

7 ENVIRONMENTAL OVERVIEW

7.1 Introduction

7.1 This section provides an overview of the environment in which the Project will be developed. More detailed descriptions of specific aspects of the environment are detailed in individual topic specific sections of the Environmental Statement (ES) (Sections 9 to 24).

7.2 Physical Characteristics

7.2.1 Offshore

7.2 The Pentland Firth is characterised by strong tidal currents, up to 5m/s with widespread and highly energetic tidal races, eddies, overfalls and areas of general turbulence. Water depths in the Project area range from 31.5 to 38m Lowest Astronomical Tide (LAT).

7.3 The wave climate in the area is dominated by the passage of low pressure systems from west to east across the North Atlantic. In general terms the highest waves approach the area from westerly directions. Wave periods of 4 seconds are typical of the Pentland Firth. Significant wave heights throughout the year are typically within the range of 1.75 to 2m and 1.25 to 1.5m within the Pentland Firth.

7.4 Mean sea surface temperature throughout the Pentland Firth is 7°C in winter to 12.5°C in summer. There is little evidence of thermoclines as there is strong mixing of currents.

7.5 The Pentland Firth represents the most extensive example of UK Biodiversity Action Plan (BAP) Priority Habitat 'tidal rapids'; consisting of sand-scoured bedrock and boulders. Despite this, the faunal communities are of low diversity and composed of common widely distributed scour tolerant species meaning the habitat is of low conservation importance.

7.6 The offshore Project area is underlain by rock of the Middle Old Sandstone which is Devonian in age.

7.7 The seabed in the vicinity of the Project consists of exposed rock with some crevices where sediment collects. There are pockets of shelly gravel, but none present in the actual proposed turbine deployment area. Between the turbine deployment area and the shore, kelp park/forest dominates. There are larger areas of sand deposits to the east and west of Stroma. The west of Stroma was surveyed and described as shelly medium sand with no infauna.

7.2.2 Onshore

7.8 From Cape Wrath to Duncansby Head the north coast of Scotland is comprised mainly of sea cliffs with pockets of sandy beaches, although these are usually small. In the vicinity of the Project along the coast of Gills Bay (Scottish mainland) and the south coast of the island of Stroma there is little evidence of littoral drift or sediment accretion. Beach and cliff erosion is minor, as is longshore drift.

7.9 The onshore Project area is underlain by the same Middle Old Red Sandstone as found underlying the offshore Project area.

7.10 The John o' Groats Site of Special Scientific Interest (SSSI) is located approximately 1.6km southeast of the Project. The SSSI is within the intertidal area and designated due to an exposure of sedimentary rock containing fossilised fish.

7.11 The majority of watercourses in the vicinity of the Project are small and many have been modified for drainage purposes. The two largest watercourses in the vicinity of the proposed onshore infrastructure are the East and West Burns of Gills. In their lower reaches both these burns are deeply incised with steep banks.

7.2.3 Landscape and seascape

7.12 The landform in the area is typical of the north Caithness zone; gently rolling with the vast majority being less than 100m above sea level. There is relatively little containment and views are both panoramic and extensive.

7.3 Biological Characteristics

7.3.1 Marine mammals

7.13 The Pentland Firth is utilised to varying degrees by a number of whale and dolphin species, 10 such species are either casual or regular visitors to the area, all of which are considered of conservation importance. Site surveys show that the Inner Sound is only visited regularly by one of these species (the harbour porpoise), although three other species were observed on occasions during the 2 year Project specific bird and marine mammal survey (minke whale, killer whale and Risso's dolphin). In terms of seals, two species use the Pentland Firth area and both of these (grey seal and harbour seal) are frequently recorded in the Inner Sound, although grey seals make up the majority of seal sightings.

7.14 No protected areas have been designated for marine mammals in the vicinity of the Project, although a number of important haulouts have been identified on the Caithness coast and island of Stroma for both grey and harbour seals.

7.15 Otters are present along the Caithness coastline, including the island of Stroma, and occur locally in both freshwater and marine environments. The Caithness and Sutherland Peatlands Special Area of Conservation (SAC) is located approximately 4km from the Project and is designated for supporting an otter population representative of northern Scotland. As European Protected Species (EPS), otters are afforded a high level of legal protection; otters and otter habitat are protected against disturbance. Additionally, otters are a Priority UK BAP species and are listed as a local species in the Caithness and Highland Local Biodiversity Action Plan (LBAP).

