Feature of a SPA (Y/N)	Species legislation/ conservation status ³	Nationally important numbers (number of animals) ⁴
Dunlin	312	1.2 (10) 7.3 (10) 10.5 (10)	N	Red	Yes 3500/13300
	1922	1.6 (15) 4.0 (160) 0.0 (20)			
	4378				
Curlew Sandpiper	2	3.0 (2) 6.5 (2) 8.5 (2)	N	Amber	No International 10000
Purple Sandpiper	1	1.7 (1) 8.0 (1) 11.0 (1)	N	WCA Sch1 part1; Amber	No 130/710
Common Sandpiper				Red	Yes 1/17,500
Grey Plover	54	1.4 (47) 7.4 (47) 10.4 (47)	N	BirdsDir-A2.2; Red	No 430/2500
	8	8.9 (1) 12.2 (1) 3.0 (1)			
	72				
American Golden Plover					Not Available
Golden Plover	1500	14.8 (750) 16.5 (750) 3.0 (750)	N	BirdsDir-A1, Red	Yes 4000/9300
	5000				
Ringed Plover	32	1.7 (32) 8.0 (32) 11.1 (32)	N	Env (Wales) Act S7; Red	No 340/730
	46				
Greenshank	21	8.9 (1) 1.5 (1) 0.0 (2)	N	BirdsDir-A2.2	Yes

Species	Data source (Peak values in study area)	Closest distance to META sites (km). Density of birds (number per 3 km ²) at closest distance is given in brackets for ESAS data and peak counts for BTO / WWBIC data.			Qualifying Interest Feature of a SPA (Y/N)	Species legislation/ conservation status ³	Nationally important numbers (number of animals) ⁴
	20						6/2300
Redshank	1	1.5 (1)	7.5 (1)	10.5 (1)	N	BirdsDir-A2.2; Red	No 1200/2400
	186	1.6 (12)	1.5 (5)	0.0 (15)			
	650						
Spotted Redshank						Amber	Yes 1/850
Ruff						Schedule 1 - Part 1; Amber	No 8/12200
Lapwing	250	0.75 (>50)	6.9 (>50)	10.9 (>50)	N	BirdsDir-A2.2; Env (Wales) Act S7; Red	Yes 6200/20000
	2285	1.6 (2)	2.8 (5)	0.0 (30)			
	6585						
Oystercatcher	170	1.8 (53)	8.0 (53)	11.1 (53)	N	BirdsDir-A2.2; Amber	No 3200/8200
	404	1.6 (46)	1.5 (9)	0.0 (3)			
	495						
Knot						Red	No 3200/4500
Sanderling	8	1.3 (6)	7.3 (6)	10.5 (6)	N	Amber	No 160/1200
Jack Snipe						Amber	No

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Species	Data source (Peak values in study area)	Closest distance to META sites (km). Density of birds (number per 3 km ²) at closest distance is given in brackets for ESAS data and peak counts for BTO / WWBIC data.	Qualifying Interest Feature of a SPA (Y/N)	Species legislation/ conservation status ³	Nationally important numbers (number of animals) ⁴
					1000/20000
Snipe	>100	2.8 (>100) 9.0 (>100) 11.0 (>100)	N	BirdsDir-A2.1; Amber	No 10000/20000
	51	8.5 (26) 11.8 (26) 0.5 (1)			
	100				
Turnstone	9	1.7 (9) 8.0 (9) 11.1 (9)	N	Amber	No 480/1400
	44	1.6 (1) 4.8 (1) 1.1 (29)			
	81				
	28				
Bar Tailed Godwit	49	1.6 (2) 4.5 (7) 0.0 (7)	N	Red	No 380/1200
	107				
Black-tailed Godwit	72	11.6 (12) 14.0 (12) 0.0 (12)	N	Schedule 1 - Part 1; Amber	No 430/610
	97				
	81				
Brent Goose – Light-bellied	45	2 (21) 2.9 (26) 8.4 (24)	N	Amber	Yes 34 (Nationally) 75 (Internationally)
	86				
Bar-headed Goose					Not Available
Mute Swan	41	2 (8) 1.5 (1) 0 (2)	N		No 740/320
	81				

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Species	Data source (Peak values in study area)	Closest distance to META sites (km). Density of birds (number per 3 km ²) at closest distance is given in brackets for ESAS data and peak counts for BTO / WWBIC data.	Qualifying Interest Feature of a SPA (Y/N)	Species legislation/ conservation status ³	Nationally important numbers (number of animals) ⁴
Greylag Goose	61		N		No 850/980
Canada Goose					Not Available
Shelduck	1	1.7 (1) 5.3 (1) 10.0 (1)	N	Amber	No 610/3000
	318	1.6 (1) 4.1 (13) 0.0 (16)			
	486				
Teal	26	1.8 (26) 8.0 (26) 11.1 (26)	N	BirdsDir-A2.1; Amber	Yes 2100/5000
	2205	5.6 (34) 1.5 (34) 0.0 (15)			
	3818				
Mallard	88	2.0 (2) 4.0 (4) 0.0 (6)	N	Amber	No 6800/45000
	321				
Shoveler	19	7.5 (2) 10.3 (2) 3.8 (2)	N	BirdsDir-A2.1; Amber	No 180/400
Wigeon	26	2.8 (26) 9.1 (26) 11.2 (26)	N	BirdsDir-A2.1; Amber	Yes 4400/15000
	5213	1.6 (20) 1.6 (88) 0.0 (300)			
	4544				
Pintail	5	3 (5) 6.5 (5) 8.5 (5)	N		No

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Species	Data source (Peak values in study area)	Closest distance to META sites (km). Density of birds (number per 3 km ²) at closest distance is given in brackets for ESAS data and peak counts for BTO / WWBIC data.	Qualifying Interest Feature of a SPA (Y/N)	Species legislation/ conservation status ³	Nationally important numbers (number of animals) ⁴
				WCA Sch1 part2; BirdsDir-A2.1; Amber	290/600
Scaup	1	7.5 (1) 10.5 (1) 3.8 (1)	N	BirdsDir-A2.2 Amber	No 52/3100
Common Scoter				Schedule 1 - Part 1; Amber	No 1000/5500
Gadwall					No 250/600
Red-breasted Merganser				Amber	No 84/1700
Goldeneye	5	6.5 (5) 2.8 (5) 16.5 (5)			No
	10		N		200/11400
Kingfisher				BirdsDir-A1; WACA-Sch1_	No 2000

4.2.2 ESAS Data

Bird species identified within the ESAS data set comprised both diving and pelagic species, namely:

- Guillemot;
- Puffin;
- Razorbill;
- Shag;
- Gannet;
- Kittiwake;
- Fulmar; and
- Manx shearwater.

In addition, five gull species were also recorded (lesser black-backed gull, great black-backed gull, black-headed gull, common gull and herring gull), as well as common and Arctic tern. The densities and distribution of data for the species identified can be found in Figure 4.4 - Figure 4.8 below. Table 4.3 and Table 4.4 provide details of the highest observed ESAS sitting and flying densities around the proposed project sites for the species identified above.

The majority of species identified within the ESAS data set were present in relatively low densities of up to two birds per 3 km², with the exception of puffin which had a peak density of 14.5 per 3 km². Gannet, kittiwake, fulmar and guillemot were present at East Pickard Bay (site 8) and Dale Roads (site 7) with puffin and Manx shearwater also having overlapping densities with Dale Roads (site 7). Based on the ESAS data, none of these species were presented at Warrior Way (site 6) (Figure 4.2 and Figure 4.3).

Five gull species were identified within the marine ornithology data search study area including:

- black-headed gull;
- common gull;
- great black-backed gull;
- lesser black-backed gull; and
- herring gull.

All of these species were recorded at densities of up to two birds per km² with the exception of herring gull which was recorded at nine per km². All species were recorded at Dale Roads (site 7) with great and lesser black-backed and herring gull also recorded at East Pickard Bay (site 8). Black-headed gull, common gull, herring gull and unidentified gull were also present within the vicinity of Warrior Way (site 6), all at very low flying densities (less than 0.56 birds per km², Figure 4.2).

Common and Arctic tern were also recorded within the marine ornithology data search study area at low densities of 0.03 per km². No records of these species were identified within the proposed test site locations.

Table 4.3: Highest observed seabird sitting densities within the data search area (ESAS, 1998-2002)

Species	Sitting Density (animals per 3 km²)
Fulmar	0.33
Gannet	0.96
Manx Shearwater	0.37
Black-headed Gull	0.56
Common Gull	0.24
Herring Gull	0.56
Greater Black-backed Gull	0.12
Lesser Black-backed Gull	0.77
Unidentified Gull	1.70
Kittiwake	0.20

Table 4.4: Highest observed seabird flying densities around the proposed project sites (ESAS, 1998-2002)

Species	Sitting Density (animals per 3 km²)
Unidentified gull	2.03
Guillemot	0.71
Puffin	0.50
Razorbill	0.16
Shag	0.15

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Species	Sitting Density (animals per 3 km ²)
Shag/Cormorant	0.08
Gannet	0.04
Common Gull	0.27

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Figure 4.2: ESAS data results for black-headed gull, common gull and herring gull (flying) around Warrior Way (site 6). Density of animals per 3 km² provided within each density block.

