Rosefield Solar Farm

Climate Change

Volume 4
Appendix 8:2: Climate Change Resilience Assessment

APFP Regulation 5(2)(a)

Planning Act 2008

Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

EN010158/APP/6.4
September 2025
Rosefield Energyfarm Limited

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1 Climate Change Resilience Assessment

1.1. Introduction

1.1.1. This technical appendix to **ES Volume 2, Chapter 8: Climate [EN010157/APP/6.2]** provides an update to the climate change resilience assessment which was carried out and presented in the Preliminary Environmental Information Report.

1.2. Environmental baseline

Establishing baseline conditions

Data sources to inform the EIA baseline characterisation

1.2.1. Information concerning the baseline climactic conditions has been sourced from the Met Office (2024) **[Ref. 1-1]**, as well as UK Climate Projections 2018 (UKCP18) **[Ref. 1-2]**, and the Global Facility for Disaster Reduction and Recovery's (GFDRR) online resource ThinkHazard (2025) **[Ref. 1-3]**. This information has been used to build a profile of climatic conditions in the Proposed Development region.

Existing baseline

1.2.2. The Met Office (2024) **[Ref. 1-1]** climate profiles considered the region as *"essentially transitional between northern and southern England in terms of temperature and between Wales and eastern England as regards rainfall."*

1.2.3. The climate in the South East has been changing over the most recent decades, as shown in **Table 1** (which displays climate averages recorded from the nearest climate station to the Site, in this case Oxford). Temperature has increased across the decades studied, with an increase of 1.24˚C from the average annual maximum temperatures of 1961 – 1990 to those in 1991 – 2020 (standard industry practice is to define a region's climate over a period of 30 years, which is also the method adopted by the Met Office). Rainfall has fluctuated across the decades studied, with the driest month experiencing an overall increase in rainfall of 3.21 mm and wettest month experiencing an overall increase in rainfall of 10.38 mm from 1961 – 1990 to 1991 – 2020.

Table 1: Climate change in South East England since 1961

Climate variable	1961 – 1990	1971 – 2000	1981 – 2010	1991 – 2020
Average Annual Maximum Temperature (˚C)	13.78	14.13	14.57	15.02
Warmest Month Max Temperature (˚C)	21.73 (July)	22.33 (July)	22.72 (July)	23.06 (July)
Coldest Month Min Temperature (˚C)	1.39 (February)	1.73 (February)	1.83 (February)	2.32 (February)
Total Annual Rainfall (mm)	632.12	641.97	659.70	681.55
Rainfall in Driest Month (mm)	39.95 (February)	42.55 (February)	42.50 (February)	43.16 (March)
Rainfall in Wettest Month (mm)	62.80 (December)	64.67 (December)	69.64 (October)	73.18 (October)

Future Baseline in the absence of the Proposed Development

1.2.4. Future climatic conditions are projected to change in comparison to the present baseline conditions. In particular, winters are projected to become increasingly warmer and wetter whilst summers are projected to become increasingly hotter and drier, as shown in

1.2.5. **Table** 2**, Table 3** and **Table 4**.

1.2.6. Annually, atmospheric pressure at sea level is predicted to increase across the short to long-term time horizons, although there is much variation in terms of model outputs. High-pressure systems usually lead to fair, calm weather, and it may be expected that these conditions become more prevalent in the future. Though, the frequency of winter storms may increase in line with projected windspeed changes.

1.2.7. The climate projections displayed in the following tables (**Tables 2 – 4**) have been extracted from the UK Climate Projections 2018 (UKCP18) **[Ref. 1-2]** data developed by the UK Climate Impacts Programme. The projections displayed in **Tables 2 – 4** below cover the indicative lifetime of the Proposed Development at the 50th percentile, with ranges shown for

the 10th and 90th percentiles, for the Representative Concentration Pathway (RCP) 8.5 (high emissions) scenario. The figures are expressed as temperature/precipitation anomalies in relation to a 1981 – 2000 baseline.

1.2.8. UKCP18 projections do not contain specific outputs for windspeed changes for the UK. However, global projections of wind speed over the UK at 10 m height show no significant changes in the first part of the 21st century but predict increases in wind speed for the winter season from 2050 onwards. This would be associated with an increase in frequency of winter storms.

Table 2: Projected change in temperature in the South East England region (50th percentile with ranges for the 10th and 90th percentiles)

Climate variable	Time horizon relative to 1981 – 2000		
	2020 – 2039	2040 – 2059	2080 – 2099
Mean annual air temperature anomaly at 1.5m (˚C)	+1.06 (+0.45 to +1.7)	+1.88 (+0.96 to +2.85)	+4.34 (+2.58 to +6.2)
Mean summer air temperature anomaly at 1.5m (˚C)	+1.37 (+0.40 to +2.34)	+2.53 (+1.13 to +3.96)	+5.83 (+3.02 to +8.75)
Mean winter air temperature anomaly at 1.5m (˚C)	+0.88 (+0.09 to +1.73)	+1.60 (+0.48 to +2.8)	+3.47 (+1.42 to +5.67)
Maximum summer air temperature anomaly at 1.5m (˚C)	+1.51 (+0.2 to +2.8)	+2.79 (+0.95 to +4.71)	+6.46 (+2.87 to +10.21)
Minimum winter air temperature anomaly at 1.5m (˚C)	+0.91 (+0.04 to +1.89)	+1.70 (+0.4 to +3.14)	+3.71 (+1.27 to +6.48)

Table 3: Projected change in precipitation rate in the South East England region (50th percentile with ranges for the 10th and 90th percentiles)

