

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 and was a 2.7 magnitude earthquake located 30km to the north of the island of North Ronaldsay and 80km 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 is 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. The Proposed Development will lie above the 3m AOD contour and below the 20m AOD contour. In the very unlikely event of a tsunami, there would most likely be a significant effect on the site. However, the likelihood of such an event occurring 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

Since there is no recorded peat on site, confirmed by a site visit on the 3rd of September 2019 there is no risk that the Proposed Development could be affected by a peat slide. Due to the extremely low slope angles within the site boundary, the likelihood of a landslide occurring is very low. Furthermore, excessive ploughing and working of the arable land located within the site area, as well as other land uses, such as the dumping of post WWII material has led to a decrease in likelihood of a landslide occurring. Landslides are scoped out of further assessment in the EIA Report.

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 lightning 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, in the vicinity of the site has been reviewed.

This map indicates that areas of surface water flooding could occur within the site area. Flooding would predominantly be constrained to ephemeral, rainwater fed ponds. With the occurrence of field drainage and lack of any permanent water courses on site, the flood risk to the site is low. A site visit on the 3rd of September confirmed that there are no watercourses on site with the exception of drainage ditches which have been appropriately buffered.

The Indicative River & Coastal Flood Map (SEPA 2019) indicates that areas of coastal flooding could occur at the margins of the site area. Areas of flooding are all located below the 3m AOD contour, all Proposed Development infrastructure would be above the 5m AOD contour. Therefore, it can be stated that the risk of coastal flooding to the site area is low (refer to Chapter 11 for further details).

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

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Biological Epidemic

Due to the short construction periods the likelihood of a biological epidemic affecting the Proposed Development is very low. No significant effects are anticipated, and 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, 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).

Terrorist Incidence

Due to the remoteness of the Proposed Development site and nature of the Proposed Development the likelihood of a terrorist incidence occurring at the Proposed Development is considered to be very low. No significant effects are anticipated, and terrorist incidence are scoped out of further assessment.

Utilities Failure

A utilities search has been undertaken of the Proposed Development site. There are no utilities which have been found within the Proposed Development site boundary. The closest utilities to the Proposed Development site boundary are a Scottish Water clean water main and a BT line which run along the south side of the A965 and will not be impacted by the Proposed Development. Therefore, impacts upon utilities are scoped out of further assessment.

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