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Figure 4.3: ESAS data results for unidentified gull (flying) around Warrior Way (site 6). Density of animals per 3 km² provided within each density block

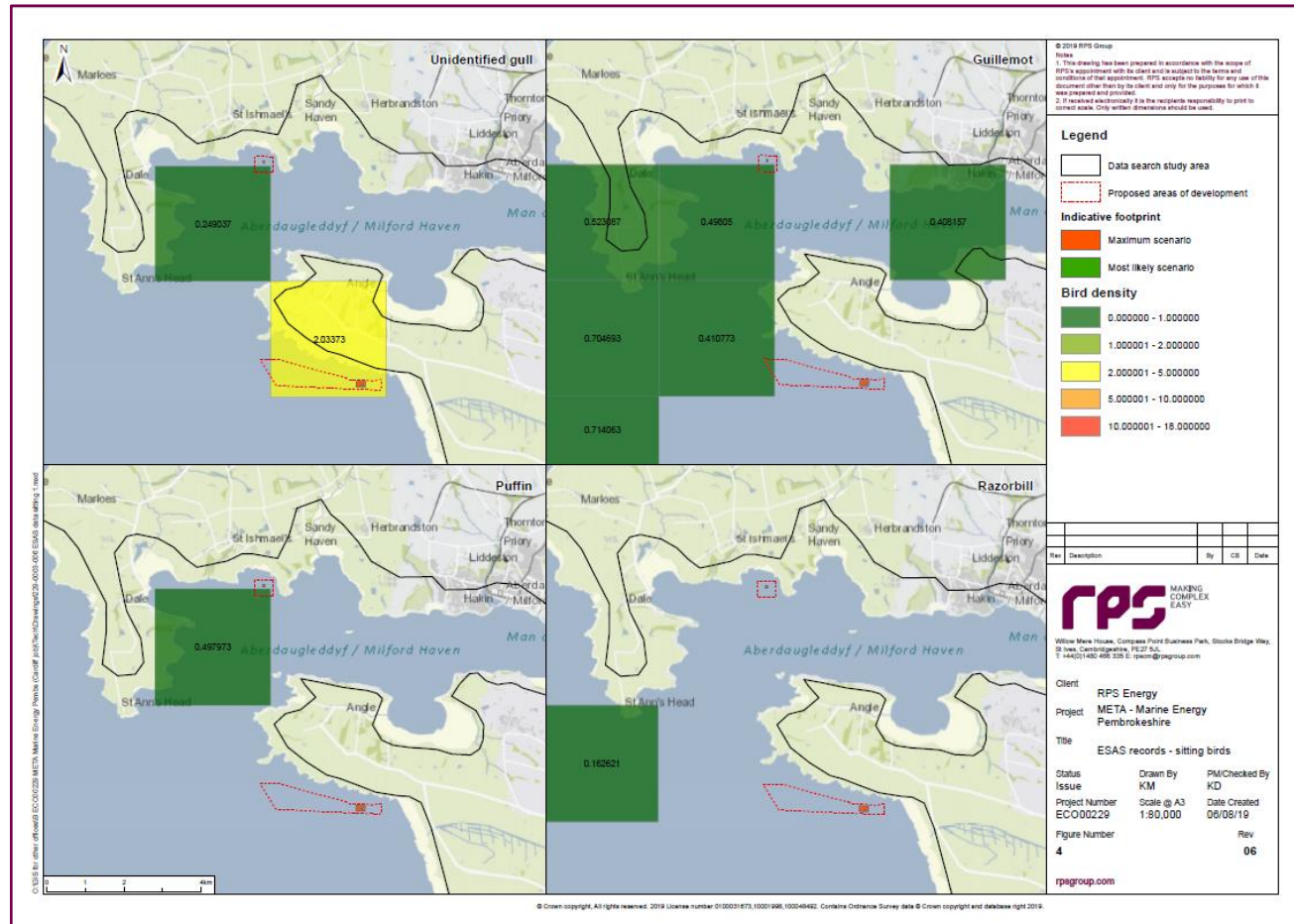


Figure 4.4: ESAS data results for unidentified gulls, guillemot, puffin and razorbill (sitting birds) around Dale Roads (site 7) and East Pickard Bay (site 8). Density of animals per 3 km² provided within each density block.

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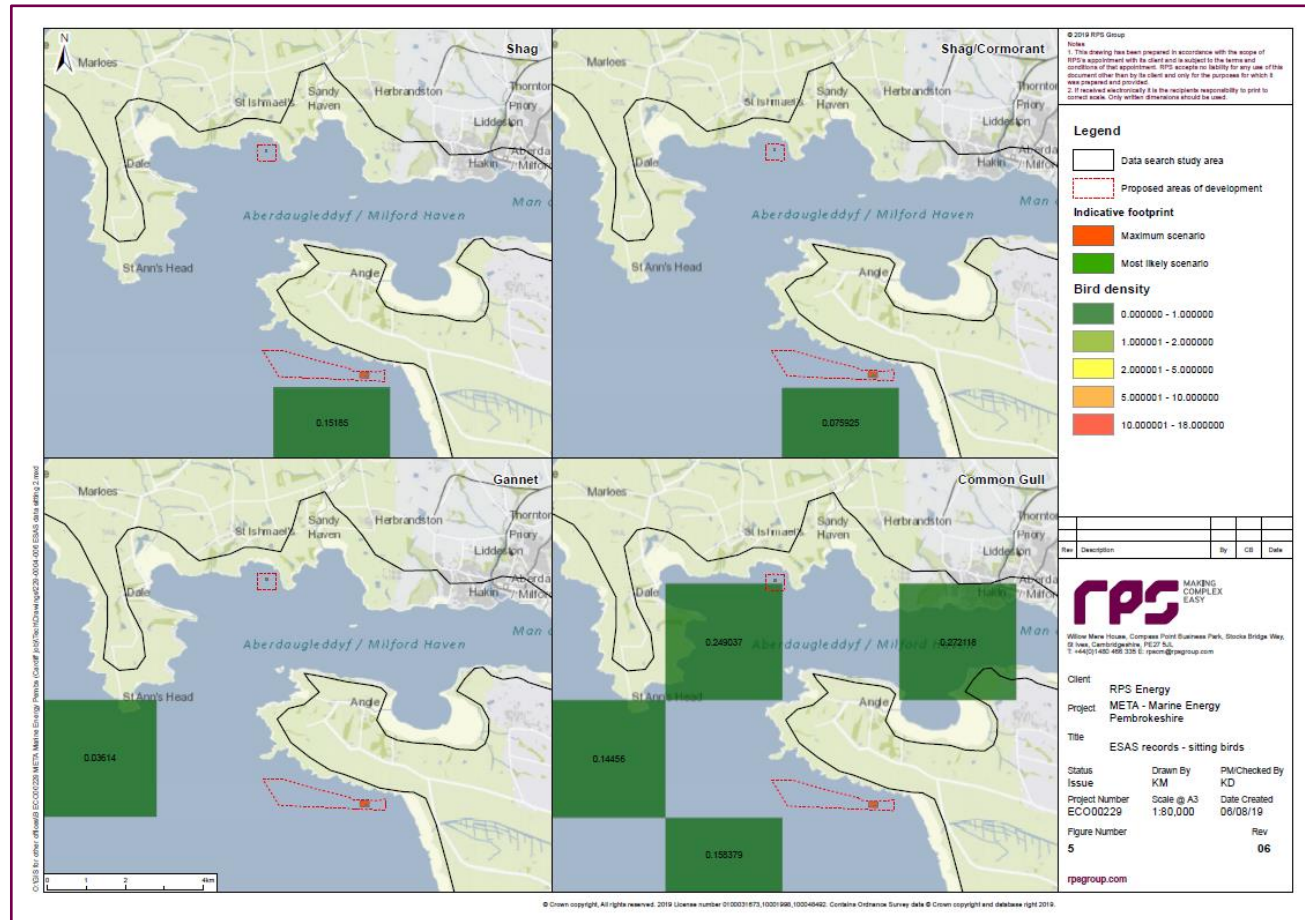


Figure 4.5: ESAS data results for shag, cormorant, gannet and common gull (sitting) around Dale Roads (site 7) and East Pickard Bay (site 8). Density of animals per 3 km² provided within each density block.

