Appendix 4.6 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 Shetland in the last ten years. The most recent earthquake occurred in 2009 and was a 3.3 magnitude earthquake located 14 km from Lerwick. There have only been six earthquakes in Shetland in the last 40 years (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

There have been three tsunami events in the last 8,200 years of Shetland that are known (University of Dundee, 2018). Although the site boundary approaches sea level the majority of the infrastructure with the exception of the temporary borrow pit search area and temporary construction compound are above 20 mAOD. Therefore, although there is a risk that should such an event occur some of the Proposed Development access track would be impacted, the likelihood of this occurrence is very low and no significant effect is anticipated. Tsunmais have been scoped out of further assessment.

Volcanic Eruptions

There have been no active volcanic eruptions in Shetland for approximately 60 million years (Shetland Amenity Trust, 2019). Therefore, volcanoes 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

The Proposed Development site is principally covered in peat, ranging in depths up to 6.15 m with an average depth of 1-2 m. There is therefore a risk that the Proposed Development could increase peat slide risk and be affected by a peat slide. An assessment is therefore required of the peat slide risk of the Proposed Development on the site. This has been undertaken and provided in **Appendix 10.4** (Peat Slide Risk Assessment) of 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 lighting strikes. Turbine technology now has appropriate lighting protection measures to ensure that the lightning is conducted harmless 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 Flood Maps indicate there are small areas of potential surface water flooding within the Proposed Development site. However, the size, topography, land use and geology of the area suggest that the catchments on site have the potential to be flashy. This means that flow in them will respond rapidly to rainfall and flood conditions could potentially occur with very little, or no, warning. The Proposed Development will include 41 watercourse crossings which may alter the natural flood events on site and therefore an assessment of the Proposed Development's impact on flooding is required. This has been undertaken and is provided in Chapter 10 (Geology, Peat, Hydrology and Hydrogeology).

Wild Fire

Due to the weather and habitat of the Shetland Islands 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

Due to the short construction and decommissioning periods and the remote nature of the Proposed Development site 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 and decommissioning of the Proposed Development has the potential to cause chemical pollution events through the spillage of fuel, paints, oils, etc. on the ground or within watercourses. An assessment of potential impacts from pollution events has therefore been undertaken and is presented in Chapter 10 (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).

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.

Industrial Accident

During construction, operation and decommissioning all contractors will be responsible for ensuring work is undertaken in compliance with the relevant UK health and safety legislation. This will include implementation of The Construction (Design and Management) Regulations 2015 (UK Government, 2015) and all relevant legislation and best practice. The Applicant will also take cognisance of the wind farm health and safety documents produced by Renewable UK (2016). With the implementation of all relevant legislation and best practice the likelihood of an accident due to the Proposed Development is low and no significant effects are anticipated. Industrial accidents are therefore scoped out of further assessment within the EIA

Transport Accidents

The Proposed Development has the potential to cause traffic accidents through construction, operation and decommissioning traffic movements. An assessment of traffic effects has been undertaken is detailed within Chapter 11 (Traffic and Transport).

Utilities Failure

A utilities search has been undertaken of the Proposed Development site. This has identified the following within the Proposed Development site boundary:

- Gossa Water public raw water supply;
- Yell Water Treatment Works;
- raw water mains leading from Gossa Water to the Water Treatment Works;
- clean water mains leading from the Water Treatment Works to residential properties within Yell; and
- SSE 33kV overhead line.

A BT line runs along the A968 outwith the site boundary.

The Applicant has been in consultation with Scottish Water throughout the Proposed Development design process and has agreed mitigation measures to protect the Goss Water pubic raw water supply (refer to Appendix 10.6 (Proposed Protection for Gossa Water Catchment)). An assessment on the impacts of the Proposed Development on Gossa Water has been undertaken in Chapter 10 (Geology, Peat, Hydrology and Hydrogeology).

The Proposed Development will not encroach on or impact the Water Treatment Works and therefore no significant effects are anticipated on the Water Treatment Works and this is scoped out of further assessment.

The Applicant will liaise with Scottish Water through the pre-construction and construction process to ensure and agree the mitigation measures and construction methodology for the protection of the raw and clean water mains. No significant effects are therefore anticipated on the raw and clean water mains and they are scoped out of further assessment

The Applicant will liaise with SSE through the pre-construction and construction process to agree the movement of the overhead line. Once the overhead line has been re-located no significant effects are anticipated and the line is scoped out of further assessment.

References

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