ENVIRONMENTAL STATEMENT: 6.1 CHAPTER 12: CLIMATE RESILIENCE

DECARBONISATION

Cory Decarbonisation Project

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The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations (2009) - Regulation 5(2)(a)

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12. CLIMATE RESILIENCE

12.1. INTRODUCTION

12.1.1. This chapter reports the assessment of the likely significant effects of climate change on the Proposed Scheme (rather than the effects of the Proposed Scheme on climate) during construction and operation and describes:

- relevant policy, legislation and guidance;
- consultation and engagement undertaken to date;
- the methodology for assessment;
- potential effects during the construction phase; and
- potential effects during the operation phase.

12.1.2. The assessment of the likely significant effects of the Proposed Scheme on climate are reported in **Chapter 13: Greenhouse Gases (Volume 1)**.

12.1.3. This chapter is intended to be read alongside **Appendix 12-1: In-combination Climate Change Impacts Assessment (Volume 3)**, to consider the extent to which climate change exacerbates an effect on an environmental receptor.

12.2. POLICY, LEGISLATION, AND GUIDANCE

12.2.1. The policy, legislation, and guidance relevant to the assessment of climate resilience for the Proposed Scheme is detailed in **Table 12-1**.

Table 12-1: Climate Resilience Summary of Key Policy, Legislation and Guidance

Policy, Legislation or Guidance	Description
Policy	
Overarching National Policy Statement (NPS) for Energy EN-1 2024[1]	This Overarching National Policy Statement for Energy (EN-1) is part of a suite of NPS designated by the Secretary of State of DESNZ in January 2024. Section 4.10 highlights that applicants and the Secretary of State should take the effects of climate change into account when developing and consenting infrastructure. The Secretary of State should be satisfied that applicants for new energy infrastructure have taken into account the potential impacts of climate change using the latest UK Climate Projections and associated research and expert guidance to ensure they have identified appropriate mitigation or adaptation measures.

Policy, Legislation or Guidance	Description
National Planning Policy Framework (NPPF) 2023[2]	The NPPF sets out the Government's planning policies for England and how these should be applied, with the following paragraphs relating to climate resilience: Guidance relating to ways to minimise vulnerability and improve resilience to climate change impacts is mainly set out in Section 14 "*Meeting the Challenge of Climate Change, Flooding and Coastal Change*". Within Paragraph 8, the document confirms that the purpose of the planning system is to contribute to the achievement of sustainable development, which includes economic, social and environmental dimensions.
The London Plan 2021[3]	The Spatial Development Strategy for Greater London setting out a framework for how London will develop over the next 20-25 years and the Mayor's vision for Good Growth. Policy GG6: Increasing Efficiency and Resilience requires that *"buildings and infrastructure are designed to adapt to a changing climate, making efficient use of water, reducing impacts from natural hazards like flooding and heatwaves, while mitigating and avoiding contributing to the urban heat island effect".*
The Bexley Local Plan 2023[4]	The Local Plan, adopted on 26th April 2023, positively plans for sustainable development across the Borough, including measures to address climate change. It is essential to the delivery of the Council's other key plans and strategies, including the Bexley Plan, the Growth Strategy and the Connected Communities Strategy. Policy SP14: Mitigating and adapting to climate change highlights that London and south east England *"is likely to suffer from some of the severest impacts of climate change in the UK".* Stating that *"approximately one quarter of the borough is at risk from tidal or fluvial flooding".* Policy SP14 states its support for projects that can deliver greenhouse gas reductions. Policy SP14 (i), aims "*to ensure that the recommendations of the TE2100 Plan are implemented in new and existing developments".* The TE2100 is the Thames Estuary 2100 Plan.

Policy, Legislation or Guidance	Description
Climate Change Adaptation: Policy Information 2021[5]	The policy paper lays emphasis on the role of climate adaptation to reduce negative consequences of climate change in the UK and gives a description of the initiatives by the UK government for building preparedness and improving resilience to climate change impacts. These include UK Climate Change Risk Assessment[6], National Adaptation Programme[7], Adaptation Reporting Power[8], UK Climate Projections 2018[9] and the UK Climate Resilience Programme[10].
Bexley's Environmental Sustainability Strategy 2011[11]	Outlines the London Borough of Bexley's responsibilities for environmental sustainability, contained in several strategies with *"Theme 1: Adaptation to and Mitigation of Climate Change"* providing the Council's view on climate resilience.
Bexley Climate Change Statement and Action Plan 2022-2026[12]	Commitment 1: Celebrate, Promote and Protect our Natural Environment of the Action Plan aims for new developments and supporting initiatives that contribute to mitigation and adaption to climate change to be encouraged.
London Environment Strategy 2018[13]	Seeking to make London resilient to severe weather and longer-term climate change impacts. The Strategy has an aim to develop, refine and monitor plans and indicators of London's resilience to severe weather and longer-term climate change impacts on flooding, heat risk and water pollution.
TE2100 Plan (2012)[14,15]	The TE2100 Plan sets out recommendations for flood risk management for London and the Thames estuary through to the end of the century and beyond. The TE2100 Plan is a strategic plan for adapting to rising sea levels in the estuary. One of these aims is to "*protect and enhance the value of the Thames, its tidal tributaries and floodplain – deliver social, cultural and commercial benefits for communities and support resilient growth*" (Aim B). Aim B is linked with Strategic Objective 5 of the TE2100 Plan: *"work together to develop community-led visions for future riversides – these will drive flood defence upgrade and identify where to deliver wider benefits*". The Proposed Scheme falls within the Thamesmead action zone of the TE2100 action plan - Policy 4 (P4) – Take further action to keep up with climate and land use change so that flood risk does not increase.

Policy, Legislation or Guidance	Description
	The TE2100 Plan is due to be updated (as of May 2023) but had not been released during the time of writing.
South East Inshore Marine Plan 2021[16]	The South East Inshore Marine Plan area stretches from Felixstowe in Suffolk to west of Dover in Kent and incorporates the River Thames. The South East Inshore Marine Plan will help to enhance and protect the marine environment and achieve sustainable economic growth while respecting local communities both within and adjacent to the marine plan area. Policies SE-CC-1 to SE-CC-3 relate to climate change: • SE-CC-1 states that "*proposals that conserve, restore or enhance habitats that provide flood defence or carbon sequestration will be supported. Habitats that provide flood defence and carbon sequestration contribute to natural resilience for coastal communities that are vulnerable to coastal erosion and change. SE-CC-1 requires proposals to manage impacts, enabling these important habitats to continue to provide this valuable service. Proposals that cannot avoid, minimise and mitigate or, as a last resort, compensate for significant adverse impacts, will not be supported*". • SE-CC-2 states that *"effects of climate change are wide-ranging and can include sea level rise, coastal flooding and rising sea temperatures. SE-CC-2 adds provision to enable enhanced resilience of developments, activities and ecosystems within the south east inshore marine plan area to the effects of climate change and coastal change".* • SE-CC-3 states that proposals should not "*exacerbate coastal change, enabling communities to be more resilient and better able to adapt to coastal erosion and flood risk where identified. SE-CC-3 also supports proposals that do not compromise existing adaptation measures, which will enable an improvement in the resilience of coastal communities to coastal erosion and flood risk. Proposals that cannot avoid, minimise and mitigate significant adverse impacts will not be supported*".

Policy, Legislation or Guidance	Description
Legislation	
The Climate Change Act 2008, as amended 2019[17]	The Climate Change Act 2008 sets targets for reducing the UK's impacts on climate change and the need to prepare for its impacts. The Act requires a Climate Change Risk Assessment to be used to assess the risks from the impact of climate change to the UK. The first UK Climate Change Risk Assessment (CCRA) was presented to Parliament in an Evidence Report in 2012, with the second presented in 2017. The overall aim of the Evidence Report is to assess the urgency of further action to tackle current and future risks, and realise opportunities, arising for the UK from climate change. The Act also requires the production of a national adaptation plan for the UK Government to implement to be ready for the challenges of climate change.
Guidance	
National Planning Practice Guidance (2021)[18]	Explains the processes and tools that can be used through the planning system in England. The guidance advises how to identify suitable mitigation and adaptation measures in the planning process. This would require the implementation of appropriate measures by the local planning authorities. The guidance particularly recommends the use of local risk assessments to identify climate-related risks and their implications for the built environment, biodiversity and vulnerable groups and communities.
Environmental Impact Assessment Guide to: Climate Change Resilience and Adaptation 2020[19]	Guide to considering climate change resilience and adaptation in EIA reporting.
Design Manual for Roads and Bridges LA 114 – Climate 2021[20]	Establishes the requirements for assessing and reporting the effects of climate on highways. While the Proposed Scheme is not a highways project, the significance criteria assessment is Section 3 of LA114 provides a useful methodology which has been adopted within this assessment.

12.3. CONSULTATION AND ENGAGEMENT

12.3.1. No consultation or engagement has been undertaken to inform the climate resilience assessment to date. No future engagement is required.

12.3.2. **Table 12-2** provides a summary of comments provided as part of the statutory consultation process and the Applicant's response.

12.3.3. **Appendix 4-2: Scoping Opinion Responses (Volume 3)** provides a summary of the Planning Inspectorate and consultee comments on the EIA Scoping Opinion[21] and the Applicant's responses.