REPORT

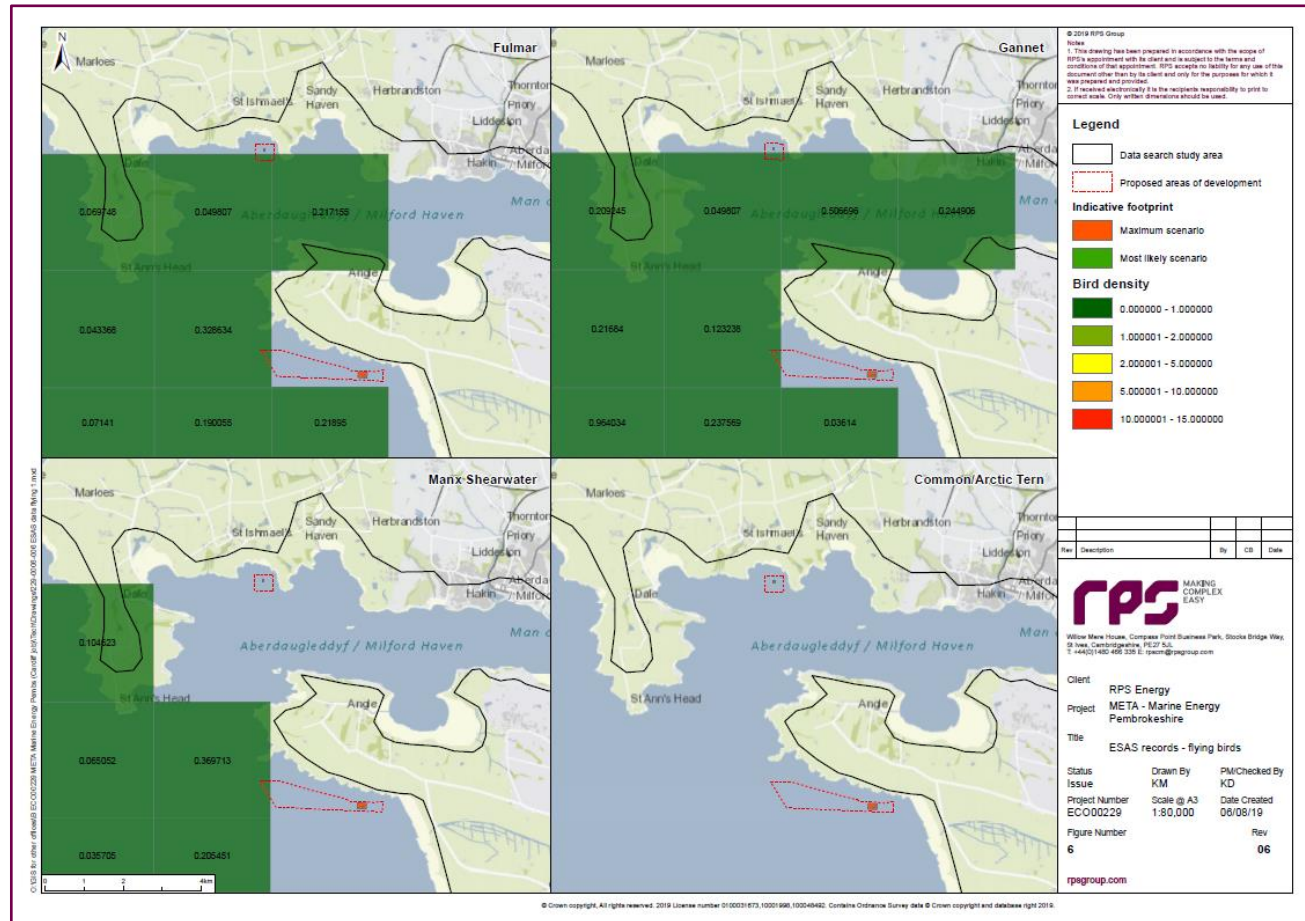


Figure 4.6: ESAS data results for fulmar, gannet, Manx shearwater and common Arctic tern (flying) around Dale Roads (site 7) and East Pickard Bay (site 8). Density of animals per 3 km² provided within each density block.

REPORT

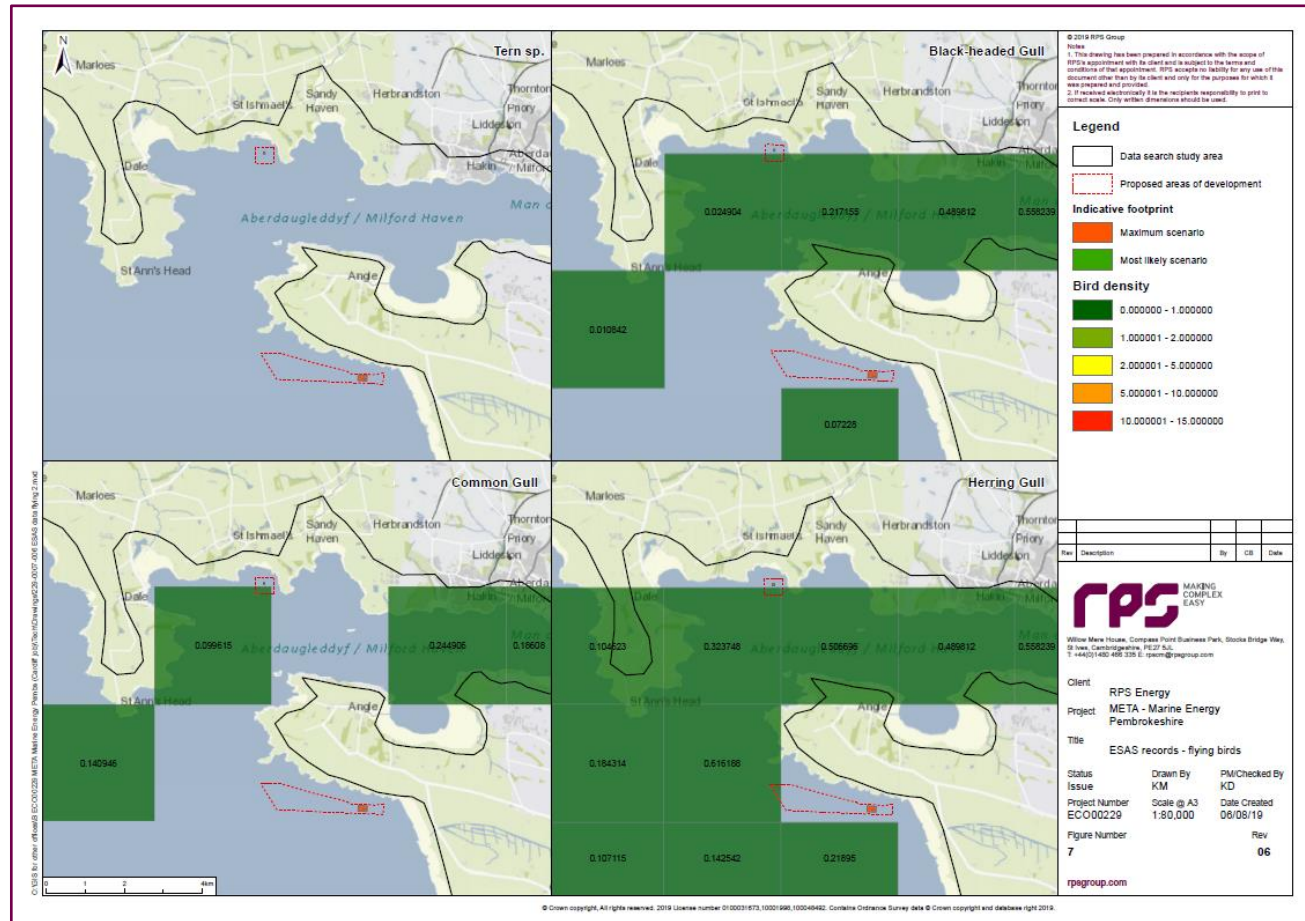


Figure 4.7: ESAS data results for tern sp., black-headed gull, common gull and herring gull (flying) around Dale Roads (site 7) and East Pickard Bay (site 8). Density of animals per 3 km² provided within each density block.

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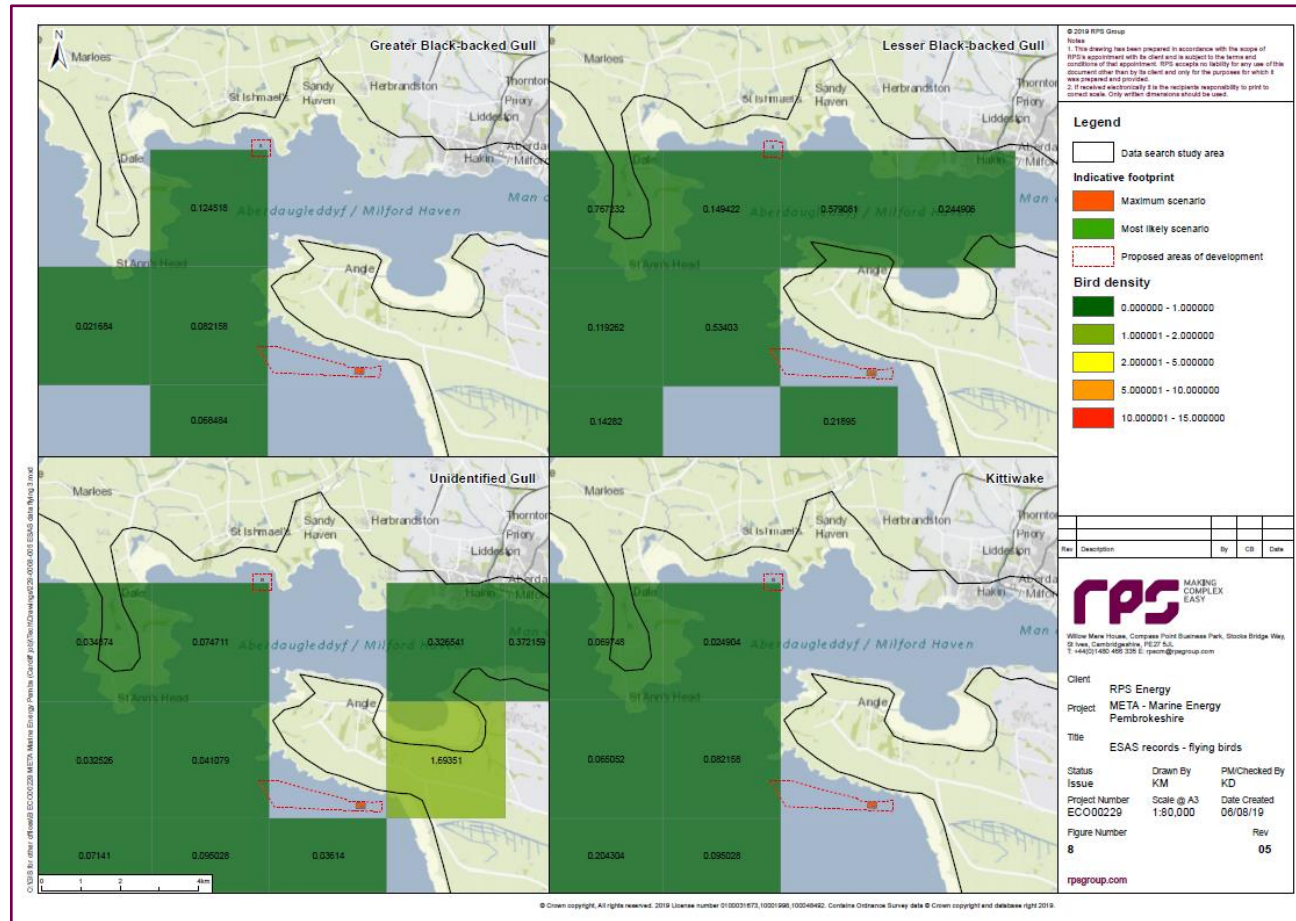


Figure 4.8: ESAS data results for great black-backed gull, lesser black-backed gull, unidentified gull and kittiwake (flying) around Dale Roads (site 7) and East Pickard Bay (site 8). Density of animals per 3 km² provided within each density block.

