

Lower Thames Crossing

6.3 Environmental Statement Appendices

Appendix 15.1 - Climate Legislation and Policy

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Lower Thames Crossing

Appendix 15.1 Climate Legislation and Policy

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1 Appendix 15.1 Climate Legislation and Policy

1.1 Legislation and Policy

1.1.1 The climate assessment has been undertaken in accordance with relevant legislation, together with national, regional and local plans and policies.

Legislation

1.1.2 Relevant legislation that has been considered in the environmental assessment is presented in Table 1.1. The Planning Statement (Application Document 7.2) provides an assessment of the Project’s strategic alignment and conformity with the National Policy Statement for National Networks (NPSNN).

1.1.3 A number of the sources of legislation referred to throughout the ES, including this chapter, derive from the law of the European Union (EU). It is noted that the impact of European legislation may need to be revised following the UK’s exit from the EU but much EU-derived domestic legislation continues to have effect in domestic law. Relevant legislation is included in Table 1.1.

Table 1.1 Legislative requirements

Scale	Description of legislation
International	<p>United Nations Framework Convention on Climate Change (UNFCCC) (1992)</p> <p>The UNFCCC is an international environmental treaty adopted on 9 May 1992. The UNFCCC’s objective is to achieve ‘<i>stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system [...] within a time frame sufficient to allow ecosystems to adapt naturally [...] and to enable economic development to proceed in a sustainable manner</i>’.</p> <p>Decisions are taken by the Conference of the Parties (COP), that (usually) meets annually.</p> <p>The UNFCCC was ratified by the UK in December 1993.</p>
	<p>United Nations 2030 Agenda for Sustainable Development (2015)</p> <p>The UN 2030 Agenda for Sustainable Development, adopted by the United Nations General Assembly on 25 September 2015, provides a shared blueprint for peace and prosperity for people and the planet. It includes 17 Sustainable Development Goals (SDG), which are an urgent call for action by all countries in a global partnership. Goal 13 covers climate change:</p> <p><i>‘Take urgent action to combat climate change and its impacts*’.</i></p> <p><i>* Acknowledging that the United Nations Framework Convention on Climate Change is the primary international, intergovernmental forum for negotiating the global response to climate change.</i></p> <p>The 2030 Agenda was agreed by 193 UN Member States, including the UK.</p>
	<p>The Paris Agreement (2015)</p> <p>In December 2015, a global climate agreement – the Paris Agreement – was adopted at the 21st Conference of the Parties. A central aim of the Paris Agreement is to strengthen the global response to climate change by limiting the global temperature increase this century to below 2°C above pre-industrial levels, and to pursue efforts to limit the temperature increase even further to 1.5°C. To achieve this aim, the Paris Agreement additionally sets a target for</p>