Table 12-2: Summary of the Statutory Consultation Comments in relation to Climate Resilience

Statutory Consultee	Response
London Borough of Bexley	
"Implications that the loss of the greenfield marshland area to the carbon capture development will have on the borough's climate resilience need to be set out".	This chapter is intended to be read alongside **Appendix 12-1: In-combination Climate Change Impacts Assessment (Volume 3)**, to consider the extent to which climate change exacerbates an assessed effect on an environmental receptor, including flood risk and terrestrial biodiversity. Further detail on flood risk and terrestrial biodiversity are provided in **Chapter 11: Water Environment and Flood Risk (Volume 1)**, **Appendix 11-2: Flood Risk Assessment (Volume 3)** and **Chapter 7: Terrestrial Biodiversity (Volume 1)**. The scope of this chapter is to evaluate how the Proposed Scheme is designed to withstand and adapt to climate variables such as temperature fluctuations and extreme weather events. While it is understood the importance of considering the broader implications of land use changes on climate resilience, evaluating the borough's overall climate resilience falls outside the scope of the assessment that has been conducted. However, **Chapter 13: Greenhouse Gases (Volume 1)** considers the construction phase and operation phase GHG emissions from Land use, Land Use Change and Forestry (LULUCF), such as the GHG emissions released as a result of the change in land use from the baseline scenario during the construction phase. This considers loss of carbon storage from permanent and temporary loss of habitat and changes to carbon storage through reinstatement and improvement to habitat. **Chapter 13: Greenhouse Gases (Volume 1) (Table 13-10)** identifies the GHG emissions with and without the Proposed Scheme operating regarding LULUCF.

12.4. ASSESSMENT METHODOLOGY AND SIGNIFICANCE CRITERIA

12.4.1. The climate resilience assessment of the Proposed Scheme has been undertaken in line with the legislation, policy and guidance described in **Section 12.2**.

12.4.2. The assessment presented within this chapter considers potential impacts from the construction and operation of the Proposed Scheme alongside Riverside 1 and Riverside 2.

POTENTIAL SIGNIFICANT EFFECTS

12.4.3. As identified in the EIA Scoping Report[22] and PEIR[23], the following were identified as having a medium or high vulnerability to the climate and have been considered further in this assessment:

- Construction Phase:
  - Construction Site & Staff, Construction Materials and Plant & Equipment (including the Temporary Construction Compounds) are vulnerable to sea level rise, storm surge and storm tide.
- Operation Phase:
  - The operation of the Carbon Capture Facility is vulnerable to extreme precipitation events (flooding), extreme temperature events, gales and high winds and storms, and sea level rise, storm surge and storm tide.
  - The Proposed Jetty is vulnerable to extreme temperature events, gales and high winds and storms, and sea level rise, storm surge and storm tide.
  - The Ancillary Infrastructure[a] is vulnerable to changes in annual average precipitation, extreme precipitation events (flooding), drought, changes in annual average temperature, extreme temperature events, gales and high winds, storms, sea level rise, storm surge and storm tide.
  - The Mitigation and Enhancement Area is vulnerable to changes in annual average precipitation, extreme precipitation events (flooding), extreme temperature events, sea level rise, storm surge and storm tide.
  - End users (operational staff) are vulnerable to extreme precipitation events (flooding), extreme temperature events, gales and high winds, storms, sea level rise, storm surge and storm tide.

MATTERS SCOPED OUT

12.4.4. The following are considered unlikely to be vulnerable to climate hazards and therefore have not been considered further in this assessment, as agreed in the

[a] For the purposes of this chapter Ancillary Infrastructure includes the Heat Recovery and Heat Transfer System, Access Roads and Site Boundary Fencing the Main Electrical Infrastructure, the Surface Water Drainage, Lighting and CCTV and Operational Contractor Maintenance Laydown Area.

Scoping Opinion, following the considerations set out in the Scoping Report[22] summarised below:

- Construction Phase:
  - No receptors are considered likely to be vulnerable to the climate hazards identified, excluding sea level rise.
- Operation Phase:
  - The operation of the Carbon Capture Facility was assessed as having low vulnerability to change in annual average precipitation, drought, change in annual average temperature, change in annual average relative humidity and evaporation.
  - The operation of the Proposed Jetty was assessed as having low vulnerability to change in annual average precipitation, drought, change in annual average temperature, change in annual average relative humidity and evaporation.
  - The Ancillary Infrastructure were assessed to have low vulnerability to relative humidity (change in annual average and/or evaporation), annual average precipitation, change in annual average precipitation, and change in annual average temperature.
  - Operational staff were assessed to have low vulnerability to change in annual average precipitation, drought, change in annual average temperature, change in annual average relative humidity and evaporation.

BASELINE DATA COLLECTION

12.4.5. A desk-based data collection exercise has been undertaken, including review of available information to determine the baseline conditions that are relevant to this assessment.

12.4.6. The key sources of information used to determine the baseline and future baseline climate conditions are:

- Met Office records[24];
- the United Kingdom Climate Projections (2018) (UKCP18) projections[9]; and
- the Climate Risk Indicators[25].

12.4.7. The current baseline climate data uses the most recent Met Office Climate Averages data for the thirty-year period between 1991-2020. To align with the baseline data used in UCKP18 climate projection modelling, the climate averages for 1981 – 2021 are also presented. Recent past extreme weather events have also been updated using Met Office records and research of locally documented cases.

ASSESSMENT METHODOLOGY

12.4.8. The climate resilience assessment looks at the potential impacts of climate change on the Proposed Scheme, rather than impacts of the Proposed Scheme on climate;

the sensitive receptors for the climate resilience assessment are components of the Proposed Scheme (as detailed in **Section 12.5**). As such, no assessment of intra-project combined effects is undertaken, as there are no receptors in common with other assessments.

12.4.9. As set out in **Chapter 2: Site and Proposed Scheme Description (Volume 1)**, two options for the construction programme of the Proposed Scheme are being considered: Option 1 and Option 2. The estimated construction period is approximately 60 months (five years) for Option 1 and approximately 42 months (three and half years) for Option 2. Option 1 has been considered further in this assessment as it represents the longest construction period and thereby the greatest exposure to potential changes in climate events, this is representative of the worst case scenario.

12.4.10. As set out in **Chapter 2: Site and Proposed Scheme Description (Volume 1)**, two options for the design of the Carbon Capture Facility are being considered. One option is for individual lines to be connected to the exhaust stacks for Riverside 1 and Riverside 2, with two individual Stack(s) for the Carbon Capture Facility. A second option is for the two lines from Riverside 1 and Riverside 2 to be combined into a single Stack at the Carbon Capture Facility. For the purposes of this assessment, there is considered to be no difference between the two options in terms of predicted effects of climate change on the Proposed Scheme.

12.4.11. As set out in **Chapter 2: Site and Proposed Scheme Description (Volume 1)**, the choice between demolition or retention of the Belvedere Power Station Jetty (disused) is being considered. The decision will not change the outcomes of the assessment of impacts and effects reported within this chapter. If the structure is demolished, this will occur during the construction phase and be managed as part of the **Outline CoCP (Document Reference 7.4)**. Therefore, the structure is unlikely to be impacted by climate change. If the structure is retained, it will not be an operational asset, however the Applicant will still be responsible for its proactive maintenance, utilising similar methodologies to those assumes for the Proposed Jetty for the purposes of this chapter.

12.4.12. The climate resilience assessment for the construction and operation phases has been undertaken using the 'likelihood-consequence' approach based on the IEMA Guidance[19], DMRB LA 114[20] and professional judgement.

12.4.13. The significance of effects has been determined by considering the consequence and likelihood of potential impacts, associated with changes in climate variables, on the Proposed Scheme components. Likelihood and consequence were qualitatively assessed using the descriptions in **Table 12-3** and **Table 12-4**, informed by the existing and future baseline. The likelihood definitions depend on the lifetime of the Proposed Scheme's components (as highlighted in **Table 12-3**) and therefore will vary. **Table 12-3** describes the frequency that the climate event may occur, based on the future climate projections. The timeframe referenced relates to the design life for

the Proposed Scheme (50 years), as described in **Chapter 2: Site and Proposed Scheme Description (Volume 1)**.

12.4.14. **Table 12-4** describes the potential consequence that the climate impact may have on a given sensitive receptor.

12.4.15. These descriptions have been developed using professional judgement, informed by relevant guidance.

Table 12-3: Likelihood Definitions

Measure of Likelihood	Description
Very High	The event occurs multiple times during the lifetime of the Proposed Scheme; e.g. approximately annually.
High	The event occurs several times during the lifetime of the Proposed Scheme; e.g. approximately once every five years.
Medium	The event occurs limited times during the lifetime of the Proposed Scheme; e.g. approximately once every 10 years.
Low	The event occurs occasionally during the lifetime of the Proposed Scheme; e.g. once in 20 years.
Very Low	The event may occur once during the lifetime of the Proposed Scheme.

Table 12-4: Measure of Consequence Definitions

Measure of Consequence	Description
Negligible	No infrastructure damage, minimal adverse impacts on health, safety and the environment or financial loss. Little change to service and disruption lasting less than one day.
Minor	Localised infrastructure disruption or loss of service. No permanent damage, minor restoration work required, disruption lasting less than one day. Small financial losses and/or slight adverse health or environmental impacts.
Moderate	Limited infrastructure damage and loss of service with damage recoverable by maintenance or minor repair. Disruption lasting more than one day but less than one week. Moderate financial losses. Adverse impacts on health and/or the environment.
Large	Extensive infrastructure damage and severe loss of service. Disruption lasting more than one week. Early renewal of infrastructure 50-90%. Permanent physical injuries and/or

Measure of Consequence	Description
	fatalities. Major financial loss. Adverse impacts on the environment, requiring remediation.
Very Large	Permanent damage and complete loss of service. Disruption lasting more than one week. Early renewal of infrastructure >90%. Severe health effects and/or fatalities. Extreme financial loss. Very large adverse loss to the environment requiring remediation and restoration.