4.2.3 Seabird Trends Since ESAS

As the ESAS programme gathered data between 1998 and 2002, there is the potential for seabird populations to have changed since this data was collected. To account for possible changes in species data in relation to the META project, estimated changes to relevant species populations (species that have been scoped in for further assessment where a potential receptor-impact pathway exists in relation to the META project) have been calculated, based on population trends. Population trends have been sourced from the Seabird Monitoring Programme (SMP) dataset, an ongoing annual monitoring programme of 25 species of seabird that regularly breed in Britain and Ireland. Established in 1986, the SMP is led and co-ordinated by JNCC in partnership with multiple organisations such as British Trust for Ornithology (BTO), Natural Resources Wales (NRW), Natural England (NE) and Royal Society of the Protection of Birds (RSPB).

The Seabird Monitoring Programme (SMP) dataset has been used to calculate estimated UK, Welsh and colony population trends. UK and Welsh population trends have been extracted from the SMP results 'Seabird Population Trends and Causes of Change: 1986-2015) (JNCC, 2016). Colony trends have been calculated based on count data available for Skomer, Skokholm and Grassholm colonies, through the comparison of 5-year average colony counts across the ESAS period (1998-2002) to recent 5-year average colony counts (2013-2018). Estimated population trends and predicted ESAS seabird densities are presented in Table 4.5.

Table 4.5 provides updated ESAS at-sea density estimates for those species that have been scoped in for further assessment in the META ornithology chapter. Updated at-sea density estimates are based on recent population trends for these species.

4.2.3.1 UK population trends

Several species have experienced a population trend decline at UK level, including kittiwake, shag and cormorant. These declines varied from an 8% decline for cormorant populations, to 34% and 44% declines for shag and kittiwake. The UK populations of guillemot, razorbill and gannet have experienced an increasing population trend, from 5% increase for guillemot to 32% and 34% increases for razorbill and gannet populations respectively.

4.2.3.2 Welsh population trends

At a Welsh national level, guillemot, kittiwake and shag populations have experienced a declining trend since the collation of data during the ESAS programme (2002). This has varied from 3.65% declines for guillemot populations, to 44% and 89% for kittiwake and shag populations. At a national level, several species experienced population trend increases, including razorbill, gannet and cormorant populations (64%, 21% and up to 41% respectively).

4.2.3.3 SPA population trend

The Skomer and Skokholm SPA colonies have displayed population increases for all species except kittiwake, which experienced a 33% decline since 2002. Puffin increased by 139%, guillemot increased by 58.4%, and razorbill increased by 35.2%. The gannet colony at Grassholm experienced an 8.4% decline, despite its success at a Welsh and UK population level.

Based on the re-calculations of the ESAS at-sea density estimates for birds (number per 3 km²) to allow for population trend changes from 2002 to 2018, densities were adjusted to account for increases and decreases at a UK population, Welsh population and colony population trends.

At a UK trend level, gannet experienced the greatest change (34%, from 0.036 to 0.048 per 3 km²), and kittiwakes the largest decrease (-44%, 0.025 – 0.082 to -0.014 to 0.046 per 3 km²).

At a Welsh level, razorbill ESAS at-sea density estimates increased from 0.163 per 3 km² to 0.367 per 3 km² (based on 64% population increase trend), while shag ESAS at-sea density estimates decreased from 0.152 per 3 km² to 0.016 per 3 km² (based on 89.7% population trend decrease).

In relation to Skomer and Skokholm SPA colonies, the puffin presents the greatest change in ESAS at-sea density estimates, from 0.498 to 1.193 per 3 km² (representing a 139.5% trend increase). Kittiwake populations at Skomer and Skokholm were subject to a 33.2% trend decline, reflecting an ESAS at-sea density estimate decline from 0.025-0.082 to 0.017-0.055 per 3 km².

Overall, seabird populations since ESAS data collection have changed substantially for most species. However, in relation to changes in calculated ESAS at-sea density estimates, these remain relatively low for all species scoped in for assessment in relation to potential impacts associated with the META project.

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Table 4.5: Updated ESAS densities based on recent UK, Wales and colony population trends (based on SMP data)

Species	Local SPA Population (most recent estimate)	UK population (local SPA population as a % of UK population)	Welsh population (local SPA population as a % of Welsh population)	ESAS baseline density (number per 3 km ²) cells closest to site 7 and 8	Density estimate (number per 3 km ²) applying UK population trend 1998-2002 to 2015 (% change)	Density estimate (number per 3 km ²) applying Welsh population trend 1998-2002 to 2019 (% change)	Density estimate (number per 3 km ²) applying Skomer and Skokholm and Grassholm colony trends 1998-2002 (ESAS data) to 2013/14 – 2017/2018 (colony data) (5 yr average) (% change)
Atlantic Puffin	19,000 individuals ¹	580,714 ² (3.28%)	10,328 ² AOB	0.498	Data not available	Data not available	1.193 (139.5%) ⁷
Common guillemot	15,262 individuals ¹	1,416,334 ² (0.11%)	57,961 individuals ² (26.33%)	0.411 - 0.496	0.432 - 0.521 (5%) ⁶	0.396 - 0.478 (-3.65%)*	0.651 - 0.786 (58.4%) ⁷
Razorbill	5,990 individuals ¹	187,052 ² (3.20%)	12,638 individuals ² (47.40%)	0.163	0.215 (32%) ⁶	0.267 (64%) ^{6**}	0.220 (35.2%) ⁷
Gannet	33,000 pairs ³	293,161 AON/AOS ⁴ (11.26% presuming pair per AON/AOS)	39,011 AON/AOS ⁴ (84.60%, presuming pair per AON/AOS)	0.036	0.048 (34%) ⁴	0.044 (21%) ⁴	0.033 (-8.4%) ⁷
Black-legged kittiwake	1,959 individuals ³	378,847 ² (0.52% local SPA population)	7,293 individuals ² (26.86%)	0.025 - 0.082	0.014 - 0.046 (-44%) ⁶	0.014 - 0.046 (-44%) ^{6***}	0.017 - 0.055 (-33.2%) ⁷
Shag	1,122 individuals ⁵	26,565 individuals ²	914 individuals ² (>100% SPA population)	0.152	0.100 (-34%) ⁶	0.016 (-89.7%) ^{****}	N/A

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Species	Local SPA Population (most recent estimate)	UK population (local SPA population as a % of UK population)	Welsh population (local SPA population as a % of Welsh population)	ESAS baseline density (number per 3 km ²) cells closest to site 7 and 8	Density estimate (number per 3 km ²) applying UK population trend 1998-2002 to 2015 (% change)	Density estimate (number per 3 km ²) applying Welsh population trend 1998-2002 to 2019 (% change)	Density estimate (number per 3 km ²) applying Skomer and Skokholm and Grassholm colony trends 1998-2002 (ESAS data) to 2013/14 – 2017/2018 (colony data) (5 yr average) (% change)
		(4.22% SPA population)					
Cormorant	29	7,238 AON ² (0.40% SPA population)	1,634 AON ² (1.77% SPA population)	0.076	0.070 (-8%) ⁶	0.088 - 0.107 (16 – 41%) ^{6*****}	N/A

¹ Natura 2000 Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro (JNCC, 2017); and NRW (2015).

² Seabird 2000

³ JNCC Species Accounts (JNCC, 2019).

⁴ Gannet Census (2013-2014)

⁵ Natura 2000 Lambay Island SPA (NPWS, 2017).

⁶ Seabird Monitoring Programme (SMP), (JNCC, 2016).

⁷ Calculated from Seabird Monitoring Programme (SMP) colony data (Skomer and Skokholm all except gannet (Grassholm)). Differences calculated from 5yr average colony counts between 1998-2002 (Seabird 2000), and between 2013/14-2017/18. Graphs presented within Appendix B.

*Based on 5-year average of count data of Welsh colonies from SMP database (55843.6 ±4471.4)

**Although only about one-quarter of Welsh razorbill colonies were surveyed in 2015 (28), numbers totalled 20,831 individuals, 64% more than was recorded in the whole country during Seabird 2000.

***11 colonies surveyed in 2015 held 4,353 AON, 44% fewer than was recorded at the same colonies during Seabird 2000 (6,230 AON).

**** Based on 5-year average of count data of Welsh colonies from SMP database (94 ±0.95)

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****The largest two colonies of great cormorant in Wales, at Puffin Island and Little Orme, have increased between 2010 to 2014 by 16% and 41%, respectively.

