Appendix 4.5 Major Accidents and Disasters

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Appendix 4.6 Major Accidents and Disasters

Introduction

Schedule 4 of the EIA Regulations lays out the information which is to be contained within an EIA Report. Part 8 states *"A description of the expected significant adverse effects of the development on the environment deriving from the vulnerability of the development to risks of major accidents and/or disasters which are relevant to the project concerned. Relevant information available and obtained through risk assessments pursuant to legislation of the European Union such as Directive 2012/18/EU of the European Parliament and of the Council or Council Directive 2009/71/Euratom or relevant assessments may be used for this purpose provided that the requirements of this Directive are met. Where appropriate, this description should include measures envisaged to prevent or mitigate the significant adverse effects of such events on the environment and details of the preparedness for and proposed response to such emergencies."*

This Appendix reviews potential major accidents and disasters which may occur and the likelihood of them occurring to/from the Proposed Development. If potential significant effects are identified this Appendix provides a cross-reference to the appropriate section of the EIA Report where the effects are assessed in detail.

Natural Disasters

Earthquake

There have been no earthquakes in Orkney in the last ten years. The most recent earthquake occurred in 2007 an was a 2.7 magnitude earthquake located 30km to the north of the island of North Ronaldsay and 100km to the north of the site. This has been the only earthquake on record in the immediate vicinity of Orkney (Earthquake Track, 2019). The choice of turbine model will be carefully considered by the Applicant and the design and construction of the foundations will take into consideration the ground conditions and risk of earthquakes. Therefore, there is a low likelihood of an earthquake occurring and there a very low risk to the Proposed Development. No significant effect is anticipated, and earthquakes are scoped out of further assessment in the EIA Report.

Tsunamis

According to Long (2017) there are no observational sites on Orkney linking to past tsunami events. To escape a tsunami, it is recommended to go above 30.5 m (ARC, 2020), the turbines will lie between 70 m and 149 m AOD. The likelihood of such an event occurring at the turbine locations is extremely low and therefore no significant effect is anticipated. Tsunamis have been scoped out of further assessment.

Volcanic Eruptions

The most recent evidence of volcanic activity in Orkney can be found within lamprophyre dykes dated to the Late Permian, 250 million years ago (Brown 1975). There have been no recorded eruptions since the Late Permian. Therefore, volcanic eruptions are considered to be a very low likelihood to the Proposed Development, no significant effect is anticipated, and volcanic eruptions are scoped out of further assessment in the EIA Report.

Landslide

A peat slide risk assessment is included within Chapter 11 (Geology, Peat, Hydrology and Hydrogeology) and Appendix 11.1.

Severe Weather

There is potential for the Proposed Development to be impacted by severe weather including increased wind storms. However, wind turbines are designed to withstand extreme weather conditions with brake mechanisms installed within the turbines so that they only operate under specific wind speeds and will shut-down during

high wind speed events. Therefore, there is very low risk to the Proposed Development from high wind speeds, no significant effect is anticipated, and high wind storms are scoped out of further assessment in the EIA Report.

There is a risk that ice may accumulate on turbine blades, nacelles and towers under the right conditions. The ice may then be released from the blades and cause injury. However, turbine technology has evolved to avoid the possibility of ice throw through the shut-down of the turbines in the appropriate conditions and the detection of ice on the blades. Therefore, the risk of ice throw from the Proposed Development is considered to be very low and no significant effects are anticipated. Ice throw is therefore scoped out of further assessment.

As with all tall structure there is a possibility that the wind turbines will attract lighting strikes. Turbine technology now has appropriate lighting protection measures to ensure that the lightning is conducted harmlessly to the ground. Therefore, the likelihood of a lightning strike causing damage to the Proposed Development is considered to be low and no significant effects are anticipated. Lighting is scoped out of further assessment.

Flooding

The SEPA Indicative River & Coastal Flood Map (SEPA 2019) illustrating the areas where there is a 0.5 % or greater probability of being flooded in any given year (i.e. the 1:200-year flooding event).

This map indicates that the only areas of fluvial flood risk (flooding from rivers) are directly adjacent to the Burn of Ore. Even this area is limited to the immediate banks of the burn, with no extensive flood plain indicated. The Burn of Longigill and the two unnamed burns to the west do not exhibit areas of fluvial flood risk.

This map indicates that there is no identified risk of surface water flooding on site.

With the only flood risk being associated directly adjacent to the Burn of Ore within the site, remote from any proposed infrastructure, the risk of flooding on the Proposed Development site, and the sensitivity of the site to flooding, is considered to be low.

Further details are provided in Chapter 11 (Geology, Peat, Hydrology and Hydrogeology).

Wild Fire

Due to the weather and habitat of Orkney, wild fires are rare and most, if not all, are of anthropogenic origin (either due to arson or escaped management burns) (Davies and Legg, 2016). There will be no managed burning of the Proposed Development site during construction, operation and decommissioning. Vehicular access to the Proposed Development site during construction, operation and decommissioning will be controlled by the Applicant and therefore the likelihood of a wild fire occurring on the site is low and no significant effect is anticipated. Therefore, wild fire is scoped out of further assessment

Major Accidents

Biological Epidemic

Any biological epidemic is unlikely to result in a major accident or disaster given that construction can be halted or postponed during any affected period. In the event of a biological epidemic the relevant Government guidelines would be adhered to at all times. No significant effects are anticipated, and as such biological epidemics are scoped out of further assessment.

Chemical Incidence

Construction of the Proposed Development has the potential to cause chemical pollution events through the spillage of fuel, paints, oils, etc. on the ground. An assessment of potential impacts from pollution events has therefore been undertaken and is presented in Chapter 11 (Geology, Peat, Hydrology and Hydrogeology). Good practice mitigation to prevent chemical incidences will be implemented through the Construction Environmental Management Plan (CEMP) and the Operational Management Plan (OEMP).

Utilities Failure

A utilities search has been undertaken for the Proposed Development site.

There is one utility within the main body of the site. This is a BT telecommunications line which briefly runs through the easternmost extent of the site.

Outwith the main body of the site, two utilities were identified: overhead high voltage wires which cross the site at Grid Reference ND 30112 94357 and a Scottish water clean water main at the southern boundary of the access corridor.

These include overhead high voltage wires, which cross the site at Grid Reference ND 30112 94357, a Scottish water clean water main at the southern boundary of the access corridor.

It is highly unlikely that any of these utilities will be affected by the development. Therefore, impacts upon utilities are scoped out of further assessment.

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