

TECHNICAL APPENDIX 5.2



**Orkney Logistics Base (Hatston)
Marine Mammal and Fish Baseline**

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EXECUTIVE SUMMARY

EnviroCentre Limited was commissioned by Orkney Island Council Harbour Authority to undertake a marine mammal and fish desk study to inform an Environmental Impact Assessment (EIA) in relation to the Orkney Logistics Base (Hatston) of a pier extension and quayside laydown area.

The desk study is required to identify records of marine mammals as well as basking shark and fish associated with Orkney, to provide an ecological marine baseline.

The site does not lie within any statutory designated sites relating to marine species (Marine Protected Areas (MPA), Special Areas of Conservations (SAC), Sites of Special Scientific Interest (SSSI) or Designated Haul Out Site for seals.

The cetacean fauna (whales, dolphins, and porpoises) of Orkney is considered one of the richest in the UK, with favoured localities for sightings off headlands, between sounds of islands in inshore areas, and over fishing banks in offshore regions. Seventeen species of cetacean have been recorded, since 1980, along the coast or in nearshore waters (within 60 km of the coast) of Orkney.

There are four statutory designated sites which feature seals within 50km of the site. Orkney is a stronghold for breeding grey seals and is part of the North Coast and Orkney Seal Management Unit (SMU). Orkney and North Coast SMU is home to c.4.5% of the UK Harbour seal population.

Although not a marine mammal, basking sharks are listed as endangered on the International Union for Conservation of Nature and Natural Resources (IUCN) Red list and are afforded domestic and global protection. Basking sharks are also Priority Marine Features (PMFs) and have been recorded near Orkney.

The Burn of Hatston flows through the west of the proposed site. During previous surveys no trout were found in this burn or any close to the development site, only eel and threespine stickleback. These watercourses are also not considered Atlantic salmon or sea trout rivers by Marine Scotland.

PMF fish species, have either been recorded in proximity to the site or are marine mammal prey sources and have nursery or spawning ground areas covering the site.

A number of active commercial fisheries are present within 20km of the site, the nearest being Quanterness (1.25km north west of the site) and consists of Atlantic salmon and lumpsucker.

From the proposed works associated with the development, some of the following potential impacts may occur:

- Noise and vibration generated during construction and future operations may temporarily or permanently impact marine mammals, seals and fish and any prey resources.
- Potential impacts on water quality from pollution events (fuel spills, sediment runoff etc.).
- Removal of benthic habitat for construction of pier.

It has been assessed that the most frequently observed species, and therefore the species considered to be of most concern within the zone of influence of the proposed development, are harbour porpoise, Risso's dolphin, killer whale, white-beaked dolphin, long-finned pilot whale, grey seal, harbour seal, basking sharks, diadromous fish, commercial fisheries, European eel and some fish PMFs.

Contents

| | |
|---|----|
| Executive Summary | i |
| 1 Introduction | 1 |
| 1.1 Terms of Reference | 1 |
| 1.2 Project Overview | 1 |
| 1.3 Report Usage | 2 |
| 2 Marine Mammal and Fish Baseline | 3 |
| 2.1 Desk Study | 3 |
| 2.2 Designated Sites | 4 |
| 2.3 Cetaceans | 4 |
| 2.4 Seals | 25 |
| 2.5 Fish | 29 |
| 2.6 Marine Mammals and Fish Species Likely to be Impacted | 33 |

Appendices

- A Proposed Site Location and Layout
- B Designated Sites

Figures

| | |
|---|----|
| Figure 2-1: Sightings of harbour porpoise seen during the SCANS-III surveys (1994-2016) | 6 |
| Figure 2-2: Distribution sightings of harbour porpoise (1980-2010) | 6 |
| Figure 2-3: Sightings of Risso's dolphin (ggri) seen during the SCANS-III surveys (1994-2016) | 7 |
| Figure 2-4: Distribution sightings of Risso's dolphin (1980-2010) | 7 |
| Figure 2-5: Sightings of minke whale seen during the SCANS-III surveys (1994-2016) | 8 |
| Figure 2-6: Distribution sightings of minke whale (1980-2010) | 9 |
| Figure 2-7: Sightings of pilot whale (gmel) seen during the SCANS-III surveys (1994-2016) | 10 |
| Figure 2-8: Distribution sightings of long-finned pilot whale (1980-2010) | 10 |
| Figure 2-9: Sightings of killer whale (oorc) seen during the SCANS-III surveys (1994-2016) | 11 |
| Figure 2-10: Distribution sightings of killer whale (1980-2010) | 11 |
| Figure 2-11: Sightings of white-beaked dolphin seen during the SCANS-III surveys (1994-2016) | 12 |
| Figure 2-12: Distribution sightings of white-beaked dolphin (1980-2010) | 13 |
| Figure 2-13: Sightings of Atlantic white-sided dolphin (lacu) seen during the SCANS-III surveys (1994-2016) | 14 |
| Figure 2-14: Distribution sightings of Atlantic white-sided dolphin (1980-2010) | 14 |
| Figure 2-15: Sightings of sperm whale (pmac) seen during the SCANS-III surveys (1994-2016) | 15 |
| Figure 2-16: Distribution sightings of sperm whale (1980-2010) | 15 |
| Figure 2-17: JNCC humpback whale distribution map (1979-1997) | 16 |
| Figure 2-18: Distribution sightings of humpback whale (1980-2010) | 17 |
| Figure 2-19: Sightings of fin whale (bphy) seen during the SCANS-III surveys (1994-2016) | 18 |
| Figure 2-20: Distribution sightings of fin whale (1980-2010) | 18 |
| Figure 2-21: JNCC sei whale distribution map (1979-1997) | 19 |
| Figure 2-22: Distribution sightings of sei whale (1980-2010) | 19 |
| Figure 2-23: Sightings of striped dolphin (scoe) seen during the SCANS-III surveys (1994-2016) | 20 |
| Figure 2-24: Distribution sightings of striped dolphin (1980-2010) | 20 |
| Figure 2-25: Sightings of Cuvier's beaked whale (zcav) seen during the SCANS-III surveys (1994-2016) | 21 |
| Figure 2-26: Distribution sightings of Cuvier's beaked whale (1980-2010) | 22 |
| Figure 2-27: Sightings of common dolphin (Ddel) seen during the SCANS-III surveys (1994-2016) | 23 |
| Figure 2-28: Distribution sightings of short-beaked common dolphin (1980-2010) | 23 |
| Figure 2-29: Sightings of bottlenose dolphin (ttru) seen during the SCANS-III surveys (1994-2016) | 24 |

Figure 2-30: Distribution sightings of bottlenose dolphin (1980-2010)..... 24
Figure 2-31: Telemetry tracked harbour seals (2001-2018)..... 27
Figure 2-32: Map showing the estimated mean harbour seal density at sea. Image taken from the NMPi. Data from surveys conducted between 1991 and 2016, originated from the Sea Mammal Research Unit..... 27
Figure 2-33: Telemetry tracked grey seals (1988-2018) 28
Figure 2-34: Map showing the estimated mean grey seal density at sea. Image taken from the National Marine Plan Interactive Map (NMPi). Data from surveys conducted between 1991 and 2016, originated from the Sea Mammal Research Unit. 28
Figure 2-35: Haul out seal count data (1996-2015) 29
Figure 2-36: Distribution sightings of basking shark (1980-2010) 30

Tables

Table 2-1: Fish PMFs in Relation to the Development Site..... 32
Table 2-2: Marine Mammals and Fish Species with Potential to be Impacted by Proposed Development 33

1 INTRODUCTION

1.1 Terms of Reference

EnviroCentre Limited was commissioned by Orkney Island Council Harbour Authority to undertake a marine mammal and fish desk study to inform an Environmental Impact Assessment (EIA) in relation to the Orkney Logistics Base (Hatston) of a pier extension and quayside laydown area. Please see Appendix A: Proposed Site Location and Layout.

The desk study is required to identify records of marine mammals as well as basking shark and fish associated with Orkney, to provide an ecological marine baseline.

1.2 Project Overview

It is proposed to extend the existing outer quay by 300m (with minimum water depth of -10m Chart Datum (CD)) which would also form a 125m inner berth. This would create substantially more quayside which would be available for both current and future operations.

In addition to the above, circa 7.5 hectares of additional land extending from the current shoreline outwards would be made available for harbour-related operations through reclamation. The design includes a ship lift, additional link span and fuel facility.

The development is designed to be built in three phases as noted below. These phases should not be considered consecutively but allow for a degree of flexibility which can be adapted to suit the requirements, budget and programme of OICHA.

Phase 1

- Reclaim the area by depositing appropriate material to form a platform on the southeastern side of the current pier causeway and thereby create 3Ha of hard-core surfaced marshalling / storage area along with an HGV trailer park for the ferry service which will be covered by a reinforced concrete slab;
- A sheet pile wall is to be installed to allow a retained interface with the current suspended deck; and
- Place rock armour along the northern and eastern edges of the infill area.

Phase 2

- Extend the current quay to the west by circa 300m with a 25m return and an inner berth to facilitate the proposed linkspan berth and fixed ramp. The extension will comprise a steel sheet pile wall and will initially interface with the alignment of the existing suspended deck on the north-west inner face before forming the new quay extension;
- Reinforced concrete slabs will form the new main deck areas;
- Reclaim the shoreline by depositing appropriate material to form a platform on the southwestern side of the current pier causeway to create an additional 3.71Ha to be used as a multi-use laydown/work area surfaced with hard-core, as well as establish a separate access road to the new quay extension;
- Place rock armour along the western edge of the infill area; and
- Dredge the approaches to the quay, after quay works complete.

Phase 3

- Reclaim the shoreline to the south-west of Phase 2 to form a platform on the southwestern side of the current pier causeway to be used as a multi-use laydown/work area as well as create a ship lift;
- The ship lift will extend from the linkspan fixed ramp installed in Phase 2 and will comprise piles and reinforced concrete pads designed for the boatlift wheel-loads;
- The rest of the area will be infilled to provide extra yard / storage; and
- Place rock armour along the western edge of the infill area.

1.3 Report Usage

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2 MARINE MAMMAL AND FISH BASELINE

2.1 Desk Study

In order to anticipate the potential marine mammal and fish ecological sensitivities at the site, a desk study was conducted. The following sources were checked:

- The Joint Nature Conservation Committee (JNCC)^{1 & 2};
- Sea Watch Foundation (SWF)^{3 & 4};
- NatureScot (NS)⁵;
- Whale and Dolphin Conservation (WDC)⁶;
- The Hebridean Whale and Dolphin Trust (HWDT) Whale Track⁷;
- Orcadian Wildlife (OW)⁸;
- Scottish Marine Animal Stranding Scheme (SMASS)⁹;
- NS¹⁰;
- Marine Scotland (MS) Regional baselines for marine mammal knowledge across the North Sea and Atlantic areas of Scottish waters ¹¹ and appendices¹²;
- MS Updated Seal Usage Maps: The Estimated at-sea Distribution of Grey and Harbour Seals¹³;
- Scottish Government Designated Sites: Seal Haul out Sites^{14 & 15};
- IUCN Red List¹⁶
- The Shark Trust basking shark sightings¹⁷;

¹ JNCC Statutory Nature Conservation Agency Protocol for Minimising the Risk of Injury to Marine Mammals from Piling Noise (2010) available at: http://jncc.defra.gov.uk/pdf/JNCC_Guidelines_Piling%20protocol_August%202010.pdf last accessed 12/12/2022

² Reid, J B, Evans, P G H, and Northridge, S P. JNCC Atlas of Cetacean Distribution in north-west European waters (2003) available at: <http://jncc.defra.gov.uk/page-2713#download> last accessed 12/12/2022

³ Sea Watch Foundation Cetaceans of Orkney available at: <https://seawatchfoundation.org.uk/wp-content/uploads/2012/07/Orkney2.pdf> last accessed 12/12/2022

⁴ Sea Watch Foundation Recent Sightings Orkney available at: <https://www.seawatchfoundation.org.uk/recent sightings/> last accessed 12/12/2022

⁵ SNH About Scotland's Nature: Marine Mammals available at: <https://www.nature.scot/plants-animals-and-fungi/mammals/marine-mammals> last accessed 12/12/2022

⁶ WDC species guides available at: <https://uk.whales.org/whales-dolphins/species-guide/> last accessed 12/12/2022

⁷ HWDT sightings data available at: <https://whaletrack.hwtdt.org/sightings-map/> last accessed 12/12/2022

⁸ Orcadian Wildlife information available at: <http://orcadianwildlife.co.uk/wPress/cetaceans-in-orkney/> last accessed 12/12/2022

⁹ Scottish Marine Animal Stranding Scheme (SMASS) available at: <https://strandings.org/map/> last accessed 10/04/2023

¹⁰ NatureScot Seals available at: <https://www.nature.scot/plants-animals-and-fungi/mammals/marine-mammals/seals> last accessed 12/12/2022

¹¹ Marine Scotland Regional baselines for marine mammal knowledge across the North Sea and Atlantic areas of Scottish waters, Scottish Marine and Freshwater Science, Vol 11 No 12, available at: <https://data.marine.gov.scot/sites/default/files/Scottish%20Marine%20and%20Freshwater%20Science%20%28SMFS%29%20Vol%2011%20No%2012%20Regional%20baselines%20for%20marine%20mammal%20knowledge%20across%20the%20North%20Sea%20and%20Atlantic%20areas%20of%20Scottish%20waters.pdf>

¹² Regional baselines for marine mammal knowledge across the North Sea and Atlantic areas of Scottish waters: Appendix 3 - SCANS surveys Scottish Marine and Freshwater Science Vol 11 No 12, available at: <https://data.marine.gov.scot/sites/default/files/Scottish%20Marine%20and%20Freshwater%20Science%20%28SMFS%29%20Vol%2011%20No%2012%20Regional%20baselines%20for%20marine%20mammal%20knowledge%20across%20the%20North%20Sea%20and%20Atlantic%20areas%20of%20Scottish%20waters%20-%20Appendix%203%20SCANS%20surveys%20%281%29.pdf>

¹³ Updated Seal Usage Maps: The Estimated at-sea Distribution of Grey and Harbour Seals, Scottish Marine and Freshwater Science, Vol 8 No 25, available at: <https://data.marine.gov.scot/sites/default/files/SMFS%200825.pdf>

¹⁴ Scottish Government seal Haul-out maps available at: <http://www.gov.scot/Topics/marine/marine-environment/species/19887/20814/maps> last accessed 12/12/2022

¹⁵ Haul Out Maps available at: https://webarchive.nrsotland.gov.uk/20180105052418mp_/http://www.gov.scot/Resource/0045/00454617.pdf last accessed 12/12/2022

¹⁶ IUCN Red List available at: <http://www.iucnredlist.org/> last accessed 12/12/2022

¹⁷ The Shark Trust basking shark sightings available at: <https://www.sharktrust.org/basking-shark-project> last accessed 12/12/2022

- Scottish Natural Heritage (SNH) Basking shark satellite tagging project, Commissioned Report¹⁸;
- Orkney Trout Fishing Association (OTFA)¹⁹;
- Orkney Shore Angling Association (OSAA)²⁰;
- MS Aquaculture – Active Fin-fish Sites (19.12.2022)²¹; and
- Scotland’s Aquaculture²²

2.1.1 Disclaimer

It should be noted that the baseline is limited by the reliability of third party information and the geographical availability of biological and/or ecological records and data. The absence of species from biological records cannot be taken to represent actual absence. Species distribution patterns should be interpreted with caution as they may reflect survey/reporting effort rather than actual distribution.

