



Fosse Green Energy

Preliminary Environmental Information Report

VOLUME

3

Appendix 6-B: Climate Change Risk
Assessment

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Prepared for:

Fosse Green Energy Limited

Prepared by:

AECOM Limited

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1. Introduction

1.1 Purpose of this Appendix

- 1.1.1 This appendix presents the results of the Climate Change Risk Assessment (CCRA) for the construction, operation (including maintenance) and decommissioning phases of the Proposed Development in the form of a Climate Change Risk Assessment table. It should be read in conjunction with **PEI Report Volume 1, Chapter 6: Climate Change**
- 1.1.2 The time-period for the initial risk rating of each phase of the Proposed Development reflects the period of the obtained UK Climate Projections (UKCP) 18 Climate Change projection data (e.g. projections for 2020-2039 cover the estimated construction period).

1.2 Climate Change Risk Assessment

- 1.2.1 The three tables below present the Climate Change risks associated with each phase of the Proposed Development, from construction through operation and maintenance to decommissioning. Future climate projections have been reviewed and the sensitivity of assets have been examined, before commenting on the adequacy of the embedded Climate Change mitigation measures built into the Proposed Development.
- 1.2.2 Identified climate variables are given a significance rating, based upon the likelihood of an impact occurring to the Proposed Development and the anticipated consequences. This includes consideration of embedded mitigation measures.

Table 1: Construction Climate Change Risk Assessment

Risk ID	Climate Variable	Risk Identification				Risk Assessment				Significance
		Risk Statement	Type of risk	Project receptors	Impact type	Planned Controls	Initial risk rating (RCP8.5 2020-2039)			
							Likelihood	Consequence	Risk rating	
1	Extreme rainfall events	Surface water flooding and standing water	Direct	Physical structures	Asset damage	Temporary drainage systems (SuDS) will be developed to prevent runoff increasing existing flood risk to or from the Proposed Development to existing structures / assets. Identified land drains that are damaged during construction will be repaired. Infrastructure flood resilience detailed in PEI Report Volume 1, Chapter 9: Water Environment .	Low	Low	Low	Not Significant
2	Extreme rainfall events	Working on-site in dangerous conditions	Direct	Workforce	Safety and health	As detailed in the Framework Construction Environmental Management Plan (CEMP) (presented in PEI Report Volume 3, Appendix 3-A) contractors will be required to monitor weather forecasts and sign up to receive the Environment Agency's flood alerts and plan works accordingly with internal methodologies to manage workers and resources in extreme weather conditions such as storms and flooding. Health and safety plans are to be in place in accordance with policy and legislative requirements.	Negligible	Low	Low	Not Significant
3	Decrease in annual rainfall	Increase drought risk	Indirect	All receptors	All impact types	As detailed in the Framework CEMP (presented in PEI Report Volume 3, Appendix 3-A) contractors will be required to monitor weather forecasts and plan works accordingly with internal methodologies to manage workers and resources in extreme weather conditions. Weather forecasts should be monitored so any expected periods of drought are prepared for in advance, and measures can be in place to minimise disruption to the Site.	Negligible	Low	Low	Not Significant
4	Increase in summer temperature	Risk of overheating to workers	Direct	Workforce	Health and safety	As detailed in the Framework CEMP (presented in PEI Report Volume 3, Appendix 3-A) contractors will be required to monitor weather forecasts and plan works accordingly in response to any extreme weather.	Negligible	Negligible	Negligible	Not Significant
5	Increase in summer temperature	Increase damage to infrastructure	Direct	Physical structures	Asset damage	As detailed in the Framework CEMP (presented in PEI Report Volume 3, Appendix 3-A) contractors will be required to monitor weather forecasts and plan works accordingly to manage resources in response to any extreme weather.	Negligible	Negligible	Negligible	Not Significant
6	Increase in annual temperature	Risk of overheating to workers	Direct	Workforce	Safety and health	As detailed in the Framework CEMP (presented in PEI Report Volume 3, Appendix 3-A) Contractors will be required to monitor weather forecasts and plan works accordingly in response to any extreme weather.	Negligible	Low	Low	Not Significant