AOB: Apparently Occupied Burrows

AON/AOS: Apparently Occupied Nests/Sites

4.2.4 WWBIC Data

The data received from WWBIC primarily identified coastal birds within the vicinity of the East Pickard Bay (site 8) region. The species identified within the data were diving species such as shag and cormorant and gannet. Coastal birds were also identified including wader and duck species as well as an assemblage of gull species. Whimbrel was identified at nationally important numbers within the dataset. For a full breakdown of species recorded within the marine ornithology data search study area see the overview in Table 4.1. For the spatial distribution of records see Figure 4.9 and Figure 4.10 below.

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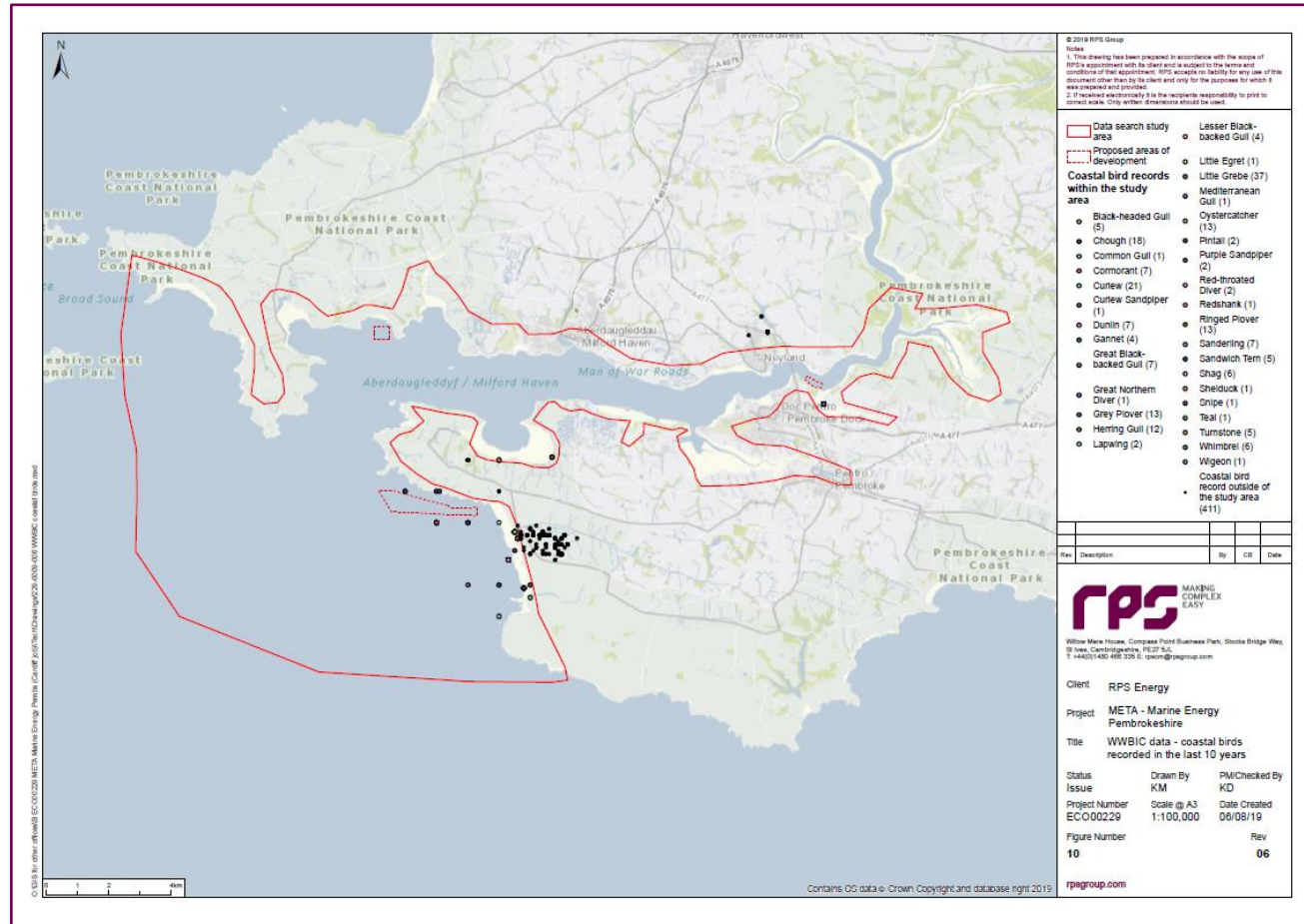


Figure 4.10: WWBIC data results - coastal birds

4.2.5 BTO Wetland Bird Survey

Thirteen wader species were recorded within the BTO WeBS data search including black-tailed godwit, bar-tailed godwit, turnstone, snipe, oystercatcher, ringed plover, golden plover, lapwing, redshank, greenshank, golden plover, dunlin, and curlew. The desk study data shows that wading birds use parts of the marine ornithology data search study area at both high and low tide throughout the year with numbers peaking in winter. The peak numbers recorded in the marine ornithology data search survey area for the majority of species do not exceed the 1% threshold value of the GB wintering population(s). However, greenshank and golden plover were recorded at nationally important numbers.

Of the wader species recorded within the dataset around half were recorded in the vicinity of Warrior Way (site 6) including oystercatcher, lapwing, redshank, greenshank, dunlin and curlew. However, none of the records within the vicinity of Warrior Way (site 6) were at nationally important numbers.

No small-scale spatial information was available for the core count data.

A total of seven duck species were identified within the BTO WeBS data including goldeneye, scaup, wigeon, shoveler, mallard, teal and shelduck. Teal and wigeon were present at nationally important numbers within the marine ornithology data search study area. All species were recorded within the marine ornithology data search study area at both low and high tide with the exception of scaup, which was only recorded during low tide surveys with a maximum count of one.

Brent geese (majority light bellied) were also recorded within the marine ornithology data search study area within the BTO WeBS dataset at nationally important numbers at low tide, and internationally important numbers recorded at high tide. Spatial information available for the low tide data (count sectors) indicated that the brent goose counts were made 2 km, 2.9km and 8km away from East Pickard Bay (site 8), Dale Roads (site 7) and Warrior Way (site 6) respectively.

Little egret was also recorded within the data search study area at nationally important numbers at high tide. A similar assemblage of gull species was also recorded within the WeBS data as previously identified.

4.2.6 Milford Haven Waterway Environmental Surveillance Group

4.2.6.1 Core Counts

Cosheston Pill

Figure 4.11: Cosheston Pill mid-winter counts for selected bird species

4.2.6.2 Low tide counts

Figure 4.12: distribution of shelduck at low tide 2013/14 dots indicate bird distribution with yellow areas indicating survey sector

Figure 4.13: distribution of wigeon at low tide 2014-15 dots indicate bird distribution with yellow areas indicating survey sector

Figure 4.14: Distribution of teal at low tide 2015/16 dots indicate bird distribution with yellow areas indicating survey sector

Figure 4.15: Curlew distribution at low tide 2015/16 dots indicate bird distribution with yellow areas indicating survey sector

Figure 4.16: Dunlin distribution at low tide 2013/14 dots indicate bird distribution with yellow areas indicating survey sector

4.2.6.3 Little Grebe

While little grebe (*Tachybaptus ruficollis*) nest and winter mainly on freshwater sites, outside of the breeding season some individuals are observed in sheltered coasts and estuaries free from strong wave action (Fox, 1994). The species inhabits small and shallow wetlands, typically less than 1 m deep, which are rich in vegetation with high densities of aquatic invertebrates (Fjeldsa, 2004). The little grebe breeds during the summer months in solitary pairs, with breeding times varying geographically dependent on the growth of emergent vegetation and water-levels (del Hoyo *et al.* 1992). Following breeding, the little grebe undergoes a flightless wing-moulting period during which it may assemble in loose groups in rich feeding areas (Fjeldsa, 2004). The species is largely solitary during the winter months or occurs in small groups of around 5-30 individuals (Snow and Perrins, 1998).

The little grebe typically forages on adult and larval insects, molluscs, crustaceans, adult and juvenile amphibians and small fish during the winter (Konter, 2001; Fjeldsa, 2004). In relation to foraging activities, the species typically dives to a depth of between 1-2 metres for approximately 10-25 seconds (Ingram and Salmon, 1941). Studies have observed highest feeding success during slack tides in shallowest water, with water depth rather than other factors such as turbidity the most likely link to feeding success (Fox, 1994). During this study, mean dive duration was 16.3 seconds (from 399 dives).

Little Grebe within Cleddau Estuary System

Due to the sheltered location and open mudflats, the Milford Haven Waterway SSSI is an important wintering ground for the little grebe. Listed as a wintering feature of Milford Haven Waterway SSSI, the little grebe has previously reached levels of national importance, however numbers have either declined or the threshold for national importance has been raised, and number of little grebe occurring within the Waterway no longer reach the threshold for National Importance (Table 4.6). At the time of notification of Milford Haven Waterway SSSI, the little grebe was present in numbers of greater than 78 wintering individuals, which declined to 53 wintering individuals by 2010 (Figure 4.7). In recent years there has been a further decline of wintering individuals to 26 in 2018 (Figure 4.7).

Table 4.6: Number of animals signifying National Importance (NI), and average little grebe numbers in the Cleddau Estuary (extracted from Haydock, 2016) in 1992, 2001, 2010 and 2016.

