The Sizewell C Project

6.3 Volume 2 Main Development Site

Chapter 26 Climate Change
Appendices 26A - 26B

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APPENDIX 26A CLIMATE CHANGE RESILIENCE (CCR) ASSESSMENT RESPONSE TABLE

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None provided.

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Appendix 26.A Climate Change Resilience Assessment Response Table

The Climate Change Resilience (CCR) assessment has been informed by engagement with design teams and environmental disciplines. The assessment has been prepared by following the Climate Change Assessment Methodology **(Volume 1, Appendix 6V)**, reporting the construction **(Table 1)** and operation **(Table 2)** stages.

To support the determination of the likelihood of the climate hazard and impact occurring in respect of the identified receptor, **(Table 3)** presents the potential climate hazards and likelihood of occurrence taken from the United Kingdom Climate Change Projections 2018 (UKCP18).

Note: the tables make reference to the Sizewell C Project; encompassing the main development site and associated development sites where potential climate impacts relate to the site as whole. References are made to the main development site and associated development sites separately where appropriate.

Table 1: **Construction stage CCR assessment responses (2022-2034)**

Receptor	Climate Hazard	Climate Impact	Likelihood of Climate Hazard Occurring (very likely/ likely/ possible, about as likely as not, unlikely, very unlikely)	Embedded Mitigation Measures	How Mitigation Secured	Likelihood of Climate Impact Occurring (likely, possible, about as likely as not, unlikely)	Consequence (high, medium, low, very low)	Level of effect (major, moderate, minor, negligible)	Significance
Construction – main development site									
Built assets, staff facilities and access routes to construction sites	Extreme weather events (such as storms).	Damage to structures/ construction equipment and resulting in delays to construction programme and associated costs and/or unacceptable safety risks, as well as high winds increasing dust (and other construction debris).	Possible, about as likely as not	A high-level risk assessment of severe weather impacts on the construction process will be produced by the main contractor to inform mitigation. The contractor will be provided with a list of potential climate change impacts to be taken into account within Environmental Management Plans (EMP). The Contractors' Environmental Management System (EMS) will take into account all measures deemed necessary and appropriate to manage severe weather events and should as a minimum cover training of personnel and prevention and monitoring arrangements. As appropriate, construction method statements should also consider severe weather events where risks have been identified. 24/7 on-site emergency response would be provided.	**Code of Construction Practice (CoCP)** (Doc Ref. 8.11)	Possible, about as likley as not Unlikely	Low	Minor	Not significant
Sizewell B relocated facilities land (the area that certain Sizewell B facilities would be	Extreme weather events (such as storms).	Damage to existing facilities proposed to be relocated due to flooding and high winds (visitor centre, technical training centre, outage offices, workshop and store areas), resulting in delays in	Possible, about as likely as not	A high-level risk assessment of severe weather impacts on the relocation process will be produced by the main contractor to inform mitigations. Any receptors and/or construction-related operations and activities potentially sensitive to severe weather events should be considered in the assessment.	**CoCP** (Doc Ref. 8.11)	Possible, about as likely as not	Low	Minor	Not significant

Receptor	Climate Hazard	Climate Impact	Likelihood of Climate Hazard Occurring (very likely/ likely/ possible, about as likely as not, unlikely, very unlikely)	Embedded Mitigation Measures	How Mitigation Secured	Likelihood of Climate Impact Occurring (likely, possible, about as likely as not, unlikely)	Consequence (high, medium, low, very low)	Level of effect (major, moderate, minor, negligible)	Significance
moved to in order to release other land for the Sizewell C Project)		releasing land for Sizewell C main development site.		Climate change projections should be considered in the risk assessments. Weather seasonality should also be considered when planning the relocation timescale. The contractors' EMS should consider all measures deemed necessary and appropriate to manage severe weather events and should as a minimum cover training of personnel and prevention and monitoring arrangements. As appropriate, construction main development site should consider severe weather events where risks have been identified. 24/7 on-site emergency response would be provided.					
Temporary construction area (the area of land located to the north and west of the SSSI crossing, which would be used to support construction activity on the main platform)	Extreme weather events (such as storms)/ increase in winter precipitation rate.	Water-logged land due to prolonged rainfall which inhibits the movement of construction machinery resulting in delays to the construction programme of the SSSI crossing, as well as high winds increasing dust (and other construction debris). If air/ waterborne, this may pose an environmental hazard for the adjacent areas beyond the main development site boundary, for example Kenton Hills / Goose Hill / Minsmere Reserve. This could delay the transport of abnormal indivisible loads between the temporary construction area and main platform, following their delivery to the Beach Landing Facility (BLF).	Possible, about as likely as not to Likely	Commencement of the main earthworks during the first available summer to avoid handling alluvial materials and peat during the winter, which would not be practical. Provision of a culvert at the SSSI crossing at earliest opportunity to mitigate the flow of Sizewell Drain throughout the construction phase. A high-level risk assessment of severe weather impacts on the construction process will be produced by the main contractor to inform mitigations. Any receptors and/or construction-related operations and activities potentially sensitive to severe weather events should be considered in the assessment. Climate change projections should be considered in the risk assessments. Weather seasonality should also be considered when planning the construction timescale. The contractors' EMS should consider all measures deemed necessary and appropriate to manage severe weather events and should as a minimum cover training of personnel and prevention and monitoring arrangements. As appropriate, construction main development site should also consider severe weather events where risks have been identified.	**CoCP** (Doc Ref. 8.11)	Possible, about as likely as not	Low	Minor	Not significant

Receptor	Climate Hazard	Climate Impact	Likelihood of Climate Hazard Occurring (very likely/ likely/ possible, about as likely as not, unlikely, very unlikely)	Embedded Mitigation Measures	How Mitigation Secured	Likelihood of Climate Impact Occurring (likely, possible, about as likely as not, unlikely)	Consequence (high, medium, low, very low)	Level of effect (major, moderate, minor, negligible)	Significance
				24/7 on-site emergency response would be provided.					
Accommodation Campus	Extreme weather events (such as storms).	Damage to construction equipment and localised flooding resulting in delays to the construction programme. This could result in a move-in delay for the 2,400-construction workforce who intend to live on-site.	Possible, about as likely as not	A high-level risk assessment of severe weather impacts on the construction of the Accommodation Campus will be produced by the main contractor to inform mitigations. Any receptors and/or construction-related operations and activities potentially sensitive to severe weather events should be considered in the assessment. Climate change projections should be considered in the risk assessments. The contractors' EMS should consider all measures deemed necessary and appropriate to manage severe weather events. As appropriate, construction method statements should also consider severe weather events where risks have been identified. 24/7 on-site emergency response would be provided.	**CoCP** (Doc Ref. 8.11)	Possible, about as likely as not	Low	Minor	Not significant
LEEIE (land east of Eastlands Industrial Estate) (the area north of Sizewell Halt, which would be used to support construction on the main platform and the temporary construction area)	Extreme weather events (such as storms).	Water-logged land due to prolonged rainfall which inhibits the movement of construction machinery resulting in delays to the construction programme. High winds increasing dust may also result in the delay of materials delivered to aid construction at Sizewell Halt, as well as the preparation of the site for the arrival of the 400 construction workforce caravans.	Possible, about as likely as not	A high-level risk assessment of severe weather impacts on the delivery of materials to aid the construction works at LEEIE will be produced by the main contractor to inform mitigations. Any receptors and/or construction-related operations and activities potentially sensitive to severe weather events should be considered in the assessment. Climate change projections should be considered in the risk assessments. Weather seasonality should also be considered when planning the delivery of materials and/or caravans to the LEEIE. A risk assessment for the delivery and implementation of the caravan complex will also be conducted. The contractors' EMS should consider all measures deemed necessary and appropriate to manage severe weather events and should as a minimum cover training of personnel and prevention and monitoring arrangements. As appropriate, construction at main development site should also consider severe weather events where risks have been identified. 24/7 on-site emergency response would be provided.	**CoCP** (Doc Ref. 8.11)	Possible, about as likely as not	Low	Minor	Not significant