Climate variable	Time horizon relative to 1981 – 2000		
	2020 – 2039	2040 – 2059	2080 – 2099
Annual precipitation rate anomaly (%)	+1.27 (-5.42 to +8.12)	-0.48 (-8.39 to +7.72)	-1.13 (-12.65 to +11.09)
Summer precipitation rate anomaly (%)	-5.93 (-29.34 to +17.37)	-16.79 (-44.81 to +12.03)	-41.4 (-71.21 to +0.58)
Winter precipitation rate anomaly (%)	+8.06 (-4.59 to +21.95)	+12.56 (-3.86 to +31.56)	+26.01 (-1.69 to +59.79)

Table 4: Projected change in sea level pressure in the South East England region (50th percentile with ranges for the 10th and 90th percentiles)

Climate variable	Time horizon relative to 1981 – 2000		
	2020 – 2039	2040 – 2059	2080 – 2099
Annual sea level pressure (hPa)	+0.28 (-0.65 to +1.25)	+0.63 (-0.57 to +1.8)	+0.83 (-1.21 to +2.84)
Summer sea level pressure (hPa)	+0.50 (-0.46 to +1.53)	+0.90 (-0.66 to +2.53)	+1.26 (-1.46 to +4.25)
Winter sea level pressure (hPa)	+0.01 (-2.01 to +2.06)	+0.09 (-2.43 to +2.71)	-0.45 (-4.87 to +3.84)

1.2.9. ThinkHazard (2025) ranks the hazard level for wildfire within Buckinghamshire as 'high' which based on their definition denotes a "*greater than a 50% chance of encountering weather that could support a significant wildfire that is likely to result in both life and property loss in any given year.*"

1.2.10. It should be noted that this hazard level is assigned to the region (in this case Buckinghamshire) as a whole, and is not specific to the Proposed Development.

1.2.11. The hazard level assigned to water scarcity was low, indicating *"a 1% chance drought will occur in the coming 10 years."*

1.2.12. The hazard level assigned to extreme heat was low, indicating *"between a 5% and 25% chance that at least one period of prolonged exposure to extreme heat, resulting in heat stress, will occur in the next five years."*A site-specific flood risk assessment has been prepared for the Proposed Development. Further detail is presented within **Chapter 16: Water [EN010158/APP/6.2], Appendix 16.1: Flood Risk Assessment [EN010158/APP/6.4]** and **Appendix 16. 2: WFD Waterbodies Stage 1 Screening Assessment [EN010158/APP/6.4].**

1.3. Mitigation embedded into the design

1.3.1. This assessment has been based on the principle that measures have been 'embedded' into the design of the Proposed Development to remove potential likely significant effects as far as practicable, for example by the considered placement of infrastructure.

1.3.2. The embedded mitigation measures relevant to climate and the benefits these provide are outlined in **Table 5** below.

Table 5: Embedded mitigation measures relevant to climate resilience

Embedded mitigation measures relevant to Climate	Benefit	Securing mechanism
Rosefield Substation, BESS, ITS, Independent Outdoor Equipment (transformer, switchgear and central inverters), Collector Compounds and Construction	Electrical infrastructure will be less likely to flood.	**Design Commitments [EN010158/APP/5.9]**

Embedded mitigation measures relevant to Climate	Benefit	Securing mechanism
Compounds will be located outside of Flood Zone 2 and 3 areas.		
The height of the lower part of the solar PV panels will be no greater than 1.8m AGL (post-earthworks) within Flood Zones		
The condition and integrity of assets would be regularly assessed, and maintenance undertaken as early as required, giving consideration to materials with enhanced tolerance to fluctuating temperatures and exposure to rainfall.	Assets would be less likely to fail due to changes in climate.	**Outline CEMP [EN010158/APP/7.2]** **Outline Operational Environmental Management Plan (Outline OEMP) [EN010158/APP/7.3]**

1.4. Approach to the assessment

1.4.1. This assessment adopts a standard risk assessment-based methodology to identify potentially significant climate change impacts to the Proposed Development. Significance has been determined based upon the guidance set out in IEMA's (2020) 'Guide to Climate Change Resilience and Adaptation' **[Ref. 1-4]**.

1.4.2. The following receptors were highlighted by the Planning Inspectorate in **ES Volume 4, Appendix 5.2**: **EIA Scoping Opinion [EN010158/APP/6.4]** (received December 2023) as specific examples of receptors to be included in the climate change resilience assessment:

- BESS;
- Cable Corridors;
- Highways Access; and
- Rosefield Substation.

1.4.3. Alongside the receptors identified above, the following receptors were also included within the climate change resilience assessment as a precautionary measure:

- Site workers;
- Ground stability;
- Plant and machinery;

1.4.4. Solar PV were scoped out of further assessment regarding climate change resilience, as detailed within **ES Volume 4, Appendix 5.1: EIA Scoping Report** [**EN010158/APP/6.4]** and confirmed within **ES Volume 4, Appendix 5.2: EIA Scoping Opinion [EN010158/APP/6.4]**.

1.4.5. The climate change risk assessment considers the likelihood of the climate hazard occurring and the magnitude of the effect.

1.4.6. The likelihood of the hazard is premised upon both the probability and frequency of the projected occurrence. In line with IEMA (2020) **[Ref. 1-4]** guidance, the definition of each distinction of likelihood has been tailored based on the projected lifespan (40 years) of the Proposed Development, in order to maintain a precautionary approach. The criteria for likelihood are set out in **Table 6**.

Table 6: Definition of likelihood

Likelihood	Description
Very likely	The event occurs multiple times during the lifetime of the Proposed Development (40 years) e.g., approximately annually.
Likely	The event occurs several times during the lifetime of the Proposed Development (40 years), e.g., approximately once every five years.
Possible	The event occurs limited times during the lifetime of the Proposed Development (40 years), e.g., approximately once every 15 years.
Unlikely	The event occurs infrequently during the lifetime of the Proposed Development (40 years), e.g., once every 30 years.
Very unlikely	The event may occur once during the lifetime of the Proposed Development (40 years).

