

# Gate Burton Energy Park

Preliminary Environmental Information Report

Volume 3, Appendix 6-A: Summary of Non-Significant  
Effects on Climate Change Receptors

June 2022

Gate Burton Energy Park Limited

## Quality information

<u>Prepared by</u>	<u>Checked by</u>	<u>Verified by</u>	<u>Approved by</u>
<u>SB</u>	<u>BM</u>	<u>ID</u>	<u>ID</u>

Prepared for:

Gate Burton Energy Park Limited

Prepared by:

AECOM Limited

© 2022 AECOM Limited. All Rights Reserved.

This document has been prepared by AECOM Limited (“AECOM”) for sole use of our client (the “Client”) in accordance with generally accepted consultancy principles, the budget for fees and the terms of reference agreed between AECOM and the Client. Any information provided by third parties and referred to herein has not been checked or verified by AECOM, unless otherwise expressly stated in the document. No third party may rely upon this document without the prior and express written agreement of AECOM.

## Table of Contents

1.	Climate Change .....	4
1.1	Purpose of this appendix .....	4
1.2	Summary of Non-Significant Effects from Climate Change Impacts and Resilience Measures of the Scheme .....	5
1.4	Summary of Non-Significant Effects from In-Combination Climate Change Assessment .....	14

# 1. Climate Change

## 1.1 Purpose of this appendix

- 1.1.1 This PEI Report appendix identifies and summarises the non-significant effects from Climate Change Resilience in Tables 1 - 3. A summary of non-significant effects from the In-Combination Climate Change assessment is presented in Tables 4 - 6.

## 1.2 Summary of Non-Significant Effects from Climate Change Impacts and Resilience Measures of the Scheme

Table 1 Climate Change Resilience Summary of Non-Significant Effects (Construction)

Climate Hazard Type	Climate Hazard Projection	Sensitive Receptor	Description of Potential Impact	Embedded Design Measures	Likelihood of Impact Occurring	Consequence of Impact Occurring	Resilience Risk Level	Significance	Additional Mitigation or Monitoring Measures
Increase in annual temperature	Very Likely	All receptors	Overheating of electrical equipment Damage to materials Risk of overheating to workers	To be included in Framework CEMP. Contractors will monitor weather forecasts and plan works accordingly, protecting workers and resources from any extreme weather conditions.	Very Unlikely	Very Low	Negligible	No	None
Increase in summer temperature	Very Likely	Plant and vehicles, physical structures, materials, and access routes to sites	Overheating of electrical equipment Damage to materials Risk of overheating to workers	To be included in Framework 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	No	None
Increase in winter temperature	Very Likely	All receptors	None considered	None considered	Very Unlikely	Very Low	Negligible	No	None
Decrease in annual rainfall	Possible	All receptors	None considered	None considered	Very Unlikely	Very Low	Negligible	No	None



Climate Hazard Type	Climate Hazard Projection	Sensitive Receptor	Description of Potential Impact	Embedded Design Measures	Likelihood of Impact Occurring	Consequence of Impact Occurring	Resilience Risk Level	Significance	Additional Mitigation or Monitoring Measures
Decrease in summer rainfall	Likely	All receptors	None considered	None considered	Very Unlikely	Very Low	Negligible	No	None
Increase to winter rainfall	Likely	Plant and vehicles, physical structures, materials, and access routes to sites	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).	To be included in Framework CEMP. Contractors will monitor weather forecasts and receive Environment Agency's (EA) flood alerts and plan works accordingly, protecting workers and resources from any extreme weather conditions such as storms, flooding. Infrastructure flood resilience detailed in <b>Chapter 9: Water Environment</b> .	Possible	Low	Minor	No	None
Increase in heat waves	Possible	Plant and vehicles, physical structures, materials, and access routes to sites	Overheating of electrical equipment Damage to materials	Contractors will monitor weather forecasts and plan works accordingly, protecting workers and resources from any extreme weather. Equipment has cooling systems where necessary.	Very Unlikely	Low	Negligible	No	None
Increase in heat waves	Possible	Staff, visitors on-site	Increased heat stress/ heat exhaustion for workers.	Contractors will monitor weather forecasts and plan works accordingly, protecting	Unlikely	Medium	Minor	No	None



