



# H2Teesside Project

## Preliminary Environmental Information Report

Volume III – Appendices

Appendix 19A: Climate Change Risk Register

The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (as amended)





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## 19A.0 CLIMATE CHANGE RISK REGISTER

Table 19A-1: Climate Change Risk Register

CLIMATE HAZARD TYPE	DESCRIPTION OF POTENTIAL IMPACT	RECEPTORS	PLANNED CONTROLS	LIKELIHOOD OF IMPACT OCCURRING	CONSEQUENCE OF IMPACT OCCURRING	RESILIENCE RISK LEVEL	ADDITIONAL MITIGATION MEASURES REQUIRED
CONSTRUCTION PHASE							
Increase in annual Temperature	See – increase in summer temperature	All	Refer to section - Increase in Summer Temperature	Very Unlikely	Very Low	Negligible	None
Increase in Summer Temperature	Overheating of electrical equipment	Construction plant and vehicles	Will be detailed in the CEMP. The contractor will monitor weather forecasts and plan works accordingly, protecting workers and resources from any extreme weather conditions	Very Unlikely	Very Low	Negligible	None
	Increased heat stress/heat exhaustion for workers. Poorer air	Staff, visitors on-site	As above	Unlikely	Medium	Minor	None



CLIMATE HAZARD TYPE	DESCRIPTION OF POTENTIAL IMPACT	RECEPTORS	PLANNED CONTROLS	LIKELIHOOD OF IMPACT OCCURRING	CONSEQUENCE OF IMPACT OCCURRING	RESILIENCE RISK LEVEL	ADDITIONAL MITIGATION MEASURES REQUIRED
	quality from dust, wildfires. Commuting issues from wildfires.						
Increase in winter temperature	None considered	All	None considered	Very Unlikely	Very Low	Negligible	None
Increase in annual rainfall	None considered	All	None considered	Very Unlikely	Very Low	Negligible	None
Decrease in summer rainfall	None considered	All	None considered	Very Unlikely	Very Low	Negligible	None
Increase in 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)	Assets, facilities, roads	Will be detailed in CEMP. Measures will likely include: - Storage of topsoil and other construction materials stored outside of the 1 in 100-year floodplain to protect materials from high rainfall and flooding events	Possible	Medium	Moderate	None



CLIMATE HAZARD TYPE	DESCRIPTION OF POTENTIAL IMPACT	RECEPTORS	PLANNED CONTROLS	LIKELIHOOD OF IMPACT OCCURRING	CONSEQUENCE OF IMPACT OCCURRING	RESILIENCE RISK LEVEL	ADDITIONAL MITIGATION MEASURES REQUIRED
			<ul style="list-style-type: none"> <li>- Suitable storage and bunding of pollutants to protect from high rainfall events. This will be further supported by the Water Management Plan and a Site Emergency Response Plan</li> <li>- Laydown and welfare areas will be laid with permeable membranes to protect the Site from high rainfall and flooding events</li> <li>- The Contractor will monitor weather forecasts and receive Environment Agency flood alerts and plan works accordingly, protecting works and resources from any extreme weather conditions (storms, flooding)</li> </ul>				



CLIMATE HAZARD TYPE	DESCRIPTION OF POTENTIAL IMPACT	RECEPTORS	PLANNED CONTROLS	LIKELIHOOD OF IMPACT OCCURRING	CONSEQUENCE OF IMPACT OCCURRING	RESILIENCE RISK LEVEL	ADDITIONAL MITIGATION MEASURES REQUIRED
Increase in heatwaves	See – increase in summer temperatures	Assets, facilities, roads	Refer to section - Increase in Summer Temperatures	Unlikely	Low	Minor	None
	See – increase in summer temperatures	Staff, visitors on-site	Refer to section - Increase in Summer Temperatures	Unlikely	Medium	Minor	None
Increase in severity and frequency of droughts	None considered	All	None considered	Very Unlikely	Very Low	Negligible	None
Increase in storm intensity	Damage to structures/equipment resulting in repair costs, reduced functionality and/or unacceptable safety risks	Assets, facilities, roads	Will be detailed in CEMP. The Contractor will monitor weather forecasts and plan works accordingly, protecting workers and resources from any extreme weather conditions	Unlikely	Low	Minor	None
Sea level rise	See – Increase to winter rainfall	Assets, facilities, roads	Refer to section - Increase to Winter Rainfall	Very Unlikely	Medium	Negligible	None



CLIMATE HAZARD TYPE	DESCRIPTION OF POTENTIAL IMPACT	RECEPTORS	PLANNED CONTROLS	LIKELIHOOD OF IMPACT OCCURRING	CONSEQUENCE OF IMPACT OCCURRING	RESILIENCE RISK LEVEL	ADDITIONAL MITIGATION MEASURES REQUIRED
OPERATIONAL PHASE							
Increase in annual temperature	See – Increase in summer temperature	All	Refer to section - Increase in Summer Temperature	Very Unlikely	Very Low	Negligible	None
Increase in summer temperature	Overheating of electrical equipment, heat damage, deformation, cracking and thermal expansion of building surfaces and pavements	Assets, facilities, roads	- Cabling will be buried underground, insulating against overheating during heatwaves - All buildings will be designed to UK standards and specifications	Possible	Medium	Moderate	None
	Impacts on the thermal comfort of building users. Increase in ambient temperature of buildings, leading to higher air conditioning requirements. Poorer air quality from dust, wildfires. Commuting issues resulting from wildfires	Staff, visitors on-site	- Detailed design of air conditioning units for offices would include an allowance for future rise in ambient temperature	Unlikely	Medium	Minor	None