2.2 Designated Sites

A search for designated sites was undertaken via the NatureScot (NS) Sitelink²³ website. The Orkney Logistics Base (Hatston) site does not lie within any statutory designated sites relating to marine species (Marine Protected Areas (MPA), Special Areas of Conservations (SAC), Sites of Special Scientific Interest (SSSI) or Designated Haul Out Site for seals. Please see Appendix B: Designated Sites Boundaries.

2.3 Cetaceans

The cetacean fauna (whales, dolphins, and porpoises) of Orkney is considered one of the richest in the UK, with favoured localities for sightings off headlands, between sounds of islands in inshore areas, and over fishing banks in offshore regions. Seventeen species of cetacean have been recorded, since 1980, along the coast or in nearshore waters (within 60 km of the coast) of Orkney. Seven of the seventeen species are thought to be present throughout the year or at least recorded annually as seasonal visitors, which include; minke whale (*Balaenoptera acutorostrata*), long-finned pilot whale (*Globicephala melas*), killer whale (*Orcinus orca*), Risso’s dolphin (*Grampus griseus*), white-beaked dolphin (*Lagenorhynchus albirostris*), Atlantic white-sided dolphin (*Lagenorhynchus acutus*) and harbour porpoise (*Phocoena phocoena*).

Unusual cetacean sightings have included fin whale (*Balaenoptera physalus*), humpback whale (*Megaptera novaeangliae*), Sperm whale (*Physeter macrocephalus*), Sowerby’s beaked whale (*Mesoplodon bidens*), Cuvier’s beaked whale (*Ziphius cavirostris*), Northern bottlenose whale (*Hyperoodon ampullatus*), short-beaked common dolphin (*Delphinus delphis*), Bottlenose dolphin (*Tursiops truncatus*), False killer (*Pseudorca crassidens*), and Beluga (*Delphinapterus leucas*).

¹⁸ Witt, M.J., Doherty, P.D., Godley, B.J. Graham, R.T. Hawkes, L.A. & Henderson, S.M. 2016. Basking shark satellite tagging project: insights into basking shark (*Cetorhinus maximus*) movement, distribution and behaviour using satellite telemetry. Final Report. Scottish Natural Heritage Commissioned Report No. 908.

¹⁹ Contact with the Orkney Trout Fishing Association to discuss species information (09/01/2023)

²⁰ Contact with the Orkney Shore Angling Association to discuss species information (23/01/2023)

²¹ MarineScotland Aquaculture – active Fin-fish Sites (19.12.2022), available at: <https://marine.gov.scot/maps/1586>, last accessed 09/01/2022

²² Scotland’s Aquaculture Site Data, available at:

http://aquaculture.scotland.gov.uk/data/site_details_record.aspx?site_id=FS1305, last accessed 09/01/2022

²³ NatureScot SiteLink available at: <https://sitelink.nature.scot/map> last accessed 12/12/2022

In addition, three species have been recorded prior to 1980: Blue whale (*Balaenoptera musculus*), Sei whale (*Balaenoptera physalus*), and Narwhal (*Monodon monoceros*).

41 cetacean sightings off Orkney in 2022 were returned from SWF. Of the individual animals recorded, the following species were identified: Risso's dolphin, long-finned pilot whale, humpback whale, harbour porpoise, killer whale, white-beaked dolphin, short-finned pilot whale (*Globicephala macrorhynchus*) and minke whale.

OW state observations over the years of the following species off the shores of Orkney include: minke whale, fin whale, humpback whale, short-beaked common dolphin, bottlenose dolphin, Risso's dolphin, sperm whale, long-finned pilot whale, Atlantic white-sided dolphin, white-beaked dolphin, Killer whale and harbour Porpoise.

SMASS have recorded the following stranded species within 8km of the site; one record of harbour porpoise, 11 records of pelagic delphinid, two records of sperm/beaked whale and one record of bottlenose dolphin between 2001-2022.

Harbour Porpoise

The harbour porpoise are widely distributed and common throughout the Orkney region and are Priority marine features (PMFs)²⁴. Harbour porpoise are predominantly confined to shelf waters, although sightings have occurred in deep water. Although present throughout the year, most sightings associated with Orkney occur during summer-Autumn (June to October), with peak counts July-August.

Harbour porpoises eat a variety of fish, cephalopods and crustaceans, determined by local availability. Prey species including herring (*Clupea harengus*), sprat (*Sprattus sprattus*), pouting (*Trisopterus luscus*), sandeel (*Ammodytes tobianus*), gobies (*Gobiidae*), cod (*Gadus morhua*), saithe (*Pollachius virens*) and whiting (*Merlangius merlangus*)²⁵.

10 records of harbour porpoise have been submitted to SWF in 2022 in connection with Orkney, consisting of 28 individuals, the closest of which being approximately 19km south of the development site, offshore of Hoxa in July. OW also state that each Autumn large numbers gather in Switha Sound to the south of Scapa Flow (approximately 22km south). Figure 2-1 shows UK harbour porpoise distribution¹⁰. Relatively high densities of porpoises have been reported around Orkney coastlines via data collated from a range of sources by NatureScot (2011)²⁶ and as detailed in Figure 2-2.

²⁴ NatureScot Priority Marine Features in Scotland's Sea's List, available at: <https://www.nature.scot/doc/priority-marine-features-scotlands-seas-habitats>, last accessed 09/01/2023

²⁵ SWF, harbour Porpoise fact sheet (2020), available at: <https://www.seawatchfoundation.org.uk/wp-content/uploads/2020/07/Harbour-Porpoise.pdf>

²⁶ Evans, P.G.H., Baines, M.E. & Coppock, J. (2011). Abundance and behaviour of cetaceans and basking sharks in the Pentland Firth and Orkney Waters. Report by Hebog Environmental Ltd & Sea Watch Foundation. Scottish Natural Heritage Commissioned Report No.419

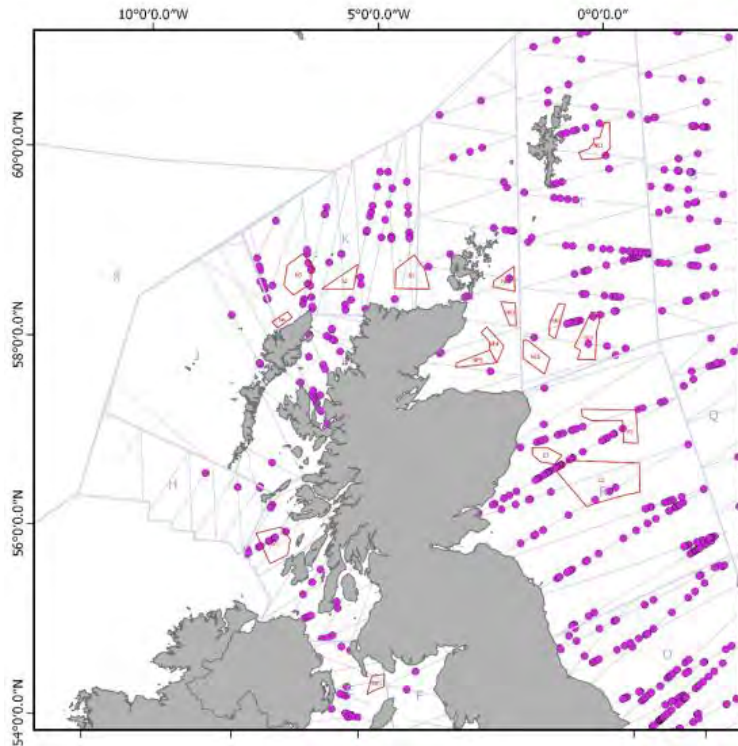


Figure 2-1: Sightings of harbour porpoise seen during the SCANS-III surveys (1994-2016)

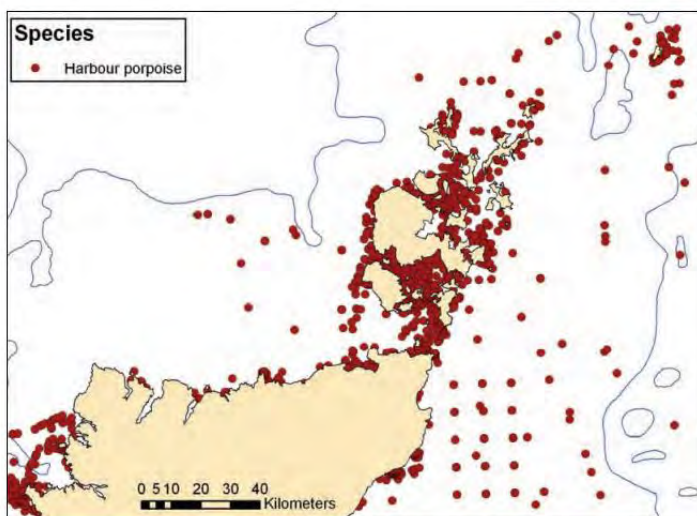


Figure 2-2: Distribution sightings of harbour porpoise (1980-2010)

Risso's Dolphin

Risso's dolphin are PMFs. Sightings of Risso's dolphin around Orkney are amongst the furthest north in the eastern Atlantic, with most frequent sightings concentrated along the west coasts of Orkney, particularly west mainland and west Hoy, but also off North Ronaldsay and in the Pentland Firth. Sightings generally occurring between April and November, with a peak in August. Strandings have occurred between November and March and individuals have also been observed off north-east Scotland and Shetland in winter, suggesting that the species may be present in the area year-round.

Risso's dolphin predominantly eat cephalopods, specifically octopus (*Octopoda*), cuttlefish (*Sepiida*) and various small squid (*Decapodiformes*), but will occasionally eat small fish, including cod²⁷.

²⁷ SWF, Risso's dolphin fact sheet (2020), available at: <https://www.seawatchfoundation.org.uk/wp-content/uploads/2020/10/Rissos-Dolphin.pdf>

Since 1st August 2017, three sightings of Risso's dolphin have been recorded via the HWDT Whale Track sightings database, none of which were observed within proximity to the site, with the closest record approximately 23km south west. Eight records of Risso's dolphin (38 individuals) off the coast of Orkney, have been submitted to SWF in 2022, with the closest sighting being approximately 17km north west, offshore of Eynhallow. Figure 2-3~~Error! Reference source not found.~~ shows UK Risso's dolphin distribution¹⁰. Risso's dolphin have been reported to show a coastal distribution via data collated from a range of sources by NatureScot (2011)²⁴, as detailed in Figure 2-4, however this has been suggested to be an artefact of watch effort.

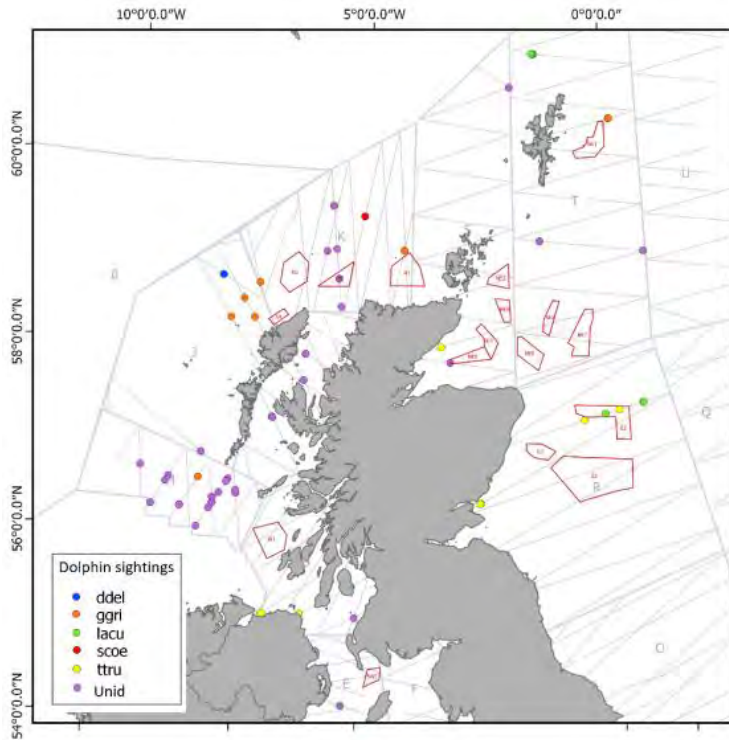


Figure 2-3: Sightings of Risso's dolphin (ggri) seen during the SCANS-III surveys (1994-2016)

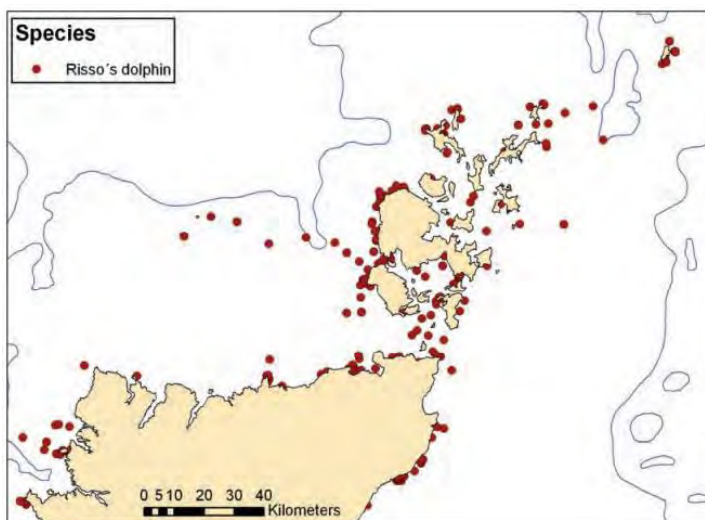


Figure 2-4: Distribution sightings of Risso's dolphin (1980-2010)

Minke Whale

Minke whales are frequently seen in coastal and inshore waters and are widely distributed throughout the North Sea and are PMFs. Minke whale are mostly observed along the west and south coasts of

Orkney and in the Pentland Firth. The species is deemed widely distributed in small numbers, with most sightings occurring between June and October.

Minke whale are both meso- and benthic-pelagic feeders, with those in the northern hemisphere, mainly taking fish including sandeel, herring, mackerel (*Scombrus scombrus*), sprat, capelin (*Mallotus villosus*), cod, whiting, haddock (*Melanogrammus aeglefinus*), but will also take euphausiids and copepods, especially at higher latitudes²⁸.

One sighting submitted to SWF of minke whale was recorded approximately 22km south east of the proposed development in 2022. Figure 2-5 shows UK minke whale distribution¹⁰. Sightings records of minke whales in Orkney have also been reported to show a fairly coastal distribution of sightings (offshore sightings also recorded), via data collated from a range of sources by NatureScot (2011)²⁴ as detailed in Figure 2-6. However, it was considered the coastal distribution was likely indicative of surveyor effort rather than reflective of minke whale distribution.