1.4.7. Magnitude is the degree of change from the relevant baseline conditions caused by climate change. The magnitude of impact takes account of the

timing, scale, size, and duration of the potential impact. The criteria for impact magnitude are set out in **Table 7**.

Table 7: Definition of impact magnitude

Impact magnitude	Summary
Very large	Substantial change, affecting the majority of the Site and for a prolonged period of time (more than one month) including irreversible changes.
Large	Noticeable change, affecting much of the Site and for a relatively long period of time (more than one week but less than one month).
Moderate	Noticeable change, affecting a few areas of the Site and for a moderate amount of time (more than three days but less than one week).
Minor	Noticeable change, affecting very few of the areas of the Site and for a small amount of time (no more than three days).
Negligible	Negligible and/or unnoticeable change or no change lasting one day or less.

1.4.8. The assessment of likely significant effects employs professional judgement to cross-examine the impact magnitude and likelihood scores using the criteria for significance of effects, as shown in **Table 8**. These effects can be either beneficial or adverse.

Table 8: Significance assessment matrix for climate resilience

Likelihood	Impact magnitude				
	Negligible	Minor	Moderate	Large	Very Large
Very unlikely	Negligible	Negligible or minor	Negligible or minor	Minor	Minor or moderate
Unlikely	Negligible or minor	Negligible or minor	Minor	Minor or moderate	Moderate or major
Possible	Negligible or minor	Minor	Moderate	Moderate or major	Major
Likely	Minor	Minor or moderate	Moderate or major	Major	Major

Likelihood	Impact magnitude				
Very likely	Minor or moderate	Moderate or major	Major	Major	Major

1.4.9. Only 'major' effects are deemed 'significant' and would require additional mitigation to be applied. Where the significance matrix indicates a range for the effect significance (e.g. 'moderate or major'), professional judgement can be applied to select one option (which would be justified by evidence, as appropriate) or an effect significance range can be applied. If a significance of effect is assigned as 'moderate or major', this would be considered significant unless further information could be provided to downgrade the significance effect to 'moderate'.

1.5. Assessment of likely effects (without additional mitigation)

1.5.1. Based upon the historic data and future projections presented within **Section 1.1: Environmental Baseline**, the following climate hazards have been identified as requiring further assessment for the construction phase (2028 – 2031), operational phase (2031 – 2071), and decommissioning phase (~ 2071):

- Increased summer temperatures, heat waves and high heat days;
- Increased magnitude and frequency of wildfire occurrences;
- Increased winter precipitation;
- Decreased summer precipitation;
- Increase in magnitude and frequency of extreme rainfall events;
- Increased risk of drought; and
- Increased wind speeds and frequency of winter storms.

1.5.2. As the Proposed Development is located in an in-land region, sea level rise and coastal flooding were not considered as reasonable hazards requiring further assessment.

1.5.3. Pluvial and fluvial flood risk has been considered as an effect associated with increased precipitation and increased wind speeds and frequency of winter storms, but should also be viewed alongside the findings of **ES Volume 2, Chapter 16: Water [EN010158/APP/6.2]** and **ES Volume 4, Appendix 16.1: Flood Risk Assessment [EN010158/APP/6.4].**

1.6. Additional mitigation

Construction phase

1.6.1. Supply chain risks should be considered to determine resilience to climate-related events that may disrupt the procurement of time-sensitive materials.

1.6.2. A Flood Management Plan (FMP) will be prepared for the construction phase to ensure the works are scheduled to avoid periods of increased flood risk;

1.6.3. No vehicle, equipment or material storage is permitted within the Flood Zone 2 or Flood Zone 3 or within 20m of watercourses where practicable.

1.6.4. In addition to these measures, an **Outline Construction Environmental Management Plan (Outline CEMP) [EN010158/APP/7.2],** which includes measures to mitigate against the risks presented by climate hazards, has been submitted in support of the DCO application. These measures include:

- Weather forecasts to be monitored on a daily basis. Forecasts would be used to inform the sequencing of activities and the use of appropriate personal protective equipment (PPE);
- Provision of welfare facilities including breaks, shade, and hydration facilities, as well as first aid amenities;
- Provision of an Emergency Response Plan, to include on-site fire prevention, suppression, and evacuation procedures;
- Provision of an Incident Response Plan that identifies flooding as a key site risk and identifies the correct policies and procedures to follow in the event of such;
- Monitoring and maintenance of plant and equipment to ensure compliance of machinery with design specifications and flexibility in the construction activities programme to account for climatic variation; and
- Appropriate on-site storage of plant and equipment;

Operational (including maintenance) phase

1.6.5. Climate hazards and measures to mitigate and adapt to these during the operational (including maintenance) phase of the Proposed Development have been identified below and secured within the **Outline CEMP [EN010158/APP/7.2] and Outline OEMP [EN010158/APP/7.3]**.

1.6.6. The condition and integrity of assets would be regularly assessed, and maintenance undertaken as early as required, giving consideration to

materials with enhanced tolerance to fluctuating temperatures and exposure to rainfall.

1.6.7. A Flood Management Plan will be secured by the **Outline OEMP [EN010158/APP/7.3]**, for any areas of the Proposed Development (mainly Internal Access tracks and Solar PV panels) that intersect areas of flood risk.

1.6.8. An **Outline Battery Safety Management Plan (Outline BSMP) [EN010158/APP/7.9]** details relevant mitigation measures pertaining to the BESS.

Decommissioning phase

1.6.9. The decommissioning phase of the Proposed Development is expected to take place after 40 years of operation. Therefore, consideration must be given to advancements that may be made in this time, which could supersede any measures recommended here.