7.3.2 Birds

7.16 A number of nationally and internationally important seabird populations, consisting of a large number of species are found within the vicinity of the Project.

7.17 The North Caithness Cliffs Special Protection Area (SPA) which is designated for breeding populations of peregrine falcon, razorbill, northern fulmar, kittiwake, puffin and guillemot overlaps the offshore Project area.

7.18 The habitats affected by the onshore infrastructure are largely grassland and dry heath, with smaller areas of woodland, scrub and wet heath and bog. These habitats may provide important breeding and foraging habitats for terrestrial bird species, protected species and sites.

7.19 The Project area is within the Orkney to Shetland Important Bird Area (IBA). Whilst IBAs are not afforded any statutory protection, they provide a useful indication as to which areas of the UK are important to seabirds. Within the area, and in addition to the species mentioned above, shag, gannet, great skua, herring gull, great black-backed gull, cormorants, grebes, seaducks and tern are also present at some point during the year. The herring gull is listed as a UK Biodiversity Action Plan (UKBAP) priority species.

7.3.3 Fish

7.20 Scottish waters are estimated to support 250 fish species, with 166 species of commercial and non-commercial species recorded from the north-eastern coast of Scotland. Of the species expected to be present within the Inner Sound, herring, common skate and basking shark are all listed as UKBAP species, whilst, cod and haddock are listed on The World Conservation Union (IUCN) Red List of Threatened Species. No protected areas have been designated for finfish or shellfish species within the study area.

7.21 A number of species are known to use the Pentland Firth for spawning and nursery activities including spurdog, tope, thornback, sandeel and herring. The area has also been identified as part of a main nursery

area for blue whiting and anglerfish; and is also part of the nursery grounds for hake, mackerel, ling, sandeel, saithe, herring, haddock, lemon sole, whiting and cod. The specific location of nursery and spawning grounds may change from year to year depending on a number of environmental variables including the seabed conditions within specific areas.

- 7.22 The nearest salmon migration river is believed to be River Thurso which enters the sea at Thurso, approximately 21km from the Project. The River Thurso is a designated Special Area of Conservation (SAC) for Atlantic salmon, an Annex II species under the Habitats Directive. Migration routes for Atlantic salmon are not well understood and it is possible that salmon from rivers on the east and north coast of Scotland use the Pentland Firth as a migratory route.

7.4 Protected Sites and Species

- 7.23 There are a number of sites in the vicinity of the Project that are designated under national and international conservation law because of the presence of protected habitats or species. Details of these sites are considered in relevant sections of the ES (Section 9 to Section 24).
- 7.24 The entire area of the Project is located within the boundary of the North Caithness Cliffs SPA. The Caithness and Sutherland Peatlands SAC is located approximately 2km from the onshore Project area.
- 7.25 Under Annex IV of the Habitats Directive, all cetacean species have been identified as species of European Community interest and are afforded protection as European Protected Species (EPS). All EPSs are also fully protected under the Wildlife and Countryside Act (1981). For any EPS it is an offence to deliberately or recklessly capture, kill, injure or disturb any such animal. The EU Habitats Directive (1992) lists two species in Annex II: bottlenose dolphins and harbour porpoises, and requires that SACs are set up for their protection. Harbour porpoises are present in the study area, although the site is not covered by a formal designation for this species. Bottlenose dolphins from the Moray Firth SAC may occasionally be present within the study area. Otters, grey seal and harbour seal are also listed under Annex II and all are expected to be present in the Project area.
- 7.26 The UK Biodiversity Action Plan (UKBAP) also offers a level of protection for habitats and species. For many species, actions plans which set out priorities, actions, targets and reporting targets, have been created. Where relevant, the UKBAP has been discussed in the sections above.
- 7.27 Basking sharks, which are listed as 'vulnerable' on the IUCN red list are occasionally seen in the waters off the northern Scottish coastline and have been recorded in marine mammal surveys carried out in the Project area.
- 7.28 Under the Marine (Scotland) Act, Marine Scotland is in the process of establishing Marine Protected Areas (MPAs) for the protection and enhancement of marine biodiversity. Scottish MPA Selection Guidelines setting out the approach that will be taken when selecting MPAs in the seas around Scotland have now been published.
- 7.29 The Scottish Government is currently consulting on suitable areas for Nature Conservation MPAs. This has resulted in 30 locations identified for possible designation as MPAs. None of these include, or are adjacent to the Project; the closest is over 20km away, off the west coast of Hoy.