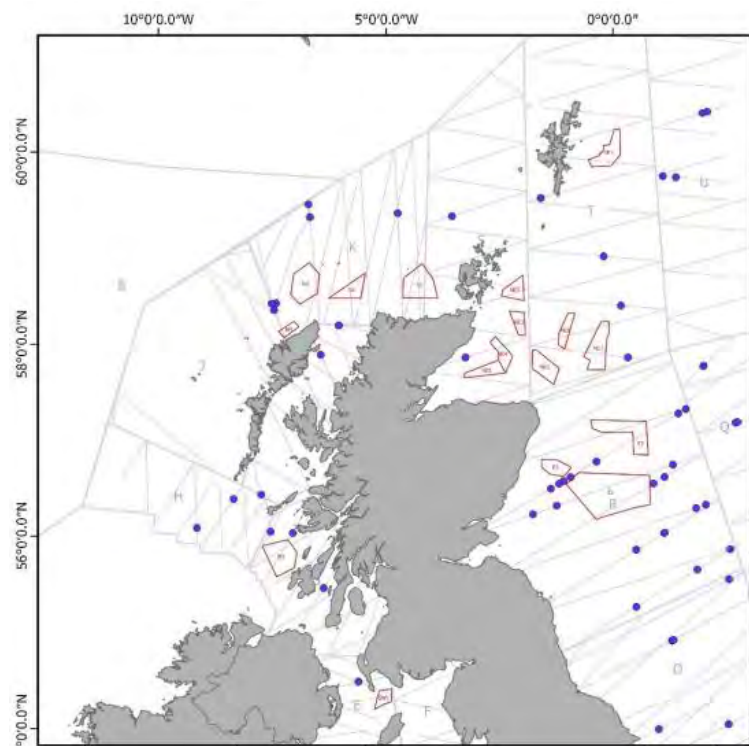


Figure 2-5: Sightings of minke whale seen during the SCANS-III surveys (1994-2016)

²⁸ SWF, minke whale fact sheet (2020), available at: <https://www.seawatchfoundation.org.uk/wp-content/uploads/2020/07/Minke-Whale.pdf>

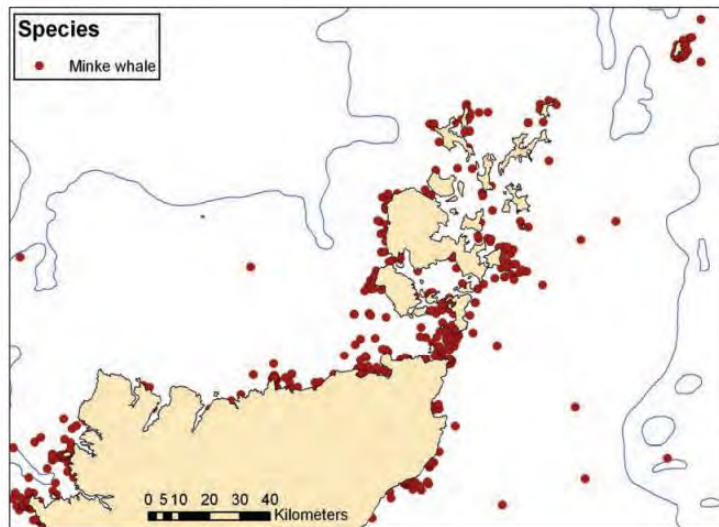


Figure 2-6: Distribution sightings of minke whale (1980-2010)

Long-finned Pilot Whale

Long-finned pilot whales are PMFs and mainly occur in deep waters (200-3,000 m), although have occasionally been observed in shallower coastal waters around northern Scotland, the northern North Sea and the Channel. Long-finned pilot whales occur in greater numbers to the north of Scotland, with little seasonality in the pattern of sightings. Long-finned pilot whale are infrequently observed in nearshore waters, but sightings have been recorded year round, with no particular area favoured, although greater sightings are recorded between November and March, when several mass strandings have also occurred.

Long-finned pilot whale are benthic and pelagic feeders, with a diet consisting predominantly of squid, with some fish, including mackerel, hake (*Merluccius hubbsi*), cod, whiting, pollack (*Pollachius pollachius*), scad (*Selar crumenophthalmus*), sea bass (*Dicentrarchus labrax*) and sandeels²⁹.

One record of long-finned pilot whale, approximately 20km south west of the development site, offshore of Hoy was submitted to SWF in 2022. Orkney Islands Council comments to the MS-LOT scoping response³⁰ refer to a pod of pilot whales found within Kirkwall Bay, near to the current Hatston Pier in May 2019. Figure 2-7 **Error! Reference source not found.** shows UK long-finned pilot whale distribution¹⁰. Sightings around the Orkney Isles have been recorded both off-shore and near-shore, via data collated from a range of sources by NatureScot (2011)²⁴, as detailed in Figure 2-8.

²⁹ SWF, long-finned pilot whale fact sheet (2020), available at: <https://www.seawatchfoundation.org.uk/wp-content/uploads/2020/07/Long-finned-Pilot-Whale.pdf>

³⁰ Marine Scotland – Licensing Operations Team Scoping Opinion Scoping Opinion adopted by the Scottish Ministers under Part 4 of The Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017. Orkney Island Council Harbour Authority Expansion of Hatston Pier and Harbour. October 2021

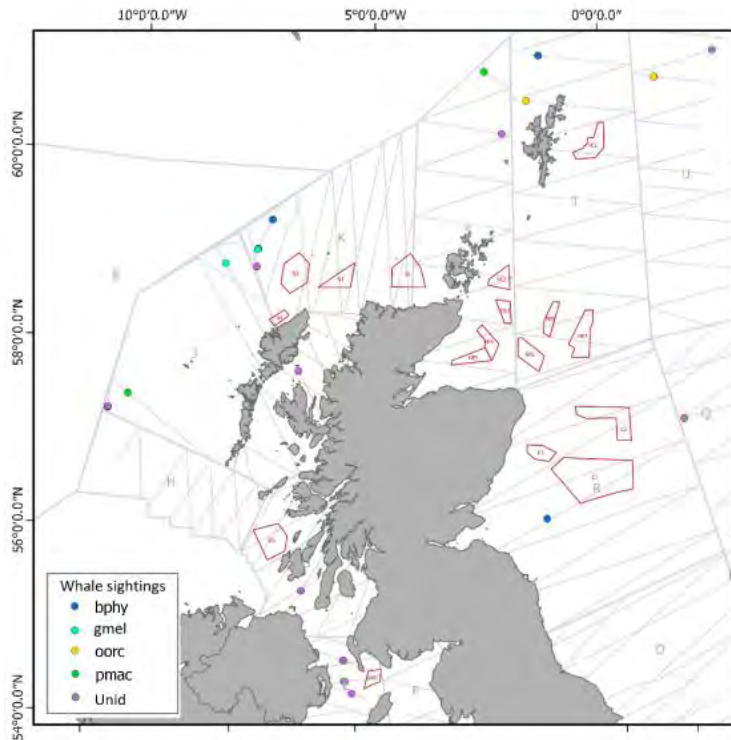


Figure 2-7: Sightings of pilot whale (gmel) seen during the SCANS-III surveys (1994-2016)

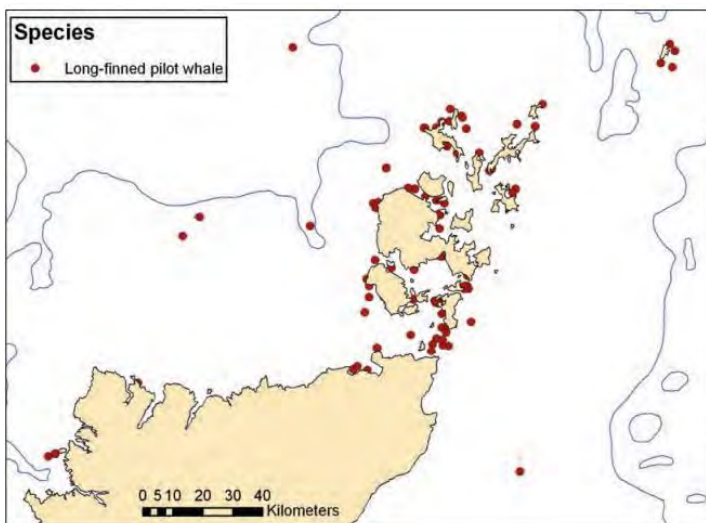


Figure 2-8: Distribution sightings of long-finned pilot whale (1980-2010)

Killer Whale

Although killer whales are uncommon, they are widely distributed in the northern Scottish water and specifically throughout Orkney waters and are PMFs. Killer whales usually first appear in coastal waters around the Northern Isles and Outer Hebrides in May and June, singly or in groups numbering up to 14 individuals, with peak sightings between June and October. Sightings have been reported particularly around Pentland Firth, the Scapa Flow and the North Isles. Pods of up to 150 killer whales have also been observed in the North Sea east of Orkney, closely associated with purse seine fishing activities.

Killer whale use a wide variety of foraging methods and thus have a very variable diet, including fish, such as herring, mackerel, salmon (*Salmo salar*), cod, halibut (*Hippoglossus stenolepis*), squid, rays (*Batoidea*), marine mammals, and occasionally turtles (*Testudines*) and birds³¹.

10 records of killer whale (43 individuals) off the coast of Orkney, have been submitted to SWF in 2022, with the closest sighting being approximately 7km south within Scapa Flow. OW also state killer whale have been sighted in the waters surrounding Orkney. Figure 2-9 **Error! Reference source not found.** shows UK killer whale distribution¹⁰. Frequent sightings of killer whales around Orkney were reported, via data collated from a range of sources by NatureScot (2011)²⁴, as detailed in Figure 2-10.

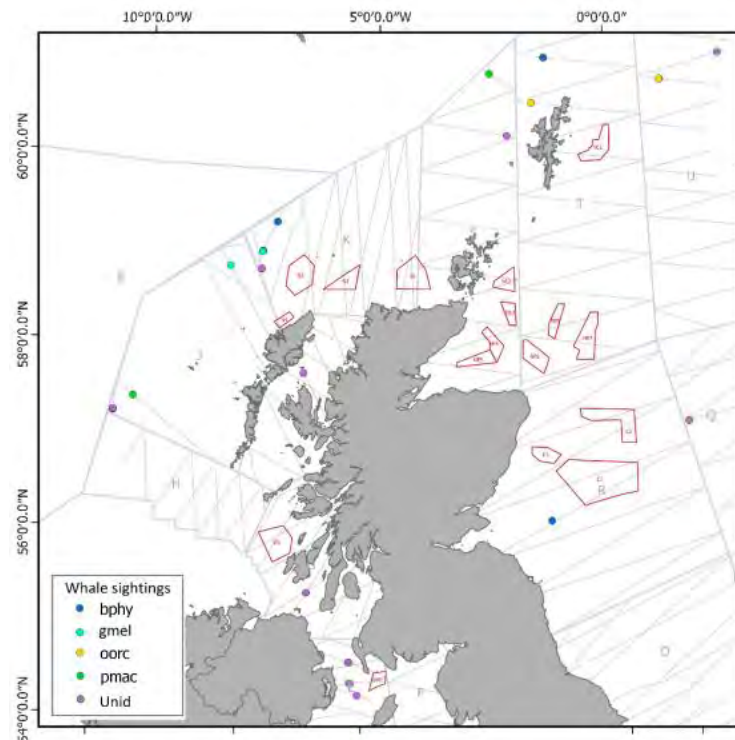


Figure 2-9: Sightings of killer whale (oorc) seen during the SCANS-III surveys (1994-2016)

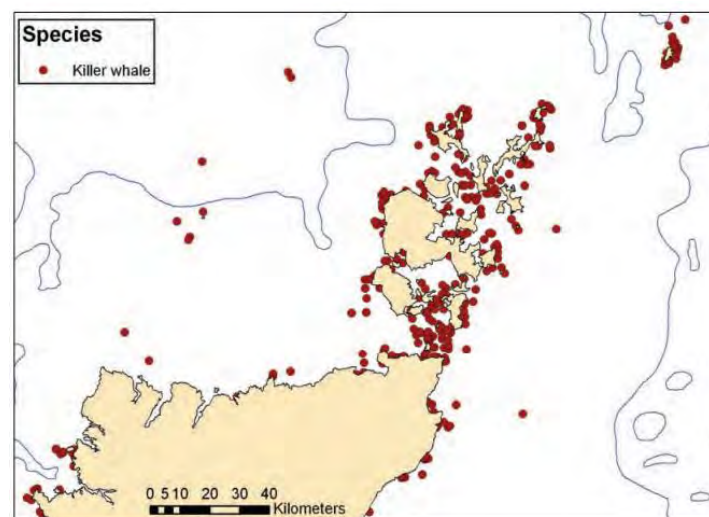


Figure 2-10: Distribution sightings of killer whale (1980-2010)

³¹ SWF, killer whale fact sheet (2020), available at: <https://www.seawatchfoundation.org.uk/wp-content/uploads/2021/03/Killer-Whale.pdf>

White-beaked Dolphin

White-beaked dolphins are recorded frequently in the North Sea, are fairly common and widely distributed around Orkney and are PMFs. Although present year-round in near-shore waters, with most sightings occurring offshore in the northern North Sea east and south of Orkney or at either end of the Pentland Firth throughout the year, sightings of the species generally peak between June and October.

White-beaked dolphins eat a variety of prey items, including fish (cod, whiting, hake, haddock, sprat, mackerel, herring, scad, and gobies), cephalopods (octopus) and sometimes crustaceans³².

One sighting submitted to SWF of white-beaked dolphin was recorded approximately 22km west of the proposed development in 2022. Figure 2-11 **Error! Reference source not found.** shows UK white-beaked dolphin distribution¹⁰. Fine scale sightings data over 1980-2010 showed a fairly even distribution of coverage of sightings of white-beaked dolphin between inshore and offshore waters, via data collated from a range of sources by NatureScot (2011)²⁴ as detailed in Figure 2-12 Figure 2-12.

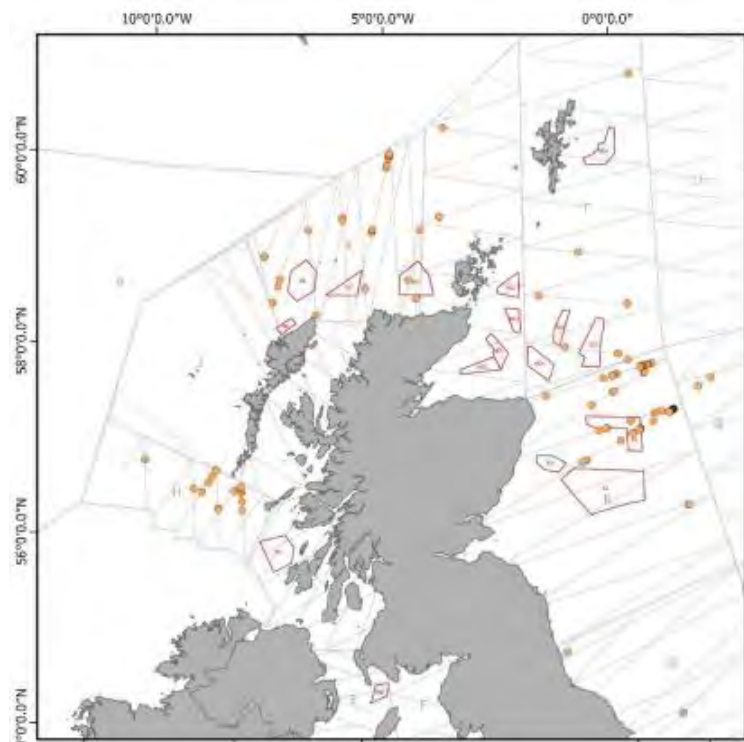


Figure 2-11: Sightings of white-beaked dolphin seen during the SCANS-III surveys (1994-2016)

³² SWF, white-beaked dolphin fact sheet (2020), available at: <https://www.seawatchfoundation.org.uk/wp-content/uploads/2020/07/White-beaked-Dolphin.pdf>

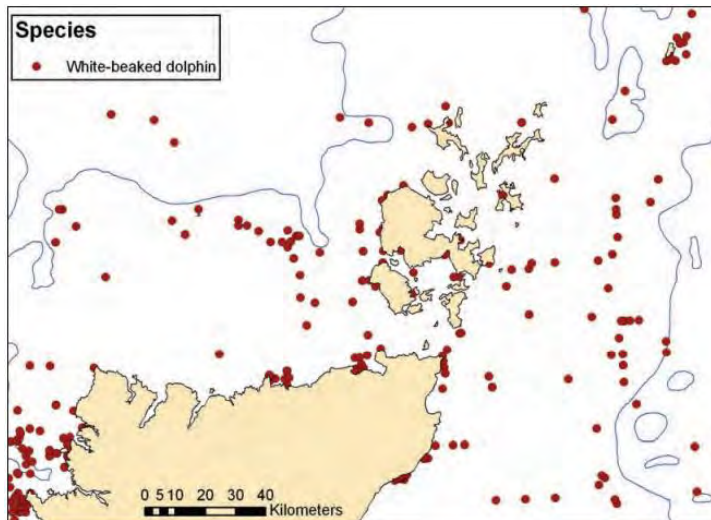


Figure 2-12: Distribution sightings of white-beaked dolphin (1980-2010)

Atlantic White-sided Dolphin

Atlantic white-sided dolphins are predominantly distributed north west of Britain and found in deep waters around the north of Scotland throughout the year and have been observed infrequently to the nearshore waters of Orkney. Atlantic white-sided dolphins are PMFs. They tend to enter the North Sea mainly in summer, but little is known about seasonal movements. Atlantic white-sided dolphins are most frequently sighted around the waters to the west of Orkney out to Sule Skerry between May and October, with peak counts in August.