12.4.16. The assessment of likelihood and consequence takes embedded mitigation into account as an assumed part of the design. Since production of the PEIR[23]further details on confirmed embedded mitigation have been sourced and included within this assessment. Where embedded mitigation is deemed insufficient to mitigate the effect of the climate variable on the receptor, additional mitigation has been provided.

SIGNIFICANCE CRITERIA

12.4.17. The likelihood and consequence are combined to assess the significance of effects on sensitive receptors, as shown in **Table 12-5**. The assessment is qualitative and based on expert judgment from knowledge of similar schemes and relevant guidance (IEMA Guidance[25] and DMRB LA 114[20]).

Table 12-5: Climate Resilience Significance Rating Matrix

Measure of Consequence of Hazard Occurring	Measure of Likelihood				
	Very low	Low	Medium	High	Very high
Very large	Not Significant	Significant	Significant	Significant	Significant
Large	Not Significant	Not Significant	Significant	Significant	Significant
Moderate	Not Significant	Not Significant	Significant	Significant	Significant
Minor	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant
Negligible	Not Significant	Not Significant	Not Significant	Not Significant	Not Significant

12.5. STUDY AREA

12.5.1. The scope for the climate resilience assessment relates to the impact of climate on the Proposed Scheme (rather than the impact of the Proposed Scheme on climate). As such, the Study Area for the Proposed Scheme is the Site for both the construction and operation phases.

SENSITIVE RECEPTORS

12.5.2. The sensitive receptors are the components of the Proposed Scheme that are likely to be impacted by changes in climate variables.

12.5.3. The following sensitive receptors have been identified:

- Construction phase:
  - the Site;
  - staff;
  - materials; and
  - plant and equipment.
- Operation phase:
  - Carbon Capture Facility;
  - Proposed Jetty;
  - Ancillary Infrastructure;
  - Mitigation and Enhancement Area; and
  - End users (operational staff).

12.6. BASELINE CONDITIONS AND FUTURE BASELINE

BASELINE

12.6.1. The IEMA Guidance[19], identifies the need for the baseline to consider the:

- current climate baseline (defined by historic climate conditions) to provide an indication of past vulnerability; and
- future climate baseline (short term extremes and long term variation) to assess the Proposed Scheme's vulnerability to climate change.

12.6.2. The current baseline for the climate resilience assessment is based on historic climate data obtained from the Met Office records for the closest meteorological station to the Proposed Scheme (Greenwich Park, approximately 11km west of the Proposed Scheme) for the period 1991-2020[26] and Met Office Regional Climate Profiles [27]. The Site is located in the Met Office Regional climate profile of Southern England. Flood risk information obtained from the ES for Riverside 2[28] has also been used to support the climate baseline where relevant to the Proposed Scheme.

UK Context

12.6.3. According to the latest State of the UK Climate Report 2022[29]:

- the observations show that in the UK extremes of temperature are changing much faster than the average temperature;
- 40°C was recorded in the UK for the first time during a heatwave which exceeded previous records by a large margin. The UK's record warm year of 2022 and unprecedented July heatwave were both made more likely by climate change;
- 2022 was the warmest year in the UK series from 1884, 0.9°C above the 1991–2020 average. It was the first year to record a UK annual mean temperature above 10°C. All the 10 warmest years for the UK in the series from 1884 have occurred in this century;
- cooling degree days (CDD)[b] are dominated by annual variability, however, for England, the most recent decade (2013–2022) has had seven more CDD than 1991–2020 and 15 more than 1961–1990, the latter representing a doubling over this period;
- for the most recent decade (2013–2022), UK winters have been 10% wetter than 1991–2020 and 25% wetter than 1961–1990;
- in recent years, widespread and substantial snow events have occurred in 2009, 2010, 2013, 2018 and 2021, but their number and severity have generally declined since the 1960s;
- the UK annual mean wind speed from 1969 to 2022 shows a downward trend, consistent with that observed globally;
- over the past 30 years (1993–2022) the sea level has risen by 11.4 cm. The rate of sea level rise is increasing;
- the most widespread storm surges of 2022 came with Storm Eunice on 18 February, with the northern Irish Sea witnessing over 1 m skew surges; and
- the period January–August 2022 was the driest across England and Wales since 1976, with drought status declared across parts of England and all of Wales.

Local Climate

12.6.4. **Table 12-6** provides an understanding of how recent climate trends have impacted the Study Area for a range of climate variables (temperature, rainfall and windspeed). The local, regional and UK context (Greenwich Park Weather Station, Southern England, and the UK) is presented to understand how the local climate compares to the regional and local baseline.

[b] Cooling Degree Days are the day-by-day sum of number of degrees by which the mean temperature is more than 22°C. CDD indicate the energy demand for cooling due to hot days. A higher number of CDD means an increase in power consumption for cooling and air conditioning, therefore this index is useful for predicting future changes in energy demand for cooling.

Table 12-6: Climate trends for 1991-2020 for Greenwich Park Weather Station, Southern England and the UK

Climate Variable	Greenwich Park Weather Station	Southern England	UK
Mean Annual Temperature (°C)	11.9	10.4	9.1
Mean Winter Temperature (°C)	6.1	4.9	4.1
Mean Summer Temperature (°C)	18.1	16.2	14.6
Maximum Summer Temperature (°C)	22.8	21.0	19.0
Highest Monthly Maximum Temperature – July (°C)	23.7	21.8	19.6
Minimum Winter Temperature (°C)	3.4	1.9	1.3
Lowest Monthly Minimum Temperature – January (°C)	3.4	1.9	1.2
Days of air frost (days)	23.1	41.9	53.4
Mean Annual Rainfall (mm)	563	808	1163
Mean Winter Rainfall (mm)	134	224	345
Mean Summer Rainfall (mm)	139	187	253
Highest Monthly Rainfall – November[c](mm)	60	87	123
Days of rainfall ≥1 mm (days)	106	129	159
Sunshine hours (hours)	1526	1594	1403
Monthly mean windspeed at 10m (knots)	-	8.0	9.3

Humidity

12.6.5. The relative annual average humidity at the Proposed Scheme is 78% to 80% and slightly higher in the surrounding areas of Greater London (80% to 82%)[26]. This is because the Proposed Scheme is in Greater London; cities often have lower humidity due to reduced evapotranspiration from vegetation and increased run-off of precipitation.

Sea Level Rise

12.6.6. The Proposed Scheme falls within the Thamesmead Policy Unit, identified in the TE2100 Plan[14] Action Zone 4, an area that is low lying with ground levels typically 2m to 3m below high water on spring tides. Flood depths in a surge tide event overtopping or breaching the defences could exceed 5m in an extreme event, given the presence of the defences, this is considered to be a residual risk. The Site is therefore highly vulnerable to tidal flood risk[14] in the undefended scenario, further information is provided in **Appendix 11-2: Flood Risk Assessment (Volume 3)**.

12.6.7. The Environment Agency Flood Map for Planning[30] presents the flood risk associated with the Study Area. The map indicates that the Study Area is located within Flood Zone 3 and is within the possible tidal flood extent of the 1 in 200-year event (0.5% Annual Probability of Exceedance event), excluding the presence of flood defences. However, there are significant defences located along the River Thames (parts of which are within the Study Area) that are maintained by the Flood Defence Owner (normally the adjacent landowner) under the supervision of the Environment Agency. These currently provide the Site with a reduction in local flood risk, as shown by the Environment Agency's Reduction in Risk of Flooding from Rivers and Sea due to Defences Dataset. The Environment Agency frequently inspects the defences to ensure appropriate maintenance is being undertaken and the crest levels are suitably set to achieve the required Standard of Protection.

12.6.8. The River Thames Flood Defences provide a standard protection of 1 in 1,000 years (0.1% annual probability). The Fluvial flood risks are managed through fluvial flood management that is provided by a system of open channels with pumped and gravity outfalls into the River Thames and tidal flood risk is managed by the River Thames tidal defences.

12.6.9. In February 2018, the upper Thames River watershed experienced a significant flood event. Flows reached record highs at various monitoring stations. Operations at the Upper Thames River Conservation Authority's (UTRCA) three flood control dams combined to reduce flows by nearly 30% on the Thames River at Byron station[31]. In July 2023, a flood warning was provided for the River Thames from Thamesmead to Woolwich Arsenal.

[c] Across the 1991-2020 time period, November, on average, was the month that received the highest rainfall.

Past Major Climate Events

12.6.10. Examples of past severe weather events in the region are provided below to present an indication of past climate hazards:

- In November 2023, Storm Ciaran was an exceptionally severe storm. Most of southern England received 30 to 50mm rainfall from this storm, and over 50mm in the wetter areas. For most of southern and south east England, this represents between a third and half of the November whole-month average rainfall, and more than 50% in some areas, in the first three days of the month. Parts of London experienced wind speeds of up to 90mph.
- September 2023 saw a significant heatwave with daily maximum temperatures exceeding 30c in the UK for seven consecutive days. This was particularly unusual for September.
- December 2022 saw a prolonged spell of low temperatures, with snow and icy conditions disrupting road and rail travel in London.
- Flash flooding in October 2022 meant some areas saw a month's worth of rain in a day. Multiple roads were closed, including the M25, with tube and railway services also disrupted.
- In August 2022 the Kent and South London Environment Agency Area was declared as in-drought. Southern England is prone to drought.
- In July 2022 the Met Office issued a red warning for extreme heat, which affected all Central and Southern England. The heatwave saw temperatures surpass 40°C for the first time in London and the UK's history. On 15th July 2022, a national emergency was declared after a red warning was put in place.
- Storm Eunice in February 2022 brought wind speeds reaching over 50mph in east London, leading to damage to the roof of the O2 stadium and a fatality in north London caused by a tree falling onto a car.
- In February 2018, snowfall from Storm Emma led to reduced train services, causing the London Overground and Transport for London (TfL) to suffer particularly badly. This type of disruption could affect working conditions and the ability of staff to get to and from the Proposed Scheme.