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			- All buildings would be designed to UK standards and specifications.				
	Reduced efficiency of Production Facility and operational plant.	Function of facility	The power plant is designed to operate over a large range of ambient conditions and the plant efficiency difference is less than 1% in all temperatures. Temperature change unlikely to have noticeable impact	Possible	Low	Minor	None
Increase in winter temperature	None considered	All	None considered	Very Unlikely	Very Low	Negligible	None
Increase in annual rainfall	None considered	All	None considered	Very Unlikely	Very Low	Negligible	None





CLIMATE HAZARD TYPE	DESCRIPTION OF POTENTIAL IMPACT	RECEPTORS	PLANNED CONTROLS	LIKELIHOOD OF IMPACT OCCURRING	CONSEQUENCE OF IMPACT OCCURRING	RESILIENCE RISK LEVEL	ADDITIONAL MITIGATION MEASURES REQUIRED
Decrease in summer rainfall	<ul style="list-style-type: none"> <li>- Water shortages</li> <li>- Drying out of pavement structures</li> <li>- Deterioration of structures or foundations due to decrease in soil moisture levels</li> <li>- Insufficient water for plant cooling</li> </ul>	Assets, facilities, roads	<ul style="list-style-type: none"> <li>- Alternative water sources in times of drought, reducing chances of shortages for plant function</li> <li>- Integration of water circuits – steam can be extracted, condensed and re-used</li> <li>- Buildings would utilise water efficient fixtures</li> <li>- All buildings would be designed to UK standards and specifications</li> </ul>	Possible	Medium	Moderate	None
Increase to winter rainfall	<ul style="list-style-type: none"> <li>- Surface water flooding and standing waters</li> <li>- Deterioration of structures or foundations due to increase in soil moisture levels</li> </ul>	Built terrestrial assets, staff facilities and access routes to sites.	<ul style="list-style-type: none"> <li>- Suitable storage and bunding of pollutants to protect from high rainfall events. Supported by Site Emergency Response Plan</li> </ul>	Unlikely	Medium	Minor	None



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	<ul style="list-style-type: none"> <li>- Damage to building surfaces/ exposed utilities from increased drying/wetting and increased frost penetration</li> <li>- Damage to infrastructure through coastal erosion, storm surge and coastal destabilisation</li> </ul>	Staff, contractors and visitors	<ul style="list-style-type: none"> <li>- Installation of a suitable sustainable surface water drainage network and management system (SuDS) to protect to Site from high rainfall events. Supported by a Surface Water Maintenance and Management Plan</li> <li>- Flood Resistance and Resilience Measures to be implemented scenarios including increases in extreme rainfall, flood flow and flash flooding</li> <li>- All buildings would be designed to UK standards and specifications</li> </ul>				



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Increase in heatwaves	See - increase in summer temperature	Assets, facilities, roads	Refer to section - Increase in Summer Temperature	Unlikely	Medium	Minor	None
	See - increase in summer temperature	Staff, visitors on-site	Refer to section - Increase in Summer Temperature	Unlikely	Medium	Minor	None
	See - increase in summer temperature	Function of facility	Refer to section - Increase in Summer Temperature	Possible	Low	Minor	None
Increase in droughts	See - decrease in summer rainfall	All	Refer to section - Decrease in Summer Rainfall	Very Unlikely	Very Low	Negligible	None
Increase in storm intensity	Physical damage to marine assets	Marine assets	All infrastructure will be designed to UK standards and specifications including contingency in design for extreme water levels and waves	Very Unlikely	Very High	Negligible	None
	Damage to structures/equipment and resulting in repairs costs,	Assets, facilities, roads	The Flood Risk Assessment will consider climate change	Very Unlikely	Very High	Negligible	None



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	reduced functionality and/or unacceptable safety risks		scenarios including increases in extreme rainfall, flood flow and flash flooding - All buildings will be designed to UK standards and specifications				
Sea level rise	See – increase to winter rainfall	Assets, facilities, roads, Staff, contractors and visitors	Refer to section - Increase to Winter Rainfall	Unlikely	Medium	Minor	None
	Physical damage to or loss of function in marine assets	Marine assets	- All infrastructure will be designed to UK standards and specifications, including contingency in design for extreme water levels and waves	Very Unlikely	Very High	Negligible	None



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DECOMMISSIONING PHASE							
Increase in annual temperature	See – increase in summer temperature	All	Refer to section - Increase in Summer Temperature	Very Unlikely	Very Low	Negligible	None
Increase in summer temperature	Overheating of electrical equipment	Deco. Plant and equipment	Will be detailed in the DEMP	Very Unlikely	Very Low	Negligible	None
Increase in winter temperature	None considered	All	None considered	Very Unlikely	Very Low	Negligible	None
Increase in annual rainfall	See - increase in winter rainfall	All	Refer to section - Increase in Winter Rainfall	Very Unlikely	Very Low	Negligible	None
Decrease in summer rainfall	None considered	All	None considered	Very Unlikely	Very Low	Negligible	None
Increase to winter rainfall	Viability of and access to sites (such as heavy rain resulting in surface water flooding of local roads,	Assets, facilities, roads	Will be detailed in DEMP	Possible	Medium	Moderate	None



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	sources of power supply or inundation of sties).						
Increase to heat waves	See – increase in summer temperature	Deco. Plant and equipment	Refer to section - Increase in Summer Temperature	Very Unlikely	Very Low	Negligible	None
Increase in droughts	None considered	All	None considered	Very Unlikely	Very Low	Negligible	None
Increase in storm intensity	Damage to structures/equipment, resulting in repair costs, reduced functionality and/or unacceptable safety risks	Assets, facilities, roads	Will be detailed in DEMP	Unlikely	Low	Minor	None
Sea level rise	See – increase in winter rainfall	Assets, facilities, roads	Refer to section - Increase in Winter Rainfall	Unlikely	Medium	Minor	None