Climate Hazard Type	Climate Hazard Projection	Sensitive Receptor	Description of Potential Impact	Embedded Design Measures	Likelihood of Impact Occurring	Consequence of Impact Occurring	Resilience Risk Level	Significance	Additional Mitigation or Monitoring Measures
				workers and resources from any extreme weather. Equipment has cooling systems where necessary.					
Increase droughts	Possible	All receptors	None considered	None considered	Very Unlikely	Very Low	Negligible	No	None
Increase in storm intensity	Unlikely	Plant and vehicles, physical structures, materials, and access routes to sites	Damage to structures/materials/equipment and resulting in delays to programme and associated costs and/or unacceptable safety risks. May include high winds increasing dust (and other debris), storm surge and coastal erosion.	Contractors will monitor weather forecasts and receive Environment Agency flood warnings and alerts and plan works accordingly, protecting workers and resources from any extreme weather conditions.	Unlikely	Low	Minor	No	None
Sea level rise	Likely	Plant and vehicles, physical structures, materials, and access routes to sites	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).	Contractors will monitor weather forecasts and receive Environment Agency flood warnings and alerts and plan works accordingly, protecting workers and resources from any extreme weather conditions.	Possible	Low	Minor	No	None



**Table 2 Climate Change Resilience Summary of Non-Significant Effects (Operation)**

Climate Hazard Type	Climate Hazard Projection	Sensitive Receptor	Description of Potential Impact	Embedded Design Measures	Likelihood of Impact Occurring	Consequence of Impact Occurring	Resilience Risk Level	Significance	Additional Mitigation or Monitoring Measures
Increase in annual temperature	Very Likely	All receptors	Thermal comfort of building users. Increase in air conditioning requirements. Overheating of electrical equipment.	All buildings will be designed to UK standards and specifications, including use of cooling systems.	Very Unlikely	Very Low	Negligible	No	None
Increase in summer temperature	Very Likely	All receptors (infrastructure, buildings, staff and workers)	Thermal comfort of building users. Increase in air conditioning requirements. Overheating of electrical equipment.	All buildings will be designed to UK standards and specifications, including use of cooling systems.	Unlikely	Low	Minor	No	None
Increase in winter temperature	Very Likely	All receptors	None considered	None considered	Very Unlikely	Very Low	Negligible	No	None
Increase in annual rainfall	Possible	All receptors	Surface water flooding and standing waters. Deterioration of structures or foundations due to increase in soil moisture levels. Damage to building surfaces/ exposed	See- Decrease in summer rainfall	Very Unlikely	Very Low	Negligible	No	None





Climate Hazard Type	Climate Hazard Projection	Sensitive Receptor	Description of Potential Impact	Embedded Design Measures	Likelihood of Impact Occurring	Consequence of Impact Occurring	Resilience Risk Level	Significance	Additional Mitigation or Monitoring Measures
			utilities from increased drying/wetting and increase frost penetration						
Decrease in summer rainfall	Likely	All receptors (infrastructure, buildings, staff and workers)	Water shortages. Deterioration of structures or foundations due to decrease in soil moisture levels.	Detailed building design to consider water efficiency fixtures.	Unlikely	Medium	Minor	No	None
Increase to winter rainfall	Likely	All receptors (infrastructure, buildings, staff and workers)	Surface water flooding and standing waters. Deterioration of structures or foundations due to increase in soil moisture levels. Damage to building surfaces/ exposed utilities from increased drying/wetting and increase frost penetration.	The <b>Chapter 9: Water Environment</b> includes a number of adaptation measures that would be considered in the detailed design and operations management.	Possible	Low	Minor	No	None
Increase to heat waves	Possible	All receptors (infrastructure,	See- Increase in summer temperature	See- Increase in summer temperature	Unlikely	Low	Minor	No	None



Climate Hazard Type	Climate Hazard Projection	Sensitive Receptor	Description of Potential Impact	Embedded Design Measures	Likelihood of Impact Occurring	Consequence of Impact Occurring	Resilience Risk Level	Significance	Additional Mitigation or Monitoring Measures
		buildings, staff and workers)							
Increase droughts	Possible	All receptors	See- Decrease in summer rainfall	See- Decrease in summer rainfall	Unlikely	Medium	Minor	No	None
Increase in storm intensity	Unlikely	Built terrestrial assets, staff facilities and access	See- Increase in winter rainfall	See- Increase in winter rainfall	Unlikely	Very High	Minor	No	None
Sea level rise	Likely	Built terrestrial assets, staff facilities and access routes to sites	See- Increase in winter rainfall	See- Increase in winter rainfall	Unlikely	Low	Minor	No	None