FUTURE BASELINE

12.6.11. The UKCP18[9] provide data on projected change in climate variables for the UK. The UKCP18[9] are the most up-to-date projections of climate change for the UK, providing projections until the end of the twenty-first century. The Climate Risk Indicators (CRI) developed as part of the UK Climate Resilience Programme has been used to inform the assessment approach[32]. The CRI utilises the UKCP18 projections[9] and allows for a range of climate related indicators (including, but not limited to, Met Office heatwaves and heat stress) to be assessed.

12.6.12. UKCP18 includes probabilistic projections of a range of climate variables for different emissions scenarios, termed Representative Concentration Pathways (RCP) and for a range of time slices to the end of the century. To address the full range of climate model uncertainty, the results are provided as 50th (10th to 90th) percentiles and the estimate projections are presented against baseline levels of 1981-2010 (based on model data).

12.6.13. The RCP8.5 scenario has been used to inform this assessment. RCP8.5 is a high emissions scenario that combines assumptions about high population and relatively slow income growth with modest rates of technological change and energy intensity improvements. RCP8.5 is a pathway scenario where greenhouse gas emissions continue to grow unmitigated, leading to a best estimate global average temperature rise of 4.3°C by 2100. The use of RCP8.5 aligns to the IEMA guide[19] and is considered an unlikely but conservative 'scenario.

12.6.14. The future baseline has been presented for the 2030s (2020-2049), the 2050s (2040-2069) and 2080s (2070-2099) to identify the anticipated climate conditions over the construction period and design life of the Proposed Scheme's sensitive receptors.

12.6.15. As the future baseline assessment is informed by the Bexley Local Authority area Climate Risk Indicator (CRI) data[32], the assessment area includes the existing commercial business within the Site, including Riverside 1 (which includes the Middleton Jetty) and Munster Joinery UK Limited. Riverside 2 would also be operational in the future baseline.

12.6.16. **Table 12-7** provides an overview of current and projected summer and winter temperature and rainfall for the location of the Proposed Scheme. Within **Table 12-7** for sea level rise the closest marine projections are shown on **Figure 12-1: The Closest Marine Projections Data Point to the Proposed Scheme (Volume 2)**.

Table 12-7: Future Climate Projections for the Model Reference (1981-2010), Current (1991-2020) and Future Climate (2030s, 2050s and 2080s) for RCP8.5 (Anomalies). Table shows the 50th Percentile (10th Percentile to 90th Percentile) Values.

Climate Variable	Model Reference (1981-2010)	Current Baseline (1991-2020)	RCP8.5			Trend (50th Percentile)
			2030	2050	2080	
Mean Annual Temperature (°C)	11	11	+1.2 (0.5 to 1.8)	+2.1 (1.1 to 3.1)	+3.8 (2.1 to 5.7)	↑
Mean Summer Temperature (°C)	17.8	18.1	+1.5 (+0.7 to +2.4)	+2.7 (+1.3 to +4.3)	+5.1 (+2.7 to +7.8)	↑
Mean Winter Temperature (°C)	5.7	6.1	+1.0 (+0.1 to +1.9)	+1.7 (+0.7 to +2.9)	+3 (+1.3 to +4.9)	↑
Maximum Summer Temperature (°C)	22.5	22.8	+1.7 (0.7 to 2.9)	+3.1 (1.2 to 5.1)	+5.8 (2.5 to 9.3)	↑
Minimum Winter Temperature (°C)	3.1	3.4	+0.9 (0 to 2.0)	+1.7 (0.5 to 3.1)	+3.1 (1.1 to 5.3)	↑
Met office heatwave*[d] (events per year)	0.7	0.8	1.6 (1.0 to 2.5)	2.8 (1.4 to 4.3)	4.6 (2.8 to 6.0)	↑
Heat stress*[e] (days per year)	0.2	0.3	1.2 (0.5 to 2.5)	3.5 (1.1 to 7.8)	11.9 (3.7 to 32.1)	↑

[d] A UK heatwave threshold is met when a location records a period of at least three consecutive days with daily maximum temperatures meeting or exceeding the heatwave temperature threshold. The threshold for the local area is 25°C.
[e] Days with shade Wet Bulb Globe Temperature (WBGT) above 25°C.

Climate Variable	Model Reference (1981-2010)	Current Baseline (1991-2020)	RCP8.5			Trend (50th Percentile)
			2030	2050	2080	
Frost days*[f] (days per year)	40.4	38.5	28.7 (21.5 to 36.6)	21.4 (13.4 to 30.5)	12.7 (6.1 to 23.8)	↓
Mean Annual Rainfall	557mm	563mm	-0.4% (-5.0% to +4.2%)	-2.5% (-9.0% to +4.4%)	-2.3% (-10.4% to +6.6%)	↓
Mean Winter Rainfall	126mm	134mm	+6.5% (-2.0% to +15.3%)	+10.6% (-0.9% to +23.6%)	+17.8% (+2.1% to +35.6%)	↑
Mean Summer Rainfall	136mm	139mm	-13.0% (-27.8% to +5.5%)	-21.2% (-41.8% to +0.5%)	-32.7% (-55.5% to -4.4%)	↓
SPEI Drought*[g] (proportion of time)	0.07	0.09	0.14 (0.08 to 0.21)	0.22 (0.11 to 0.31)	0.32 (0.16 to 0.42)	↑
Relative Humidity (%)	78-80	-	-2.2 (-3.3 to -1.8)	-3.6 (-4.9 to -3)	-	↓
Wildfire events*[h] (days per year)	30.9	33.1	46.7 (33.3 to 64.0)	70.0 (38.0 to 85.2)	83.4 (50.2 to 113.2)	↑

[f] Days with minimum temperature below 0 ºC.
[g] Time in drought defined as precipitation and potential evaporation. Standardised Precipitation Evaporation Index.
[h] Days with Met Office Wildfire Index at the Very High Fire Severity level or above.

Climate Variable	Model Reference (1981-2010)	Current Baseline (1991-2020)	RCP8.5			Trend (50th Percentile)
			2030	2050	2080	
Soil Moisture[i] (% change) – Winter / Summer	0	-0.3 / -2.0	-1.5 (-4.9 to +1.7%) / -11.6 (-19.9 to -7.0)	-1.7 (-6.7 to +1.0) / -18.2 (-25.9 to -12.3)	-2.9 (-6.6 to +1.3) / -26.3 (-33.2 to -21.6)	↓
Sea level rise[j,k] (m)	N/A	N/A	+0.15 (+0.19)	+0.29 (+0.37)	+0.57 (+0.74)	↑
Note: *absolute values.						

[i] Potential soil moisture deficit measured by the maximum difference between accumulated rainfall and potential evaporation.
[j] Projections for sea level rise have been ascertained using UKCP18 marine projections for the closest location (Coastal Location latitude(N), longitude(E): 51.5, 0.58) to the Proposed Scheme, as shown on **Figure 12-1: The Closest Marine Projections Data Point to the Proposed Scheme (Volume 2)**.
[k] These projections are based on closest marine projections available using the 50th and 90th percentile, and therefore will differ to sea level allowances that may be provided by **Chapter 11: Water Environment and Flood Risk (Volume 1)** as that assessment investigates a range of allowances for each river basin district using the 70th and 95th percentile.

Wind

12.6.17. UKCP18 depicts a wide spread of future changes in mean surface wind speed, however, there is considerable uncertainty in projected changes in circulation over the UK and natural climate variability contributes to much of this uncertainty. It is therefore difficult to represent regional extreme winds and gusts within regional climate models.

12.6.18. Central estimates of change in mean wind speed for the 2050s are small in all data simulations (<0.2ms-1). A wind speed of 0.2ms-1 (approximately 0.4 knots) is small compared with the typical magnitude of summer mean wind speed of about 3.6–5.1ms-1 (7 – 10 knots) over much of England. Seasonal changes at individual locations across the UK lie within the range of -15% to +10%.

Sea Level Rise

12.6.19. The Proposed Scheme may be impacted by sea level rise in the future, due to its location on the River Thames and within the tidal and fluvial flood zones. Fluvial, surface water and tidal flood risk is expected to increase consequent to the impacts of climate change that are predicted to result in: increased sea levels; greater tide locking; higher peak fluvial flows; and more intense rainfall events. The flood defences outlined within this section (**Section 12.6.6**) have an upper end sea level allowance for the South East and River Thames which ranges from 6.9mm to 18.2mm from year 2000 to 2125, with a cumulative rise of 1.6m[33].

12.6.20. The TE2100 Plan[14] includes various options to manage future flood risk. These options include: upgrading the existing Thames Barrier; flood storage and upgrade the existing Thame Barrier; new barrier with a single set of gates in Gravesend Reach; or a new barrier with a single set of gates in Long Reach[34]. For the section of the River Thames defences adjacent to the Site, the Thames Estuary 2100 Plan outlines that this could mean increasing the height to 8.20m AOD by 2120. Although for the period 2070 to 2120 (the period in which the design life of the Proposed Scheme falls) the maximum height is 7.70m AOD. The maximum height is dictated by the mitigation measures adopted elsewhere in the Estuary.