Species	1992 NI (No. animals)	1990s Cleddau average (No. animals)	2001 NI (No. animals)	2000s Cleddau average (No. animals)	2010 NI (No. animals)	2010s Cleddau average (No. animals)	2016 NI (No. animals)	2018 Cleddau Average (No. animals)
Little grebe	30	53	78	52	160	36	160	26

Table 4.7: Number of wintering individuals in Milford Haven Waterway SSSI. (Source: British Trust for Ornithology (BTO) Wetland Bird Surveys (WeBS))

Attribute	No. individuals at time of notification	Mean peak 2005/6 – 2009/10 (No. animals)	Mean peak 2012/13 – 2017/18 (No. animals)
Wintering Population Size	>78	53	26

Despite supporting little grebe numbers which are considerably lower than numbers of National importance, the Cleddau Estuary system remains the second-most important sites in Wales for the little grebe, and supports an estimated 14% of the Welsh wintering population (Haydock, 2019). The Cleddau Estuary

supports an average of 26 individuals (5-year average peak count) (Haydock, 2019). Within the estuary system, little grebes were widespread, but especially favoured pools at the Gann Estuary (Haydock, 2016). Table 4.8 provides monthly counts for September, October and November (wintering months) on the Cleddau Estuary system.

Table 4.8: WeBs results for little grebe on the Cleddau Estuary system. (Source: British Trust for Ornithology (BTO) Wetland Bird Surveys (WeBS))

Month	2013 (No. animals)	2014 (No. animals)	2015 (No. animals)	2016 (No. animals)
September	5	6	3	4
October	23	18	7	17
November	26	22	14	21

Cosherton Pill is located to the east of Warrior Way (site 6) and is the closest WeBs survey sector to the proposed META site. The saltmarsh and mudflats within Cosherton Pill support over-wintering shelduck, redshank, curlew, teal and wigeon. In the 1980s, data collected in the Cosherton Pill area suggested a total count of 39 little grebes, which declined to 15 observed individuals in the 1990s, and to only eight individuals throughout the 2000s (Figure 4.17 and Figure 4.18). Based on the WWBIC dataset, there have been no observations of little grebe since 2010 in the Cosherton Pill area.

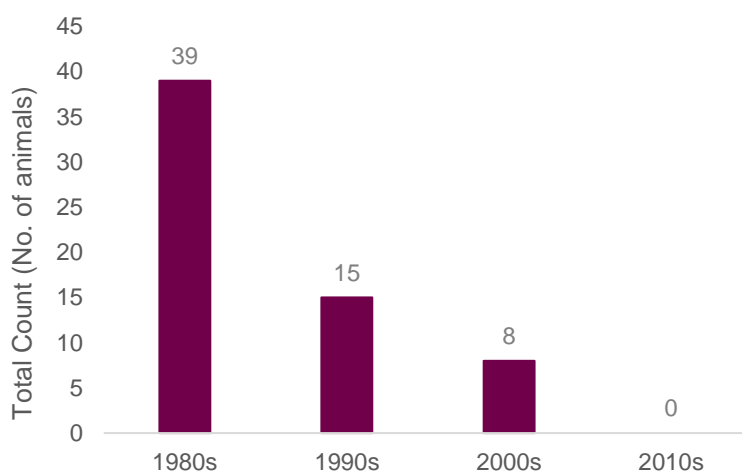


Figure 4.17: Total decade counts of little grebe observed within Cosherton Pill. (Source: WWBIC data)

Based on a review of WWBIC survey data, little grebe numbers within the Cleddau Estuary have declined considerably since the 1980s, reflective of declines elsewhere in the county in recent years. This is the same as the national trend and an increase in the threshold for National Importance, for reasons which are not yet understood.

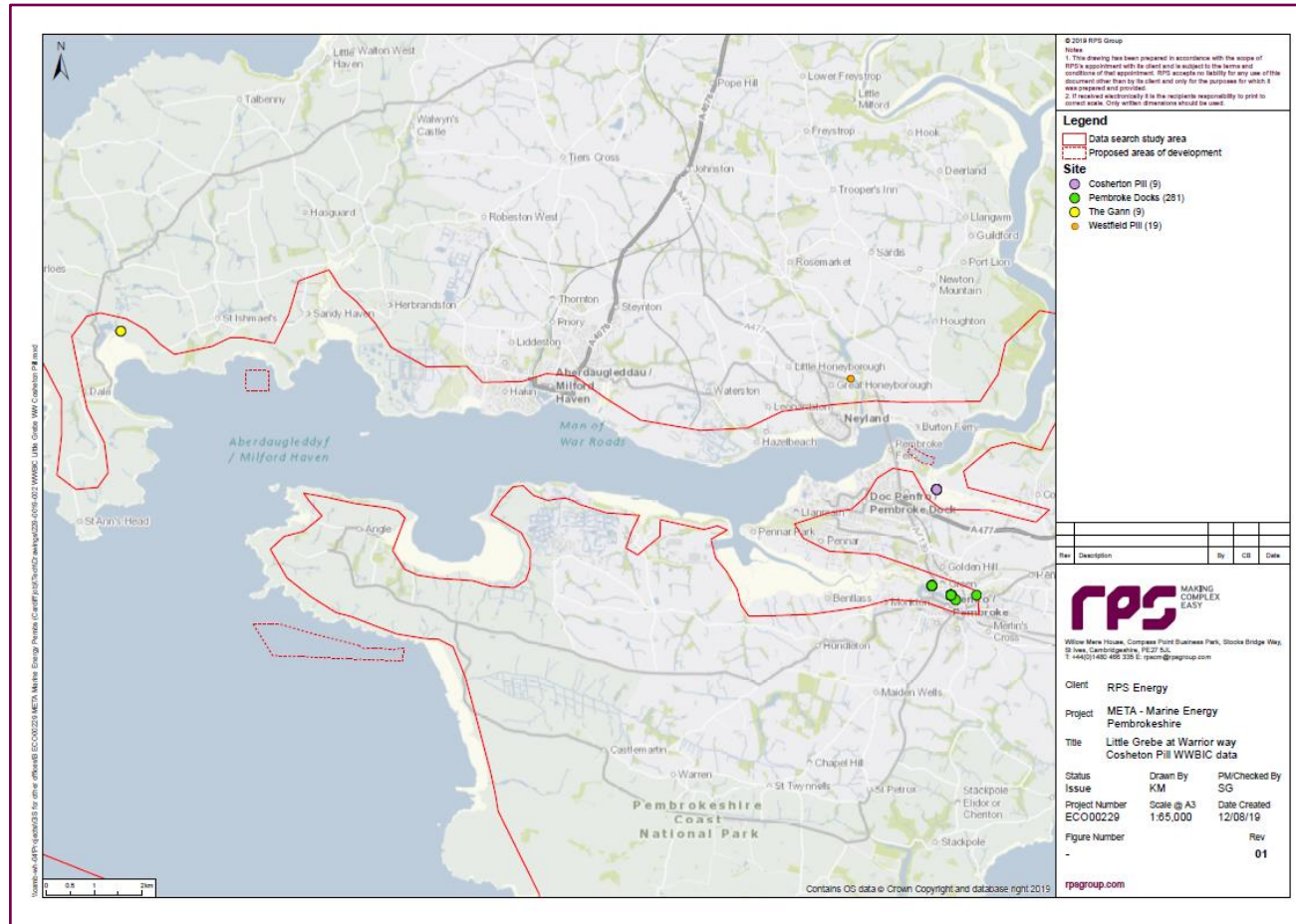


Figure 4.18: Little grebe distribution around the Cleddau Estuary system. Decade data presented Cosherton Pill: > 2000, The Gann and Westerfield Pill: > 2010, and Pembroke Dock: > 2015 (Source: WWBIC).

5 CONCLUSIONS

The Waterway supports an assemblage of seabirds and coastal birds as identified within this baseline study. Data was obtained from the British Trust for Ornithology (BTO), European Seabirds at Sea (ESAS) Milford Haven Waterways Environmental Surveillance Group (MHWESG) and West Wales Biodiversity Information Centre (WWBIC) to inform the baseline characterisation of the ornithology study areas. The species identified during the desk study and then considered within the Marine Ornithology EIA chapter were those listed as notified interest features of any designated sites within the marine ornithology search area or marine ornithology data search study search area, as well as those that are listed under Schedule 1 of the WCA, Section 7 of the Environment Act (Wales) 2016, Red and Amber-listed Bird of Conservation Concern (Johnstone and Bladwell, 2016), or those that have occurred within the marine ornithology data search study area in numbers considered of national or international importance.

As the ESAS programme gathered data between 1998 and 2002, there is potential for seabird populations to have changed since data was collected. To account for possible changes in species data in relation to the META project, estimated changes to relevant species ESAS densities have been calculated, utilising data from the Seabird Monitoring Programme (SMP). This analysis suggested seabird populations since ESAS data collection have changed substantially for most species. However, densities remain relatively low for all species scoped in for assessment in the META EIA in relation to potential impacts associated with the META project.

A detailed review of data relating to little grebe, a feature of the Milford Haven Waterway SSSI, has provided an overview of the distribution of this species around the study search area. Based on the WWBIC data review, the little grebe population within the Cleddau Estuary have declined considerably since the 1980s, despite an increase in the threshold for National Importance for reasons which are not yet understood. The Cleddau Estuary does not support numbers of little grebe of national importance. No sightings of little grebe have been recorded within the Coshaston Pill area since 2010.

Due to the localised nature and scale of activities associated with the META project, this data is considered sufficient to characterise the baseline as well as identify and assess any potential impacts and presents a proportionate approach to the META marine ornithology impact assessment.