1.6.10. An **Outline Decommissioning Environmental Management Plan (Outline DEMP) [EN010158/APP/7.4]** is submitted in support of the DCO Application. The **Outline DEMP [EN010158/APP/7.4]** includes measures to mitigate and adapt to climate change risks during the decommissioning phase of the Proposed Development, such as:

- Weather forecasts to be monitored on a daily basis. Forecasts would be used to inform the sequencing of activities and the use of appropriate personal protective equipment (PPE);
- Provision of welfare facilities including breaks, shade, and hydration facilities, as well as first aid amenities;
- Provision of an Emergency Response Plan, to include on-site fire prevention, suppression, and evacuation procedures;
- Provision of an Incident Response Plan that identifies flooding as a key site risk and identifies the correct policies and procedures to follow in the event of such;
- Monitoring and maintenance of plant and equipment to ensure compliance of machinery with design specifications and flexibility in the construction activities programme to account for climatic variation; and
- Appropriate on-site storage of plant and equipment;

1.6.11. A Flood Management Plan will be prepared for the decommissioning phase to ensure the works are scheduled to avoid periods of increased flood risk.

1.6.12. No vehicle, equipment or material storage is permitted within the Flood Zone 2 or Flood Zone 3 or within 20m of watercourses where practicable.

1.6.13. The decommissioning phase of the Proposed Development would present similar risks to those experienced during the construction phase, and any measures recommended would be assessed for their applicability in this phase.

1.7. Assessment of residual effects (with additional mitigation)

Construction phase

1.7.1. Potential climate risks to the decommissioning phase, the likelihood, magnitude, and significance are detailed in **Table 9.**

1.7.2. No hazards were identified as likely to have a significant effect on the Proposed Development during the construction phase.

Table 9: Summary of likely climate change effects on the construction of the Proposed Development

Receptor	Effect	Mitigation measures	Likelihood	Magnitude	Significance
Temperature					
Increased summer temperatures, heat waves and high heat days					
Construction Workers	An increase in average summer temperatures has the potential to reduce employee productivity during the summer months.	Monitor changing weather forecasts on a daily basis and implement an adverse hot weather procedure which includes communication of high-risk temperatures (with consideration of humidity). Dependent on PPE needed for construction activities, ensure access to high temperature PPE, such as sun hats, sunscreen and loose light clothing. Provide breaks, shade and hydration. If possible, avoid undertaking particularly hot or strenuous activities with excessive/heavy PPE and consider a change in working hours/shift patterns to avoid the hottest part of the day. This is secured in the **Outline CEMP [EN010158/APP/7.2].**	Unlikely	Negligible adverse	Minor adverse
	Extended periods of increased heat have the potential to increase risks to human health and wellbeing including discomfort, dehydration, sunburn, heat stress, stroke or exhaustion.		Unlikely	Negligible adverse	Minor adverse
BESS, Cable Corridors, Plant and	An increase in temperature could cause material and	The condition and integrity of assets would be regularly assessed, and maintenance undertaken as early as required, giving	Unlikely	Negligible adverse	Negligible adverse

Receptor	Effect	Mitigation measures	Likelihood	Magnitude	Significance
Machinery, and Substations	asset deterioration due to increased intensity and duration of hot summers, and exacerbated by any decrease in rainfall.	consideration to materials with enhanced tolerance to fluctuating temperatures and exposure to rainfall. Plant and equipment will be monitored and maintained to ensure compliance with design specifications and flexibility in construction activities to account for climatic variation. This is secured in the **Outline CEMP [EN010158/APP/7.2].**			
Increased magnitude and frequency of wildfire occurrences					
Construction Workers	Wildfire poses a direct risk to worker health and safety.	An emergency response plan will be developed which clearly establishes the procedures to be followed in the event of a wildfire, which will include on-site fire prevention, suppression, and evacuation procedures. This is secured in the **Outline CEMP [EN010158/APP/7.2].**.	Unlikely	Moderate adverse	Minor adverse
BESS	An increase in the magnitude and frequency of wildfire occurrences may result in thermal runaway associated with the BESS.	As specified and secured within the **Outline Battery Safety Management Plan (Outline BSMP) [EN010158/APP/7.9]**.	Unlikely	Moderate adverse	Minor adverse

Receptor	Effect	Mitigation measures	Likelihood	Magnitude	Significance
Cable Corridors, Substations, Plant and machinery	An increase in the magnitude and frequency of wildfire occurrences may prevent the undertaking of some construction activities.	An emergency response plan will be developed which clearly establishes the procedures to be followed in the event of a wildfire, which will include on-site fire prevention, suppression, and evacuation procedures. This is secured in the **Outline CEMP [EN010158/APP/7.2].**.	Unlikely	Moderate adverse	Minor adverse
Precipitation					
Increased winter precipitation					
BESS, Cable Corridors, Substations, Plant and machinery	Extended periods of increased rainfall have the potential to increase pluvial and fluvial flood risk which may in turn prevent the undertaking of some construction activities.	Adherence to the recommendations and findings of the Flood Risk Assessment and Flood Management Plan will take place throughout the construction phase as detailed in **ES Volume 4, Appendix 16.1: Flood Risk Assessment [EN010158/APP/6.4]**.	Unlikely	Minor adverse	Negligible adverse
Construction Workers	Extended periods of increased rainfall have the potential to increase pluvial and fluvial flood risk which may present a health	A Flood Management Plan will be developed to ensure occupants are able to safely evacuate the site prior to a flooding event. This is secured in the **Outline CEMP [EN010158/APP/7.2].**	Unlikely	Minor adverse	Negligible adverse