**Table 3 Climate Change Resilience Summary of Non-Significant Residual Effects (Decommissioning)**

Climate Hazard Type	Climate Hazard Projection	Sensitive Receptor	Description of Potential Impact	Embedded Design Measures	Likelihood of Impact Occurring)	Consequence of Impact Occurring	Resilience Risk Level	Significance	Additional Mitigation or Monitoring Measures
Increase in annual temperature	Very Likely	All receptors	Damage to structures/materials/equipment and resulting in delays to programme and associated costs and/or unacceptable safety risks.	Prevention measures will be covered in the DEMP, and health and safety plans and likely to be similar to CEMP.	Very Unlikely	Very Low	Negligible	No	None
Increase in summer temperature	Very Likely	Staff, visitors on-site	Increased heat stress/ heat exhaustion for workers.	Prevention measures will be covered in the DEMP and health and safety plans and likely to be similar to CEMP.	Unlikely	Medium	Minor	No	None
		Built assets, materials, staff facilities and access routes to sites	Damage to structures/materials/equipment and resulting in delays to programme and associated costs and/or unacceptable safety risks.		Unlikely	Low	Minor	No	None
Increase in winter temperature	Very Likely	All receptors	None considered	None considered	Very Unlikely	Very Low	Negligible	No	None
Increase in annual rainfall	Possible	All receptors	None considered	See- Decrease in summer rainfall	Very Unlikely	Very Low	Negligible	No	None
Decrease in summer rainfall	Likely	All receptors	None considered	None considered	Very Unlikely	Very Low	Negligible	No	None



Climate Hazard Type	Climate Hazard Projection	Sensitive Receptor	Description of Potential Impact	Embedded Design Measures	Likelihood of Impact Occurring)	Consequence of Impact Occurring	Resilience Risk Level	Significance	Additional Mitigation or Monitoring Measures
Increase to winter rainfall	Likely	Built assets, materials, staff facilities and access routes to sites	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).	Prevention measures will be covered in the DEMP and health and safety plans and likely to be similar to CEMP. Contractors will monitor weather forecasts and receive Environment Agency's (EA) flood alerts and plan works accordingly, protecting workers and resources from any extreme weather conditions such as storms, flooding.	Possible	Low	Minor	No	None
Increase to heat waves	Possible	Staff, visitors on-site	Increased heat stress/ heat exhaustion for workers.	See increase in summer temperature	Unlikely	Medium	Minor	No	None
		Built assets, materials, staff facilities and access routes to sites	Damage to structures/materials/equipment and resulting in delays to programme and associated costs and/or unacceptable safety risks.		Unlikely	Low	Minor	No	None
Increase droughts	Possible	All receptors	None considered	None considered	Very Unlikely	Very Low	Negligible	No	None
Increase in storm intensity	Unlikely	Built assets, materials, staff facilities	Damage to structures/materials/equipment and resulting in delays to programme and associated	Prevention measures will be covered in the DEMP and	Unlikely	Low	Minor	No	None



Climate Hazard Type	Climate Hazard Projection	Sensitive Receptor	Description of Potential Impact	Embedded Design Measures	Likelihood of Impact Occurring)	Consequence of Impact Occurring	Resilience Risk Level	Significance	Additional Mitigation or Monitoring Measures
		and access routes to sites	costs and/or unacceptable safety risks.	health and safety plans and likely to be similar to CEMP.					
Sea level rise	Likely	Built assets, materials, staff facilities and access routes to sites	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).	See increase in winter rainfall.	Unlikely	Low	Minor	No	None



## 1.3 Summary of Non-Significant Effects from In-Combination Climate Change Assessment

Table 4 In-Combination Climate Change Assessment - Summary of Non-Significant Effects on Receptors (Construction)

Climate Hazard Type	Climate Hazard Projection	Sensitive Receptor	Receptor Sensitivity to Climate Hazard	Description of Potential ICCI	Embedded Design Measures	Likelihood of Impact Occurring	Likelihood of ICCI Impact Occurring	Consequence of Impact Occurring	ICCI Significance Level	Significance	Additional Mitigation or Monitoring Measures
Increase to winter rainfall	Very Likely	Groundwater	Low	An increase in groundwater level may increase the possibility of groundwater levels rising closer to the ground surface / mixing with potential shallower contamination (within Made Ground) which would otherwise not be encountered. This would increase the likelihood of potential impact on groundwater quality.	Contamination which may be encountered during construction will have been removed, remediated or mitigated to some extent. Maintenance and operation of the Proposed Development will be in accordance with environmental legislation and good practice. Therefore, it is unlikely that there will be an increased risk to groundwater quality should levels rise towards Made Ground.	Unlikely	Medium	Low	Minor	No	None



Climate Hazard Type	Climate Hazard Projection	Sensitive Receptor	Receptor Sensitivity to Climate Hazard	Description of Potential ICCI	Embedded Design Measures	Likelihood of Impact Occurring	Likelihood of ICCI Impact Occurring	Consequence of Impact Occurring	ICCI Significance Level	Significance	Additional Mitigation or Monitoring Measures
Sea level rise	Possible	Surface water	Low	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)	None considered	Very Unlikely	Very Low	Negligible	No	None	None