Soil Erosion and Degradation

12.6.21. There are many factors which cause or worsen soil erosion, both natural and anthropogenically induced. These include slope angle, precipitation, soil texture, organic matter content of the soil, vegetation cover, human activity (e.g. construction, deforestation, agriculture), wind speed and intensity, and flood events. It was estimated in 2017 that every year, approximately 36 billion tonnes of fertile soil is lost due to erosion[35]. To put this into perspective, another study estimated this loss to be approximately 1% of the world's topsoil every year[36].

12.6.22. With regards to climate change influence on soil erosion, in drier regions (under the summer climate projections) we can expect climate change to result in more periods of drought and hence more wind erosion. In moister areas (under the winter climate projections) we may experience more intense precipitation events and hence more water erosion[37].

Shrink Swell

12.6.23. The British Geological Survey (BGS) identifies that the increased risk of clay shrink-swell due to climate change is likely for both the 2030s and the 2070s[38]. As a result of the projected warmer, drier summers, there is potential for increasing shrink-swell activity which can lead to subsidence.

12.7. EMBEDDED DESIGN, MITIGATION AND ENHANCEMENT MEASURES

12.7.1. **Table 12-8** sets out the embedded design, mitigation and enhancement measures relevant to the Climate Resilience assessment.

Table 12-8: Climate Resilience Embedded Design, Mitigation and Enhancement Measures

Receptor	Climate Variable	Embedded Design Commitments, Mitigation and Enhancement Measures	Evidence of Commitment
Construction Phase			
• **Construction site (including Temporary Construction Compounds).** • **Staff.** • **Materials.** • **Plant and equipment.**	• Sea level rise. • Storm surge. • Storm tide.	• **Appendix 11-2: Flood Risk Assessment (Volume 2)** has been prepared in accordance with NPS EN-1 (2024)[1] and the National Planning Policy Framework (NPPF)[2]. **Appendix 11-2: Flood Risk Assessment (Volume 2)** has assessed the potential implications of the Proposed Scheme on flood risk to people and property elsewhere, as well as assess the potential risk of flooding to the Proposed Scheme. Importantly, it sets out the process for developing the finished floor levels for sensitive equipment. • Site clearance, levelling and ground preparation works for the Temporary Construction Compounds may be completed to provide a suitable working compound. The surface material of construction compounds will be permeable so as to allow rainwater to percolate to ground, with suitably bunded locations identified as storage areas for	• Inherent in the design of the Proposed Scheme as described in **Chapter 2: Site and Proposed Scheme Description (Volume 1)**. • **Outline CoCP (Document Reference 7.4)**, to be developed into a full CoCP in substantial accordance with this outline, secured by a DCO requirement. • The measures set out in the **Outline Site Waste Management Plan (SWMP) (Document Reference 7.10)**, ensure that wastes will be responsibly managed in full adherence to local and national policy and legislation. This will be taken forward to a full SWMP as set out in the **Outline CoCP (Document Reference 7.4)**. • Compliance with the **Appendix 11-2: Flood Risk Assessment (Volume 2)**, compliance with which is secured by a DCO requirement. • Capital dredging will be carried out in pursuant to the provisions of the Deemed Marine

Receptor	Climate Variable	Embedded Design Commitments, Mitigation and Enhancement Measures	Evidence of Commitment
		any hazardous, polluting materials or chemicals to prevent the risk of pollution. • The Applicant has also undertaken a flood bank condition survey and undertaken some remedial works which will provide protection to the construction site. • The **Outline CoCP (Document Reference 7.4)** will set out how construction activities will be undertaken in accordance with appropriate good practice guidance such as the Guidance for Pollution Prevention (GPP)[39]. Further embedded design, mitigation and enhancement measures relevant to water environment and flood risk are provided in **Chapter 11: Water Environment and Flood Risk (Volume 1)**. • Capital dredging will be undertaken pursuant to the provisions of the Deemed Marine Licence, contained within the **Draft DCO (Document Reference 3.1)**.	Licence, contained within the **Draft DCO (Document Reference 3.1)**.

Receptor	Climate Variable	Embedded Design Commitments, Mitigation and Enhancement Measures	Evidence of Commitment
Operation Phase			
Carbon Capture Facility	• Extreme precipitation events (flooding).	• The Proposed Scheme incudes design and installation of a new drainage system within the Site. • The drainage design will be designed such that the rate of surface water run-off leaving the Site and entering the adjacent watercourse network is limited to the 1 in 100 year greenfield rate of 35.3 l/s. • Surface water storage will be provided by a below ground tanked system with capacity to cater for a 1 in 100 year plus climate change (+40% increase in rainfall intensity) event. • The flood level data includes allowances for climate change, in accordance with Environment Agency requirements, and this data has been taken forward for the purposes of defining design levels for the Proposed Scheme. In respect of allowances for peak rainfall intensity (used to inform surface water drainage) the Proposed Scheme design has been based upon a 40% uplift in rainfall intensity, as required by LBB.	• Inherent in the design of the Proposed Scheme as described in **Chapter 2: Site and Proposed Scheme Description (Volume 1)**. **Outline Drainage Strategy (Document Reference 7.2)**, to be developed into a full drainage strategy in substantial accordance with this outline, secured by a DCO requirement. • The operational procedures, including maintenance, will be set out in an Operational EMP, which will be prepared prior to the Proposed Scheme commencing operation, which is secured by a DCO requirement. • **Outline EPRP (Document Reference 7.11)**, to be developed into a full EPRP in substantial accordance with this outline, secured by a DCO requirement.

Receptor	Climate Variable	Embedded Design Commitments, Mitigation and Enhancement Measures	Evidence of Commitment
		• Where appropriate, operational areas as an inherent part of the design will be covered with hardstanding to prevent any mobilisation of pollutants. • Maintenance of the Proposed Scheme will be the responsibility of the Applicant, and will involve routine, planned maintenance and system checks, as well as reactive maintenance and repairs. • The maintenance procedures will be set out in an Operational Environmental Management Plan (Operational EMP), which will be prepared prior to the Proposed Scheme commencing operation. • The **Outline Emergency Preparedness and Response Plan (Outline EPRP) (Document Reference 7.11)** includes measures to manage extreme weather events and consequences such as risk of fire from overheating and flooding.	
	• Extreme temperature events.	• The design will be in accordance with the UK Building Regulations and BE EN codes. Where no BS EN code exists the Eurocodes and ISO standards will be	• Inherent in the design of the Proposed Scheme as described in **Chapter 2: Site and Proposed Scheme Description (Volume 1)**.

Receptor	Climate Variable	Embedded Design Commitments, Mitigation and Enhancement Measures	Evidence of Commitment
		adopted. The Applicant already carries out regular civil asset condition surveys via external consultants on framework agreement. The agreed survey frequency for the assets is in line with the condition and deterioration rates observed onsite. • Design specifications to allow for climate change impact on ambient temperature. • A cooling study has been undertaken to develop the cooling system design took into account climate change with the ambient temperature used within the model. Ambient temperatures also written into equipment specification for vendors. • The maintenance procedures will be set out in an Operational EMP, which will be prepared prior to the Proposed Scheme commencing operation.	• The operational procedures, including maintenance, will be set out in an Operational EMP, which will be prepared prior to the Proposed Scheme commencing operation, which is secured by a DCO requirement.
	• Gales and high winds; and • Storms.	• The design of the Proposed Scheme will be in accordance with the UK Building Regulations and BE EN codes. These account for increases in wind event frequencies and magnitudes due to climate change via the various nationally defined parameters.	• Inherent in the design of the Proposed Scheme as described in **Chapter 2: Site and Proposed Scheme Description (Volume 1)**. • The operational procedures, including maintenance, will be set out in an Operational EMP, which is secured by a DCO requirement.

Receptor	Climate Variable	Embedded Design Commitments, Mitigation and Enhancement Measures	Evidence of Commitment
		• No wind modelling has been undertaken at this stage and will be completed at detailed design stage. Structures will be adequately designed to allow for future worst case wind conditions. • A comprehensive earthing, bonding and lightning protection system shall be developed as part of the detailed design. • The maintenance procedures will be set out in an Operational EMP, which will be prepared prior to the Proposed Scheme commencing operation.	• Detailed design stage will include wind modelling, which will be applied to the design specification. This is included in the **Mitigation Schedule (Document Reference 7.8)** compliance with this element is secured by a DCO requirement.
	• Sea level rise. • Storm surge. • Storm tide.	• Finished development platform and floor levels, as informed by **Appendix 11-2: Flood Risk Assessment (Volume 2)** would, where practicable. • Use of Sustainable Drainage System (SuDS). These are constructed/ maintained in line with CIRIA SuDS Manual C753[40]. Any new drainage collection and distribution systems will be designed in accordance with UK Building Regulations and codes of Practice current at the time of design. These already	• Inherent in the design of the Proposed Scheme as described in **Chapter 2: Site and Proposed Scheme Description (Volume 1)**. • **Outline Drainage Strategy (Document Reference 7.2)**, to be developed into a full drainage strategy in substantial accordance with this outline, secured by a DCO requirement. • **Outline EPRP (Document Reference 7.11)**, to be developed into a full EPRP in substantial accordance with this outline, secured by a DCO requirement.