Receptor	Effect	Mitigation measures	Likelihood	Magnitude	Significance
	and safety risk to personnel on site.				
Highways Access	Extended periods of increased rainfall have the potential to cause pluvial flood risk which could hamper access to site, particularly in high traffic areas where the operating and maneuvering of heavy plant in wet conditions causes ground disturbance and access tracks to become unnavigable. This has the potential to delay the construction works.	Monitor changing weather forecasts and river levels on a daily basis, or more frequently if adverse weather is forecast. Ensure alternative access routes are provided in the event of flooding in nearby areas. Ensure safe access is always available to key assets with consideration given to ground conditions. This is secured in the **Outline CEMP [EN010158/APP/7.2].**	Unlikely	Minor adverse	Negligible adverse
Decreased summer precipitation					
Ground stability, Highways Access and	Decreased precipitation may lead to instances of extreme drought,	Monitor changing weather forecasts on a daily basis, and in dry periods assess ground water levels (e.g., from standpipes and river level). Ensure safe access is always available to key	Very Unlikely	Negligible adverse	Negligible adverse

Receptor	Effect	Mitigation measures	Likelihood	Magnitude	Significance
Construction workers	which may reduce groundwater levels and soil saturation thereby resulting in ground instability, hampering access to site or construction of the site. Increase in dust and soil erosion are likely to have implications on air quality and workforce health.	assets with consideration given to ground conditions. Where possible, take reasonable measures to minimise the mobilisation and dispersal of dust. This is secured in the **Outline CEMP [EN010158/APP/7.2].**			
Increase in magnitude and frequency of extreme rainfall events					
BESS, Cable Corridors, Substations, Plant and machinery, and Construction workers	Increased requirements for monitoring and maintenance due to enhanced severity and frequency of extreme rainfall events.	Ensure efficiency during monitoring and maintenance checks, e.g., ensure all checks are done once in a competent manner so that further visits are not needed. This is secured in the **Outline CEMP [EN010158/APP/7.4].**	Unlikely	Negligible adverse	Negligible adverse
BESS, Cable Corridors,	Sudden flood events (including flash floods)	Monitor changing weather forecasts on a daily basis, focusing on flood risk announcements,	Unlikely	Minor adverse	Negligible adverse

Receptor	Effect	Mitigation measures	Likelihood	Magnitude	Significance
Substations, Plant and machinery, and Construction workers	could cause extreme damage to site ground, machinery and materials; as well as pose a risk to worker health.	incoming storms, or periods of extended rainfall. Halt construction activities and have evacuation procedures prepared in case of sudden flood events. This is secured in the **Outline CEMP [EN010158/APP/7.4].** Maintain drainage systems on site with frequent checks to ensure they are operating at maximum efficiency as secured in the **Outline Drainage Strategy [EN010158/APP/7.11]**.			
Increased risk of drought					
BESS, Cable Corridors, Substations, Ground stability, Highways access, Plant and machinery and Construction workers	Instances of extreme drought may reduce groundwater levels and soil saturation thereby resulting in ground instability, hampering access to site or operations on site. Increase in dust and soil erosion are likely to have implications on air quality and workforce health.	Monitor changing weather forecasts on a daily basis, and in dry periods assess ground water levels. Ensure safe access is always available to key assets with consideration given to ground conditions. Where possible, take reasonable measures to minimise the mobilisation and dispersal of dust. This is secured in the **Outline CEMP [EN010158/APP/7.2].**.	Very unlikely	Minor adverse	Negligible adverse

Receptor	Effect	Mitigation measures	Likelihood	Magnitude	Significance
Wind speed and storms					
Increased wind speeds and frequency of winter storms					
BESS, Cable Corridors, Substations, Plant and machinery, and Construction workers	Storms and sudden flood events (including flash floods) could cause damage to site ground, machinery and materials; as well as pose a risk to worker health.	Monitor changing weather forecasts on a daily basis, focusing on flood risk announcements, incoming storms, or periods of extended rainfall. Halt construction activities and have evacuation procedures prepared in case of sudden flood events. This is secured in the **Outline CEMP [EN010158/APP/7.4]**. Maintain drainage systems on site with frequent checks to ensure they are operating at maximum efficiency as secured in the **Outline Drainage Strategy [EN010158/APP/7.11]**.	Very Unlikely	Minor adverse	Negligible adverse

Operational (including maintenance) phase

1.7.3. Potential climate risks to the operational (including maintenance) phase, the likelihood, magnitude, and significance are detailed in **Table 10**.

1.7.4. No hazards were identified as likely to have a significant effect on the Proposed Development during the operational (including maintenance) phase.

Table 10: Summary of likely climate change effects on the operation (including maintenance) of the Proposed Development

Receptor	Effect	Mitigation measures	Likelihood	Magnitude	Significance
Temperature					
Increased summer temperatures, heat waves and high heat days					
BESS, Cable Corridors, Plant and Machinery, and Substations	An increase in temperature could cause material and asset deterioration due to increased intensity and duration of hot summers, and exacerbated by any decrease in rainfall	The condition and integrity of buildings should be regularly assessed. Maintenance of these should be habitual and consideration should be given to the use of construction materials with enhanced tolerance to fluctuating temperatures. This is secured in the **Outline OEMP [EN010158/APP/7.2].**.	Likely	Negligible adverse	Minor adverse
Operational workers	Extended periods of increased heat have the potential to increase risks to human health and wellbeing including discomfort, dehydration, sunburn, heat stress, stroke or exhaustion.	Monitor changing weather forecasts on a daily basis and implement an adverse hot weather procedure which includes communication of high-risk temperatures (with consideration of humidity). Dependent on PPE needed for construction activities, ensure access to high temperature PPE, such as sun hats, sunscreen and loose light clothing. Provide breaks, shade and hydration. If possible, avoid undertaking	Likely	Negligible adverse	Minor adverse