**Table 5 In-Combination Climate Change Assessment - Summary of Non-Significant Effects on Receptors (Operation)**

Climate Hazard Type	Climate Hazard Projection	Sensitive Receptor	Receptor Sensitivity to Climate Hazard	Description of Potential ICCI	Embedded Design Measures	Likelihood of Impact Occurring	Likelihood of ICCI Impact Occurring	Consequence of Impact Occurring	ICCI Significance Level	Significance	Additional Mitigation or Monitoring Measures
Increase to winter rainfall	Very Likely	River Trent	High	Increased precipitation can impact peak discharge rates for surface water runoff,	Individual PV Panels will be held above the ground surface on mounting structures (see	Unlikely	Medium	Medium	Moderate	No	None



Climate Hazard Type	Climate Hazard Projection	Sensitive Receptor	Receptor Sensitivity to Climate Hazard	Description of Potential ICCI	Embedded Design Measures	Likelihood of Impact Occurring	Likelihood of ICCI Impact Occurring	Consequence of Impact Occurring	ICCI Significance Level	Significance	Additional Mitigation or Monitoring Measures
				which can impact receiving waterbodies (receptors) if the capacity of the drainage infrastructure is exceeded in extreme events. If this results in attenuation features such as oil interceptor's capacity being exceeded then there is potential for River Trent to receive untreated and polluted water.	<b>Chapter 2: The Scheme</b> ). This will avoid sealing the ground with impermeable surfaces. As a result, it is assumed that the DCO Site's impermeable area will remain largely consistent with its pre-development state. However, runoff from the PV Panels will alter the existing routing of runoff. Additional attenuation in the form of SuDS will be incorporated to control any increase in the rate of flow towards receiving watercourses, and to provide treatment for any contaminants						





Climate Hazard Type	Climate Hazard Projection	Sensitive Receptor	Receptor Sensitivity to Climate Hazard	Description of Potential ICCI	Embedded Design Measures	Likelihood of Impact Occurring	Likelihood of ICCI Impact Occurring	Consequence of Impact Occurring	ICCI Significance Level	Significance	Additional Mitigation or Monitoring Measures
					collected on areas of hardstanding. The rate of runoff from each development location within the whole Energy Park Site would ensure nil detriment in terms of no increase in runoff rate from the Site to receiving watercourses. The drainage strategy will determine appropriate storage volumes to account for climate change projections						
Sea level rise	Likely	Surface water	Low	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	There is a tidal influence, in this area however it is reasonable to assume that the fluvial influence is likely to outweigh the tidal influence and therefore the	Unlikely	Unlikely	Low	Minor	No	None



Climate Hazard Type	Climate Hazard Projection	Sensitive Receptor	Receptor Sensitivity to Climate Hazard	Description of Potential ICCI	Embedded Design Measures	Likelihood of Impact Occurring	Likelihood of ICCI Impact Occurring	Consequence of Impact Occurring	ICCI Significance Level	Significance	Additional Mitigation or Monitoring Measures
				drainage infrastructure)	risk from tidal flooding is considered low based on the distance upstream from river mouth and flood defences in the area. Whilst climate change has the potential to impact on drainage and flood risk, for example through sea level rise, the design of the Scheme will incorporate the climate change projections required by the Environment Agency to ensure that potentially increased surface water flows are accounted for and managed across the lifetime of the Scheme.						



**Table 6 In-Combination Climate Change Assessment - Summary of Non-Significant Effects on Receptors (Decommissioning)**

Climate Hazard Type	Climate Hazard Projection	Sensitive Receptor	Receptor Sensitivity to Climate Hazard	Description of Potential ICCI	Embedded Design Measures	Likelihood of Impact Occurring	Likelihood of ICCI Impact Occurring	Consequence of Impact Occurring	ICCI Significance Level	Significance	Additional Mitigation or Monitoring Measures
Increase to winter rainfall	Very Likely	Surface water	High	Increased precipitation can impact peak discharge rates for surface water runoff, which can impact receiving waterbodies (receptors) if the capacity of the drainage infrastructure is exceeded in extreme events. If this results in attenuation features such as oil interceptor's capacity being exceeded then there is potential for surface waters to receive untreated and polluted water.	As per operational embedded design measures (Table 5).	Unlikely	Medium	Medium	Moderate	No	None



Climate Hazard Type	Climate Hazard Projection	Sensitive Receptor	Receptor Sensitivity to Climate Hazard	Description of Potential ICCI	Embedded Design Measures	Likelihood of Impact Occurring	Likelihood of ICCI Impact Occurring	Consequence of Impact Occurring	ICCI Significance Level	Significance	Additional Mitigation or Monitoring Measures
Sea level rise	Likely	Surface water	Low	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)	As per operational embedded design measures (Table 5).	Unlikely	Unlikely	Low	Minor	No	None