APPENDICES

Appendix A

MHWESG Reports

Appendix B

Colony Specific Trend Graphs

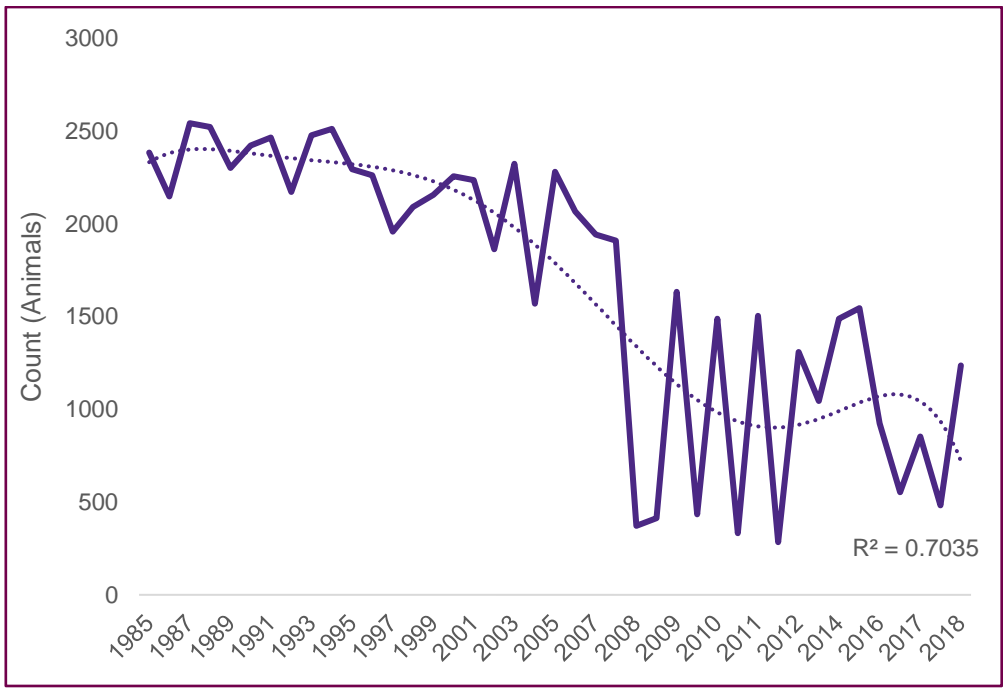


Figure A. 1: Kittiwake Skomer colony counts (since 1985) with polynomial trendline, data sourced from SMP (JNCC, 2016).

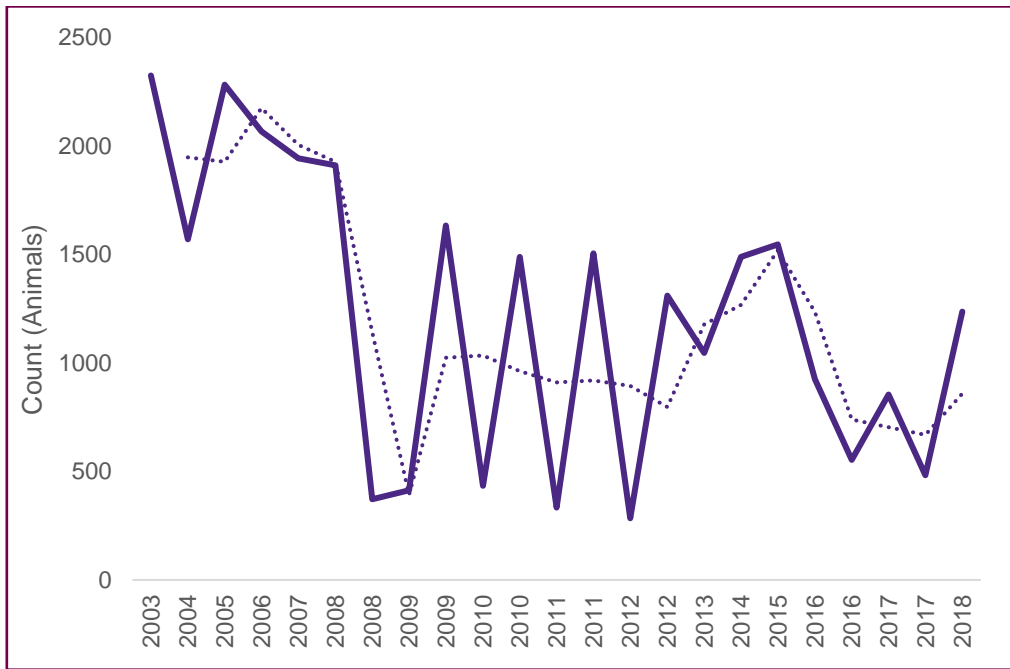


Figure A. 2: Kittiwake Skomer colony counts (post ESAS surveys (2002 onwards)), with moving average trendline. Data sourced from SMP (JNCC, 2016).

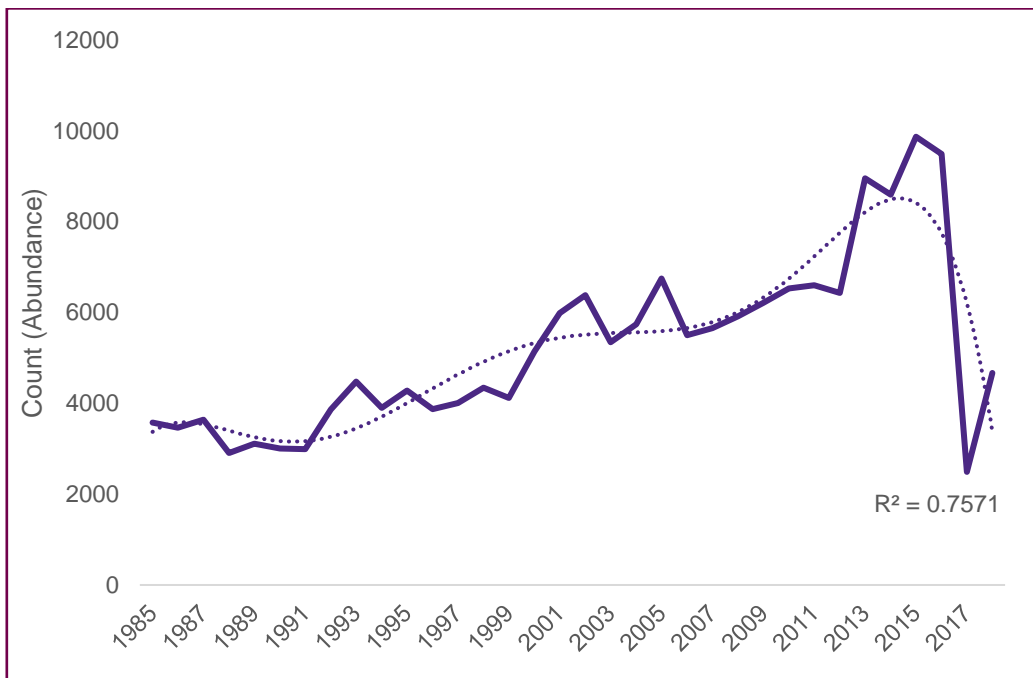


Figure A. 3: Razorbill Skomer and Skokholm colony counts (since 1985) with polynomial trendline, data sourced from SMP (JNCC, 2016).

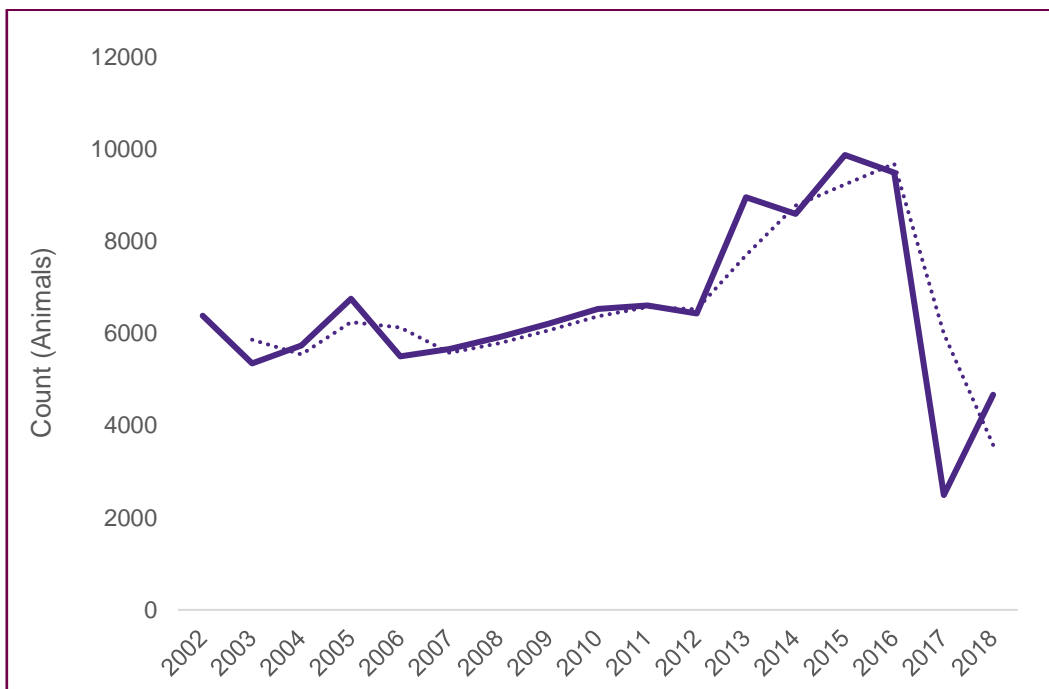


Figure A. 4: Razorbill Skomer and Skokholm colony counts (post ESAS surveys (2002 onwards)), with moving average trendline. Data sourced from SMP (JNCC, 2016).