Atlantic white-sided dolphins are pelagic feeders, predominantly eating herring, silver pout (*Gadiculus argenteus*), blue whiting (*Micromesistius poutassou*), scad, lantern fish (*Myctophidae*), Argentine (*Argentina*) and mackerel as well as some squid and shrimps (*Caridea*)³³.

No records of Atlantic white-sided dolphins were returned from SWF or HWDC, however OW state they are occasionally observed, but usually well offshore. Figure 2-13 shows UK Atlantic white-sided dolphin distribution¹⁰. A mainly offshore distribution of Atlantic white-sided dolphins is associated with Orkney, via data collated from a range of sources by NatureScot (2011)²⁴ as detailed in Figure 2-14.

³³ SWF, Atlantic white-sided dolphin fact sheet (2020), available at: <https://www.seawatchfoundation.org.uk/wp-content/uploads/2020/07/Atlantic-White-sided-Dolphin.pdf>

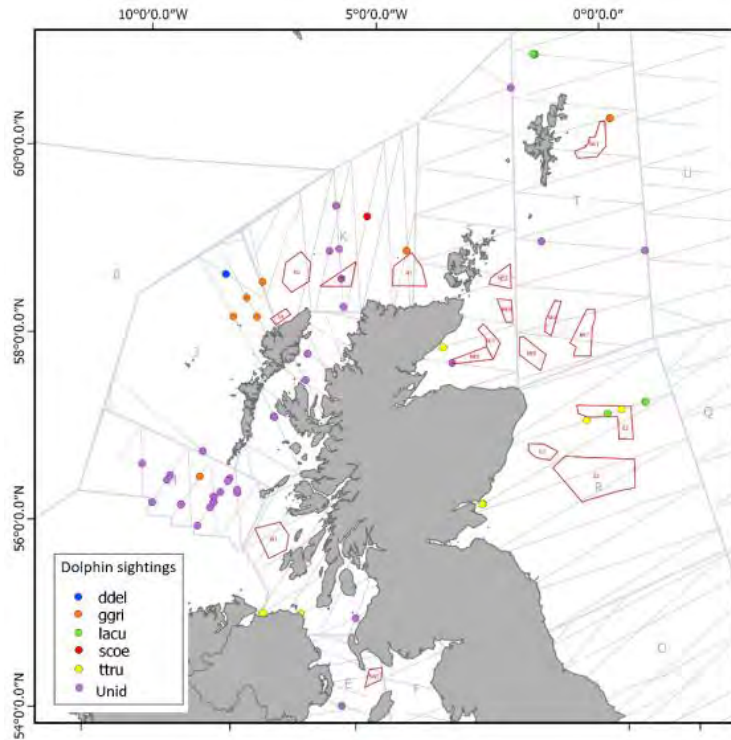


Figure 2-13: Sightings of Atlantic white-sided dolphin (*lacu*) seen during the SCANS-III surveys (1994-2016)

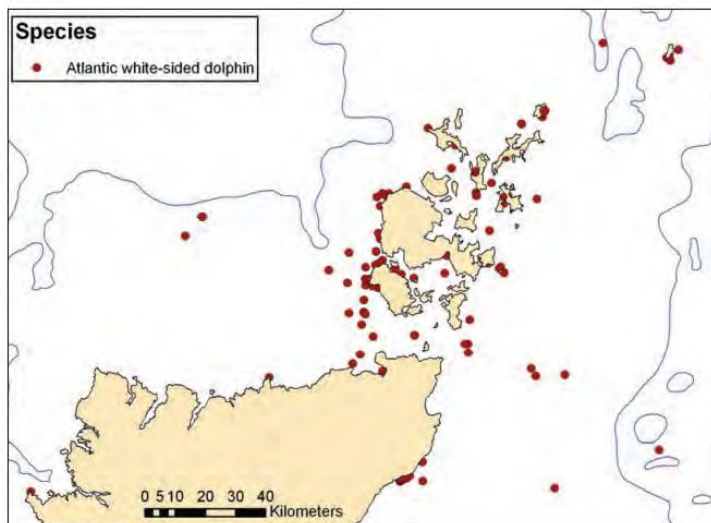


Figure 2-14: Distribution sightings of Atlantic white-sided dolphin (1980-2010)

Sperm Whale

Male sperm whales occur mainly in waters deeper than 200m beyond the shelf break north of Scotland, but they have also been observed in near-shore waters mainly off the Northern Isles of Scotland. Sperm whale are frequently sighted between July and December. Sperm whale are PMFs.

Sperm whale eat a variety of deep sea squid. However, they will also take saithe, monkfish (*Lophius*), halibut, benthic octopus, and crustaceans³⁴.

³⁴ SWF, Atlantic white-sided dolphin fact sheet (2020), available at: <https://www.seawatchfoundation.org.uk/wp-content/uploads/2020/07/Sperm-Whale.pdf>

No records of sperm whale were returned from HWDC, however SWF state that sperm whale are occasionally recorded near Orkney, with most notable records of six sperm whales that remained in Scapa Flow (approximately 9km south) between 22nd February and 25th March in 1993, and eleven sperm whales which were stranded at Backaskaill Bay, Sanday (approximately 32km north) on 7th December 1994, where they died the subsequent morning. The OW also state that sperm whale have been sighted, predominantly in Scapa Flow. Figure 2-15 shows UK sperm whale distribution¹⁰. Sightings of sperm whale over a thirty year study period, via data collated from a range of sources by NatureScot (2011)²⁴ around Orkney Isles was low (seven main coastal sightings events between 1993 and 2007) as detailed in Figure 2-16.

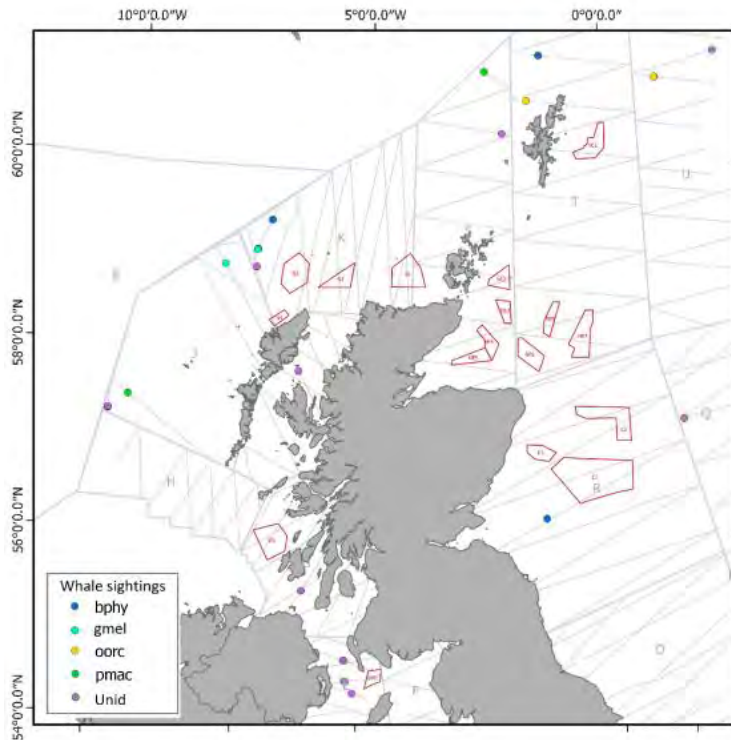


Figure 2-15: Sightings of sperm whale (pmac) seen during the SCANS-III surveys (1994-2016)

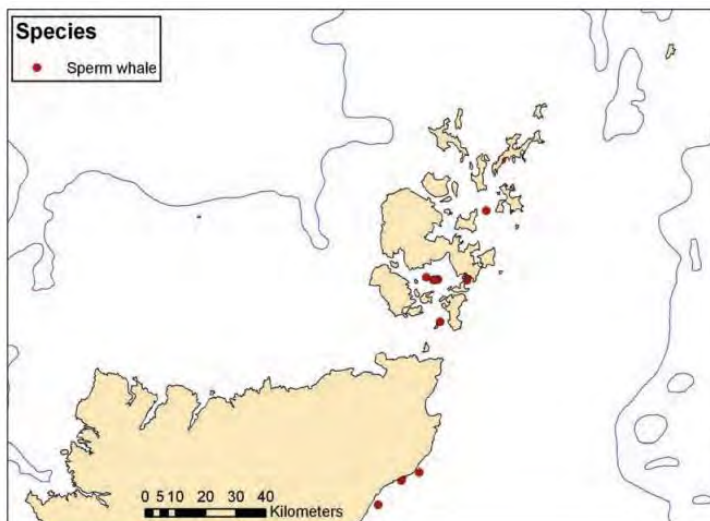


Figure 2-16: Distribution sightings of sperm whale (1980-2010)

Humpback Whale

Humpback whale sightings off Orkney are unusual, with isolated records almost exclusively in waters deeper than 200m. Most sightings are recorded in summer between May and September, which is when small numbers are seen off the continental shelf west and north of Scotland.

Humpback whale eat krill (*Euphausiids*) and various species of small schooling fish, such as herring, sprat, capelin, sandeel and mackerel³⁵.

One sighting submitted to SWF of humpback whale was recorded approximately 9km south of the proposed development in 2022 off the shore of Hobbister (Scapa Flow). OW state they are observed annually, mostly in Scapa Flow (approximately 7km from the development site). Figure 2-17 shows UK humpback whale distribution. Sightings of humpback whales have been infrequently recorded (only 14 sightings in the 30 years), which were mostly clustered around Orkney with no apparent seasonal pattern, via data collated from a range of sources by NatureScot (2011)²⁴ as detailed in Figure 2-18.

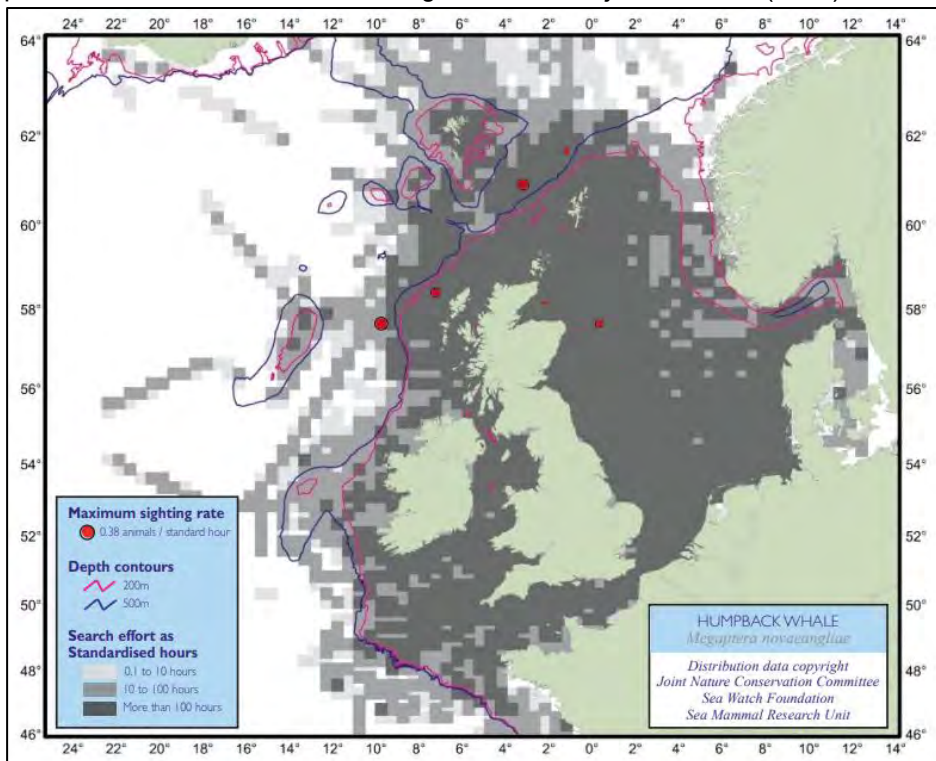


Figure 2-17: JNCC humpback whale distribution map (1979-1997)

³⁵ SWF, humpback whale fact sheet (2020), available at: <https://www.seawatchfoundation.org.uk/wp-content/uploads/2020/07/Humpback-Whale.pdf>

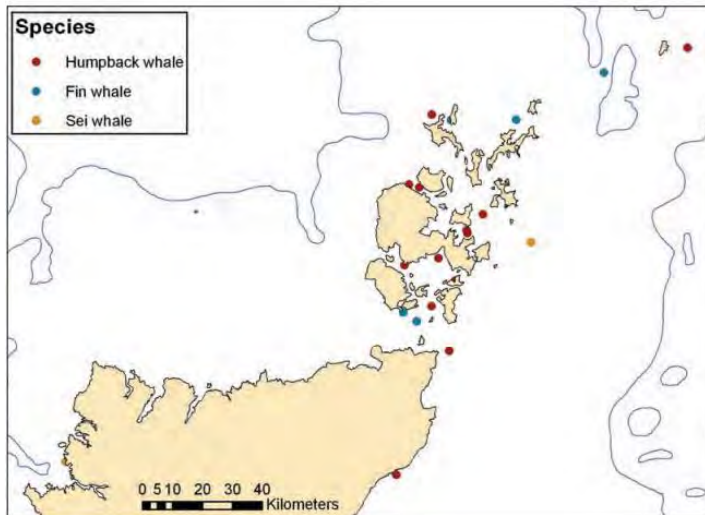


Figure 2-18: Distribution sightings of humpback whale (1980-2010)

Fin Whale

Fin whale are distributed predominantly along or beyond 500m, with fin whale sightings occurring mainly between June and December and peak sighting numbers in northern Britain occur between June and August. Fin whale are PMFs.

Fin whale diet consists predominantly of planktonic crustaceans (particularly *euphausiids*) but will also prey upon small schooling fish including herring, capelin, sandeel, blue whiting, mackerel, and squid³⁶.

No records of fin whale were returned from SWF or HWDC, however OW state fine whale have been rarely observed passing Hoxa Head (approximately 20km south of the development site) and records of two strandings in Scapa Flow (approximately 7km south of the development site) were recorded in two consecutive years, 2019 and 2020. Figure 2-19 **Error! Reference source not found.** shows UK fin whale distribution¹⁰. Sightings of fin whale are very rare around the Orkney Isles (only four sightings in 30 years), via data collated from a range of sources by NatureScot (2011)²⁴ as detailed in Figure 2-20.