Receptor	Effect	Mitigation measures	Likelihood	Magnitude	Significance
		particularly hot or strenuous activities with excessive/heavy PPE and consider a change in working hours/shift patterns to avoid the hottest part of the day. This is secured in the **Outline OEMP [EN010158/APP/7.2].**			
Increased magnitude and frequency of wildfire occurrences					
Operational Workers	Wildfire poses a direct risk to worker health and safety.	An emergency response plan will be developed which clearly establishes the procedures to be followed in the event of a wildfire, which will include on-site fire prevention, suppression, and evacuation procedures. This is secured in the **Outline OEMP [EN010158/APP/7.2].**.	Unlikely	Moderate adverse	Minor adverse
BESS	An increase in the magnitude and frequency of wildfire occurrences may result in thermal runaway associated with the BESS.	As specified and secured within the **Outline Battery Safety Management Plan (Outline BSMP) [EN010158/APP/7.9].**	Unlikely	Moderate adverse	Minor adverse
Cable Corridors,	An increase in the magnitude and	An emergency response plan will be developed which clearly establishes the	Unlikely	Moderate adverse	Minor adverse

Receptor	Effect	Mitigation measures	Likelihood	Magnitude	Significance
Substations, Plant and machinery	frequency of wildfire occurrences may prevent the undertaking of some operational maintenance activities.	procedures to be followed in the event of a wildfire, which will include on-site fire prevention, suppression, and evacuation procedures. This is secured in the **Outline OEMP [EN010158/APP/7.2].**			
Precipitation					
Increased winter precipitation					
BESS, Cable Corridors, Substations, Plant and machinery	Extended periods of increased rainfall have the potential to increase pluvial and fluvial flood risk which may in turn prevent the undertaking of some maintenance/operational activities.	Adherence to the recommendations, findings, and mitigation measures specified within **ES Volume 4, Appendix 16.1: Flood Risk Assessment [EN010158/APP/6.4]**.	Unlikely	Minor adverse	Negligible adverse
Operational Workers	Extended periods of increased rainfall have the potential to increase pluvial and fluvial flood risk which may present a health and safety risk to personnel on site.	A Flood Management Plan will be developed to ensure occupants are able to safely evacuate the site prior to a flooding event. This is secured in the **Outline OEMP [EN010158/APP/7.2].**.	Unlikely	Minor adverse	Negligible adverse

Receptor	Effect	Mitigation measures	Likelihood	Magnitude	Significance
Highways Access	Extended periods of increased rainfall have the potential to cause pluvial flood risk which could hamper access to site, particularly in high traffic areas where the operating and maneuvering of heavy plant in wet conditions causes ground disturbance and access tracks to become unnavigable. This has the potential to delay the operational works.	Monitor changing weather forecasts and river levels on a daily basis, or more frequently if adverse weather is forecast. Ensure alternative access routes are provided in the event of flooding in nearby areas. Ensure safe access is always available to key assets with consideration given to ground conditions. This is secured in the **Outline OEMP [EN010158/APP/7.2].**	Unlikely	Minor adverse	Negligible adverse
Decreased summer precipitation					
Ground stability, Highways Access and Operational workers	Decreased precipitation may lead to instances of extreme drought, which may reduce groundwater levels and soil saturation thereby resulting in ground instability, hampering	Monitor changing weather forecasts on a daily basis, and in dry periods assess ground water levels (e.g., from standpipes and river level). Ensure safe access is always available to key assets with consideration given to ground conditions. Where possible, take reasonable measures to minimise the mobilisation and dispersal of	Unlikely	Negligible adverse	Negligible adverse

Receptor	Effect	Mitigation measures	Likelihood	Magnitude	Significance
	access to site or operational activities to the site. Increase in dust and soil erosion are likely to have implications on air quality and workforce health.	dust. This is secured in the **Outline OEMP [EN010158/APP/7.2].**.			
Increase in magnitude and frequency of extreme rainfall events					
BESS, Cable Corridors, Substations, Plant and machinery, and Operational workers	Increased requirements for monitoring and maintenance due to enhanced severity and frequency of extreme rainfall events.	Ensure efficiency during monitoring and maintenance checks, e.g., ensure all checks are done once in a competent manner so that further visits are not needed. This is secured in the **Outline OEMP [EN010158/APP/7.4].**	Unlikely	Negligible adverse	Negligible adverse
BESS, Cable Corridors, Substations, Plant and machinery, and	Sudden flood events (including flash floods) could cause extreme damage to site ground, machinery and materials; as well as	Monitor changing weather forecasts on a daily basis, focusing on flood risk announcements, incoming storms, or periods of extended rainfall. Halt operational activities and have evacuation procedures prepared in case of sudden flood events. This is secured in the **Outline OEMP**	Unlikely	Minor adverse	Negligible adverse

Receptor	Effect	Mitigation measures	Likelihood	Magnitude	Significance
Operational workers	pose a risk to worker health.	**[EN010158/APP/7.4].** Maintain drainage systems on site with frequent checks to ensure they are operating at maximum efficiency as set out in the **Outline Drainage Strategy [EN010158/APP/7.11]**.			
Increased risk of drought					
BESS, Cable Corridors, Substations, Ground stability, Highways Access, Plant and machinery and Operational workers	Instances of extreme drought may reduce groundwater levels and soil saturation thereby resulting in ground instability, hampering access to site or operations on site. Increase in dust and soil erosion are likely to have implications on air quality and workforce health.	Monitor changing weather forecasts on a daily basis, and in dry periods assess ground water levels. Ensure safe access is always available to key assets with consideration given to ground conditions. Where possible, take reasonable measures to minimise the mobilisation and dispersal of dust. This is secured in the **Outline OEMP [EN010158/APP/7.2].**.	Very unlikely	Minor adverse	Negligible adverse
Wind speed and storms					
Increased wind speeds and frequency of winter storms					