Receptor	Climate Hazard	Climate Impact	Likelihood of Climate Hazard Occurring (very likely/ likely/ possible, about as likely as not, unlikely, very unlikely)	Embedded Mitigation Measures	How Mitigation Secured	Likelihood of Climate Impact Occurring (likely, possible, about as likely as not, unlikely)	Consequence (high, medium, low, very low)	Level of effect (major, moderate, minor, negligible)	Significance
Ground conditions	Decrease in annual precipitation rate.	Increased risk of soil erosion from exposed soils during construction.	Possible, about as likely as not	Primary and tertiary mitigation will reduce the amount of soil exposure during construction, which will in turn reduce the potential for soil erosion. The CoCP includes measures such as minimising the area and duration of soil exposure and timely reinstatement of vegetation or hardstanding to reduce soil exposure/erosion and increase resilience to climate change. 24/7 on-site emergency response would be provided.	**CoCP** (Doc Ref. 8.11)	Possible, about as likely as not	Very low	Negligible	Not significant
	Decrease in summer precipitation rate.	Increased risk of soil erosion from exposed soils during construction.	Possible, about as likely as not	Primary and tertiary mitigation will reduce the amount of soil exposure during construction, which will in turn reduce the potential for soil erosion. The CoCP includes measures such as minimising the area and duration of soil exposure and timely reinstatement of vegetation or hardstanding to reduce soil exposure/ erosion and increase resilience to climate change.	**CoCP** (Doc Ref. 8.11)	Possible, about as likely as not	Very low	Negligible	Not significant
	Increase in winter precipitation rate.	Increase in risk of contamination leaching from soils from precipitation and being carried within soils overland with heavier precipitation events and flooding.	Likely	The CoCP will include measures to reduce risk of contamination migration, leaching etc. during construction. Methods to include making sure surface water run-off from the stockpiles, landscape bunds or working areas into adjacent surface watercourses or leaching into underlying groundwater is minimised, use of appropriate pollution incident control and safe storage of materials is completed, etc. The contractor's risk assessments and method statements (RAMS) will include good practice for managing contaminated ground and appropriate risk mitigation is adopted. 24/7 on-site emergency response would be provided.	**CoCP** (Doc Ref. 8.11)	Unlikely	Very low	Negligible	Not significant
	Increase in sea level	Increase in risk of contamination leaching from soils with higher sea level.	Likely	As construction works progress, measures embedded within design will mitigate the risk of flooding. These measures include: • During initial stages of construction, a temporary reinforced coastal flood defence with crest level of 7m AOD would be built to form a haul road used for construction until the main sea defence is completed;	Main development site design. **CoCP** (Doc Ref. 8.11)	Unlikely	Very low	Negligible	Not significant

Receptor	Climate Hazard	Climate Impact	Likelihood of Climate Hazard Occurring (very likely/ likely/ possible, about as likely as not, unlikely, very unlikely)	Embedded Mitigation Measures	How Mitigation Secured	Likelihood of Climate Impact Occurring (likely, possible, about as likely as not, unlikely)	Consequence (high, medium, low, very low)	Level of effect (major, moderate, minor, negligible)	Significance
				• A raised platform to a level of 7.3m AOD, which has been set above the still water level for 1 in 1,000-year return period events for the theoretical maximum lifetime of the Sizewell C Project with an allowance for sea level rise with climate change; and • The new coastal flood defence crest level would be 10.2m AOD with adaptive design to potentially raise the defence up to 14.2m AOD in the future to minimise the risk of overtopping in the later stages of the Sizewell C Project's lifetime, if required. The crest height has been set above the still water level for 1 in 10,000 year return period events over the lifetime of the Sizewell C Project with an allowance for sea level rise with climate change. The CoCP will include measures to reduce risk of contamination migration, leaching etc. during construction. Methods to include making sure surface water run-off from the stockpiles, landscape bunds or working areas into adjacent surface watercourses or leaching into underlying groundwater is minimised, use of appropriate pollution incident control and safe storage of materials is completed, etc. The contractor's RAMS will include good practice for managing contaminated ground and appropriate risk mitigation is adopted. 24/7 on-site emergency response would be provided.					
Construction – associated development sites (temporary)									
Freight Management Facility (FMF)	Extreme weather events (such as storms).	Damage to construction equipment and localised flooding resulting in delays to the construction programme.	Possible, about as likely as not	A high-level risk assessment of severe weather impacts on the construction of the FMF will be produced by the main contractor to inform mitigations. Any receptors and/or construction-related operations and activities potentially sensitive to severe weather events should be considered in the assessment. Climate c hange projections should be considered in the risk assessments. The contractors' EMS should consider all measures deemed necessary and appropriate to manage severe weather events. As appropriate, construction method statements should also consider severe weather events where risks have been identified.	**CoCP** (Doc Ref. 8.11)	Possible, about as likely as not	Low	Minor	Not significant

Receptor	Climate Hazard	Climate Impact	Likelihood of Climate Hazard Occurring (very likely/ likely/ possible, about as likely as not, unlikely, very unlikely)	Embedded Mitigation Measures	How Mitigation Secured	Likelihood of Climate Impact Occurring (likely, possible, about as likely as not, unlikely)	Consequence (high, medium, low, very low)	Level of effect (major, moderate, minor, negligible)	Significance
Operation of the FMF to support the construction of main development site	Strong winds	Increasing frequency of Orwell Bridge closures leading to disruption to heavy goods vehicles (HGVs).	Possible, about as likely as not	Traffic Incident Management Plan sets out procedures for holding HGVs en-route along the A14 in order to avoid exacerbating congestion in the event of Orwell Bridge closures.	**Traffic Incident Management Plan** (Doc Ref. 8.6)	Possible, about as likely as not	Low	Minor	Not significant
Park and ride facilities	Extreme weather events (such as storms).	Damage to construction equipment and localised flooding resulting in delays to the construction programme. This could result in delays to the commencement of park and ride services running from Darsham and Wickham Market, as a result either delaying construction on the main development site or forcing the construction workforce to find alternatives means of transport to the main development site.	Possible, about as likely as not	A high-level risk assessment of severe weather impacts on the construction of the park and ride facilities will be produced by the main contractor to inform mitigations. Any receptors and/or construction-related operations and activities potentially sensitive to severe weather events should be considered in the assessment. Climate change projections should be considered in the risk assessments. The contractors' EMS should consider all measures deemed necessary and appropriate to manage severe weather events. As appropriate, construction method statements should also consider severe weather events where risks have been identified.	**CoCP** (Doc Ref. 8.11)	Possible, about as likely as not	Low	Minor	Not significant
Two village bypass, Yoxford roundabout and other highways improvements	Extreme weather events (such as storms).	Damage to construction equipment and localised flooding resulting in delays to the construction programme. This could result in delays to the operation of the highways, as a result either delaying construction on the main development site or forcing the construction workforce to find alternatives means of transport to the main development site.	Possible, about as likely as not	A high-level risk assessment of severe weather impacts on the construction of the park and ride facilities will be produced by the main contractor to inform mitigations. Any receptors and/or construction-related operations and activities potentially sensitive to severe weather events should be considered in the assessment. Climate change projections should be considered in the risk assessments. The contractors' EMS should consider all measures deemed necessary and appropriate to manage severe weather events. As appropriate, construction method statements should also consider severe weather events where risks have been identified.	**CoCP** (Doc Ref. 8.11)	Possible, about as likely as not	Low	Minor	Not significant