Risk ID	Climate Variable	Risk Identification				Risk Assessment				Significance
		Risk Statement	Type of risk	Project receptors	Impact type	Planned Controls	Initial risk rating (RCP8.5 2020-2039)			
							Likelihood	Consequence	Risk rating	
7	Decrease in summer rainfall	Increase drought risk	Indirect	All receptors	All impact types	None required.	Negligible	Negligible	Negligible	Not Significant
8	Increase to winter rainfall	Viability of land access to sites (such as heavy rain resulting in surface water flooding of local roads, sources of power supply, or inundation of sites)	Direct	All receptors	Safety and health	As detailed in the Framework CEMP (presented in PEI Report Volume 3, Appendix 3-A) contractors will be required to monitor weather forecasts and sign up to receive the Environment Agency’s flood alerts and plan works accordingly to manage extreme weather conditions such as storms and flooding. Infrastructure flood resilience detailed in PEI Report Volume 1, Chapter 9: Water Environment	Low	Negligible	Negligible	Not Significant
9	Increase in heatwaves	Increased heat stress/heat exhaustion for workers	Direct	Workforce	Safety and health	As detailed in the Framework CEMP (presented in PEI Report Volume 3, Appendix 3-A) contractors will be required to monitor weather forecasts and plan works accordingly, managing workers in extreme weather.	Negligible	Low	Low	Not Significant
10	Wildfire risk	Risk to workers over dry periods	Direct	Workforce	Safety and health	As detailed in the Framework CEMP (presented in PEI Report Volume 3, Appendix 3-A), contractors will be required to monitor weather forecasts and plan works accordingly, managing workers in extreme weather.	Low	Low	Low	Not Significant
11	Sea level rise	Surface water flooding and standing water	Direct	Physical structures	Asset damage	None required	Negligible	Negligible	Negligible	Not Significant
12	Changing wind pattern	Increased near surface wind speed can damage structures and assets	Direct	Workforce	Safety and health	As detailed in the Framework CEMP (presented in PEI Report Volume 3, Appendix 3-A) contractors will be required to monitor weather forecasts and plan works accordingly, managing workers, and appropriate storage of equipment and material in extreme weather.	Negligible	Low	Low	Not Significant

Table 2: Operation Climate Change Risk Assessment

Risk ID	Climate Variable	Risk Identification				Risk Assessment							Significance
		Risk Statement	Type of risk	Project receptors		Planned Controls	Initial risk rating (RCP8.5 2040-2069)			Initial risk rating (RCP8.5 2070-2099)			
							Likelihood	Consequence	Risk rating	Likelihood	Consequence	Risk rating	
1	Extreme rainfall events	Surface water flooding and standing water	Direct	Physical structures	Asset damage	Drainage arrangements to attenuate surface water runoff and ensure no increase in flood risk to the Proposed Development location and surrounding areas will be discussed within the Environmental Statement (ES) and supporting outline drainage strategy. Infrastructure flood resilience is detailed in PEI Report Volume 1, Chapter 9: Water Environment	Low	Moderate	Low	Low	Moderate	Low	Not Significant
2	Extreme rainfall events	Deterioration of structures or foundations due to soil moisture levels	Direct	Physical structures	Asset damage	Drainage arrangements to attenuate surface water runoff and ensure no increase in flood risk to the Proposed Development location and surrounding areas will be discussed within the ES and supporting outline drainage strategy. Infrastructure flood resilience detailed in in PEI Report Volume 1, Chapter 9: Water Environment.	Low	Low	Low	Low	Low	Low	Not Significant
3	Extreme rainfall events	Working on-site in dangerous conditions	Direct	Workforce	Safety and health	During periods of maintenance works, contractors will monitor weather forecasts and sign up to receive the Environment Agency’s flood alerts and plan works accordingly with internal methodologies to manage workers and resources in extreme weather conditions such as storms, flooding.	Low	Low	Low	Low	Low	Low	Not Significant
4	Decrease in annual rainfall	Drought risk	Direct	Workforce	Safety and Health	During periods of maintenance works, contractors will monitor weather forecasts and extreme weather conditions to manage workers in extreme weather events.	Low	Low	Low	Negligible	Negligible	Negligible	Not Significant
5	Decrease in annual rainfall	Drought risk potentially impacting landscape	Indirect	Physical structures, materials	Asset damage	Regular maintenance activities carried out by a contractor will provide the opportunity to monitor asset performance and condition.	Low	Low	Low	Negligible	Negligible	Negligible	Not Significant

