

Appendix 7.2 Climate Projections and Risk Assessment

- 7.1.1 The assessment of climate risks to the Proposed Development has been undertaken using the framework set out in the 'Predicting Effects' section of Chapter 7: the likelihood of a climate hazard occurring over the relevant assessment period is combined with the consequence of that hazard to derive the magnitude of impact, which is then combined with the sensitivity of the receptor in the level of effect matrix to determine the level of effect and its significance. The scales and matrices below reproduce those applied in the chapter (Tables 7.3 to 7.6). The framework is project-specific, developed in accordance with the risk-based approach recommended in IEMA (2020) 'EIA Guide to: Climate Change Resilience and Adaptation' and informed by the UKGBC (2022) 'Framework for Measuring and Reporting of Climate-related Physical Risks to Built Assets', and is informed by UKCP18 climate projections and professional judgement

Likelihood Scale

Likelihood	Definition
High	The hazard is expected to occur repeatedly over the assessment period
Moderate	The hazard is expected to occur at least once over the assessment period
Low	The hazard may occur over the assessment period but is not expected to do
Rare	Occurrence over the assessment period is unlikely

Consequence Scale

Consequence	Definition
Major	Serious harm to health or life safety; loss of function of a building or asset for an extended period; damage requiring major repair or replacement
Moderate	Temporary harm to health or wellbeing; temporary loss of amenity or function; damage requiring repair
Minor	Discomfort or inconvenience; localised, short-lived disruption; damage repairable within routine maintenance
Negligible	No discernible effect on health, function or amenity

Magnitude of Impact Derived from Likelihood and Consequence

Likelihood / Consequence	Major	Moderate	Minor	Negligible
High	High	High	Medium	Negligible
Moderate	High	Medium	Low	Negligible
Low	Medium	Low	Low	Negligible
Rare	Low	Low	Negligible	Negligible

7.1.1 The magnitude of impact derived above is combined with the sensitivity of the receptor in the level of effect matrix in Chapter 7 (Table 7.6). For climate risks, levels of effect of Moderate or above - that is, Moderate, Major or Substantial - are treated as significant and warrant designed mitigation; levels of effect of Minor or below are not significant. The evidence supporting each likelihood and consequence rating applied in the chapter is set out in the table below.

Evidence Supporting the Likelihood and Consequence Ratings

Hazard (phase)	Likelihood - rating and evidence	Consequence - rating and evidence
Worker heat stress during summer periods (construction, 2027-2032)	Moderate - observed UK trends show increasing frequency and intensity of hot spells; at least one heatwave event capable of affecting outdoor worker welfare is expected within the construction programme.	Moderate - temporary harm to health (heat stress) among outdoor construction workers; recoverable with management, no lasting loss of function.
Programme disruption from extreme weather (construction)	Moderate - storm and intense rainfall events are expected at least once over the programme, consistent with observed intensification of extremes.	Minor - localised, short-lived disruption to works and temporary site infrastructure; damage repairable within routine site management.
Dust generation during dry periods (construction)	Low - prolonged dry spells may occur within the near-term programme but are not expected to do so.	Minor - discomfort and inconvenience to site users and neighbouring occupants; short-lived and managed through the CEMP.
Overheating of dwellings (operation, 60-year design life)	High - UKCP18 (RCP8.5) projects summer maximum temperatures increasing by 3-5°C by the 2080s with greater frequency and intensity of heatwaves; hot spells capable of causing overheating are	Moderate - temporary harm to health and wellbeing of occupants during hot spells, particularly vulnerable groups; temporary loss of amenity; recoverable.

	expected to occur repeatedly over the design life.	
Surface water flooding (operation)	Moderate - UKCP18 projects winter rainfall increasing by 10-30% by the 2080s with individual events becoming more intense; at least one exceedance event is expected over the design life.	Moderate - temporary loss of amenity or function and damage to property requiring repair.
Water resource pressure (operation)	Moderate - UKCP18 projects summer rainfall decreasing by 10-40% by the 2080s; supply restrictions are expected at least once over the design life.	Minor - inconvenience and temporary restrictions on use; no lasting harm to health or function.
Storm damage (operation)	Low - storms of a severity capable of damaging modern buildings may occur over the design life but are not expected to do so.	Moderate - damage to building fabric requiring repair; temporary loss of function possible.
Subsidence from soil shrinkage (operation)	Moderate - intensified seasonal wetting and drying cycles are expected to cause some shrink-swell movement at least once over the design life.	Minor - minor movement-related damage repairable within routine maintenance, given foundation design to current standards.