³⁶ SWF, humpback whale fact sheet (2020), available at: <https://www.seawatchfoundation.org.uk/wp-content/uploads/2020/07/Fin-Whale.pdf>

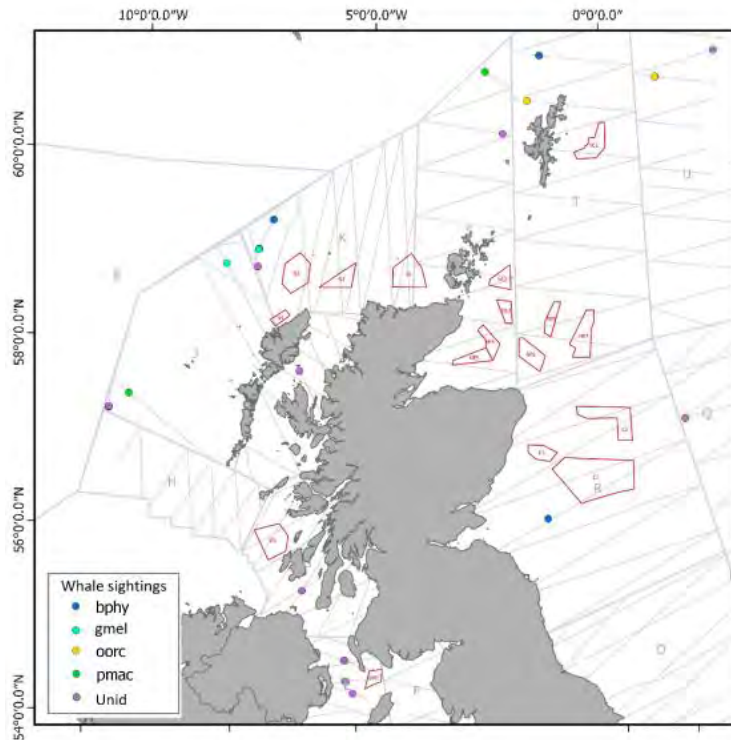


Figure 2-19: Sightings of fin whale (bphy) seen during the SCANS-III surveys (1994-2016)

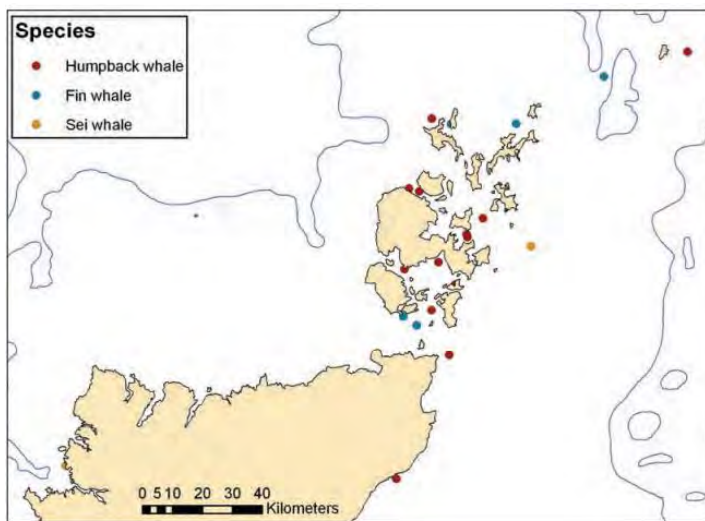


Figure 2-20: Distribution sightings of fin whale (1980-2010)

Sei Whale

Sei whales have mostly been recorded in waters deeper than 200m between the Northern Isles and the Faroes (specifically in proximity to the Faroe-Shetland Channel). Infrequent sightings of sei whale have been reported in coastal waters off Shetland. In general, sightings of sei whale were mainly previously observed in July and August off the Shetland coast.

Sei whale skim the surface waters for patches of copepod, their preferred prey. However, they also feed on *euphausiids*, shoals of fish (e.g. sardine (*Sardina pilchardus*), anchovy (*Engraulidae*)) and where encountered, squid³⁷.

³⁷ SWF, sei whale fact sheet (2020), available at: <https://www.seawatchfoundation.org.uk/wp-content/uploads/2020/07/Sei-Whale.pdf>

No records of sei whale were returned from SWF, HWDC or OW. Figure 2-21 shows UK sei whale distribution. Sightings of sei whale are very rare around the Orkney Isles (only one sighting in 30 years), via data collated from a range of sources by NatureScot (2011)²⁴ as detailed in Figure 2-22.

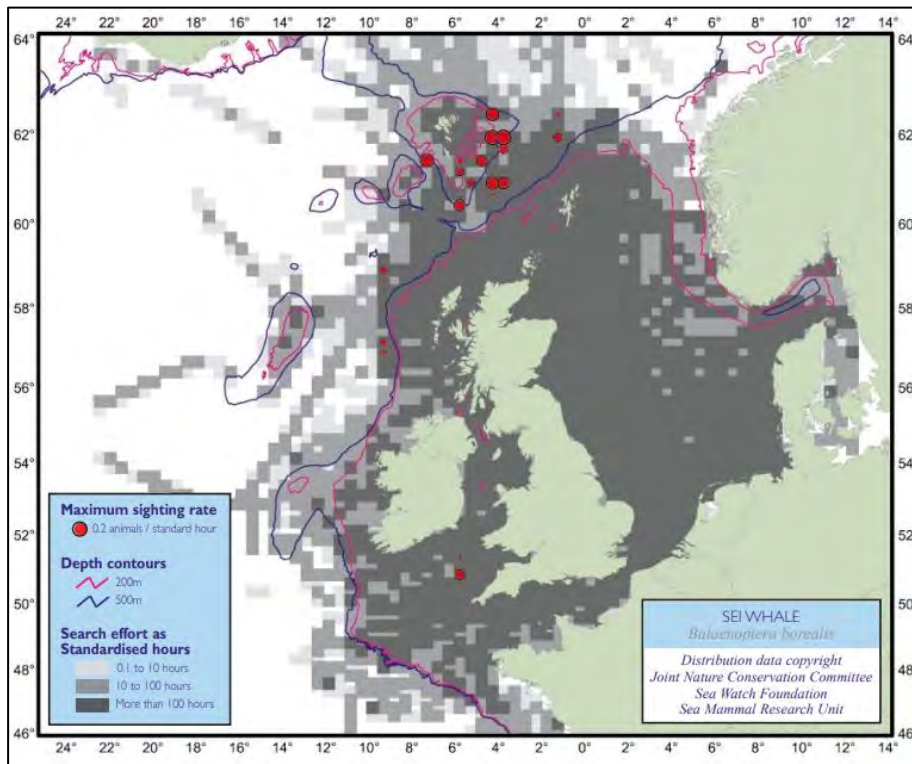


Figure 2-21: JNCC sei whale distribution map (1979-1997)

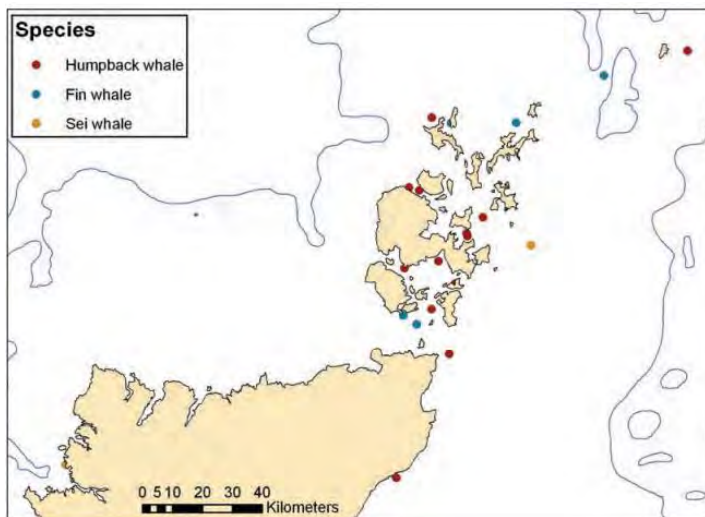


Figure 2-22: Distribution sightings of sei whale (1980-2010)

Striped Dolphin

Striped dolphins are considered rare in UK waters, with the species' normal distribution reaching its northern limits at 50° N and most infrequent records reported in the South-west Channel.

Striped dolphins have variable diets and are classed as opportunistic feeders, depending on the region and season. Being meso- and benthopelagic feeders, their diet consists of fish (sprat, blue whiting,

herring, mackerel, hake, sandeel, lanternfish, and cod), with crustaceans and cephalopods also making up part of their diet³⁸.

No records of striped dolphin were returned from SWF, HWDC or OW. Figure 2-23 shows UK striped dolphin distribution¹⁰. Only two sightings of striped dolphin as reported over a 30 year study, via data collated from a range of sources by NatureScot (2011)²⁴ as detailed in Figure 2-24.

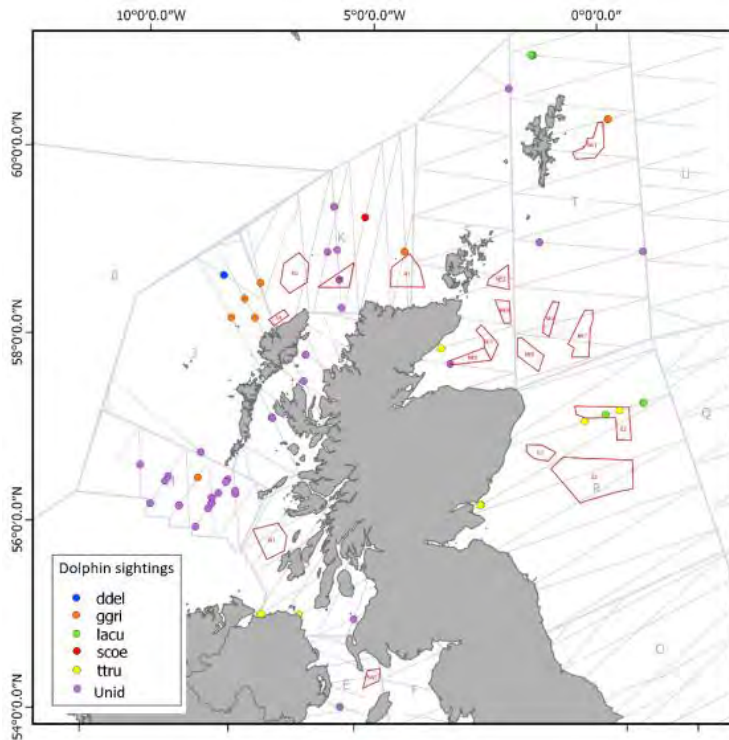


Figure 2-23: Sightings of striped dolphin (scoe) seen during the SCANS-III surveys (1994-2016)

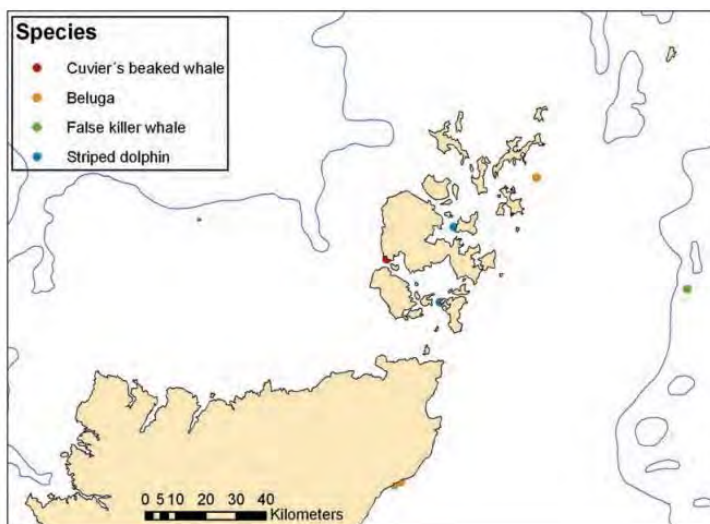


Figure 2-24: Distribution sightings of striped dolphin (1980-2010)

³⁸ SWF, striped dolphin fact sheet (2020), available at: <https://www.seawatchfoundation.org.uk/wp-content/uploads/2020/07/Striped-Dolphin.pdf>

Cuvier's Beaked Whale

Cuvier's beaked whales have a preference for deep waters and there have been only six confirmed sightings of this species in British and Irish waters. Previous sightings have occurred east of the Orkney Islands in the northern North Sea in August 1980. From the limited sightings, it has been suggested that there is likely a summer movement of Cuvier's beaked whale into UK waters between June and September.

Cuvier's beaked whale eat a variety of deep-sea squid species, but will also prey upon crustaceans and fish³⁹.

No records of Cuvier's beaked whale were returned from SWF, HWDC or OW. Figure 2-25 shows UK Cuvier's beaked whale sightings¹⁰. Only one sighting of a Cuvier's beaked whale as reported over a 30 year study, via data collated from a range of sources by NatureScot (2011)²⁴ as detailed in Figure 2-26.

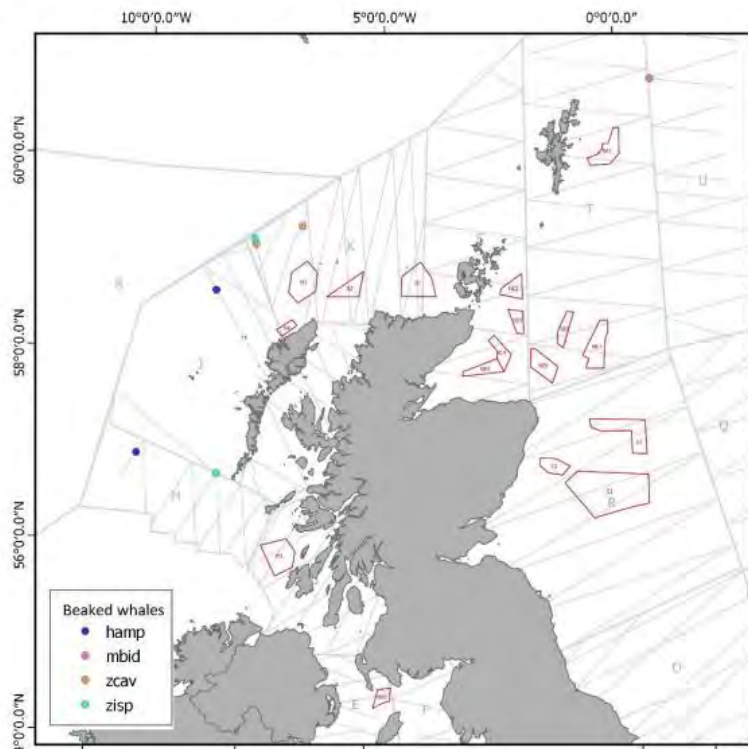


Figure 2-25: Sightings of Cuvier's beaked whale (zcav) seen during the SCANS-III surveys (1994-2016)

³⁹ SWF, Cuvier's beaked whale fact sheet (2020), available at: <https://www.seawatchfoundation.org.uk/wp-content/uploads/2020/07/Cuiviers-Beaked-Whale.pdf>

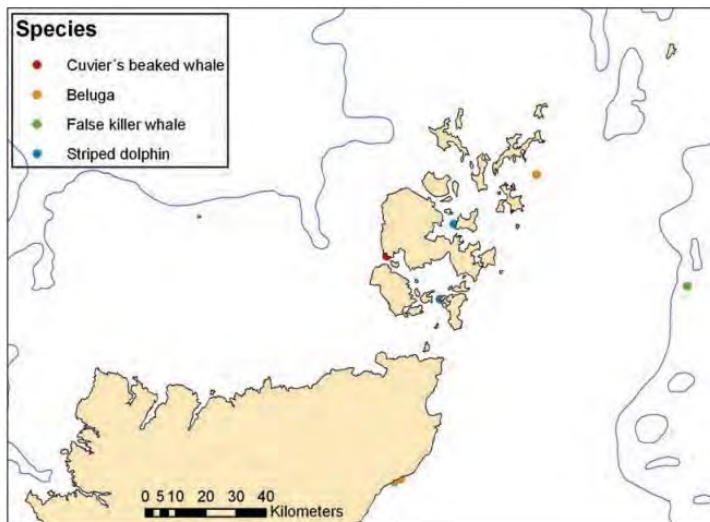


Figure 2-26: Distribution sightings of Cuvier's beaked whale (1980-2010)

Short-beaked Common Dolphin

Short-beaked common dolphins are not strongly associated with Orkney islands and have been rarely recorded in the area since 1980, but are PMFs. In North Atlantic waters, short-beaked common dolphins are predominantly found in continental shelf waters, notably in the Celtic Sea and Western Approaches to the Channel.