Risk ID	Climate Variable	Risk Identification				Risk Assessment							Significance
		Risk Statement	Type of risk	Project receptors		Planned Controls	Initial risk rating (RCP8.5 2040-2069)			Initial risk rating (RCP8.5 2070-2099)			
							Likelihood	Consequence	Risk rating	Likelihood	Consequence	Risk rating	
6	Increase in summer temperature	Damage to materials	Direct	Materials, plant, and machinery	Asset damage	During periods of maintenance works contractors will monitor weather forecasts and plan works accordingly to manage any extreme weather conditions.	Low	Moderate	Low	Low	Moderate	Low	Not Significant
7	Increase in summer temperature	Overheating of electrical equipment	Direct	Physical structures	Asset damage	Operational staff will monitor weather forecasts and plan works accordingly in response to extreme weather conditions. Infrastructure is designed to tolerate hot conditions so will not be impacted.	Negligible	Low	Low	Negligible	Low	Low	Not Significant
8	Increase in winter temperature	Operational efficiency	Direct	Physical structures	Asset use	Improvements in panel efficiency due to warmer weather will couple with better battery storage in the same conditions.	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Not Significant
9	Increase in annual temperature	Risk of overheating to workers	Direct	Workforce	Safety and health	During periods of maintenance works, contractors will monitor weather forecasts and plan works accordingly.	Low	Moderate	Low	Low	Moderate	Low	Not Significant
10	Decrease in summer rainfall	Increased drought risk	Indirect	Physical structures	Asset damage	None required	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Not Significant
11	Increase to winter rainfall	Viability of and access to sites (such as heavy rain resulting in surface water flooding of local roads, sources of power supply, or inundation of sites)	Direct	All receptors	Safety and health	During periods of maintenance works, Contractors will monitor weather forecasts and sign up to receive the Environment Agency’s flood alerts and plan works accordingly to respond to extreme weather such as storms and flooding. Infrastructure flood resilience detailed in Chapter 9: Water Environment.	Low	Moderate	Low	Negligible	Low	Low	Not Significant
12	Increase in heatwaves	Overheating of electrical equipment	Direct	Physical structures	Asset damage	Equipment fitted with cooling systems where necessary, such as air conditioning units. Fire detection and water/chemical suppressant is built into the BESS Units.	Negligible	Moderate	Low	Low	Moderate	Low	Not Significant
13	Increase in heatwaves	Damage to materials	Direct	Materials	Asset damage	During periods of maintenance works contractors will monitor weather forecasts and plan works accordingly in response to any extreme weather.	Low	Low	Low	Low	Moderate	Low	Not Significant

Risk ID	Climate Variable	Risk Identification				Risk Assessment							Significance
		Risk Statement	Type of risk	Project receptors		Planned Controls	Initial risk rating (RCP8.5 2040-2069)			Initial risk rating (RCP8.5 2070-2099)			
							Likelihood	Consequence	Risk rating	Likelihood	Consequence	Risk rating	
14	Increase in heatwaves	Increased heat stress/heat exhaustion for workers	Direct	Workforce	Safety and health	During periods of maintenance works contractors will monitor weather forecasts and plan works accordingly with internal methodologies to manage workers and resources in extreme weather conditions such as storms, flooding.	Low	Moderate	Low	Low	Moderate	Low	Not Significant
15	Increased wildfire risk	Potential danger for solar battery to cause or be damaged by wildfire	Indirect	Physical structures	Safety, asset damage	Fire detection and water/chemical suppressant will be built into the BESS Units.	Low	Low	Low	Low	Moderate	Low	Not Significant
16	Sea level rise	Increased sea level rise can impact the frequency and duration of flooding from all sources (e.g. tidal, fluvial, surface water, artificial sources, groundwater, and drainage infrastructure)	Indirect	Physical structures	Asset damage	The design of the Proposed Development will incorporate climate change projections required by the Environment Agency to ensure flood risk form all source, including a sea level rise assessment, is accounted for and managed across the lifetime of the Proposed Development so it will remain operational in times of flood. PEI Report Volume 1, Chapter 9: Water Environment provides more detail, and a Flood Risk Assessment will be submitted with the ES.	Negligible	Low	Low	Low	Low	Low	Not Significant
17	Changing wind pattern	Increased near surface wind speed can damage structures and assets	Direct	Physical structures	Asset damage	The design of the Proposed Development will incorporate the climate change projections required by the Environment Agency to ensure stability of structures is designed with allowance on stronger wind actions.	Negligible	Low	Low	Negligible	Low	Low	Not Significant