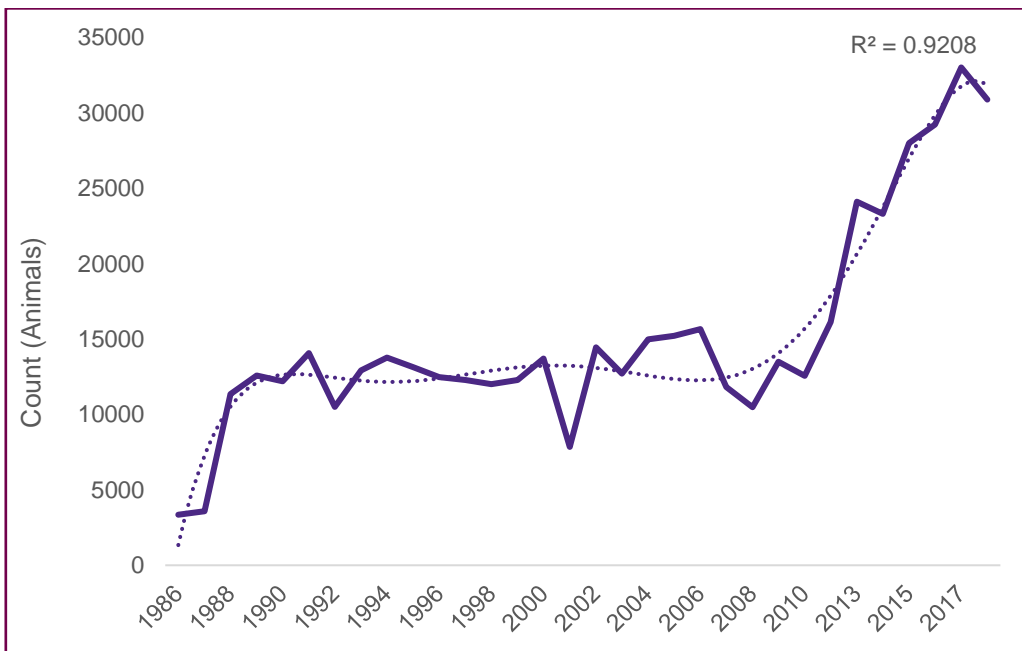


Figure A. 5: Puffin Skomer and Skokholm colony counts (since 1985) with polynomial trendline, data sourced from SMP (JNCC, 2016).

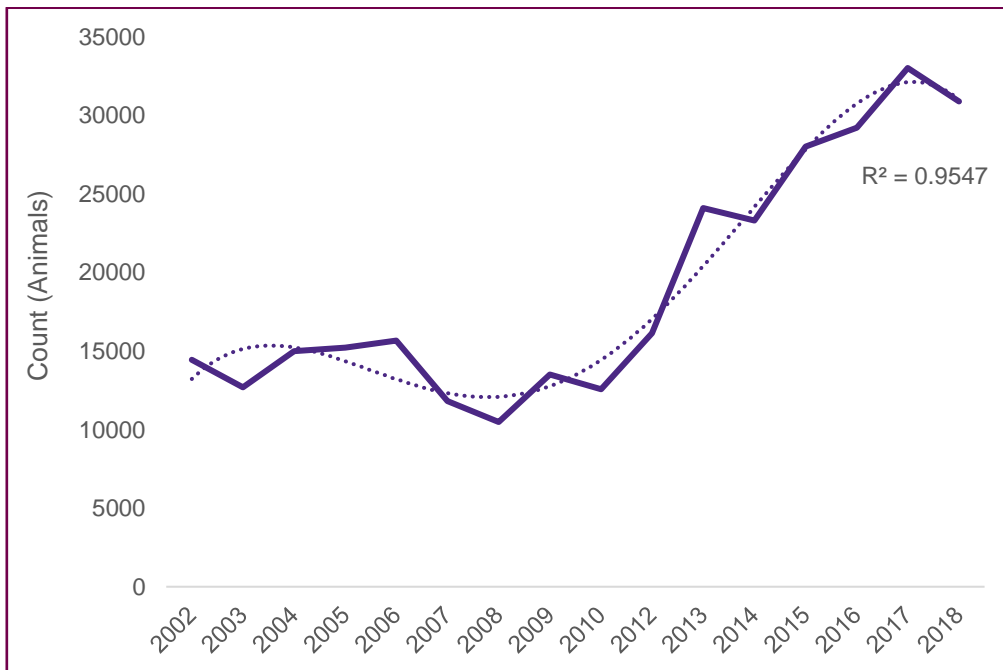


Figure A. 6: Puffin Skomer and Skokholm colony counts (post ESAS surveys (2002 onwards)) with polynomial trendline, data sourced from SMP (JNCC, 2016).

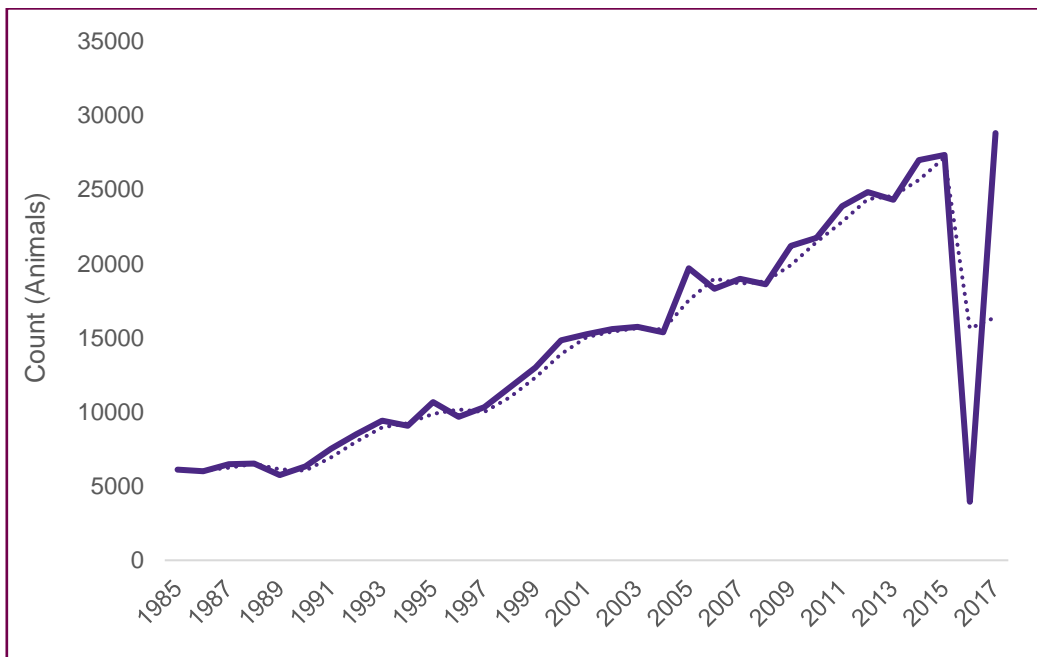


Figure A. 7: Guillemot Skomer and Skokholm colony counts (since 1985) with moving average trendline, data sourced from SMP (JNCC, 2016).

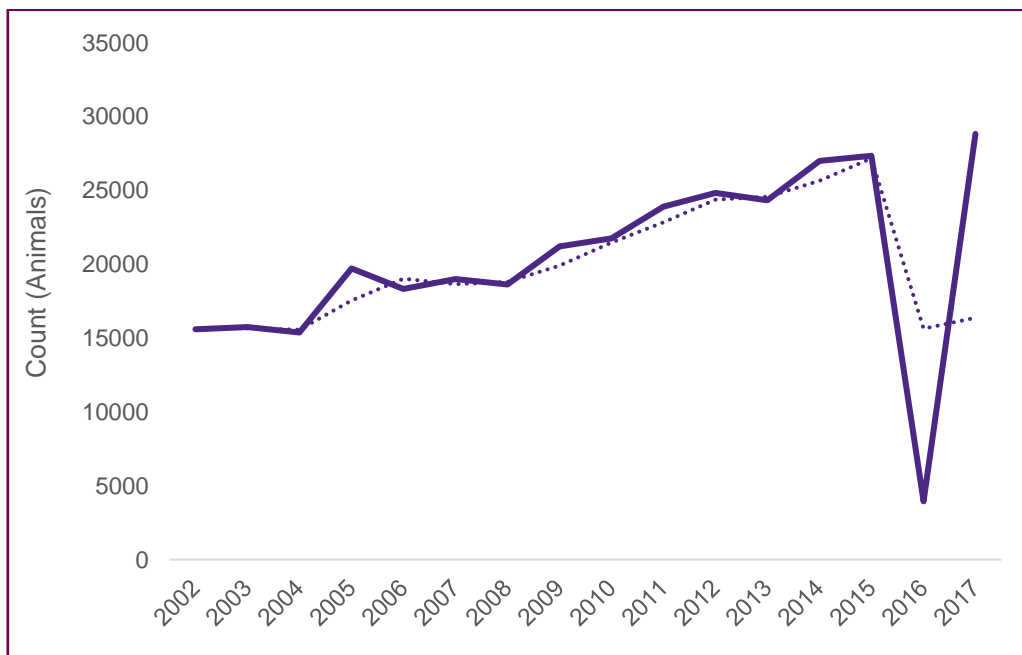


Figure A. 8: Guillemot Skomer and Skokholm colony counts (post ESAS surveys (2002 onwards)) with moving average trendline, data sourced from SMP (JNCC, 2016).

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