Receptor	Climate Hazard	Climate Impact	Likelihood of Climate Hazard Occurring (very likely/ likely/ possible, about as likely as not, unlikely, very unlikely)	Embedded Mitigation Measures	How Mitigation Secured	Likelihood of Climate Impact Occurring (likely, possible, about as likely as not, unlikely)	Consequence (high, medium, low, very low)	Level of effect (major, moderate, minor, negligible)	Significance
Green rail route	Increase in maximum summer air temperature	Damage to rail line due to rail buckling resulting in a loss of service and delays in the delivery of freight to the main development site.	Possible, about as likely as not	A high-level risk assessment of severe weather impacts on the functional operation of the rail route will be conducted. Any receptors and/or rail line features (such as signalling functionality) potentially sensitive to severe weather events should be considered in the assessment. Climate change projections should be considered in the risk assessments. Existing track on the Sizewell branch line will be replaced to a modern standard.	Construction of rail route in line with UK design standards.	Unlikely	Medium	Minor	Not significant
	Increase in winter precipitation rate	Delays to services due to sections where localised flooding occurs.	Likely	A high-level risk assessment of severe weather impacts on the functional operation of the rail route will be conducted. Any receptors and/or rail line features (such as signalling functionality) potentially sensitive to severe weather events should be considered in the assessment. Climate change projections should be considered in the risk assessments. Existing track on the Sizewell branch line will be replaced to a modern standard. The Outline Drainage Strategy sets out measures for the attenuation of flood waters during construction of the associated development sites and the operation of temporary associated development sites via Sustainable Drainage Systems (SuDS), where required.	Construction of rail route in line with UK design standards. Outline Drainage Strategy **(Volume 2, Appendix 2A)**	Unlikely	Medium	Minor	Not significant
	Extreme weather events (such as storms)	Delays in the delivery of freight to the main development site due to cancelled services due to high winds and the interference of construction debris.	Possible, about as likely as not	A high-level risk assessment of severe weather impacts on the functional operation of the rail route will be conducted. Any receptors and/or rail line features (such as signalling functionality) potentially sensitive to severe weather events should be considered in the assessment. Climate change projections should be considered in the risk assessments. Existing track on the Sizewell branch line will be replaced to a modern standard.	Construction of rail route in line with UK design standards.	Possible, about as likely as not	Low	Minor	Not significant

Receptor	Climate Hazard	Climate Impact	Likelihood of Climate Hazard Occurring (very likely/ likely/ possible, about as likely as not, unlikely, very unlikely)	Embedded Mitigation Measures	How Mitigation Secured	Likelihood of Climate Impact Occurring (likely, possible, about as likely as not, unlikely)	Consequence (high, medium, low, very low)	Level of effect (major, moderate, minor, negligible)	Significance
Ground conditions	Decrease in annual precipitation rate	Increased risk of soil erosion from exposed soils during construction.	Possible, about as likely as not	Primary and tertiary mitigation will reduce the amount of soil exposure during construction, which will in turn reduce the potential for soil erosion. The CoCP includes measures such as minimising the area and duration of soil exposure and timely reinstatement of vegetation or hardstanding to reduce soil exposure/erosion and increase resilience to climate change.	**CoCP** (Doc Ref. 8.11)	Possible, about as likely as not	Very low	Negligible	Not significant
	Decrease in summer precipitation rate	Increased risk of soil erosion from exposed soils during construction.	Possible, about as likely as not	Primary and tertiary mitigation will reduce the amount of soil exposure during construction, which will in turn reduce the potential for soil erosion. The CoCP includes measures such as minimising the area and duration of soil exposure and timely reinstatement of vegetation or hardstanding to reduce soil exposure/erosion and increase resilience to climate change.	**CoCP** (Doc Ref. 8.11)	Possible, about as likely as not	Very low	Negligible	Not significant
	Increase in winter precipitation rate	Increase in risk of contamination leaching from soils from precipitation and being carried within soils overland with heavier precipitation events and flooding.	Likely	The CoCP will include measures to reduce risk of contamination migration, leaching etc. during construction. Methods to include making sure surface water run-off from the stockpiles, landscape bunds or working areas into adjacent surface watercourses or leaching into underlying groundwater is minimised, use of appropriate pollution incident control and safe storage of materials is completed, etc. The Outline Drainage Strategy sets out measures for the attenuation of flood waters during construction of the associated development sites and the operation of temporary associated development sites via SuDS, where required. The contractor's RAMS will include good practice for managing contaminated ground and appropriate risk mitigation is adopted.	**CoCP** (Doc Ref. 8.11) Outline Drainage Strategy **(Volume 2, Appendix 2A)**	Unlikely	Very low	Negligible	Not significant
Construction – main development site									
Hard coastal defence feature (HCDF)	Increase in relative sea level	Increase in risk of exposure of the HCDF due to erosion of the oft coastal defence feature (SCDF).	Likely	Recession of HCDF further landward than the current sea defence; making the HCDF a marine component with no initial exposure to waves; Recession on the HCDF's northern flank away from the Minsmere to Walberswick Heaths and Marshes Special Area of Conservation	Requirement of Nuclear Safety case. Main development site design.	Possible, about as likely as not	Low	Minor	Not Significant

Receptor	Climate Hazard	Climate Impact	Likelihood of Climate Hazard Occurring (very likely/ likely/ possible, about as likely as not, unlikely, very unlikely)	Embedded Mitigation Measures	How Mitigation Secured	Likelihood of Climate Impact Occurring (likely, possible, about as likely as not, unlikely)	Consequence (high, medium, low, very low)	Level of effect (major, moderate, minor, negligible)	Significance
	Changes in wave climatology. Altered sediment supply regime			(SAC) and the Minsmere to Walberswick Speical Protection Area (SPA) boundary. This will minimise the likelihood, and magnitude, of any impacts if the northern flank of the HCDF were exposed. Gently curved HCDF corners would minimise effects to longshore transport if the feature becomes exposed. A dissipative rock armour slope, initially buried beneath the SCDF to reduce wave reflections and turbulence if the HCDF were exposed. Dissipative rock armour would give the best chance of natural beach retention without intervention. *It should be noted that in 2016 case study on the Minsmere-Walberswick SPA was published as part of a series of Commissioned Reports highlighting how curent management might be adapted at site level to address future climate change impacts (Ref 1.1).*	Nuclear Site Licence				
	Increase in sea level	Increase in risk of flooding with higher sea levels.	Likely	Design of HCDF resilient to a 1 in 10,000 flood event – with added future resilience in terms of adding further height to the feature. SCDF – sedimentary, sacrificial, embedded mitigation features to protect the HCDF from exposure.	Requirement of Nuclear Safety case. Main development site design. Nuclear Site Licence.	Unlikely	High	Minor	Not significant
Soft coastal defence feature (SCDF)	Increase in relative sea level Changes in wave climatology Altered sediment supply regime	Edge position of SCDF and volume lost during storms. Changes in shoreline position and beach elevation/ volume of SCDF supply events.	Likely	The SCDF is providing relatively small quantities of beach grade sediment during storms (up to $1m^3$ per metre of beach during severe storms) over several decades, until feature becomes completely depleted. The episodic addition of sediment would provide extra material when needed, enhance stability on the shoreline and potentially reduce natural erosion rates in the northern part of the Sizewell C frontage and the southern barrier. SCDF presence increases the longevity of a natural beach to delay exposure of the HCDF.	Main development site design.	Possible, about as likely as not	Low	Minor	Not significant

Receptor	Climate Hazard	Climate Impact	Likelihood of Climate Hazard Occurring (very likely/ likely/ possible, about as likely as not, unlikely, very unlikely)	Embedded Mitigation Measures	How Mitigation Secured	Likelihood of Climate Impact Occurring (likely, possible, about as likely as not, unlikely)	Consequence (high, medium, low, very low)	Level of effect (major, moderate, minor, negligible)	Significance
Beach landing facility (BLF)	Increase in relative sea level Changes in wave climatology Altered sediment supply regime	Impacts to the beach. Impacts to inner longshore bar. Impacts to annual vegetation of drift lines.	Likely	Design features to make BLF highly transmissive to water and sediment flows: • Small number of marine piles, twelve, rising to a maximum of 20 with shoreline retreat; • Use of slender piles – jetty piles approx. 1m diameter and the fender and dolphin piles approx.1.5m diameter; and • Short length – approx. 36.5m seaward of mean high water springs (70m seaward of the HCDF). Use of shallow draft barges and tugboats only requires a small amount of dredging, which would mean a near zero change in longshore transport volumes.	Main development site design.	Possible, about as likely as not	Low	Minor	Not significant
Nearshore outfalls (combined drainage outfall and fish recovery and return (FRR) outfalls).	Increase relative sea level. Changes in wave climatology. Altered sediment supply regime.	Impacts to the beach. Impacts to inner longshore bar.	Likely	Subterranean tunnels connecting the outfalls to Sizewell C, their construction would have no impacts for coastal geomorphology. Tunnel excavation material would be extracted back to land and not disposed of in the marine environment. The small heads (3 x 3m) are unlikely to affect sand transport or bar morphology due to their size and location on the deeper seaward flank of the outer longshore bar (i.e. toward the fringes of the primary sand transport corridor). FRR outfall locations are aimed at minimising fish re-impingement into Sizewell B.	Main development site design.	Possible, about as likely as not	Low	Minor	Not significant
Offshore cooling water infrastructure.	Increase relative sea level. Changes in wave climatology. Altered sediment supply regime.	Scour seaward of Sizewell – Dunwich Bank.	Likely	Subterranean tunnels connecting the outfalls to Sizewell C, their construction would have no impacts for coastal geomorphology. Tunnel excavation material would be extracted back to land and not disposed of in the marine environment.	Main development site design.	Possible, about as likely as not	Low	Minor	Not significant