Short-beaked common dolphins are opportunistic feeders, with their diet being very varied, but predominantly small schooling fish are preferred, with species depend upon region, including hake, horse mackerel (*Trachurus trachurus*), mackerel, sprat, sardine, anchovy, Norway pout (*Trisopterus esmarkii*), cod, scad, sandeel, herring, whiting and blue whiting. Squid is also taken depending on local availability⁴⁰.

No records of short-beaked common dolphin through SWF or HWDT have been submitted within proximity to Orkney, however they have been rarely observed by OW. Figure 2-27 shows UK common dolphin distribution¹⁰. Infrequent coastal sightings of common dolphins along the Orkney Isles have been recorded via data collated from a range of sources by NatureScot (2011)²⁴ as detailed in Figure 2-28.

⁴⁰ SWF, short-beaked common dolphin fact sheet (2020), available at: <https://www.seawatchfoundation.org.uk/wp-content/uploads/2020/07/Common-Dolphin.pdf>

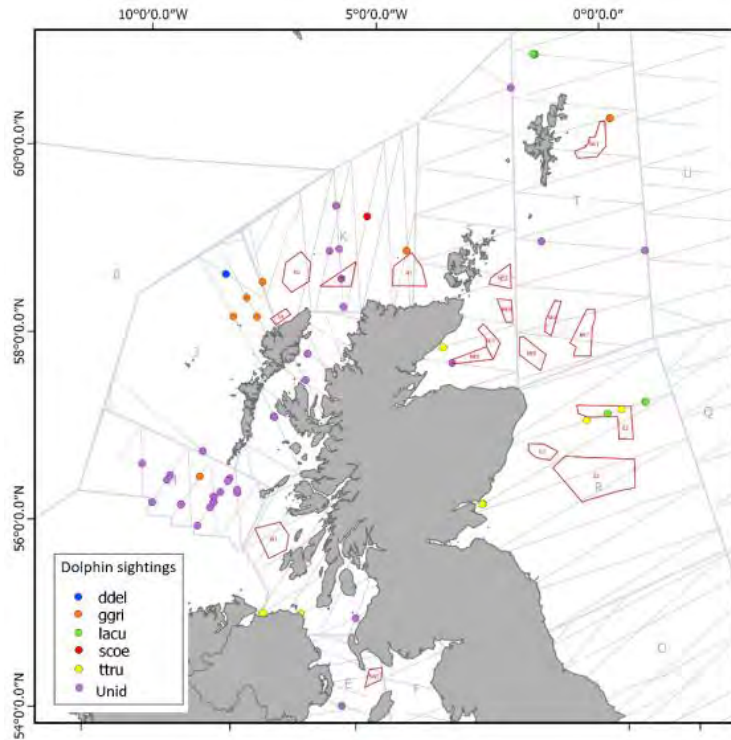


Figure 2-27: Sightings of common dolphin (Ddel) seen during the SCANS-III surveys (1994-2016)

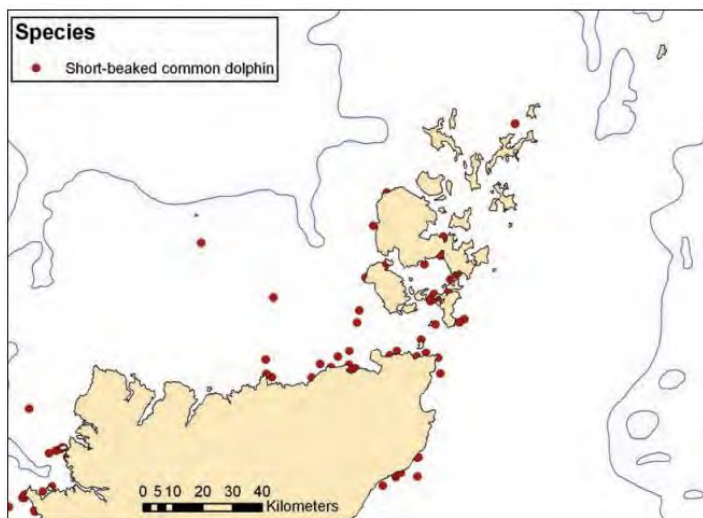


Figure 2-28: Distribution sightings of short-beaked common dolphin (1980-2010)

Bottlenose Dolphin

Bottlenose dolphin are not strongly associated with Orkney islands and have been rarely recorded in the area since 1980, but are PMFs. Bottlenose dolphin are observed in the greatest numbers between July and October (with a secondary peak in some localities in March-April).

Bottlenose dolphin are considered selectively opportunistic and eat a variety of fish and squid species, including cod, saithe, whiting, haddock, salmon, sprat, sandeels, pout, flatfish (*Pleuronectiformes*), and cephalopods⁴¹.

⁴¹ SWF, bottlenose dolphin fact sheet (2020), available at: <https://www.seawatchfoundation.org.uk/wp-content/uploads/2020/07/Bottlenose-Dolphin.pdf>

No records of bottlenose were returned from SWF or HWDC. However, OW state that bottlenose dolphin have been observed offshore of Orkney. The nearest statutory designated site featuring bottlenose dolphin is the Moray Firth SAC, approximately 105km from Hatston, which is designated for supporting the only known resident bottlenose dolphin population in the North Sea (estimated to be around 130 individuals). Dolphins are present all year round⁴². Figure 2-29 shows UK bottlenose dolphin distribution¹⁰. Bottlenose dolphins are thought to be rarely occurring north of the Orkney isles as details in Figure 2-30.

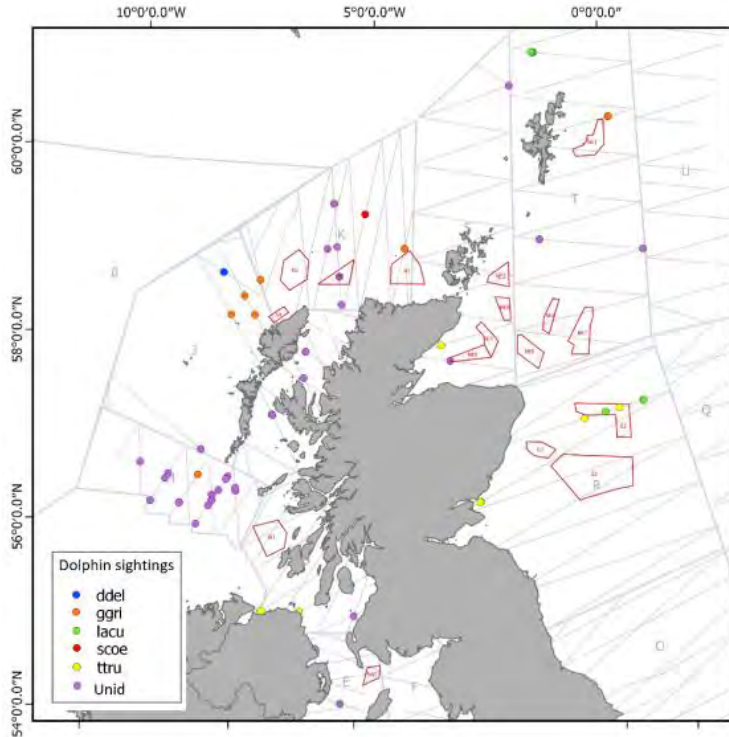


Figure 2-29: Sightings of bottlenose dolphin (ttru) seen during the SCANS-III surveys (1994-2016)

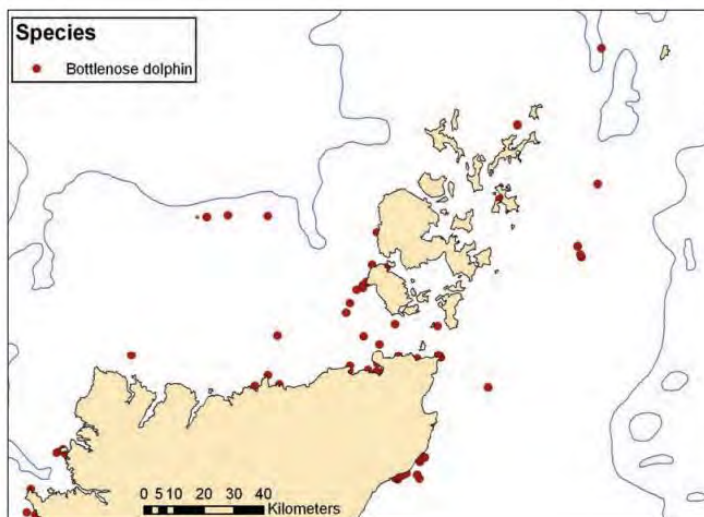


Figure 2-30: Distribution sightings of bottlenose dolphin (1980-2010)

⁴² JNCC SAC Site Details available at: <https://sac.jncc.gov.uk/site/UK0019808> last accessed 12/12/2022

Short-finned Pilot Whale

Short-finned and long-finned pilot whale species can be difficult to separate at sea. In general, short-finned pilot whale tend to be associated and reside in tropical and warm-temperate areas, whilst long-finned pilot whales occur in more cooler waters. Although the possibility exists that some of the pilot whales observed off Orkney (one record submitted to SWF in 2022) are short-finned, the conditions in these areas do not tend to suit the requirements of this species⁴³. They feed mainly on squid, with octopus and fish (mackerel, hake, herring and cod) comprising some of their diet⁴⁴.

Other Cetaceans

Other rare cetacean species recorded around the shores of Orkney since 1980 include Sowerby's beaked whale (PMF), Northern bottlenose whale (PMF), false killer whale, blue whale, narwhal and Beluga. In general, the conditions off Orkney do not tend to suit the requirements of the majority of these species and no recent records of these species were returned from SWF, HWDC or OW.

2.4 Seals

Both harbour seal (*Phoca vitulina*) and grey seal (*Halichoerus grypus*) are PMFs and can be seen all around Scotland on many of the offshore islands and along much of the west mainland coast. Because seals range widely in their search for food, single seals of either species might be spotted anywhere along the Scottish coastline.

There are four statutory designated sites which feature seals within 50km of the Hatston harbour. The nearest notable site for seals in proximity to the development are:

- Eynhallow SSSI, which encompasses the island of Eynhallow, between the Orkney Mainland and Rousay. The island is bound by shingle and sandy beaches which are used by harbour seal for breeding in June and July and as a moult haul out in August. Counts of up to 900 individuals have been made, however, the site is classed as being unfavourable in the latest condition assessment (2013), due to a wider decline in the north and east coast harbour seal population. The SSSI is located 17km north west of the development site.
- The Muckle and Little Green Holm SSSI, two small uninhabited islands which lie between the larger islands of Shapinsay and Eday. Their rocky coasts are used by breeding grey seals. In 2010 the pup count was estimated to be 900, representing c. 2% of the UK pups. The site was classed as being favourable maintained in the last (2014) condition assessment. The SSSI is located 17km north of the development site.
- Faray and Holm of Faray SAC, two uninhabited islands which support a well-established grey seal breeding colony, located approximately 23km north of the development site.
- Sanday SAC, located 33km north west, is also an important site for harbour seals.

Orkney is a stronghold for breeding grey seals and is part of the North Coast and Orkney Seal Management Unit (SMU). It is estimated that the Orkney colonies produced nearly a third of UK pups in 2019⁴⁵. The overall trend is for an increased numbers in the UK population but there was a slight reduction in the Orkney population estimate between 2016 and 2019.

⁴³ No JNCC UK distribution map was available as all sightings were assumed to be of long-finned pilot whales, supported by all strandings in the study area having been of long-finned pilot whales

⁴⁴ WDC short-finned pilot whale species guide, available at: <https://uk.whales.org/whales-dolphins/species-guide/short-finned-pilot-whale/>

⁴⁵ Scientific Advice on Matters Related to the Management of Seal Populations: 2021, Natural Environment Research Council Special Committee on Seals. Available at: <http://www.smru.st-andrews.ac.uk/files/2022/08/SCOS-2021.pdf> (Accessed 08/02/2023)

The latest estimate of the UK harbour seal population is 43,750 with the Orkney and North Coast SMU being home to c.4.5% of that⁴⁶. Whilst the overall trend for harbour seals within the UK is increasing, there has been a dramatic change in distribution. Counts within the Orkney and North Coast SMU have gone from c.9000 in the late 1990's to less than 2000 by 2020. Within Scotland there is a general pattern of population increases in the west and losses along the east and north coasts.

The site and adjacent coastline is not considered suitable for use as a haul out by harbour seals due to the relatively high level of disturbance associated with the existing pier and adjacent industrial units. The site is not within a designated site for grey seal and due to activities associated with the existing pier and adjacent industrial area, it is not considered that the habitat is suitable for use as a breeding or moulting haul out site.

Grey seals travel large distances, frequently over 100km, to forage and prefer offshore feeding areas as well as exposed coasts and islands to come ashore, with the outer fringes of Orkney being classed as suitable. Harbour seals routinely travel 40-50km from their haul-out sites to forage and prefer more sheltered waters. The waters surrounding the site are home to various gadoids and flat fish which are grey seal prey species. There are many seal haul outs, two SSSIs and an SAC designated for grey seals within 100km of the site, which is considered to be their typical foraging range. The waters within and surrounding the site are known to host fish and other suitable prey items for harbour seals, and there are several designated haul outs, an SSSI and SAC within 50km of the site, which is considered to the typical foraging range. This means both harbour seals and grey seals may therefore use the coastal waters within and adjacent to the site for commuting between haul outs and/or foraging.

Records of 420 out of 461 tagged harbour seals within UK waters (2001-2018) show a primarily coastal distribution, with concentrations in Hebrides, the Moray Firth, Orkney and Shetland, as detailed in Figure 2-31. Estimated at sea usage for the area around the site is c.10 - <50 individuals per 5km² (Figure 2-32).

Records of 285 out of 355 tagged grey seals within UK waters (1988-2018) show a broad-scale distribution, with grey seals utilising both coastal and offshore habitat, with Orkney being a key high-use area, as detailed in Figure 2-33. The estimated sea usage for grey seals within the site is less than other areas of the Orkney Isles though (10 - <50 vs >100 individuals per 5km² to the north, east and south) as detailed in Figure 2-34.