Receptor	Effect	Mitigation measures	Likelihood	Magnitude	Significance
BESS, Cable Corridors, Substations, and Plant and machinery	Increased requirements for monitoring and maintenance due to enhanced severity of climate change.	Replace and repair assets as early as required. Ensure efficiency during monitoring and maintenance checks, such as by ensuring that all checks are done at once in a competent manner so that further visits are not needed. This is secured in the **Outline OEMP [EN010158/APP/7.4**.	Unlikely	Minor adverse	Negligible adverse
BESS, Cable Corridors, Substations, Plant and machinery, and Operational workers	Storms and sudden flood events (including flash floods) could cause damage to site ground, machinery and materials; as well as pose a risk to worker health.	Monitor changing weather forecasts on a daily basis, focusing on flood risk announcements, incoming storms, or periods of extended rainfall. Halt maintenance/operational activities and have evacuation procedures prepared in case of sudden flood events. This is secured in the **Outline OEMP [EN010158/APP/7.4].** Maintain drainage systems on site with frequent checks to ensure they are operating at maximum efficiency as set out in the **Outline Drainage Strategy [EN010158/APP/7.11]**.	Unlikely	Minor adverse	Negligible adverse

Decommissioning phase

1.7.5. Potential climate risks to the decommissioning phase, the likelihood, magnitude, and significance are detailed in **Table 11**.

1.7.6. No hazards were identified as likely to have a significant effect on the Proposed Development during the decommissioning phase.

Table 11: Summary of likely climate change effects on the decommissioning phase of the Proposed Development

Receptor	Effect	Mitigation measures	Likelihood	Magnitude	Significance
Temperature					
Increased summer temperatures, heat waves and high heat days					
Decommissioning Workers	An increase in average summer temperatures has the potential to reduce employee productivity during the summer months.	Monitor changing weather forecasts on a daily basis and implement an adverse hot weather procedure which includes communication of high-risk temperatures (with consideration of humidity). Dependent on PPE needed for construction activities, ensure access to high temperature PPE, such as sun hats, sunscreen and loose light clothing. Provide breaks, shade and hydration. If possible, avoid undertaking particularly hot or strenuous activities with excessive/heavy PPE and consider a change in working hours/shift patterns to avoid the hottest part of the day. This is secured in the **Outline DEMP [EN010158/APP/7.2].**	Likely	Negligible adverse	Minor adverse
	Extended periods of increased heat have the potential to increase risks to human health and wellbeing including discomfort, dehydration, sunburn, heat stress, stroke or exhaustion.		Likely	Negligible adverse	Minor adverse

Receptor	Effect	Mitigation measures	Likelihood	Magnitude	Significance
BESS, Cable Corridors, Plant and Machinery, and Substations	An increase in temperature could cause material and asset deterioration due to increased intensity and duration of hot summers, and exacerbated by any decrease in rainfall.	The condition and integrity of assets would be regularly assessed, and maintenance undertaken as early as required, giving consideration to materials with enhanced tolerance to fluctuating temperatures and exposure to rainfall. Plant and equipment will be monitored and maintained to ensure compliance with design specifications and flexibility in decommissioning activities to account for climatic variation. This is secured in the **Outline DEMP [EN010158/APP/7.2].**	Unlikely	Negligible adverse	Negligible adverse
Increased magnitude and frequency of wildfire occurrences					
Decommissioning Workers	Wildfire poses a direct risk to worker health and safety.	An emergency response plan will be developed which clearly establishes the procedures to be followed in the event of a wildfire, which will include on-site fire prevention, suppression, and evacuation procedures. This is secured in the **Outline DEMP [EN010158/APP/7.2].**	Unlikely	Moderate adverse	Minor adverse
BESS	An increase in the magnitude and frequency of wildfire occurrences may	As specified and secured within the **Outline Battery Safety Management Plan (Outline BSMP) [EN010158/APP/7.9].**	Unlikely	Moderate adverse	Minor adverse

Receptor	Effect	Mitigation measures	Likelihood	Magnitude	Significance
	result in thermal runaway associated with the BESS.				
Cable Corridors, Substations, Plant and machinery	An increase in the magnitude and frequency of wildfire occurrences may prevent the undertaking of some decommissioning activities.	An emergency response plan will be developed which clearly establishes the procedures to be followed in the event of a wildfire, which will include on-site fire prevention, suppression, and evacuation procedures. This is secured in the **Outline DEMP [EN010158/APP/7.2].**.	Unlikely	Moderate adverse	Minor adverse
Precipitation					
Increased winter precipitation					
BESS, Cable Corridors, Substations, Plant and machinery	Extended periods of increased rainfall have the potential to increase pluvial and fluvial flood risk which may in turn prevent the	Adherence to the recommendations and findings of the Flood Risk Assessment and Flood Management Plan will take place throughout the decommissioning phase, or otherwise to any updated versions that may have been created closer to the point of decommissioning.	Unlikely	Minor adverse	Negligible adverse

Receptor	Effect	Mitigation measures	Likelihood	Magnitude	Significance
	undertaking of some decommissioning activities.				
Decommissioning Workers	Extended periods of increased rainfall have the potential to increase pluvial and fluvial flood risk which may present a health and safety risk to personnel on site.	A Flood Management Plan will be developed to ensure occupants are able to safely evacuate the site prior to a flooding event.	Unlikely	Minor adverse	Negligible adverse
Highways Access	Extended periods of increased rainfall have the potential to cause pluvial flood risk which could hamper access to site, particularly in high traffic areas where the operating and maneuvering of heavy plant in wet	Monitor changing weather forecasts and river levels on a daily basis, or more frequently if adverse weather is forecast. Ensure alternative access routes are provided in the event of flooding in nearby areas. Ensure safe access is always available to key assets with consideration given to ground conditions. This is secured in the **Outline DEMP [EN010158/APP/7.2].**	Unlikely	Minor adverse	Negligible adverse