Receptor	Climate Hazard	Climate Impact	Likelihood of Climate Hazard Occurring (very likely/ likely/ possible, about as likely as not, unlikely, very unlikely)	Embedded Mitigation Measures	How Mitigation Secured	Likelihood of Climate Impact Occurring (likely, possible, about as likely as not, unlikely)	Consequence (high, medium, low, very low)	Level of effect (major, moderate, minor, negligible)	Significance
Existing and proposed planting	Changes in precipitation patterns.	Increase in risk of drought (i.e. water shortages)	Possible, about as likely as not	The operational landscape masterplan establishes the proposed landscape framework within the EDF Estate, which will be implemented on completion of the construction phase. Indicative species lists are set out in the **Design and Access Statement (DAS)** (Doc Ref. 8.1) and have been developed in collaboration with the EDF Estate Management team (Cedar Land Management) drawing on their extensive knowledge of site and environmental conditions. The **OLEMP** sets out the strategy for the establishment, maintenance, long-term management and monitoring of newly created landscapes/ habitats and existing features/ habitats. The **OLEMP** sets out principles of climate change adaptation and resilience. The **OLEMP** will be refined and developed through the detailed design stage (forming the project LEMP); and will become part of the restoration works information package alongside detailed planting schedules and specifications.	Operational landscape masterplan for DCO. Implementation of the **OLEMP** (Doc Ref. 8.2).	Possible, about as likely or not	Very low	Negligible	Not significant
Main development site platform	Increase in sea level	Increase in risk of flooding with higher sea levels	Likely	SCDF – sedimentary, sacrificial, embedded mitigation features to protect the HCDF from exposure. Measures embedded within design: • Platform designed to a level of 7.3m AOD; has been set above the still water level for 1 in 1,000-year return period events for the theoretical maximum lifetime of the Sizewell C Project with an allowance for sea level rise with climate change; and • The new coastal flood defence crest level would be 10.2m AOD with adaptive design to potentially raise the defence up to 14.2m AOD in the future to minimise risk of overtopping in the later stages of the Sizewell C Project's lifetime, if required. The crest height has been set above still water level for 1 in 10,000 year return period events over the lifetime of the Sizewell C Project with an allowance for sea level rise with climate change; and • In compliance with the conditions of the NSL, emergency arrangements will be established and adequate arrangements implemented for safe operation. A periodic and systematic	Requirement of Nuclear Safety case. Main development site design. Nuclear Site Licence	Unlikely	High	Minor	Not significant

Receptor	Climate Hazard	Climate Impact	Likelihood of Climate Hazard Occurring (very likely/ likely/ possible, about as likely as not, unlikely, very unlikely)	Embedded Mitigation Measures	How Mitigation Secured	Likelihood of Climate Impact Occurring (likely, possible, about as likely as not, unlikely)	Consequence (high, medium, low, very low)	Level of effect (major, moderate, minor, negligible)	Significance
				review and reassessment of the safety case would be undertaken.					
Coastal path (to form part of future England Coast Path)	Increase in sea level	Increased risk of coastal path not being accessible due to higher sea levels.	Likely	Measures described in **Volume 2, Chapter 20** including the design of the sea defences to minimise likelihood, implementation of a beach monitoring plan to monitor erosion, addition of sediment to provide extra material to the SCDF when needed. Availability of alternative access route for users along the top of the HCDF. Formalising coastal margins from seaward side to security fence of main development site to provide access.	Main development site design	Unlikely	Low	Minor	Not significant
		Increased risk of coastal path not being accessible due to higher sea levels.	Likely	The coast path runs along the coast on land outside the control of EDF, and it is not known whether the relevant authorities and land owners plan to maintain the coast and protect the coast path or allow it to be eroded. As set out in **Volume 2, Chapter 20** it is likely that the proposed Sizewell C sea defences would lead to a delay in the rate of change.	n/a	Unlikely	Low	Minor	Not significant
Ground conditions.	Increase in winter precipitation rate	Increase in risk of contamination leaching from soils from precipitation and being carried within soils overland with heavier precipitation events and flooding.	Likely	**CoCP Part B** details the mitigation measures to be adopted during earthworks and construction works in response to identified receptors, including controlled water receptors (surface water and grondwater. Operational RAMS will be developed when maintenance or other works are required that could increase risk of exposure.	**CoCP** (Doc Ref. 8.11)	Unlikely	Very low	Negligible	Not significant
	Increase in sea level	Increase in risk of contamination leaching from soils with higher sea level.	Likely			Unlikely	Very low	Negligible	Not significant

Table 2: Operation stage CCR assessment responses (2034-2094)

Receptor	Climate Hazard	Climate Impact	Likelihood of Climate Hazard Occurring (very likely/ likely/ possible, about as likely as not, unlikely, very unlikely)	Embedded Mitigation Measures	How Mitigation Secured	Likelihood of Climate Impact Occurring (likely, possible, about as likely as not, unlikely)	Consequence (high, medium, low, very low)	Level of effect (major, moderate, minor, negligible)	Significance
Operation – main development site									
Power station access road (linking the site of special scientific interest (SSSI) crossing with a new roundabout onto Abbey Road (B1122))	Increase in maximum summer air temperature	Potential damage to road surfacing due to prolonged exposure to high intensity temperatures, leading to road subsidence and possible temporary road closure until repairs are conducted. This could delay the delivery of construction materials and construction workers to the main development site.	Likely	In addition, the road will be surfaced to a specific standard to withstand the projected increase in maximum summer temperature. In the event that the main site entrance road has to be closed due to damage as as a result of prolonged exposure to high intensity temperatures, the secondary access road from Lover's Lane to LEEIE would be used to facilitate the delivery of materials and construction workers to the main development site.	Road designed in line with the Design Manual for Roads and Bridges (DMRB) standards for highways. Secured through DCO design.	Unlikely	Low	Minor	Not significant
	Increase in winter precipitation rate / extreme weather events (such as storms)	Potential flooding to the main site access road due to prolonged periods of high intensity precipitation resulting in temporary road closure. This could delay the delivery of materials and workers to the power station.	Likely	The access road design incorporates sufficient drainage and culverts to withstand projected increase in future rainfall. In the event that the main site entrance road has to be closed due to adverse weather conditions, the secondary access road from Lover's Lane to LEEIE)) would be used to facilitate the delivery of materials and workers to the power station.	Road designed in line with DMRB standards for highways. Secured through DCO design. Outline Drainage Strategy **(Volume 2, Appendix 2A)**	Unlikely.	Low	Minor	Not significant
Operation – associated development sites (permanent)									
Sizewell link road	Increase in maximum summer air temperature	Potential damage to road surfacing due to prolonged exposure to high intensity temperatures, leading to road subsidence and possible temporary road closure until repairs are conducted. This could delay the delivery of construction materials and construction workers to the main development site.	Likely	The Sizewell link road design will be surfaced to a specific standard to withstand the projected increase in maximum summer temperature.	Road designed in line with DMRB standards for highways. Secured through DCO design.	Unlikely	Low	Minor	Not significant
	Increase in winter precipitation rate / extreme	Potential flooding to the main site access road due to prolonged periods of high intensity precipitation	Likely	The Sizewell link road design incorporates sufficient drainage and culverts to withstand projected increase in future rainfall.	Road designed in line with DMRB standards for highways. Secured	Unlikely	Low	Minor	Not significant