⁴⁶ Scientific Advice on Matters Related to the Management of Seal Populations: 2021, Natural Environment Research Council Special Committee on Seals. Available at: <http://www.smru.st-andrews.ac.uk/files/2022/08/SCOS-2021.pdf> (Accessed 08/02/2023)

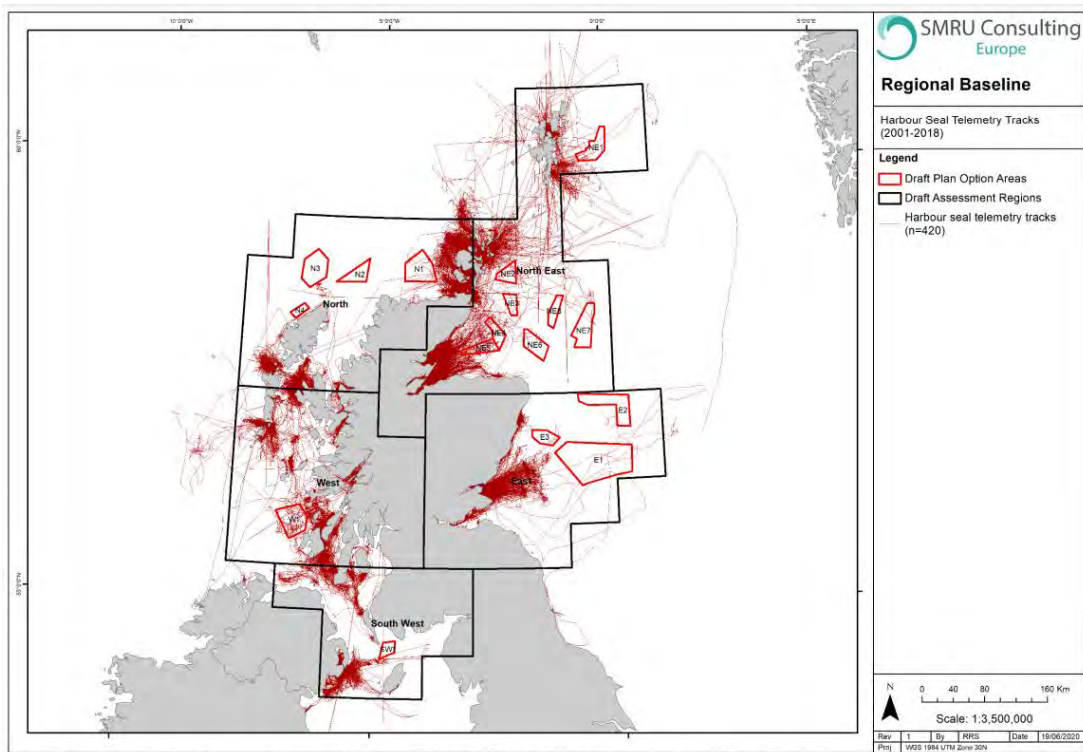


Figure 2-31: Telemetry tracked harbour seals (2001-2018)

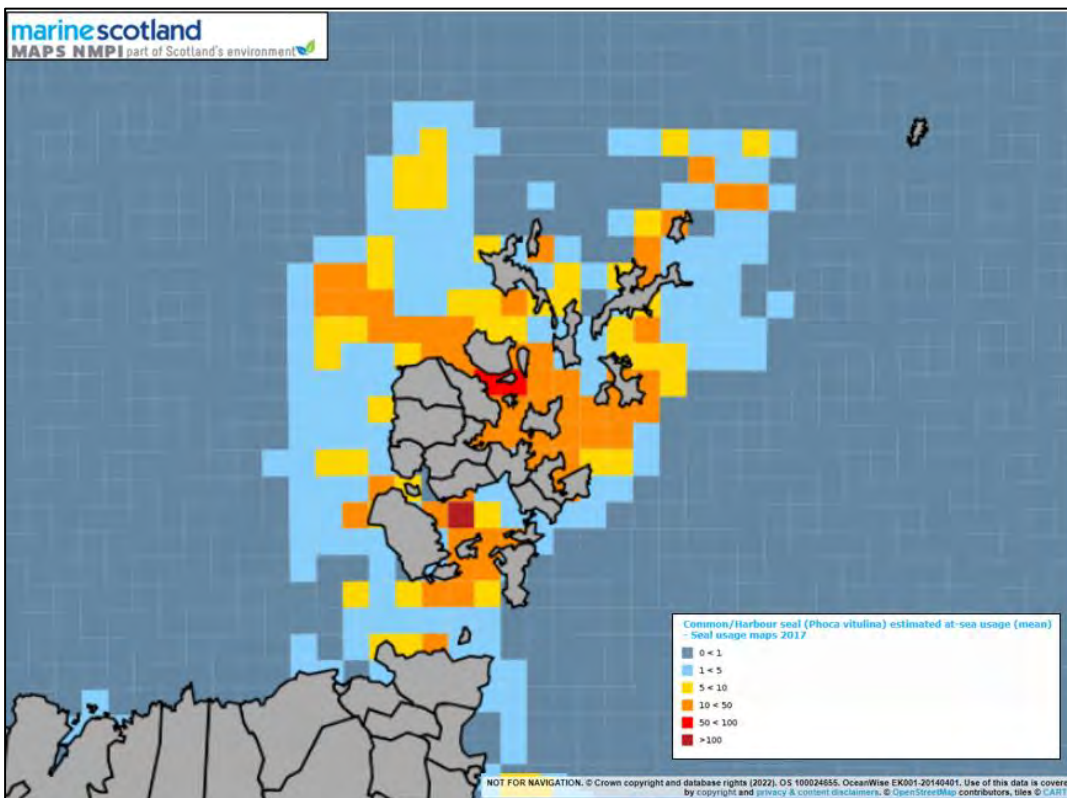


Figure 2-32: Map showing the estimated mean harbour seal density at sea. Image taken from the NMPI. Data from surveys conducted between 1991 and 2016, originated from the Sea Mammal Research Unit.

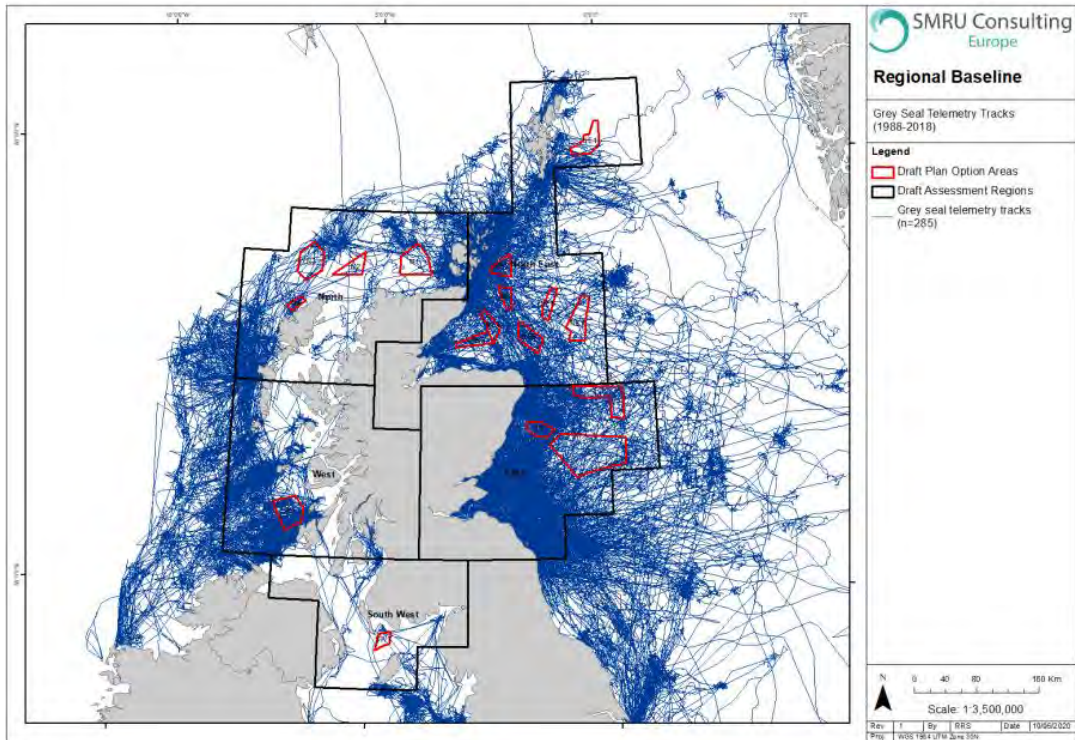


Figure 2-33: Telemetry tracked grey seals (1988-2018)

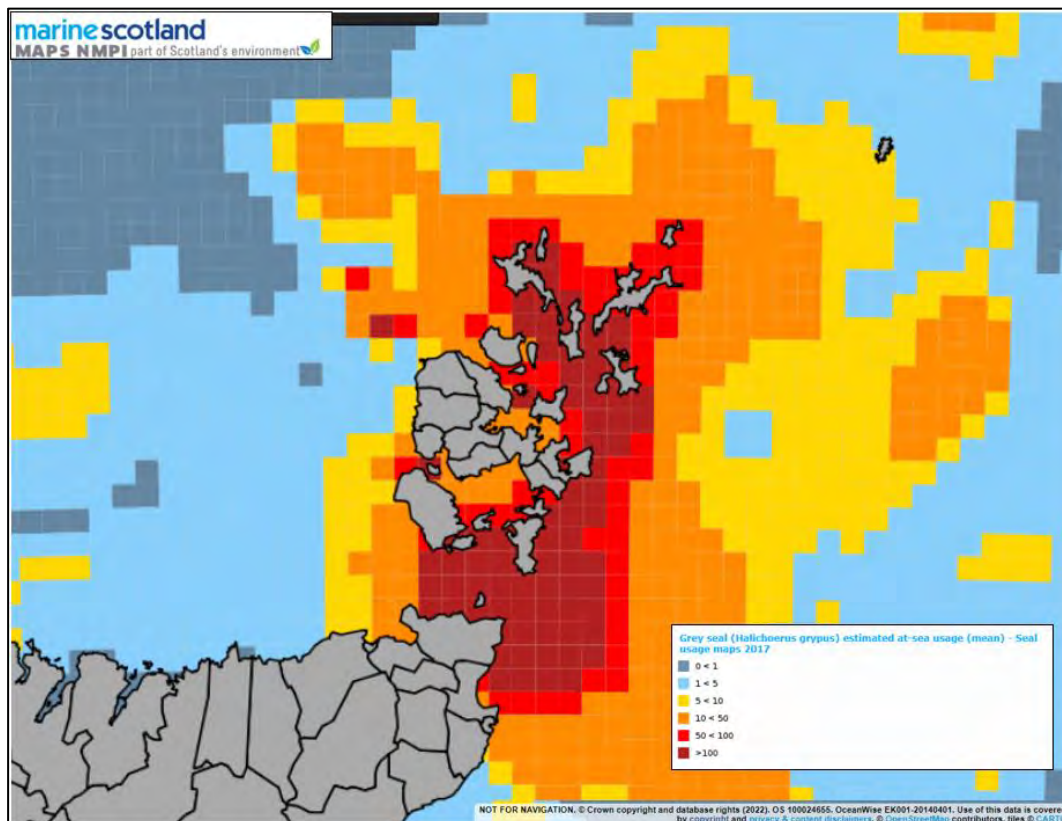


Figure 2-34: Map showing the estimated mean grey seal density at sea. Image taken from the National Marine Plan Interactive Map (NMPi). Data from surveys conducted between 1991 and 2016, originated from the Sea Mammal Research Unit.

Seal haul out data counts for harbour seal and grey seal also show the important association with Orkney, as detailed in Figure 2-35¹².

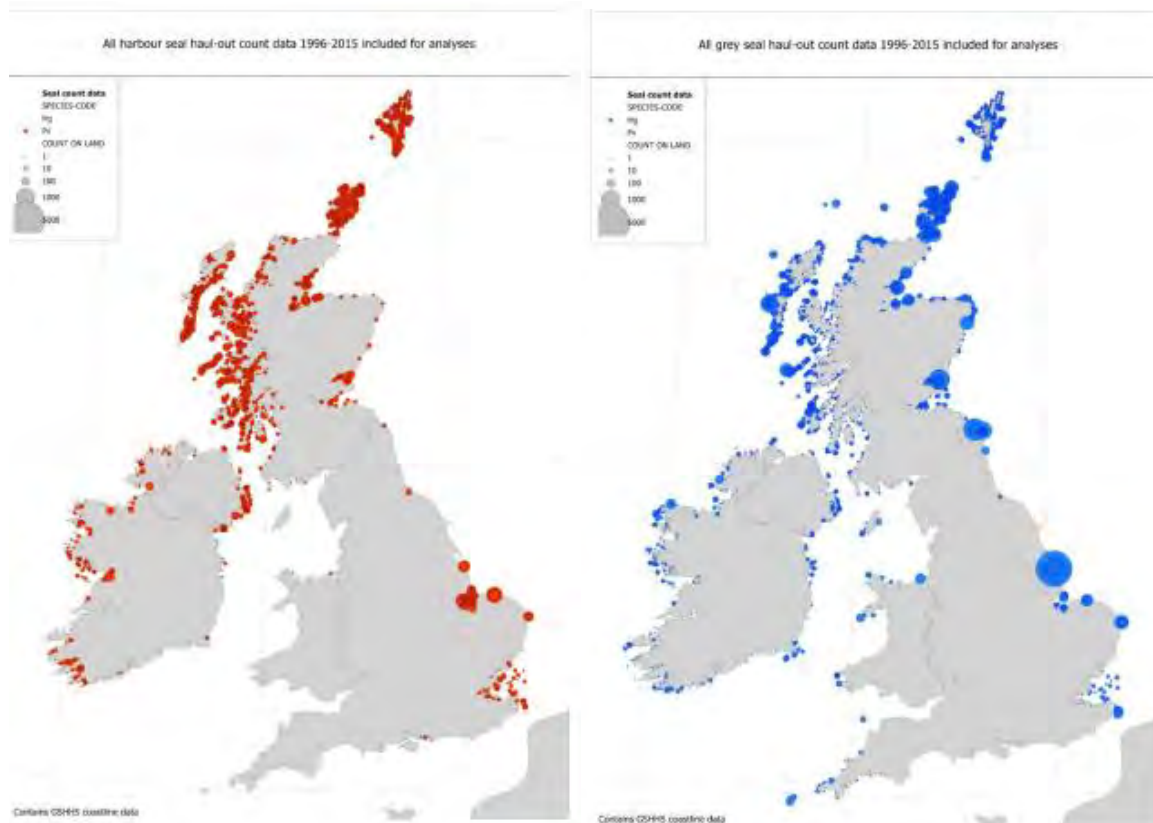


Figure 2-35: Haul out seal count data (1996-2015)

SMASS have recorded 75 harbour seal strandings within 8km of the site between 1994-2022 and 18 grey seal strandings within 8km of the site between 1995-2021.

2.5 Fish

2.5.1 Basking Shark

Although not a marine mammal, basking sharks (*Cetorhinus maximus*) are listed as endangered on the International Union for Conservation of Nature and Natural Resources (IUCN) Redlist⁴⁷ and are afforded domestic and global protection; therefore, have been considered in this assessment. Basking sharks are also PMFs. Basking shark sightings have been reported to HWDC since 2017, with three records nearest to the site being approximately 40km west in 2022, 58km south in 2022 and 94km south west in 2019. The nearest known basking shark hotspot⁴⁸ during the summer months, between May and October is along the coast of the Isle of Skye, approximately 247km south west of Orkney. No records of basking shark strandings have been reported by SMASS near Orkney. Various records of basking shark have been reported over a 30 year study, via data collated from a range of sources by NatureScot (2011)²⁴ as detailed in Figure 2-36.