Receptor	Climate Variable	Embedded Design Commitments, Mitigation and Enhancement Measures	Evidence of Commitment
		include allowances for increased inflow due to climate change.	• **Appendix 11-2: Flood Risk Assessment (Volume 2)**, compliance with which is secured by a DCO requirement.
Proposed Jetty	• Extreme precipitation events (flooding).	• The flood level data includes allowances for climate change, in accordance with Environment Agency requirements, and this data has been taken forward for the purposes of defining design levels for the Proposed Jetty. • In respect of allowances for peak rainfall intensity (used to inform surface water drainage) the Proposed Scheme design has been based upon a 40% uplift in rainfall intensity, as required by LBB.	• Inherent in the design of the Proposed Scheme as described in **Chapter 2: Site and Proposed Scheme Description (Volume 1)**. • **Outline Drainage Strategy (Document Reference 7.2)**, compliance with which is secured by a DCO requirement.
	• Extreme temperature events.	• The design will be in accordance with the UK Building Regulations and BE EN codes. Where no BS EN code exists the Eurocodes and ISO standards will be adopted. Regular civil asset condition surveys will be carried out in line with the condition and deterioration rates observed on Middleton Jetty. Proactive maintenance (outlined in the Operational EMP) to address any defects is planned.	• Inherent in the design of the Proposed Scheme as described in **Chapter 2: Site and Proposed Scheme Description (Volume 1)**. • **Design Principles and Design Codes (Document Reference 5.7)**, compliance with which is secured by a DCO requirement. • The operational procedures, including maintenance, will be set out in an Operational EMP, which will be prepared prior to the

Receptor	Climate Variable	Embedded Design Commitments, Mitigation and Enhancement Measures	Evidence of Commitment
		• Proposed Jetty is designed using conventional materials (concreate, steel) which are resilient to high temperatures.	Proposed Scheme commencing operation, which is secured by a DCO requirement.
	• Gales and high winds. • Storms.	• An initial consideration of future potential increases in wind loading has been taken into account within the design. However, wind loading on the Proposed Jetty elements including Catwalks and Access Trestle will be considered further at detailed design stage. • A comprehensive earthing, bonding and lightning protection system shall be developed as part of the detailed design. All parts of the earthing and lightning protection system shall be designed to withstand the prospective earth fault currents and transient voltages to which they will be exposed.	• Inherent in the design of the Proposed Scheme as described in **Chapter 2: Site and Proposed Scheme Description (Volume 1)**. • Detailed design stage will include wind modelling, which will be applied to the design specification. This is included in the **Mitigation Schedule (Document Reference 7.8)**, compliance with this element is secured by a DCO requirement. • A comprehensive earthing, bonding and lightning protection system shall be developed as part of the detailed design. This is included in the **Mitigation Schedule (Document Reference 7.8)**, compliance with this element is secured by a DCO requirement.
	• Sea level rise. • Storm surge. • Storm tide.	• Periodic maintenance dredging will be undertaken to ensure the Proposed Jetty remains operational at all states of tide. Dredging will be managed pursuant to the provisions of the Deemed Marine	• Inherent in the design of the Proposed Scheme as described in **Chapter 2: Site and Proposed Scheme Description (Volume 1)**. • Dredging will be carried out in pursuant to the provisions of the Deemed Marine Licence,

Receptor	Climate Variable	Embedded Design Commitments, Mitigation and Enhancement Measures	Evidence of Commitment
		Licence, contained within the **Draft DCO (Document Reference 3.1)**. • The Proposed Jetty's operational procedures will consider limits of uncontrollable factors to ensure safe and efficient travel, berthing, and loading operations. Where these thresholds are exceeded, operation will cease until levels are back within acceptable tolerances will be determined. Such limits will include wind speed and direction, height of tide, tidal stream, and visibility. • Sea level rise that can affect the Proposed Jetty has been assessed using UK Climate Projections database from the Met Office, using the 70th and 95th percentile data for RCP 8.5. Extreme water levels have been based on the TE2100 Plan[14]. • Proposed monitoring is detailed in **Chapter 19: Marine Navigation (Volume 1)** and in **Appendix 19-1: Preliminary Navigational Risk Assessment (Volume 3)**.	contained within the **Draft DCO (Document Reference 3.1)**. • Detailed design stage will include wind modelling, which will be applied to the design specification. This is included in the **Mitigation Schedule (Document Reference 7.8)**, compliance with this element is secured by a DCO requirement. • A Navigational Risk Assessment would be produced, in substantial accordance with **Appendix 19-1: Preliminary Navigational Risk Assessment (Volume 3)**, which is secured by a DCO requirement.

Receptor	Climate Variable	Embedded Design Commitments, Mitigation and Enhancement Measures	Evidence of Commitment
Ancillary Infrastructure	• Change in annual average precipitation. • Extreme precipitation events. • Drought.	• A review of the outputs from Marsh Dykes Modelling Study (as detailed in **Chapter 11: Water Environment and Flood Risk (Volume 1)**) demonstrates that parts of the Proposed Scheme are located within the floodplain with a maximum flood level for the 1 in 100-year plus 40% climate change event of around 0.80m AOD. As this is significantly below the flood level for a breach of the River Thames defences (around 1.73m AOD), no further mitigation is required for the Proposed Scheme, however, floodplain compensation will be provided, as set out in the FRA. • Finished floor levels would, where practicable, be set at an appropriate level (minimum of 2.8m AOD top of platform and 2.95m AOD for buildings) with the minimum equipment height of 3.1m AOD, including freeboard above the modelled breach flood level of the River Thames Flood Defences. • The surface water drainage design ensures that the rate of surface water run-off leaving the Site and entering the	• Inherent in the design of the Proposed Scheme as described in **Chapter 2: Site and Proposed Scheme Description (Volume 1)**. • **Outline Drainage Strategy (Document Reference 7.2)**, to be developed into a full drainage strategy, in substantial accordance with this outline, secured by a DCO requirement. • **Appendix 11-2: Flood Risk Assessment (Volume 2)**, compliance with which is secured by a DCO requirement. • **Design Principles and Design Code (Document Reference 5.7)**, compliance with which is secured by a DCO requirement. • Detailed embedded mitigation as identified in the Protective coating and Cathodic Protection will be considered as part of the detailed design. This is included in the **Mitigation Schedule (Document Reference 7.8)**, this element is secured by a DCO requirement.

Receptor	Climate Variable	Embedded Design Commitments, Mitigation and Enhancement Measures	Evidence of Commitment
		adjacent watercourse network is limited to the 1 in 100-year greenfield rate. • The flood level data includes allowances for climate change, in accordance with Environment Agency requirements, and this data has been taken forward for the purposes of defining design levels. • In respect of allowances for peak rainfall intensity (used to inform design of surface water management infrastructure), the Proposed Scheme design has been based upon a 40% uplift in rainfall intensity, as required by LBB. • Implementation of SuDS, i.e. interceptors and silt traps which will be emptied regularly to ensure flows of water, to avoid flooding. • All operational areas and access road will be covered with hardstanding to prevent any mobilisation of pollutants. • Areas within the Site that have the potential to require pollution prevention measures to collect and control potentially contaminated surface water runoff have been identified. These areas will be	

Receptor	Climate Variable	Embedded Design Commitments, Mitigation and Enhancement Measures	Evidence of Commitment
		designed to satisfy the relevant Environmental Permitting, COSHH, COMAH and HSE guidance and GPP requirements including bunding. Measures will also be put in place to prevent damage to infrastructure on Site during a flood event. Further information is available in the **Outline Drainage Strategy (Document Reference 7.2)**. • The design, installation, commissioning, operation and maintenance of plant, drainage systems, equipment and machinery, including associated systems, will take into account Good Engineering Practice. • The current design of steel elements is based on sacrificial steel thickness to achieve the required design life; however, protective coating and Cathodic Protection will be considered as part of the detailed design.	
	• Change in annual average temperature.	• Any new lighting for the Proposed Scheme will comply with the relevant design standards and therefore suitable	• Inherent in the design of the Proposed Scheme as described in **Chapter 2: Site and Proposed Scheme Description (Volume 1)**.

Receptor	Climate Variable	Embedded Design Commitments, Mitigation and Enhancement Measures	Evidence of Commitment
	• Extreme temperature events.	to withstand temperature changes sufficient for their operational life span. • An **Outline Lighting Strategy (Document Reference 7.3)** has been prepared for the Proposed Scheme in accordance with relevant legislation and guidance in order to minimise effects from light intrusion, sky glow or glare. • The design will be in accordance with the UK Building Regulations and BE EN codes. Where no BS EN code exists the Eurocodes and ISO standards will be adopted.	• **Outline Lighting Strategy (Document Reference 7.3)**, to be developed into a full lighting strategy in substantial accordance with this outline, secured by a DCO requirement.
	• Gales and high winds. • Storms.	• A comprehensive earthing, bonding and lightning protection system shall be developed as part of the detailed design. All parts of the earthing and lightning protection system shall be designed to withstand the prospective earth fault currents and transient voltages to which they will be exposed.	• Inherent in the design of the Proposed Scheme as described in **Chapter 2: Site and Proposed Scheme Description (Volume 1)**. • **Design Principles and Design Code (Document Reference 5.7)**, compliance with which is secured by a DCO requirement.
	• Sea level rise. • Storm surge. • Storm tide.	• The levels across the Site will be raised to a minimum of 2.8m AOD across the majority of the Site (i.e. the sub-base gravel compounds) and 2.675m AOD	• Inherent in the design of the Proposed Scheme as described in **Chapter 2: Site and Proposed Scheme Description (Volume 1)**.