	weather events (such as storms)	resulting in temporary road closure. This could delay the delivery of construction materials and construction workers to the main development site.		Numerous infiltration basins are also included adjacent to the road to provide flow control of stormwater runoff. **Sizewell Link Road Flood Risk Assesment** (Doc Ref. 5.6) details that new access road to be constructed in Flood Zone 1, which has less than 1 in 1,000 annual probability of river or sea flooding in any year (<0.1%). The existing access flood located in Flood Zone 3 and therefore at higher risk of flooding is being removed as part of the Sizewell C Project.	through DCO design. Outline Drainage Strategy **(Volume 2, Appendix 2A)**				
Two village bypass	Increase in maximum summer air temperature	Potential damage to road surfacing due to prolonged exposure to high intensity temperatures, leading to road subsidence and possible temporary road closure until repairs are conducted. This could delay the delivery of construction materials and construction workers to the main development site.	Likely	The Two Village bypass design will be surfaced to a specific standard to withstand the projected increase in maximum summer temperature.	Road designed in line with DMRB standards for highways. Secured through DCO design.	Unlikely	Low	Minor	Not significant
	Increase in winter precipitation rate / extreme weather events (such as storms)	Potential flooding to the main site access road due to prolonged periods of high intensity precipitation resulting in temporary road closure. This could delay the delivery of construction materials and construction workers to the main development site.	Likely	The Two Village bypass design incorporate sufficient drainage and culverts to withstand projected increase in future rainfall. Numerous infiltration basins are also included adjacent to the road to provide flow control of stormwater runoff. Final finished ground levels have been set to be above the fluvial flood levels during a 1 in 100-year plus 35% for climate change event as detailed within **Two Village Bypass Flood Risk Assesment** (Doc Ref. 5.5).	Road designed in line with DMRB standards for highways. Secured through DCO design. Outline Drainage Strategy **(Volume 2, Appendix 2A)**	Unlikely	Low	Minor	Not significant

Table 3: Potential climate hazards and likelihood of occurrence (UKCP18 projections)

Climate variable	Potential Hazard	Likelihood (2020-2039)	Likelihood (2050-2069)	Likelihood (2080-2099)
Mean annual air temperature anomaly at 1.5m (°C)	Increase in mean annual air temperature	Possible, about as likely as not	Likely	Very likely
Mean summer air temperature anomaly at 1.5m (°C)	Increase in mean summer air temperature	Possible, about as likely as not	Likely	Very likely
Mean winter air temperature anomaly at 1.5m (°C)	Increase in mean winter air temperature	Possible, about as likely as not	Likely	Very likely
Maximum summer air temperature anomaly at 1.5m (°C)	Increase in maximum summer air temperature	Possible, about as likely as not	Likely	Very likely
Minimum winter air temperature anomaly at 1.5m (°C)	Increase in minimum winter air temperatures	Possible, about as likely as not	Likely	Very likely
Annual precipitation rate anomaly (%)	Decrease in annual precipitation rate	Possible, about as likely as not	Likely	Very likely
Summer precipitation rate anomaly (%)	Decrease in summer precipitation rate	Possible, about as likely as not	Likely	Very Likely
Winter precipitation rate anomaly (%)	Increase in winter precipitation rate	Likely	Likely	Very likely
Annual specific humidity anomaly at 1.5m (%)	Increase in annual specific humidity	Likely	Likely	Very likely
Time-mean sea level anomaly (m)	Increase in sea level	Likely	Likely	Very Likely

References

1.1 Franks, S.E, Pearcce-Higgins, J.W, Ausden , M & Massimino, D. 2016. Increasing the Resilience of UK's Special Protection Areas to Climate Change – Case study: Minsmere-Walberswick. Natural England Commissioned Reports, Number 202a

VOLUME 2 APPENDIX 26B IN-COMBINATION CLIMATE CHANGE IMPACT (ICCI) ASSESSMENT RESPONSE TABLE

APPENDIX 26B IN-COMBINATION CLIMATE CHANGE IMPACT (ICCI) ASSESSMENT RESPONSE TABLE

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Plates

None provided.

Figures

None provided.

Appendix 26B: In-Combination Climate Change Impact Assessment Response Table

The in-combination climate change impact (ICCI) assessment has been informed by engagement with environmental disciplines. The assessment has been prepared by following the Climate Change Assessment Methodology (**Volume 1, Appendix 6V)**, reporting the construction (**Table 1.1**) and operation (**Table 1.2**) stages.

To support the determination of the likelihood of the climate hazard and impact occurring in respect of the identified receptor, **Table 1.3** presents the potential climate hazards and likelihood of occurrence taken from the United Kingdom Climate Change Projections 2018 (UKCP18).

Note: the tables make reference to the Sizewell C Project; encompassing the main development site and associated development sites where potential ICCI's relates to the site as whole. References are made to the main development site and associated development sites separately where appropriate.

Table 1.1: Construction stage ICCI assessment responses (2022-2034)

Environmental Discipline	Climate Hazard	Description of Potential Impact ICCI Identified	Likelihood of Climate Hazard Occurring (very likely/ likely/ possible, about as likely as not, unlikely, very unlikely)	Likelihood of Climate Impact Occurring (Likely, Possible, About As Likely As Not, Unlikely)	Overall Likelihood of the ICCI (High, Medium, Low)	Embedded Mitigation Measures	Consequence (High, Medium, Low, Very Low)	Effect Classification (Major, Moderate, Minor, Negligible)	Significance
Landscape and visual	Increased air temperature, increased incidence of heatwaves	Reduced success in the establishment of new planting and longevity of existing established trees and woodlands within the EDF Estate, which contribute to visual screening, landscape character and the natural beauty/ special qualities of the Suffolk Coast and Heaths Area of Outstanding Natural Beauty (AONB) and special landscape area.	Possible, about as likely as not	Unlikely	Low	Consideration will be given to the potential effects of climate change on the selection of species for proposed planting and the management of new and existing planting, as set out in the **Outline Landscape and Ecology Management Plan (OLEMP)** (Doc Ref. 8.2).	Very low	Negligible	Not significant
Landscape and visual	Changing precipitation patterns, water shortage, possible drought		Possible, about as likely as not	Unlikely	Low		Very low	Negligible	Not significant
Geology and land quality	Decrease in annual precipitation rate	Increased risk of soil erosion from exposed soils during construction	Possible, about as likely as not	Possible, about as likely as not	Medium	Primary and tertiary mitigation will reduce the amount of soil exposure during construction, which will in turn reduce the potential for soil erosion. The **Code of Construction Practice (CoCP)** (Doc Ref. 8.11) includes measures such as minimising the area and duration of soil exposure and timely reinstatement of vegetation or hardstanding to reduce soil exposure/ erosion.	Very low	Negligible	Not significant
Geology and land quality	Decrease in summer precipitation rate		Possible, about as likely as not	Possible, about as likely as not	Medium	Primary and tertiary mitigation will reduce the amount of soil exposure during construction, which will in turn reduce the potential for soil erosion. The **CoCP** (Doc Ref. 8.11) includes measures such as minimising the area and duration of soil exposure and timely reinstatement of vegetation or hardstanding to reduce soil exposure/erosion and increase resilience to climate change.	Very low	Negligible	Not significant
Soils and agriculture.	Increase in mean temperature – annual and seasonal shifts	Increased carbon loss from soils: soils will be disturbed, potentially resulting in more soil organic carbon being available for more rapid decomposition. As temperatures rise decomposition rates have the potential to increase causing an increase in carbon losses from soils	Possible, about as likely as not	Possible, about as likely as not	Medium	The **Outline Soil Management Plan** as provided in **Volume 2, Appendix 17C,** states soils will be restored to agricultural use at the end of the construction phase. Where land is to be returned to less intense agricultural operations (for example on the EDF Energy Estate) this results in the potential for the replaced soils to start to accumulate soil organic carbon to a greater level than that under the pre-construction land use.	Low	Minor	Not significant