Table 3: Decommissioning Climate Change Risk Assessment

Risk ID	Climate Variable	Risk Identification				Risk Assessment				Significance
		Risk Statement	Type of risk	Project receptors	Impact type	Planned Controls	Initial risk rating (RCP8.5 2070-2099)			
							Likelihood	Consequence	Risk rating	
1	Extreme rainfall events	Surface water flooding and standing water	Direct	Physical structures	Asset damage	The Framework decommissioning environmental management plan (DEMP), to be submitted with the ES, will include a requirement for Contractors to manage flood risk during decommissioning to ensure no increase in flood risk and plan to manage any damage to existing assets. Infrastructure flood resilience detailed in PEI Report Volume 1, Chapter 9: Water Environment .	Low	Moderate	Low	Not Significant
2	Extreme rainfall events	Working on-site in dangerous conditions	Direct	Workforce	Safety and health	The Framework DEMP, to be submitted with the ES, will include a requirement for contractors to monitor weather forecasts and sign up to receive Environment Agency's flood alerts and plan works accordingly with internal methodologies to manage workers and resources in extreme weather conditions such as storms, flooding.	Low	Low	Low	Not Significant
3	Decrease in annual rainfall	Drought risk	Direct	Workforce	Safety and health	None required.	Negligible	Negligible	Negligible	Not Significant
4	Increase in winter temperature	None considered	NA	All receptors	All impact types	None required.	Negligible	Negligible	Negligible	Not Significant
5	Increase in annual temperature	Risk of overheating to workers	Direct	Workforce	Safety and health	The Framework DEMP, to be submitted with the ES, will include a requirement for contractors to monitor weather forecasts and plan works accordingly, managing workers in extreme weather.	Low	Moderate	Low	Not Significant
6	Decrease in summer rainfall	Increased drought risk	Indirect	All receptors	All impact types	None required.	Negligible	Negligible	Negligible	Not Significant
7	Increase to winter rainfall	Viability of and access to sites (such as heavy rain resulting in surface water flooding of local roads, sources of power supply, or inundation of sites)	Direct	All receptors	Safety and health	The Framework DEMP, to be submitted with the ES, will include a requirement for contractors to monitor weather forecasts and sign up to receive Environment Agency's flood alerts and plan works accordingly, managing workers and resources in response to extreme weather conditions such as storms, flooding.	Negligible	Low	Low	Not Significant
8	Increase in heatwaves	Increased heat stress/heat exhaustion for workers	Direct	Workforce	Safety and health	The Framework DEMP, to be submitted with the ES, will include a requirement for contractors to monitor weather forecasts and plan works accordingly, managing workers in response to extreme weather.	Low	Moderate	Low	Not Significant
9	Increased wildfire risk	Potential danger to decommissioning	Direct	Workforce	Safety and health	The Framework DEMP, to be submitted with the ES, will include a requirement for contractors to monitor weather	Low	Moderate	Low	Not Significant



Risk ID	Climate Variable	Risk Identification				Risk Assessment				Significance
		Risk Statement	Type of risk	Project receptors	Impact type	Planned Controls	Initial risk rating (RCP8.5 2070-2099)			
							Likelihood	Consequence	Risk rating	
		workers on site over dry periods				forecasts and plan works accordingly, managing workers in response to extreme weather.				
10	Sea level rise	Increased sea level rise can impact the frequency and duration of flooding from all sources (e.g. tidal, fluvial, surface water, artificial sources, groundwater, and drainage infrastructure)	Indirect	Workforce, access to site	Asset damage	The design of the Proposed Development will incorporate climate change projections required by the Environment Agency to ensure flood risk form all source, including a sea level rise assessment is accounted for and managed across the lifetime of the Proposed Development so it will remain operational in times of flood. PEI Report Volume 1, Chapter 9: Water Environment provides more detail, and a Flood Risk Assessment will be submitted with the ES. A Preliminary Flood Risk Assessment is presented in PEI Report Volume 3, Appendix 9-C.	Low	Low	Low	Not Significant
11	Changing wind pattern	Increased near surface wind speed can damage structures and assets	Direct	Physical structures	Asset damage	The design of the Proposed Development will incorporate the climate change projections required to ensure appropriate storage of equipment and materials in stronger wind actions.	Negligible	Low	Low	Not Significant