Receptor	Effect	Mitigation measures	Likelihood	Magnitude	Significance
	conditions causes ground disturbance and access tracks to become unnavigable. This has the potential to delay the decommissioning works.				
Decreased summer precipitation					
Ground stability, Highways Access and Decommissioning workers	Decreased precipitation may lead to instances of extreme drought, which may reduce groundwater levels and soil saturation thereby resulting in ground instability, hampering access to site or decommissioning activities to the site. Increase in dust and soil erosion are	Monitor changing weather forecasts on a daily basis, and in dry periods assess ground water levels (e.g., from standpipes and river level). Ensure safe access is always available to key assets with consideration given to ground conditions. Where possible, take reasonable measures to minimise the mobilisation and dispersal of dust. This is secured in the **Outline DEMP [EN010158/APP/7.2].**.	Unlikely	Negligible adverse	Negligible adverse

Receptor	Effect	Mitigation measures	Likelihood	Magnitude	Significance
	likely to have implications on air quality and workforce health.				
Increase in magnitude and frequency of extreme rainfall events					
BESS, Cable Corridors, Substations, Plant and machinery, and Decommissioning workers	Increased requirements for monitoring and maintenance due to enhanced severity and frequency of extreme rainfall events.	Ensure efficiency during monitoring and maintenance checks, e.g., ensure all checks are done once in a competent manner so that further visits are not needed. This is secured in the **Outline DEMP [EN010158/APP/7.4].**	Unlikely	Negligible adverse	Negligible adverse
BESS, Cable Corridors, Substations, Plant and machinery, and Decommissioning workers	Sudden flood events (including flash floods) could cause extreme damage to site ground, machinery and materials; as well as pose a risk to worker health.	Monitor changing weather forecasts on a daily basis, focusing on flood risk announcements, incoming storms, or periods of extended rainfall. Halt decommissioning activities and have evacuation procedures prepared in case of sudden flood events. This is secured in the **Outline DEMP [EN010158/APP/7.4].** Maintain drainage systems on site with frequent checks to ensure they are operating at maximum efficiency as set out in the	Unlikely	Minor adverse	Negligible adverse

Receptor	Effect	Mitigation measures	Likelihood	Magnitude	Significance
		Outline Drainage Strategy [EN010158/APP/7.11].			
Increased risk of drought					
BESS, Cable Corridors, Substations, Ground stability, Highways access, Plant and machinery and Decommissioning workers	Instances of extreme drought may reduce groundwater levels and soil saturation thereby resulting in ground instability, hampering access to site or operations on site. Increase in dust and soil erosion are likely to have implications on air quality and workforce health.	Monitor changing weather forecasts on a daily basis, and in dry periods assess ground water levels. Ensure safe access is always available to key assets with consideration given to ground conditions. Where possible, take reasonable measures to minimise the mobilisation and dispersal of dust. This is secured in the **Outline DEMP [EN010158/APP/7.2].**.	Very unlikely	Minor adverse	Negligible adverse
Wind speed and storms					
Increased wind speeds and frequency of winter storms					
BESS, Cable Corridors,	Storms and sudden flood events	Monitor changing weather forecasts on a daily basis, focusing on flood risk	Unlikely	Minor adverse	Negligible adverse

Receptor	Effect	Mitigation measures	Likelihood	Magnitude	Significance
Substations, Plant and machinery, and Decommissioning workers	(including flash floods) could cause damage to site ground, machinery and materials; as well as pose a risk to worker health.	announcements, incoming storms, or periods of extended rainfall. Halt decommissioning activities and have evacuation procedures prepared in case of sudden flood events. This is secured in the **Outline DEMP [EN010158/APP/7.4].** Maintain drainage systems on site with frequent checks to ensure they are operating at maximum efficiency as set out in the **Outline Drainage Strategy [EN010158/APP/7.11]**.			

1.8. Difficulties and Uncertainties

1.8.1. UKCP18 provides probabilistic projections of future climate for a range of emissions scenarios. Future GHGs emissions, and the resulting pathway, is uncertain. A precautionary approach, consistent with IEMA Guidance **[Ref. 1-4]** has therefore been adopted by selecting a high emissions scenario (RCP8.5) and long-term time slice (2060-2079) projections.

1.8.2. Due to the inherent uncertainty surrounding climate conditions in the far future (40 years), it is difficult to accurately attempt to assess the climate hazards and their impacts during the decommissioning process, though they are anticipated to be equivalent to those identified during the operational (including maintenance) phase. It is likewise difficult to account for any advancements in technology and best practice that may influence, replace, or increase the efficacy of the mitigation measures presented.

2 References

Ref. 1-1 Met Office (2024) UK Climate Averages. Available online: https://www.metoffice.gov.uk/research/climate/maps-and-data/uk-climate-averages/

Ref. 1-2 UK Climate Projections (2018). Available at: https://ukclimateprojections-ui.metoffice.gov.uk/ui/home

Ref. 1-3 Global Facility for Disaster Reduction and Recovery (GFDRR) (2025) ThinkHazard. Available online: https://thinkhazard.org/en/

Ref. 1-4 Institute of Environmental Management and Assessment (2020) Climate Change Resilience and Adaptation. Available online: https://www.iema.net/resources/reading-room/2020/06/26/iema-eia-guide-to-climate-change-resilience-and-adaptation-2020

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