Environmental Discipline	Climate Hazard	Description of Potential Impact ICCI Identified	Likelihood of Climate Hazard Occurring (very likely/ likely/ possible, about as likely as not, unlikely, very unlikely)	Likelihood of Climate Impact Occurring (Likely, Possible, About As Likely As Not, Unlikely)	Overall Likelihood of the ICCI (High, Medium, Low)	Embedded Mitigation Measures	Consequence (High, Medium, Low, Very Low)	Effect Classification (Major, Moderate, Minor, Negligible)	Significance
		and a reduction in soil organic carbon (also has consequences for soil structural stability linked to potential for increased erosion risk). Impact will be greater for wetter and currently less disturbed soils (e.g. risk of greater carbon losses from wet soils under pasture than from sandy soils under arable as latter are already drier and regularly disturbed and so will already have rapid carbon cycling and lower soil organic carbon contents).							
Soils and agriculture	Increase in rainfall intensity	Increased risk of soil erosion from working areas/ stockpiles.	Likely	Possible, about as likely as not	Medium	Best practice soil handling and stockpile management, as well as best practice general site management (including cessation of earthworks operations under wet conditions) will limit risk of soil erosion.	Low	Minor	Not significant
Soils and agriculture	Changes to temperature and rainfall regimes (drought)	Reduced yields over time in combination with reduction in land area under production, predominantly due to increased periods of drought (including where total rainfall amounts are not low but rainfall occurs in short/ intense storms and thus a greater proportion of total land run-off directly or cannot be stored in the soils). This has been identified as a construction phase ICCI; limited agricultural land is required on a permanent basis with the majority being returned to production at the end of the construction phase.	Possible, about as likely as not	Unlikely	Low	Impacts on farm businesses would be reduced as part of the land acquisition process, including further engagement with land owners regarding the timing of acquisition and access to the necessary land. As this relates to the construction phase only it is considered the ICCI is only possible to likely and with the secondary mitigation outlined the effect will be not significant.	Low	Negligible	Not significant

Table 1.2: Operation stage ICCI assessment responses (2034-2094)

Environmental Discipline	Climate Hazard	Description of Potential Impact ICCI Identified	Likelihood of Climate Hazard Occurring (very likely/ likely/ possible, about as likely as not, unlikely, very unlikely)	Likelihood of Climate Impact Occurring (Likely, Possible, About As Likely As Not, Unlikely).	Overall Likelihood of the ICCI (High, Medium, low)	Embedded Mitigation Measures	Consequence (High, Medium, Low, Very Low)	Effect Classification (Major, Moderate, Minor, Negligible)	Significance
Landscape and visual	Increase air temperature, increased incidence of heatwaves	Reduced success in the establishment of new planting, including within the associated development sites and longevity of existing established trees and woodlands, which contribute to visual screening, landscape character and the natural beauty/special qualities of the Suffolk Coast and Heaths AONB and special landscape area.	Very likely	Possible, about as likely as not	Medium	Consideration will be given to the potential effects of climate change on the selection of species for proposed planting and the management of new and existing planting, as set out in the **OLEMP** (Doc Ref. 8.2).	Very low	Negligible	Not significant
Landscape and visual	Changing precipitation patterns, water shortage, possible drought		Very likely	Possible, about as likely as not	Medium		Very low	Negligible	Not significant
Amenity and recreation	Increased relative sea level Changes in wave climatology Altered sediment supply regime	Erosion of the coast path comprising Public Rights of Way (PRoW) E-363/021/0, the Suffolk Coast Path, Sandlings Walk and the future England Coast Path within the Sizewell C Project site.	Likely	Unlikely	Medium	Measures described in **Volume 2 Chapter 20** including design of the sea defences to minimise likelihood of coastal retreat, implementation of a beach monitoring plan to monitor erosion, addition of sediment to provide extra material to the soft coastal defence feature (SCDF) when needed. Provision of alternative path on higher ground on the hard coastal defence feature (HCDF) should the coast path be eroded, ensuring a coast path is always present. The Sizewell C Project reduces likelihood compared to the existing situation as the existing coast path is at a lower elevation than route of the proposed coast path.	Low	Minor	Not significant
Amenity and recreation	Increased relative sea level Changes in wave climatology Altered sediment supply regime	Erosion of the coast path (to north and south) outside of the Sizewell C Project site.	Likely	Possible, about as likely as not	Medium	The coast path runs along the coast on land outside the control of SZC Co., and it is not known whether the relevant authorities and land owners plan to maintain the coast and protect the path or allow it to be eroded. To mitigate the impact the presence of the proposed sea defences including the HCDF and SCDF as described in **Volume 2, Chapter 20** would lead to a delay in the rate of change.	Low	Minor	Not significant
Soils and agriculture	Increase in rainfall intensity	As land is restored and returned to agricultural use or habitat creation there is the potential for fertilisers or other soil amendments (such as manure) to be added to restore soils in a suitable condition for their proposed end use. With increased rainfall intensity there is potential for these materials to be washed off into watercourses resulting in water quality issues.	Very likely	Possible, about as likely as not	Medium	The **Outline Soil Management Plan** as seen in **Volume 2, Appendix 17C,** sets out how soils should be restored, including the measures to be employed to apply soil amendments and to prevent them washing off (for example mixing the materials into the topsoil rather than as a surface addition).	Low	Minor	Not significant

Environmental Discipline	Climate Hazard	Description of Potential Impact ICCI Identified	Likelihood of Climate Hazard Occurring (very likely/ likely/ possible, about as likely as not, unlikely, very unlikely)	Likelihood of Climate Impact Occurring (Likely, Possible, About As Likely As Not, Unlikely).	Overall Likelihood of the ICCI (High, Medium, low)	Embedded Mitigation Measures	Consequence (High, Medium, Low, Very Low)	Effect Classification (Major, Moderate, Minor, Negligible)	Significance
Geology and land quality.	Increase in winter precipitation rate	Increase in risk of contamination leaching from soils from precipitation and being carried within soils overland with heavier precipitation events and flooding	Very likely	Likely	High	Effects of the Sizewell C Project on controlled waters (groundwater and surface water) due to contamination are considered to be negligible to minor adverse. Considering climate change and contamination impacts in combination are unlikely to be significantly different given the contamination profile of the site.	Very low	Minor	Not significant
Groundwater and surface water	Increase in mean summer air temperature	Increased evapotranspiration leading to lower water table unable to support groundwater dependent ecosystems	Very likely	Possible, about as likely as not	Medium	As part of the Sizewell C Project, realignment of Sizewell drain includes installation of a control structure allowing the rate of water leaving the Sizewell Marshes to be altered. While this is principally to mitigate potential propagation of drawdown during dewatering it will also allow some aspects of climate change to be offset. The timescales over which associated developments are operational mean climate change does not exert a significant influence on the water environment.	Very low	Negligible	Not significant
Groundwater and surface water	Decrease in annual precipitation rate	Change in local water dependent ecosystems due to reduced recharge to groundwater and flow/ levels in surface water channels	Very likely	Possible, about as likely as not	Medium	As part of the Sizewell C Project, realignment of Sizewell drain includes installation of a control structure allowing the rate of water leaving the Sizewell Marshes to be altered. While this is principally to mitigate potential propagation of drawdown during dewatering it will also allow some aspects of climate change to be offset. The timescales over which associated developments are operational mean climate change does not exert a significant influence on the water environment.	Very low	Negligible	Not significant
Groundwater and surface water	Decrease in summer precipitation rate	Change in local water dependent ecosystems due to reduced recharge to groundwater and flow/ levels in surface water channels	Very likely	Possible, about as likely as not	Medium	As part of the Sizewell C Project the realignment of Sizewell drain includes installation of a control structure allowing the rate of water leaving the Sizewell Marshes to be altered. While this is principally to mitigate potential propagation of drawdown during dewatering it will also allow some aspects of climate change to be offset. The timescales over which associated developments are operational mean climate change does not exert a significant influence on the water environment.	Very low	Negligible	Not significant
Groundwater and surface water	Increase in winter precipitation rate	Increased risk of surface inundation, elevated groundwater levels, or increased flow through currently low energy surface water channels disrupting ecological receptors	Very likely	Likely	High	As part of the Sizewell C Project the realignment of Sizewell drain includes the installation of a control structure allowing the rate of water leaving the Sizewell Marshes to be altered. While this is principally to mitigate potential propagation of drawdown during dewatering it will also allow some aspects of climate change to be offset. The timescales over which associated developments	Very low	Minor	Not significant