7.5 Human Environment

7.5.1 Settlements and transport network

- 7.30 The area is dominated by agricultural land composing mostly of grazing with some arable and peat moorland. Settlements are sparse and relatively scattered. The two main settlements in the vicinity of the Project are John o' Groats and Canisbay. John o' Groats is a dispersed village with an approximate population of 300. The hamlet of Canisbay is located approximately 2.5 miles south west of John o' Groats and has a population of less than 100.

- 7.31 The main road in the vicinity of the Project is the A836 which links Thurso to the A99 at John o' Groats via a number of small settlements including Castletown. The road provides the only access to the harbour at Gills Bay. A number of minor roads link the A836 to settlements dispersed throughout the area.

7.5.2 Socio-economics

- 7.32 The Highland area contains a growing population with the greatest increase in population anticipated to be in the over 65s. The most significant employment sectors are distribution, hotels and restaurants indicating the economic importance of tourism to the area. There are over 150 hotels and 48 visitor attractions located within a 30km radius of the onshore Project area. The Dounreay nuclear reactor located approximately 40km away is a large employer in the area, and although currently being decommissioned employs 1,900 people directly as well as numerous others through the supply chain.

7.5.3 Commercial fisheries

- 7.33 The inshore fishing fleet in the Orkney and Caithness region is made up of small creeling vessels targeting shellfish such as crabs, lobsters and scallops. The fishing fleet in the Inner Sound consists of four small local creeling vessels, which also fish in areas outwith the Inner Sound. Although larger vessels are known to transit through the Inner Sound they do not fish in the vicinity of the Project. Mariculture is not an active industry in the vicinity of the Project, the closest sites are salmon fish farms located in Scapa Flow, Orkney.

7.5.4 Cultural heritage

- 7.34 The onshore cultural heritage displays a late 18th to early 19th century historical landscape dominated by farming and crofting and rectilinear fields. Dominant buildings in the historic landscape include derelict Huna House, the B listed West Canisbay House and the A listed Canisbay Kirk and graveyard. Although outwith the Project area, the A listed Castle of Mey is included on the Historic Scotland inventory of designed landscapes and gardens and the castle and its gardens make a significant contribution to the local scenery. Sites earlier than the 18th century are known to exist, but few are prominent and the majority are not or are hardly visible on the surface.
- 7.35 Within the wider Pentland Firth, especially around Orkney, there are a number of coastal archaeological remains and submerged archaeology of interest. Within the vicinity of the Project, admiralty chart 1954 shows that there is one wreck off Mell Head, Stroma. Geophysical data available for the Project area indicates a large number of anomalies that may be of cultural heritage interest but are not yet proven.
- 7.36 Under the Marine (Scotland) Act, Marine Scotland is in the process of establishing MPAs some with the purpose of preserving of marine historic assets.

7.5.5 Shipping and navigation

- 7.37 The Pentland Firth is a busy sea lane regularly used for international navigation. The main shipping channel lies to the north of Stroma, between the island and Orkney. Larger cargo vessels and tankers transit the region using this route and so do not pass through the Inner Sound.
- 7.38 Ferries regularly traverse the Project area between Orkney and the Scottish mainland. There is a ferry port at Gill's Bay that provides a regular catamaran service to South Ronaldsay, with ferries passing through the Inner Sound to the east and west of Stroma.
- 7.39 To the west of the Project is the port of Scrabster which is frequented by fishing vessels, ferries and some cargo vessels. Although the ferries and cargo vessels using the port at Scrabster tend not to transit the site of the Project, fishing vessels en route to and from North Sea fishing grounds do transit through the Inner Sound.
- 7.40 There are two small harbours on the coast of Caithness adjacent to the Project. Gills Bay, as mentioned above, is the mainland port used by the Pentland Ferries service to Orkney. A small harbour at John o' Groats is used by boat tour operators, a number of small fishing vessels and a summer passenger service. There is also a small harbour on the southern coast of Stroma which is used for occasional island tour boats and the transport of cattle and sheep that are grazed on the island.