Figure 7.1 UKCP18 projections of change in average annual temperature (in degrees C, relative to a 1961-90 baseline) for a medium-high emissions scenario

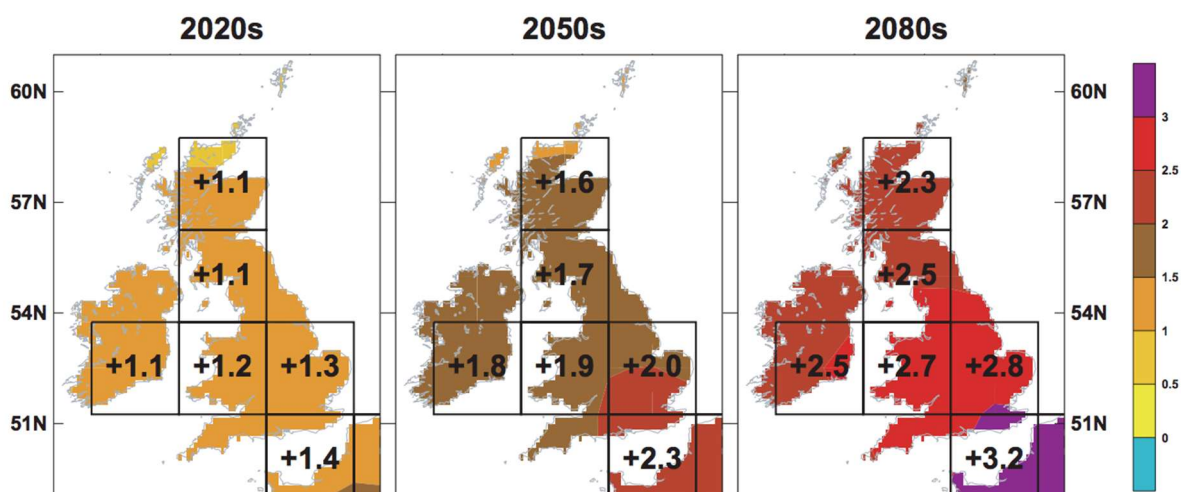


Figure 7.2 Temperature Projections