Environmental Discipline	Climate Hazard	Description of Potential Impact ICCI Identified	Likelihood of Climate Hazard Occurring (very likely/ likely/ possible, about as likely as not, unlikely, very unlikely)	Likelihood of Climate Impact Occurring (Likely, Possible, About As Likely As Not, Unlikely).	Overall Likelihood of the ICCI (High, Medium, low)	Embedded Mitigation Measures	Consequence (High, Medium, Low, Very Low)	Effect Classification (Major, Moderate, Minor, Negligible)	Significance
						are operational mean climate change does not exert a significant influence on the water environment.			
Groundwater and surface water	Increase in sea level	Increased risk of surface inundation or raised groundwater levels disrupting ecological receptors	Very likely	Likely	High	The associated developments are sufficiently distant from the coast, and the timescales over which they are operational mean that climate change does not exert a significant influence on the water environment.	Very low	Minor	Not significant
Terrestrial ecology	Increased number of hot days; increase of droughts	Reduced success of establishment of new planting as part of the restoration of temporary associated development sites due to hotter drier conditions	Very likely	Possible, about as likely as not	Medium	Resilience of landscaping to climate change provided by the habitat creation requirements is detailed within the **ES** to make sure that climate change is taken into consideration in the choice of species. The timing of planting will be advised to align with spring and/or late autumn were rainfall would naturally irrigate. Adequate monitoring of post-planting will be required to ensure establishment. The **OLEMP** (Doc Ref. 8.2) documents the existing and new habitats and their prescribed management. The **OLEMP** will be subsequently evolved with detailed monitoring to target communities secured by the Development Consent Order (DCO).	Low	Minor	Not significant
Terrestrial ecology	Increased number of hot days; increase of droughts	Reduced success of habitat creation as part of long-term restoration of associated development sites	Very likely	Possible, about as likely as not	Medium	Creation of Sandlings dry grassland and heath is likely to have some resilience to dry summer conditions. Some areas will be encouraged to self-seed to allow a natural resilience. Resilience of long-term restoration habitats will be outlined in the **OLEMP** together with monitoring and management requirements.	Low	Minor	Not significant
Terrestrial ecology	Decrease in annual precipitation rate	Reduced success of habitat creation compensating for loss of site of special scientific interest (SSSI) wetland habitat	Very likely	Possible, about as likely as not	Medium	Reedbed and ditch habitat creation at Aldhurst Farm has used groundwater as the water supply and a control structure allows control of water levels reducing loss of water from the basins. In addition, the **Mitigation Strategy** for fen meadow will outline the water requirements for the off-site fen meadow restoration making sure it takes account of climate change proposals. The **OLEMP** documents the existing and new habitats and their prescribed management. The **OLEMP** will be subsequently evolved with detailed monitoring to target communities secured by the DCO.	Low	Minor	Not significant
Terrestrial ecology	Decrease in annual precipitation rate	Retailed habitat within Sizewell Marshes SSSI may get drier	Very likely	Possible, about as likely as not	Medium	The control structure on realigned Sizewell drain allows control of water levels within the Sizewell Marshes SSSI, so no adverse effects due to water levels would occur on existing habitats (e.g. water vole habitats). A commitment has been made to update the **Water Level Management Plan** alongside the Internal	Low	Minor	Not significant

Environmental Discipline	Climate Hazard	Description of Potential Impact ICCI Identified	Likelihood of Climate Hazard Occurring (very likely/ likely/ possible, about as likely as not, unlikely, very unlikely)	Likelihood of Climate Impact Occurring (Likely, Possible, About As Likely As Not, Unlikely).	Overall Likelihood of the ICCI (High, Medium, low)	Embedded Mitigation Measures	Consequence (High, Medium, Low, Very Low)	Effect Classification (Major, Moderate, Minor, Negligible)	Significance
						Drainage Board, the Environment Agency, Natural England and Suffolk Wildlife Trust and other stakeholders, for the management of water levels within the Sizewell Marshes SSSI. **Volume 2, Chapter 19** provides further information.			
Terrestrial ecology	Decrease in annual precipitation rate	Reduced water level in ditches used by water vole in Sizewell Marshes SSSI and in Aldhurst Farm basin used as a receptor site	Very likely	Possible, about as likely as not	Medium	The control structure on realigned Sizewell drain allows control of water levels within the Sizewell Marshes SSSI, so no adverse effects due to water levels would occur on existing habitats (e.g. water vole habitats). A commitment has been made to update the **Water Level Management Plan** alongside the Internal Drainage Board, the Environment Agency, Natural England and Suffolk Wildlife Trust and other stakeholders, for the management of water levels within the Sizewell Marshes SSSI. **Volume 2, Chapter 19** provides further information.	Low	Minor	Not significant
Terrestrial ecology	Increased number of hot days; increase of droughts	Reduced success of habitat creation for foraging marsh harrier	Very likely	Possible, about as likely as not	Medium	Monitoring of on-site habitat creation to confirm whether the required level of marsh harrier flight activity is occurring. If not, additional off-site habitat will be brought online to increase the extent of the foraging area available. This is outlined in the **Marsh Harrier Improvement Strategy.**	Low	Minor	Not significant
Terrestrial ecology	Increased number of hot days; increase of droughts	Reduced water availability for abstraction	Very likely	Possible, about as likely as not	Medium	The conversion from agriculture to permanent grasslands and other wetland habitats will reduce the amount of abstraction currently licenced for agricultural management, thus increasing the overall groundwater levels. This benefit may offset some of the climate related drought issues. The **OLEMP** documents the existing and new habitats and their prescribed management.	Low	Minor	Not significant
Terrestrial ecology	Increased number of hot days; increase of droughts	Reduced retention of water in artificial ponds used by Natterjack toads	Very likely	Possible, about as likely as not	Medium	The **Natterjack Mitigation Strategy** and long-term **Management Plan** will make sure a management prescription to maintain water levels in artificial ponds by bowser if required. Ponds will be lined during creation to retain maximum levels of water.	Low	Minor	Not significant
Terrestrial ecology	Increase in sea level	Erosion of vegetated sand and shingle (Suffolk Shingle beaches county wildlife site) due to coastal squeeze and inability for habitats to roll back inland	Very likely	Possible, about as likely as not	Medium	Vegetated sand and shingle would be lost temporarily whilst the HCDF is constructed and then substrate would be reinstated over the top, covering it and vegetation allowed to re-establish. Sea level rise would eventually uncover the hard sea defence eroding the vegetated sand and shingle habitat. The impact is mainly due to the presence of the HCDF	Low	Minor	Not significant