Receptor	Climate Variable	Embedded Design Commitments, Mitigation and Enhancement Measures	Evidence of Commitment
		across the access roads. This has resulted from the breach analysis which forms part of **Appendix 11-2: Flood Risk Assessment (Volume 2)**. • Finished floor levels would, where practicable, be set at an appropriate level (minimum of 2.8m AOD top of platform and 2.95m AOD for buildings) with the minimum equipment height of 3.1m AOD, including freeboard above the modelled breach flood level of the River Thames Flood Defences. • There will be a 600mm freeboard above the modelled breach flood level of the River Thames Flood Defences. Alternatively, any flood sensitive equipment could be raised above the breach flood level. Further mitigation measures are detailed in **Appendix 11-2: Flood Risk Assessment (Volume 3)**.	• **Appendix 11-2: Flood Risk Assessment (Volume 2)**, compliance with which is secured by a DCO requirement. • **Outline Drainage Strategy (Document Reference 7.2)**, to be developed into a full drainage strategy in substantial accordance with this outline, secured by a DCO requirement.
The Mitigation and Enhancement Area	• Changes in annual average precipitation. • Extreme Precipitation	• Procedures for the maintenance of the Mitigation and Enhancement Area are set out in the **Outline LaBARDS (Document Reference 7.9)**.	• Inherent in the design of the Proposed Scheme as described in **Chapter 2: Site and Proposed Scheme Description (Volume 1)**.

Receptor	Climate Variable	Embedded Design Commitments, Mitigation and Enhancement Measures	Evidence of Commitment
	events (flooding). • Extreme temperature events. • Sea level rise. • Storm surge. • Storm tide.	• Adherence to Best Practice Guidance and British Standards. • Design includes providing floodplain compensation. • Design includes vegetating exposed soils and controlling degradation through reduced grazing pressures. Design also includes re-wetting of grazing marsh soils by lifting water table locally. • Design includes attenuation for operation area and roof run-off, plus treatment before a controlled release into the grazing marsh ditch network. • Scrapes will provide additional volume for storage within the grazing marsh. • Suitable native planting with high diversity capable of adapting to levels of change. • Capturing rainwater from operational area and diverting into grazing marsh areas. • A maintenance plan for landscaped areas will be prepared. The regime will better control scrub encroachment and manage woodland. It will prescribe better management of trees and woodland	• **Outline LaBARDS (Document Reference 7.9)**, to be developed into a full CoCP in substantial accordance with this outline, secured by a DCO requirement. • **Appendix 11-2: Flood Risk Assessment (Volume 2)**, compliance with which is secured by a DCO requirement. • **Outline Drainage Strategy (Document Reference 7.2)**, to be developed into a full drainage in substantial accordance with this outline, secured by a DCO requirement.

Receptor	Climate Variable	Embedded Design Commitments, Mitigation and Enhancement Measures	Evidence of Commitment
		regularly assessing tree risk and condition. • Improved access and management will reduce likelihood of fire and enable quicker response/safe escape. • Additional ditches proposed across the grazing marsh could potentially help to control/serve as fire breaks.	
End users (operational staff)	• Extreme precipitation events (flooding).	• Should the area in the vicinity of the Site be inundated following a breach of the tidal flood defences, such that safe exit is not possible, safe refuge will be provided for operational staff/visitors within the administration block and other areas of the building which will be located above the 0.5% (1 in 200 year) AEP breach flood level. • An **Outline EPRP (Document Reference 7.11)** includes measures to manage extreme weather events and consequences such as risk of fire from overheating and flooding.	• Inherent in the design of the Proposed Scheme as described in **Chapter 2: Site and Proposed Scheme Description (Volume 1)**. • **Outline EPRP (Document Reference 7.11)**, to be developed into a full EPRP in substantial accordance with this outline, secured by a DCO requirement.
	• Extreme temperature events.	• The Proposed Scheme will provide suitable welfare facilities which meet good practice guidelines.	

Receptor	Climate Variable	Embedded Design Commitments, Mitigation and Enhancement Measures	Evidence of Commitment
	• Gales and high winds; and • Storms.	• The design will be in accordance with the UK Building Regulations and BE EN codes. These account for increases in wind event frequencies and magnitudes due to climate change via the various nationally defined parameters. • Structures will be adequately designed to allow for future worst case wind conditions.	• Inherent in the design of the Proposed Scheme as described in **Chapter 2: Site and Proposed Scheme Description (Volume 1)**. • **Design Principles and Design Code (Document Reference 5.7)**, compliance with which is secured by a DCO requirement. • **Outline EPRP (Document Reference 7.11)**, compliance with which is secured by a DCO to be developed into a full EPRP in substantial accordance with this outline, secured by a DCO requirement.
	• Sea level rise; • Storm surge; and • Storm tide.	• Should the area in the vicinity of the Site be inundated following a breach of the tidal flood defences, such that safe exit is not possible, safe refuge will be provided for operational staff/visitors within the administration block and other areas of the building which will be located above the 0.5% (1 in 200 year) AEP breach flood level.	• Inherent in the design of the Proposed Scheme as described in **Chapter 2: Site and Proposed Scheme Description (Volume 1)**. • **Outline EPRP (Document Reference 7.11)**, to be developed into a full EPRP in substantial accordance with this outline, secured by a DCO requirement.

12.8. ASSESSMENT OF LIKELY IMPACTS AND EFFECTS

12.8.1. **Table 12-9** and **Table 12-10** presents the assessment of impacts and effects for the Proposed Scheme during both the construction and operation phases, with the consequence assessment considering the embedded design, mitigation and enhancement measures detailed in **Section 12.7**.

CONSTRUCTION PHASE

Table 12-9: Climate Resilience Assessment of Significance of Effects (Construction Phase)

Receptor	Climate Variable	Potential Impacts	Likelihood	Consequence	Significance
• **Construction site (including Temporary Construction Compounds).** • **Construction staff.** • **Construction materials.** • **Construction Plant and equipment**.	• Sea level rise. • Storm surge. • Storm tide.	Flooding of excavations.	Low	Minor	**Not Significant**
		Reducing earthwork stability and hastening the deterioration of materials.	Very Low	Minor	**Not Significant**
		Damage to construction equipment and materials through flooding / overtopping of defences.	Low	Negligible	**Not Significant**
		Existing drainage infrastructure overwhelmed.	Low	Minor	**Not Significant**
		Mobilisation of pollutants, affecting building materials.	Very Low	Negligible	**Not Significant**
		Access routes may be impeded by flooding.	Low	Minor	**Not Significant**
		Construction programme delays.	Very Low	Minor	**Not Significant**
		Injuries to workforce and H&S risks.	Very Low	Minor	**Not Significant**

OPERATION PHASE

Table 12-10: Climate Resilience Assessment of Significance of Effects (Operation Phase)

Receptor	Climate Variable	Potential Impacts	Likelihood	Consequence	Significance
Carbon Capture Facility	• Extreme precipitation events (flooding).	Flooding of assets resulting in loss or disruption of function and associated risks.	High	Minor	**Not Significant**
		Deterioration of material structure and fabric.	Medium	Negligible	**Not Significant**
		Drainage infrastructure overwhelmed leading to surface water flooding.	High	Negligible	**Not Significant**
		Mobilisation of pollutants, affecting building materials.	Low	Negligible	**Not Significant**
	• Extreme temperature events.	Changes in water temperature and availability of water for cooling may affect operation.	Medium	Minor	**Not Significant**
		Greater demand for cooling.	High	Negligible	**Not Significant**

Receptor	Climate Variable	Potential Impacts	Likelihood	Consequence	Significance
		Risk of fire and associated safety risks.	Low	Minor	**Not Significant**
		Faster rate of deterioration of materials from increase in UV radiation e.g., fading and brittleness.	Medium	Minor	**Not Significant**
		Expansion of building joints compromising structural integrity leading to increase maintenance.	High	Minor	**Not Significant**
	• Gales and high winds. • Storms.	Increase in wind loading on the stacks.	High	Minor	**Not Significant**
		Damage from high winds and rain infiltration into surfaces and materials.	Medium	Minor	**Not Significant**
		Increased maintenance requirements.	High	Minor	**Not Significant**
		Potential for safety risks should structure become weakened.	High	Minor	**Not Significant**

Receptor	Climate Variable	Potential Impacts	Likelihood	Consequence	Significance
		Lightning strikes leading to power outages onsite and causing fires.	Low	Negligible	**Not Significant**
	• Sea level rise. • Storm surge. • Storm tide.	Damage to infrastructure.	Medium	Minor	**Not Significant**
		Reducing earthwork stability and hastening the deterioration of materials.	Medium	Minor	**Not Significant**
		Power outages and threats to business continuity.	Very Low	Negligible	**Not Significant**
Proposed Jetty	• Extreme precipitation events (flooding).	Flooding resulting in loss or disruption of function and associated risks.	Low	Negligible	**Not Significant**
		Deterioration of material structure and fabric.	Medium	Negligible	**Not Significant**
		Destabilisation or impact on the structure of Proposed Jetty.	Low	Minor	**Not Significant**
		Faster rate of deterioration of materials from increase in UV	Medium	Minor	**Not Significant**

Receptor	Climate Variable	Potential Impacts	Likelihood	Consequence	Significance
		radiation e.g., fading and brittleness.			
	• Extreme temperature events.	Increase in thermal expansion of structure joints compromising structural integrity leading to increased maintenance.	High	Minor	**Not Significant**
	• Gales and high winds. • Storms.	Increased maintenance requirements.	High	Minor	**Not Significant**
		Destabilisation of structure due to lightning strike.	Low	Negligible	**Not Significant**
		High winds may damage the Proposed Jetty.	High	Minor	**Not Significant**
	• Sea level rise. • Storm surge. • Storm tide.	Reducing earthwork stability and hastening the deterioration of materials.	Medium	Minor	**Not Significant**
Ancillary Infrastructure	• Change in annual average precipitation.	Increased surface runoff leading to surface water flooding and siltation.	Very High	Minor	**Not Significant**