Scale	Description of legislation
	<p>net zero global carbon emissions in the second half of this century. The Paris Agreement was ratified and entered into force in November 2016.</p> <p>The Paris Agreement requests each country to outline and communicate their post-2020 climate actions, known as their nationally determined contribution (NDC).</p> <p>United Kingdom of Great Britain and Northern Ireland’s Nationally Determined Contribution (2020 and updated in 2022)</p> <p>Communication from the UK of its Nationally Determined Contribution (NDC) to the United Nations Framework Convention on Climate Change (UNFCCC), as agreed under the Paris Agreement.</p> <p>The UK’s NDC commits to an economy-wide net reduction in greenhouse gas (GHG) emissions of at least 68% by 2030 compared to 1990 / base year levels (being 812 MtCO_{2e}¹), i.e., around 260 MtCO_{2e}.</p> <p>¹ From ‘Annual Statement of Emissions for 2019’ (Department for Business, Energy and Industrial Strategy (BEIS), 2021)</p> <p>COP26 Glasgow Climate Pact (2021)</p> <p>The United Nations Conference of the Parties (COP26), held from 31 October – 13 November 2021 in Glasgow, resulted in the Glasgow Climate Pact (GCP) in which the participating countries agreed that additional efforts are required to prevent temperatures increasing above the 2-degree rise established in the Paris Agreement. Parties agreed to revisit their NDCs and consider more stringent emission targets.</p> <p>GCP also resulted in a framework (rulebook) for transparent reporting of climate actions.</p>
National	<p>Environment Act 2021</p> <p>The Environment Act has two main functions:</p> <ol style="list-style-type: none"> 1. To give a legal framework for environmental governance in the UK. 2. To bring in measures for improvement of the environment in relation to waste, resource efficiency, air quality, water, nature and biodiversity, and conservation. <p>The majority of the Act does not make any immediate changes for organisations other than regulators.</p> <p>The Environment Act does not currently present specific legislative requirements relevant to Climate. Further requirements may be implemented through secondary legislation to be made under this Act in the future.</p> <p>Planning Act 2008</p> <p>The Planning Act 2008 introduced a new system of development consent for Nationally Significant Infrastructure Projects. The system included National Policy Statements which provided the framework within which decisions are to be made.</p> <p>Section 104(3) provides that the Secretary of State must, ‘<i>decide the application in accordance with any relevant national policy statement, except to the extent that...</i>’:</p> <ul style="list-style-type: none"> • it would lead to the United Kingdom being in breach of any of its international obligations • it would lead to the Secretary of State being in breach of any duty imposed on them by or under any enactment. <p>Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (EIA Regulations)</p>

Scale	Description of legislation
	<p>These regulations transposed the requirements of the EIA Directive 2014/52/EU into UK law. This introduced climate as a topic for environmental assessment, including a description of the likely significant effects resulting from the impact of the Project on climate (for example the nature and magnitude of greenhouse gas (GHG) emissions) and the vulnerability of the Project to climate change.</p> <p>The Climate Change Act (CCA) 2008 / Climate Change Act (2050 Target Amendment) Order 2019</p> <p>The Climate Change Act (2008) sets a framework for the UK to reduce GHG emissions and build capacity to adapt and strengthen resilience to climate risks. The Act originally committed the UK to cut its emissions by at least 80% below the 1990 baseline level by 2050. On 27 June 2019, this target was amended, committing the UK to a legally binding target of net zero emissions by 2050, set on a whole-economy basis.</p> <p>As per section 89, the CCA applies to GHG emissions from sources or other matters occurring in, above or under the UK (including coastal waters and the UK sector of the continental shelf).</p> <p>The Act also established the Climate Change Committee (CCC) in part 2 and carbon trading schemes in part 3.</p> <p>The CCC is the independent statutory body that advises the UK Government and Devolved Administrations on climate change mitigation and adaptation, including emissions reduction targets. When providing advice, the CCC considers the UK's international obligations under the Paris Agreement and the UNFCCC. Pursuant to Section 36(1) and 59(1) of the CCA, the CCC monitors and reports to Parliament on an annual basis the progress that has been made towards meeting the carbon budgets and further progress that is needed to meet the budgets.</p> <p>The CCA introduced carbon budgets for the UK Government, which cap emissions over successive five-year periods, that must be set 12 years in advance. The CCA designates the Secretary of State as responsible (section 4(1)(b)): <i>'to ensure that the net UK carbon account for a budgetary period does not exceed the carbon budget'</i>.</p> <p>Section 13 and 14 of the CCA require the Secretary of State to prepare and present to Parliament proposals and policies for meeting the carbon budgets. Carbon budgets must comply with the European and international obligations of the United Kingdom (section 8(2)). The CCA empowers the Secretary of State to carry carbon budget back (with a maximum of 1%) or forward, after consulting other national authorities and obtaining and taking into account the advice of the CCC (section 17).</p> <p>For each budgetary period a final statement must be prepared. In case a budget has not been met, the statement must provide an explanation. The statement must be laid before Parliament not later than 31st May in the second year following the end of the period to which it relates (section 18). The Secretary of State must lay before Parliament a report setting out proposals and policies to compensate in future periods for the excess emissions (Section 19).</p> <p>Furthermore, the CAA includes requirements for the UK Government in relation to adaptation to climate change. This includes the duty to produce every five years:</p> <ul style="list-style-type: none"> • a UK Climate Change Risk Assessment (CCRA) to identify risks, based in the advice of the CCC • a National Adaptation Programme to address those risks