⁴⁷ IUCN Red List available at: <http://www.iucnredlist.org/> last accessed 12/12/2022

⁴⁸ The Shark Trust basking shark sightings available at: <https://www.sharktrust.org/basking-shark-project> last accessed 12/12/2022

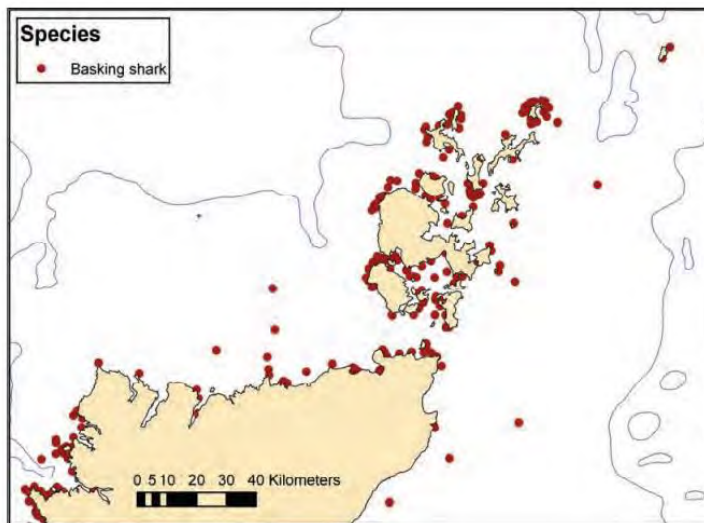


Figure 2-36: Distribution sightings of basking shark (1980-2010)

2.5.2 Burns/Watercourses

A series of burns and watercourses are present throughout Orkney, which have potential to provide suitable habitat for a range of fish species for spawning, nursery grounds and residing. The Burn of Hatston is an open watercourse that flows through the west of the proposed site, which is culverted to the Bay of Kirkwall at approximately 250m south west of the existing Hatston Pier and has a catchment size of 1.36km² upstream of the point of discharge.

Malcolm Thomson of the Orkney Trout Fishing Association completed survey work (approx. 15 years ago) looking at streams around Orkney to identify which held populations of brown trout (*Salmo trutta*) and of those, which were also producing sea trout (*Salmo trutta*). Out of the freshwater systems surveyed, 36 contained brown trout, and evidence of sea trout was found in 23 of those. However, no trout were found in any burns close to the development site, only eel (*Anguilla anguilla*) and threespine stickleback (*Gasterosteus aculeatus*) (pers comm). These watercourses are also not considered Atlantic salmon or sea trout rivers by Marine Scotland⁴⁹.

A recent site visit undertaken by EnviroCentre considered the burn of Hatston to be unsuitable for Atlantic salmon or sea trout, specifically due to the heavily culverted nature with lack of design for fish passage and constrained access between the watercourse mouth and sea (limited water levels and exposed nature) (Photograph 1 and 2).

A number of trout burns are also present in the wider area, with the Bay of Firth (approximately 6.5km west of the site) being a known feeding area for sea trout and supports a recreational fishery which occurs at sea and it is available to the public for free.

The Atlantic salmon, sea trout and European eel are PMFs (marine part of life cycle).

Although river lamprey (*Lampetra fluviatilis*) and sea lamprey (*Petromyzon marinus*) are PMFs (marine part of life cycle), they are not considered to be of relevance to the site as lampreys were absent from

⁴⁹ Marine Scotland Salmon and Sea Trout – Scottish Salmon Rivers, available at: <https://marine.gov.scot/information/atlantic-salmon-distribution-scotland>, last accessed 09/01/2023

all survey sites on Orkney during the National Lamprey Survey of Scotland, undertaken by NatureScot between 2003-2005⁵⁰.



Photograph 1: Culverted entrance to Burn of Hatston, with limited fish suitability



Photograph 2: Low water levels and exposed mouth of Burn of Hatston

Open Water

A range of fish species have been caught by the Orkney Shore Angling Association (OSAA) off Hatston pier, some of which are PMFs (as indicated by *), including:

- Mackerel*
- Ling (*Molva molva*)*
- Cod*
- Whiting*
- Flapper Skate (*Dipturus intermedius*)*⁵¹
- Herring*
- Sea Trout*
- Atlantic Horse-Mackerel*
- Pollack
- Lesser spotted dogfish (*Scylliorhinus caniculus*)
- Coalfish (*Pollachius virens*)
- Pouting
- Poor cod (*Trisopterus minutus*)
- Sea Scorpion (*Taurulus bubalis*)
- Short-Horn Sculpin (*Myoxocephalus scorpius*)
- Flounder (*Platichthys flesus*)
- Plaice (*Pleuronectes platessa*)
- Dab (*Limanda limanda*)
- Conger Eel (*Conger conger*)
- Tub Gurnard (*Trigla lucerna*)
- Grey Gurnard (*Eutrigla gurnardus*)
- Lumpsucker (*Cyclopteridae*)
- Garfish (*Belone belone*)

⁵⁰ NatureScot (2020). National Lamprey Survey of Scotland (2003-2005). Occurrence dataset <https://doi.org/10.15468/gbeajh> accessed via GBIF.org on 2023-01-23.

⁵¹ Reported as common skate by OSAA, however likely to be the flapper skate following the common skate being identified as two distinct species in 2010, with the flapper skate occurring in the northern North Sea and off Scotland's north-west coast.

- Thornback Ray (*Raja clavata*)
- Spotted Ray (*Raja montagui*)
- Thicklip Grey Mullet (*Chelon labrosus*)
- Shore Rockling (*Gaidropsarus mediterraneus*)
- Ballan Wrasse (*Labrus bergylta*)
- Cuckoo Wrasse (*Labrus bimaculatus*)

Fish PMFs

The following PMF fish species, have either been recorded in proximity to the site ⁽ⁱ⁾ or are marine mammal prey sources ⁽ⁱⁱ⁾. Information (where possible) on, nursery and spawning ground areas ^{52 53 54} as well as distribution has been used to assess whether the species could be present within the development site in Orkney. In addition, benthic habitat surveys undertaken on the site revealed underwater habitat types comprising predominantly infralittoral muddy sand $\geq 200\text{m}$, with a mosaic of boulders, cobbles, red seaweeds, muddy sand, bedrock, sand/gravel, occasional kelp/seaweed and shells in the nearshore areas⁵⁵. Therefore, where no suitable habitat is present for marine mammal prey resource PMFs these have been excluded. Those of relevance are detailed in Table 2-1.

Table 2-1: Fish PMFs in Relation to the Development Site

| PMF | Spawning Grounds Cover the Site | Nursery Grounds Cover the Site | Distribution Covers the Site |
|--|---------------------------------|--------------------------------|------------------------------|
| Anglerfish (<i>Lophius piscatorius</i>) | Unlikely (insufficient data) | Yes (high density) | Yes |
| Atlantic halibut ⁽ⁱⁱ⁾ | No | No | Yes |
| Atlantic herring ^{(i) (ii)} | Yes | Yes (low density) | Yes |
| Atlantic mackerel ^{(i) (ii)} | No | No | Yes |
| Atlantic salmon ⁽ⁱⁱ⁾ | No | No | Yes |
| Blue whiting ^{(i) (ii)} | No | Yes (low density) | Yes |
| Cod ^{(i) (ii)} | No | No | Yes |
| Flapper skate and blue skate (formerly common skate) (<i>Dipturus intermedius</i> and <i>D. batis</i>) ^{(i) (ii)} | Potentially | Potentially | Yes |
| Horse mackerel ^{(i) (ii)} | No | No | No |
| Ling ⁽ⁱ⁾ | No | Yes (low density) | Yes |
| Norway pout ⁽ⁱⁱ⁾ | No | No | No |
| Saithe ⁽ⁱⁱ⁾ | No | Yes (unknown density) | Yes |
| Sandeels (<i>Ammodytes marinus</i> & <i>Ammodytes tobianus</i>) ⁽ⁱⁱ⁾ | Yes | Yes (low density) | Yes |
| Sand goby (<i>Pomatoschistus minutus</i>) ⁽ⁱⁱ⁾ | Potentially | Potentially | Yes |
| Sandy ray (<i>Leucoraja circularis</i>) ⁽ⁱⁱ⁾ | No | No | No |
| Spiny dogfish (<i>Squalus acanthias</i>) | No | Yes (low density) | Yes |
| Whiting ^{(i) (ii)} | No | Yes (low density) | Yes |

Aquaculture/Fisheries

⁵² MS NMPi data available at: https://marine.gov.scot/maps/nmpi?title=&items_per_page=25

⁵³ CEFAS Ellis, J.R., Milligan, S.P., Readdy, L., Taylor, N. and Brown, M.J. 2012. Spawning and nursery grounds of selected fish species in UK waters. Sci. Ser. Tech. Rep., Cefas Lowestoft, 147: 56pp.,

⁵⁴ NatureScot <https://www.nature.scot/sites/default/files/Publication%202016%20-%20SNH%20Commissioned%20Report%20406%20-%20Descriptions%20of%20Scottish%20Priority%20Marine%20Features%20%28PMFs%29.pdf>

⁵⁵ Dewey, S., Forster, S., O'Dell, J., and MacMillan, A. (2023). Hatston Pier and Harbour Subtidal Survey – Interim Report. A report to Envirocentre by Seastar Survey Ltd. and Physalia Associates Ltd. 18 pages

A number of active commercial fisheries are present within 20km of the site, comprising of Atlantic Salmon, lumpsucker (*Cyclopteridae*) and wrasse (*Labridae*). The nearest commercial fishery is Quanterness, present 1.25km north west of the development site and consist of Atlantic salmon and lumpsucker.

2.6 Marine Mammals and Fish Species Likely to be Impacted

From the proposed works associated with the development, some of the following potential impacts may occur:

- Noise and vibration generated during construction of pier and future operations, ship traffic and other port activities may temporarily or permanently impact marine mammals, seals and fish and any prey resources.
- Potential impacts on water quality as a result of pollution events (fuel spills, sediment runoff etc.) during and post construction.
- Removal of benthic habitat for construction of pier.
- Introduction or further spread of non-native species during and post construction.
- Increased ship movement may result in collisions with marine mammals, seals or basking sharks.

Based on the above information, it has been assessed that the most frequently observed species, and therefore the species considered to be of most concern within the zone of influence of the proposed development, are harbour porpoise, Risso’s dolphin, killer whale, white-beaked dolphin, long-finned pilot whale, grey seal, harbour seal, basking sharks, diadromous fish, commercial fisheries, European eel and some fish PMFs. The other species aforementioned are less frequently observed in Orkney waters and therefore are less likely to be of concern within the zone of influence.

Table 2-2: Marine Mammals and Fish Species with Potential to be Impacted by Proposed Development

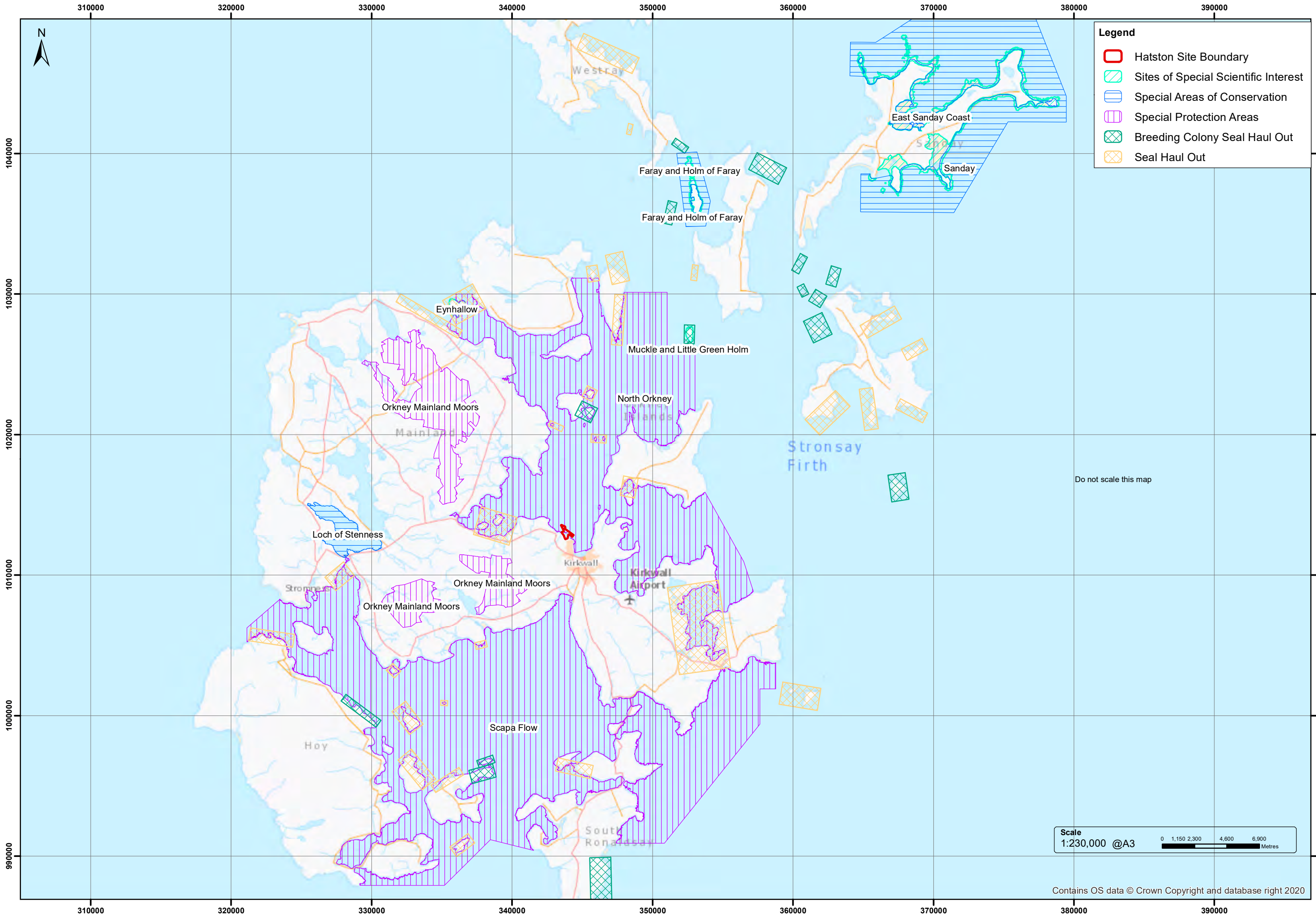
| Species | Regularly Present near Hatston | Potential to be Impacted |
|------------------------------|--------------------------------|--------------------------|
| Harbour porpoise | Yes | Yes |
| Risso’s dolphin | Yes | Yes |
| Killer whale | Yes | Yes |
| White beaked dolphin | Yes | Yes |
| Long-finned pilot whale | Yes | Yes |
| Minke whale | Yes | Yes |
| Short-beaked common dolphin | No | No |
| Striped dolphin | No | No |
| Atlantic white-sided dolphin | No | No |
| Bottlenose dolphin | No | No |
| Humpback whale | No | No |
| Sperm whale | No | No |
| Fin whale | No | No |
| Cuvier’s beaked whale | No | No |
| Sei whale | No | No |
| Short-finned pilot whale | No | No |
| Sowerby’s beaked whale | No | No |
| Northern bottlenose whale | No | No |
| False killer whale | No | No |
| Blue whale | No | No |
| Narwhal | No | No |

| Species | Regularly Present near Hatston | Potential to be Impacted |
|---|---------------------------------------|---------------------------------|
| Beluga | No | No |
| Harbour seal | Yes | Yes |
| Grey seal | Yes | Yes |
| Basking shark | Yes | Yes |
| Diadromous fish | Yes | Yes |
| Commercial fisheries | Yes | Yes |
| European Eel | Yes | Yes |
| PMF fish species with nursery and/or spawning grounds covering the site (Anglerfish, Atlantic herring, flapper skate, saithe, sandeels, sandy goby, spiny dogfish, whiting) | Yes | Yes |

APPENDICES

A PROPOSED SITE LOCATION AND LAYOUT

B DESIGNATED SITES



Legend

- Hatston Site Boundary
- Sites of Special Scientific Interest
- Special Areas of Conservation
- Special Protection Areas
- Breeding Colony Seal Haul Out
- Seal Haul Out

Do not scale this map

Scale
1:230,000 @A3