Receptor	Climate Variable	Potential Impacts	Likelihood	Consequence	Significance
	• Extreme precipitation events. • Drought.	Drainage infrastructure overwhelmed leading to surface water flooding.	High	Negligible	**Not Significant**
		Mobilisation of pollutants, affecting Ancillary Infrastructure.	Low	Negligible	**Not Significant**
		Flooding of assets resulting in loss or disruption of function and associated risks.	High	Negligible	**Not Significant**
		Deterioration of material structure and fabric.	Medium	Negligible	**Not Significant**
		Windborne dust and debris clogging drainage channels and requiring clearing.	High	Negligible	**Not Significant**
		Flooding of the road.	High	Minor	**Not Significant**
		Water ingress may damage electrical equipment leading to power loss.	Medium	Minor	**Not Significant**
		Damage of machinery.	Low	Minor	**Not Significant**

Receptor	Climate Variable	Potential Impacts	Likelihood	Consequence	Significance
	• Change in annual average temperature. • Extreme temperature events.	Melting or deterioration of road surfaces.	Medium	Moderate	**Significant**
		Failure of security infrastructure and lighting due to overheating.	Medium	Minor	**Not Significant**
		Reduction in the ability of the ground to conduct heat away from underground cables during high temperatures.	Low	Moderate	**Not Significant**
		Overheating of any existing power generation units and stack associated with safety risks.	High	Moderate	**Significant**
		Faster rate of deterioration of materials from increase in UV radiation, e.g., fading and brittleness.	Medium	Minor	**Not Significant**
		Overheating of electrical equipment increasing the risk of fire.	Medium	Moderate	**Significant**

Receptor	Climate Variable	Potential Impacts	Likelihood	Consequence	Significance
		Expansion of materials resulting in damage or increased fatigue, structural integrity loss and increased maintenance.	High	Minor	**Not Significant**
	• Gales and high winds. • Storms.	Increased maintenance requirements.	High	Minor	**Not Significant**
		Destabilisation of structures due to lighting strike.	Low	Negligible	**Not Significant**
		Power loss.	High	Minor	**Not Significant**
		Windborne dust and debris clogging drainage channels and requiring clearing.	Very High	Minor	**Not Significant**
		Damage from high winds and rain infiltration into surfaces and materials. Damage to signage.	Medium	Minor	**Not Significant**
	• Sea level rise.	Damage to infrastructure.	Low	Minor	**Not Significant**

Receptor	Climate Variable	Potential Impacts	Likelihood	Consequence	Significance
	• Storm surge. • Storm tide.	Reducing earthwork stability and hastening the deterioration of materials.	Low	Minor	**Not Significant**
		Power outages and threats to business continuity.	Low	Minor	**Not Significant**
The Mitigation and Enhancement Area	• Changes in annual average precipitation. • Extreme Precipitation events (flooding).	Longer growing season, more vigorous vegetation growth within the Mitigation and Enhancement Area in spring and autumn without a vegetation management plan.	Very High	Negligible	**Not Significant**
		Flooding of the Mitigation and Enhancement Area.	High	Minor	**Not Significant**
	• Extreme temperature events.	Degradation of soils through shrinking and cracking.	High	Negligible	**Not Significant**
		Increased dieback of vegetation/planting within	Very High	Minor	**Not Significant**

Receptor	Climate Variable	Potential Impacts	Likelihood	Consequence	Significance
		the Mitigation and Enhancement Area.			
	• Sea Level Rise. • Storm surge. • Storm tide.	Flooding of the Mitigation and Enhancement Area.	Very High	Minor	**Not Significant**
End users (operational staff)	• Extreme precipitation events (flooding).	Access routes may be impeded by flooding.	High	Minor	**Not Significant**
		Damp buildings can lead to mould growth resulting in health issues.	Medium	Moderate	**Significant**
		Injuries to workforce.	Medium	Minor	**Not Significant**
	• Extreme temperature events.	High temperatures can cause discomfort, alongside impacting concentration and productivity of staff.	High	Minor	**Not Significant**
		Injuries to workforce.	High	Minor	**Not Significant**
	• Gales and high winds. • Storms.	Access routes for end users may be impeded by storm debris.	High	Minor	**Not Significant**

Receptor	Climate Variable	Potential Impacts	Likelihood	Consequence	Significance
	• Sea level rise. • Storm surge. • Storm tide.	H&S risks due to disruption of services.	Low	Minor	**Not Significant**

12.9. ADDITIONAL DESIGN, MITIGATION AND ENHANCEMENT MEASURES

12.9.1. This section sets out the additional mitigation and compensation measures which are relevant for climate resilience.

CONSTRUCTION PHASE

12.9.2. No additional design, mitigation or enhancement measures are proposed for climate resilience during the construction phase.

OPERATION PHASE

12.9.3. As demonstrated in **Table 12-8**, the embedded design, mitigation and enhancement measures for the Proposed Scheme have been considered, however some significant effects from climate impacts have been identified for the following receptors:

- Ancillary Infrastructure:
  - melting or deterioration of road surfaces from increasing temperatures;
  - overheating of any existing power generation units and stack associated with safety risks due to increasing temperatures; and
  - overheating of electrical equipment increasing the risk of fire.
- End users:
  - damp buildings can lead to mould growth resulting in health issues.

12.9.4. Additional mitigation measures required for the Proposed Scheme include:

- The Applicant will develop and implement a maintenance programme which includes inspection and clearance access routes particularly after storm or heavy rainfall events.
- The detailed design for access roads will consider the potential for extreme temperature events and heatwaves and ensure that the design specification is sufficient for such temperatures. An inspection and planned maintenance regime will be implemented to ensure access roads are periodically inspected, especially after any extreme temperature events, to monitor and repair any damage.
- The detailed design will specify coatings/cladding to minimise corrosion/ deterioration on plant and buildings in case of wind and storm events. The detailed design for buildings will ensure there is adequate ventilation and heating to prevent mould growth.
- Existing power generation units and new electrical equipment will be monitored to ensure overheating risk and potential fire risk are managed. Installation of new electrical equipment will take into account the location and place the equipment in areas protected from direct sunlight. If appropriate, mechanical cooling measures will be implemented.

12.9.5. The above additional mitigation measures are included in the **Mitigation Schedule (Document Reference 7.8)**, compliance with which is secured by a DCO requirement.

12.10. MONITORING

12.10.1. The Applicant will monitor the effects of extreme weather-related incidents (for example, road surface deformations, flooding, storm damage and debris, snow and ice etc.) and identify any maintenance measures required. Inspections by an appropriately qualified professional will be carried out following an intense rainfall event, heatwave, high wind or storm event to monitor any damage and implement appropriate mitigation as necessary.

12.10.2. Given the uncertainties inherent in climate science and projections, the impacts and effects identified will be monitored throughout the construction and operation phases of the Proposed Scheme. This would include monitoring of local extreme weather events via the Met Office, regular (potentially annual) reviews of the State of the UK Climate Report (Met Office) to review and understand any changes in climate trends. The monitoring would be undertaken to assess the appropriateness of the mitigation measures.

12.10.3. The full CoCP will provide that the Contractor(s) will need to monitor the effects of extreme weather-related incidents (for example, road surface deformations, flooding, storm damage and debris, snow and ice etc.) and identify any maintenance measures required.

12.10.4. This monitoring included in the **Mitigation Schedule (Document Reference 7.8)**, compliance with this element is secured by a DCO requirement.

12.11. RESIDUAL EFFECTS

12.11.1. Taking into account the additional mitigation measures presented in **Section 12.9**, the consequence of the climate hazards will be reduced to **Minor (Not Significant)** for both the construction and operation phases.

12.12. LIMITATIONS AND ASSUMPTIONS

12.12.1. This section outlines the limitations, uncertainties, and assumptions made in undertaking climate resilience assessment reported in this chapter:

- There is currently no agreed industry methodology that should be applied for assessing climate resilience for EIA development. Consequently, the approach developed and applied in this assessment is based on existing best practice and professional experience.
- The UKCP18 projections have been used to infer future changes in a range of climate variables that may affect the vulnerability of the Proposed Scheme to

climate change. At the time of writing, these represent the most up-to-date representation of future climate in the UK.

- The UK Climate Resilience Programme Climate Risk Indicators[32], developed as part of the have been used to inform this assessment. As such there are inherited limitations and uncertainties within the data. Further information on the methodology used to produce this data can be found in 'Changing Climate Risk in the UK: a Multi-sectoral Analysis using Policy-relevant Indicators'[41]. The Climate Risk Indicators utilise UKCP18 projections. At the time of writing, these represent the most up-to-date representation of future climate in the UK.
- There are inherent uncertainties associated with climate projections and they are not predictions of the future. It is possible that future climate will differ from the future baseline climate against which the resilience of the Proposed Scheme has been assessed, depending on global emissions over the next century. A 'high' emissions scenario (RCP8.5) using the 2080s time slice (2070–2099, the longest temporal scale available through UKCP18) has been used to develop the baseline against which vulnerability has been assessed. This is consistent with the precautionary principle (i.e. 'worst case' scenario).
- Any further research, analysis or decision making should take account of the accuracies and uncertainties associated with climate projections. It is also important to note that the analysis is based on selected observational data, the results of climate model ensembles and a selected range of existing climate change research and literature available at the time of assessment. Any future decision making based on this analysis should consider the range of literature, evidence and research available at that time and any changes to this.

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