

# Gate Burton Energy Park Environmental Statement

Volume 3, Appendix 6-A: Climate Change Summary of Non-Significant and Residual Effects  
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## 6. Climate Change

### 6.1 Purpose of this appendix

- 6.1.1 This ES 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 4-5.

## 6.2 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 <b>Framework Construction Environmental Management Plan (CEMP) [EN010131/APP/7.3]</b> . 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 <b>Framework CEMP [EN010131/APP/7.3]</b> . The Applicant 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

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 annual rainfall	Possible	All receptors	None considered	None considered	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
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 <b>Framework CEMP [EN010131/APP/7.3]</b> . 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 [EN010131/APP/3.1]</b> .	Possible	Low	Minor	No	None
Increase in heat waves	Possible	Plant and vehicles, physical structures, materials, and access	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

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
		routes to sites							
		Staff, visitors on-site	Increased heat stress/ heat exhaustion for workers.	Contractors will monitor weather forecasts and plan works accordingly, protecting workers and resources from any extreme weather. Equipment has cooling systems where necessary.	Unlikely	Medium	Minor	No	None
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.	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
			Damage to building surfaces/ exposed 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 [EN010131/APP/3.1]</b> includes a number of adaptation measures that would be considered in the detailed design and operations management which are included in the <b>Framework CEMP [EN010131/APP/7.3]</b> and <b>Framework Operational Management Plan (OEMP) [EN010131/APP/7.4]</b> .	Possible	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
Increase to heat waves	Possible	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 droughts	Possible	All receptors	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 in storm intensity	Unlikely	Built terrestrial assets, staff facilities and access	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 [EN010131/APP/3.1]</b> includes a number of adaptation measures that would be considered in the detailed design and operations management which are included in the <b>Framework CEMP [EN010131/APP/7.3]</b> and <b>Framework OEMP [EN010131/APP/7.4.]</b>	Unlikely	Very High	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
Sea level rise	Likely	Built terrestrial assets, staff facilities and access routes to sites	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 [EN010131/APP/3.1]</b> includes a number of adaptation measures that would be considered in the detailed design and operations management which are included in the <b>Framework CEMP [EN010131/APP/7.3]</b> and <b>Framework OEMP [EN010131/APP/7.4]</b>	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 <b>Framework Decommissioning Environmental Management Plan (DEMP) [EN010131/APP/7.5]</b> , and health and safety plans and likely to be similar to the <b>Framework CEMP [EN010131/APP/7.3]</b> .	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 <b>Framework DEMP [EN010131/APP/7.5]</b> and health and safety plans and likely to be similar to the <b>Framework CEMP [EN010131/APP/7.3]</b> .	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

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 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
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 <b>Framework DEMP [EN010131/APP/7.5]</b> and health and safety plans and likely to be similar to the <b>Framework CEMP [EN010131/APP/7.3]</b> . 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	Damage to structures/materials/equipment and resulting in delays to		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	programme and associated costs and/or unacceptable safety risks.						
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 and access routes to sites	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 <b>Framework DEMP [EN010131/APP/7.5]</b> and health and safety plans and likely to be similar to the <b>Framework CEMP [EN010131/APP/7.3]</b> .	Unlikely	Low	Minor	No	None
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	Sea level rise

## 6.3 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 Scheme 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

**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, 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.	Individual PV Panels will be held above the ground surface on mounting structures (see <b>Chapter 2: The Scheme [EN010131/APP/3.1]</b> ). This will avoid sealing the ground with impermeable surfaces. As a result, it is assumed that the 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	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
					collected on areas of hardstanding. The rate of runoff from each development location within the whole Solar and Energy Storage Park 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						