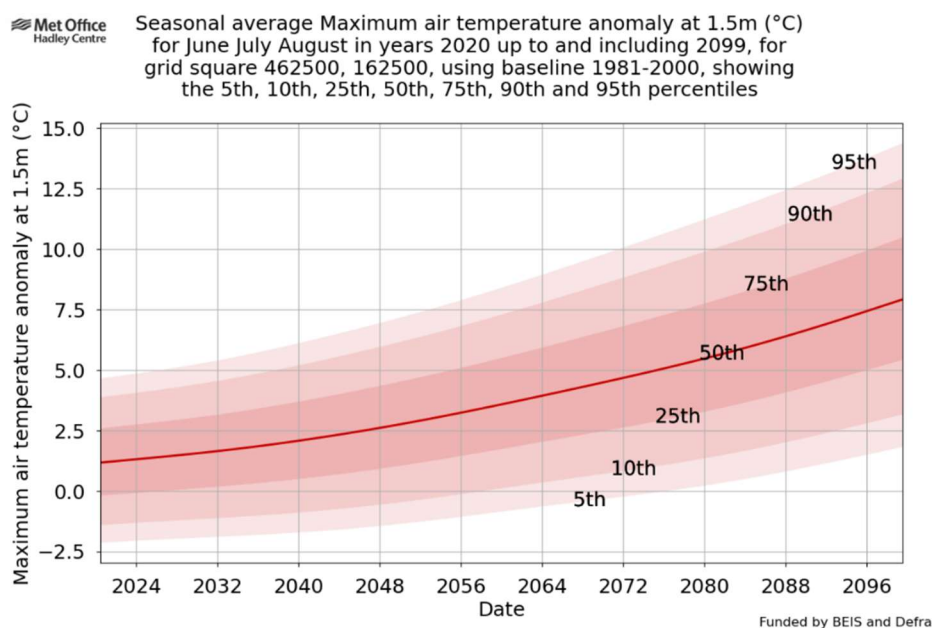


Figure 7.3 Precipitation Projections - Winter

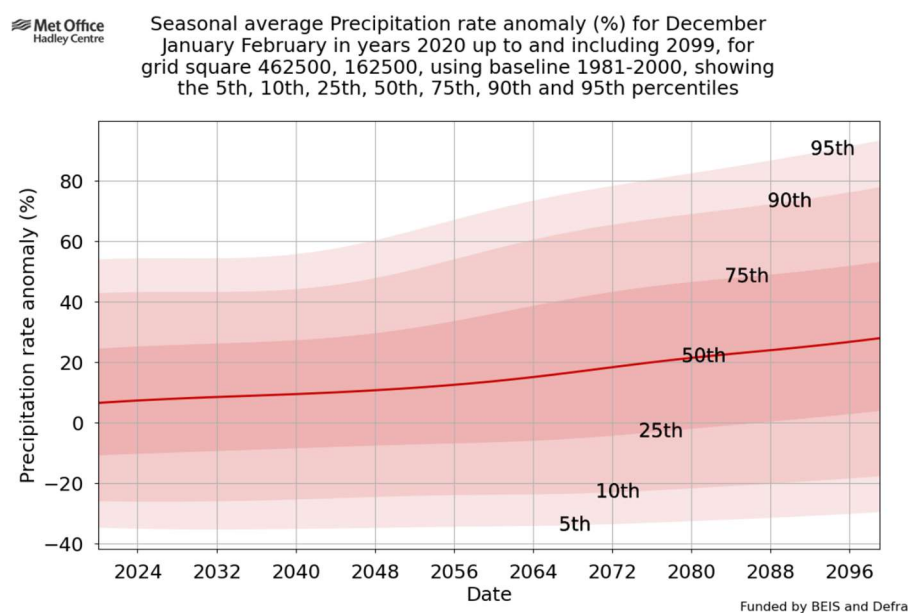


Figure 7.4 Precipitation Projections - Summer

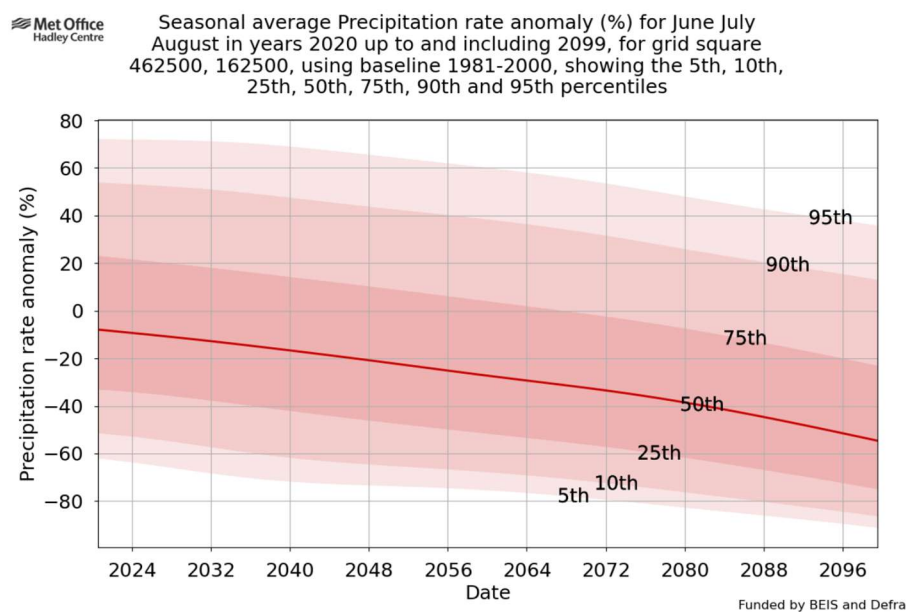


Figure 7.5 Cloud Anomalies