Environmental Discipline	Climate Hazard	Description of Potential Impact ICCI Identified	Likelihood of Climate Hazard Occurring (very likely/ likely/ possible, about as likely as not, unlikely, very unlikely)	Likelihood of Climate Impact Occurring (Likely, Possible, About As Likely As Not, Unlikely).	Overall Likelihood of the ICCI (High, Medium, low)	Embedded Mitigation Measures	Consequence (High, Medium, Low, Very Low)	Effect Classification (Major, Moderate, Minor, Negligible)	Significance
						preventing roll back and this has been identified as a residual impact in the **ES**.			
Terrestrial ecology	Increase in plant diseases and weakening of plants	As climate change advances, the conditions for non-native plant pathogens and predators may improve and the changing climate conditions may also weaken the defences of certain plants	Very likely	Possible, about as likely as not	Medium	Regular scanning of new diseases, selection of the most resilient species and local sourcing from disease free stock. The **OLEMP** documents the existing and new habitats and their prescribed management. The **OLEMP** will be subsequently evolved with detailed monitoring to target communities secured by the DCO.	Low	Minor	Not significant
Terrestrial ecology	Invasive non-native species	Hotter weather may provide better conditions for non-native invasive species leading to greater spread and growth	Very likely	Possible, about as likely as not	Medium	The **OLEMP** includes management and monitoring for non-native invasive species. Should invasive species be identified, and invasive weed specialist will develop an invasive species management plan.	Low	Minor	Not significant
Terrestrial ecology	Increase in volume of water in short periods	Rainfall is likely to be more extreme, larger volumes compressed into shorter times with the potential to flood	Very likely	Possible, about as likely as not	Medium	Maintain permeability of land, planting of trees that can attenuate up to 60 times more than grassland alone. Monitoring of the habitat via the **OLEMP** and adaptation where required.	Low	Minor	Not significant
Terrestrial ecology	General climate fluctuation	Species in general will experience differing conditions to those they have evolved to, this may result in a reduction in suitability of the landscape	Very likely	Possible, about as likely as not	Medium	Creation of a heterogeneous, permeable landscape with an evolving management plan will support continual adaptation. The **OLEMP** documents the existing and new habitats and their prescribed management. The **OLEMP** will be subsequently evolved with detailed monitoring to target communities secured by the DCO.	Low	Minor	Not significant
Marine ecology	Increased sea water temperature	Higher absolute entrainment temperatures and upper incipient lethal temperature exceeded for longer periods of the year.	Very likely	Likely	High	Higher entrainment mortality rates would likely be observed under future climate change. However, thermal lethality is highly species specific and adaptation to future climate conditions and potential species distribution shifts may influence the ability to tolerate thermal stress (British Energy Estuarine & Marine Studies (BEEMS) Scientific Advisory Report, 2011) (Ref 1.1). Predictions of entrainment losses indicate very minor/ negligible effects at the population level for invertebrate zooplankton and ichthyoplankton. Note: likelihood of climate impact occurring based on the United Kingdom Climate Change Projections 2009 (UKCP09) (Ref 1.2) data and whilst the trajectory is very likely there is uncertainty in the magnitude of the predicted change.	Very low	Minor	Not significant
Marine ecology	Increased sea water temperature	Increases in ambient water temperature would result in higher absolute temperatures within the	Very likely	Likely	High	Results indicate that future climate change is not predicted to significantly increase the absolute areas in exceedance of 28ºC, which remain under 1ha for all	Very low	Minor	Not significant

Environmental Discipline	Climate Hazard	Description of Potential Impact ICCI Identified	Likelihood of Climate Hazard Occurring (very likely/ likely/ possible, about as likely as not, unlikely, very unlikely)	Likelihood of Climate Impact Occurring (Likely, Possible, About As Likely As Not, Unlikely).	Overall Likelihood of the ICCI (High, Medium, low)	Embedded Mitigation Measures	Consequence (High, Medium, Low, Very Low)	Effect Classification (Major, Moderate, Minor, Negligible)	Significance
		thermal field of the cooling water discharge.				scenarios tested. Following the decommissioning of Sizewell B, 28ºC as an absolute temperature is not predicted to be exceeded (as a 98th percentile) even under the extreme climate case of the Sizewell C Project operating in 2110. In 2085, towards the end of the likely operational lifecycle of the Sizewell C Project, seabed area in exceedance of 23ºC is predicted to occur over just 0.22ha, whereas surface exceedance occurs over an area of 69ha (98th percentile). The total area of the thermal plume above 23ºC in 2085 is therefore smaller and further offshore than the contemporary predictions for the two power stations operating together. Whilst climate change would act in-combination with the Sizewell C Project to increase areas of exceedance, receptors exposed would be acclimated to a modified thermal baseline. Furthermore, changes in species composition may have occurred independently of the Sizewell C Project. For species exposed to the thermal plume, effects would be similar to those predicted for the current baseline and acute effects would be restricted to small areas for the most sensitive species. Note: 28ºC used as a 98th percentile represents the threshold for the contemporary Water Framework Directive (WFD) standard for 'poor' status and the recommended threshold that should not be exceeded in a Special Protection Area (SPA). 23ºC as a 98th percentile represents the threshold for the contemporary WFD standard for 'moderate' status. It should be noted that applying contemporary standards to future climate scenarios ignores regulatory responses to climate change and should be considered as comparative only.			
Marine ecology	Increased sea water temperature	The seasonal chlorination strategy for the Sizewell C Project involves chlorination during the period of the year when water temperatures exceed 10ºC. Increases in temperature may lead to small increases in the duration of chlorination	Very likely	Likely	High	In 2030, water temperatures at the Sizewell C intakes are predicted to exceed 10ºC for 219 days per annum, from the beginning of May until the start of December. Towards the end of the operational lifecycle of the Sizewell C Project in the year 2085, climate change is predicted to result in temperatures exceeding 10ºC from late April until late December, for a total of 244 days per annum (BEEMS, 2019) (Ref 1.3). Whilst the duration of the growing season is likely to	Very low	Minor	Not significant

Environmental Discipline	Climate Hazard	Description of Potential Impact ICCI Identified	Likelihood of Climate Hazard Occurring (very likely/ likely/ possible, about as likely as not, unlikely, very unlikely)	Likelihood of Climate Impact Occurring (Likely, Possible, About As Likely As Not, Unlikely).	Overall Likelihood of the ICCI (High, Medium, low)	Embedded Mitigation Measures	Consequence (High, Medium, Low, Very Low)	Effect Classification (Major, Moderate, Minor, Negligible)	Significance
						extend in the future, temperature driven changes in phenology would be moderated by day length and solar elevation thus restricting the total growth period. In the coastal waters at Sizewell, high levels of turbidity in the winter and early spring limit biological production. When photosynthesis is light limited, increases in temperature are not predicted to enhance productivity (Underwood and Kromkamp, 1999) (Ref 1.4). Therefore, increases in the duration of annual chlorination is likely in the order of weeks at most and would occur at the shoulders of the growth period when biomass is lower. Therefore, a marginally longer chlorination period is predicted to have a minimal effect on entrainment and on receptors in the receiving waters.			

Table 1.3: Potential climate hazards and likelihood of occurrence (UKCP18 projections)

Climate variable	Potential Hazard	Likelihood (2020-2039)	Likelihood (2050-2069)	Likelihood (2080-2099)
Mean annual air temperature anomaly at 1.5m (°C)	Increase in mean annual air temperature	Possible, about as likely as not	Likely	Very likely
Mean summer air temperature anomaly at 1.5m (°C)	Increase in mean summer air temperature	Possible, about as likely as not	Likely	Very likely
Mean winter air temperature anomaly at 1.5m (°C)	Increase in mean winter air temperature	Possible, about as likely as not	Likely	Very likely
Maximum summer air temperature anomaly at 1.5m (°C)	Increase in maximum summer air temperature	Possible, about as likely as not	Likely	Very likely
Minimum winter air temperature anomaly at 1.5m (°C)	Increase in minimum winter air temperatures	Possible, about as likely as not	Likely	Very likely
Annual precipitation rate anomaly (%)	Decrease in annual precipitation rate	Possible, about as likely as not	Likely	Very likely
Summer precipitation rate anomaly (%)	Decrease in summer precipitation rate	Possible, about as likely as not	Likely	Very Likely
Winter precipitation rate anomaly (%)	Increase in winter precipitation rate	Likely	Likely	Very likely
Annual specific humidity anomaly at 1.5m (%)	Increase in annual specific humidity	Likely	Likely	Very likely
Time-mean sea level anomaly (m)	Increase in sea level	Likely	Likely	Very Likely

References

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1.4 Underwood, G. J. C., and Kromkamp, J. 1999. Primary Production by Phytoplankton and Microphytobenthos in Estuaries. Advances in Ecological Research, 29: 93–139.