Scale	Description of legislation
	<p>Additionally the CAA provides Government with the power (known as the ‘Adaptation Reporting Power’) to require public bodies and infrastructure operators that provide key services, to report on what actions they are taking to address climate impacts.</p> <p>Carbon Budget Orders (2011, 2016, 2021)</p> <p>Carbon budgets are approved by Parliament and published as Carbon Budget Orders. The carbon budgets for the carbon budgetary periods relevant to the Project are as follows:</p> <ul style="list-style-type: none"> • 1,950 MtCO₂e (The Carbon Budget Order 2011, fourth budget, 2023-2027) • 1,725 MtCO₂e (The Carbon Budget Order 2016, fifth budget, 2028-2032) • 965 MtCO₂e (The Carbon Budget Order 2021, sixth budget, 2033-2037) <p>The sixth carbon budget is the first to be set in the context of the above Net Zero target and takes the UK more than three-quarters of the way to reaching Net Zero by 2050.</p>

Policy

- 1.1.4 National policies are presented in Table 1.2 and Table 1.3, with the Project response to these requirements. Where there is duplication of requirements presented in the various relevant National Policy Statements, these have been combined and a single Project response to the policy issue is provided in the table.
- 1.1.5 Table 1.4 presents regional and local policies that have been considered during the development of the Project and the DCO application.
- 1.1.6 Further detail on policy compliance can be found in the Planning Statement (Application Document 7.2).

Table 1.2 National policy framework and the Project response

Reference	Requirement	Project response
National Policy Statement for National Networks (NPSNN) (Department for Transport, 2014)		
Paragraph 4.38	<i>'Adaptation is therefore necessary to deal with the potential impacts of these changes that are already happening. New development should be planned to avoid increased vulnerability to the range of impacts arising from climate change. When new development is brought forward in areas which are vulnerable, care should be taken to ensure that risks can be managed through suitable adaptation measures, including through the provision of green infrastructure.'</i>	Section 15.3 and Section 15.6 of Chapter 15 (Application Document 6.1) demonstrate application of the UK Climate Projections 2018 (UKCP18) (Met Office, 2019), during the estimated lifetime of the Project. Section 15.5 of Chapter 15 presents the measures that have been incorporated to increase the Project's resilience to the effects of climate change.
Paragraph 4.40	<i>'... applicants must consider the impacts of climate change when planning location, design, build and operation. Any accompanying environment statement should set out how the proposal will take account of the projected impacts of climate change.'</i>	In accordance with the requirements of the NPSNN, the Environmental Statement has set out how the Project takes into account the projected impacts of climate change. Section 15.5 of Chapter 15 (Application Document 6.1) provides information on how the Project accounts for its projected impacts on climate, and also provides details of the measures included within the Project design to increase the Project's capacity to cope with the effects of climate change. A detailed Flood Risk Assessment has been carried out and is presented in Appendix 14.6 (Application Document 6.3). This assessment also includes allowances for climate change to ensure alleviation and mitigation measures are robust. Chapter 14: Road Drainage and the Water Environment (Application Document 6.1) summarises the outcomes of the detailed Flood Risk Assessment.
Paragraph 4.41	<i>'Where transport infrastructure has safety-critical elements and the design life of the asset is 60 years or greater, the applicant should apply the United Kingdom Climate Projections 2009 (UKCP09) high emissions scenario (high impact, low likelihood) against the 2080 projections at the 50% probability level.'</i>	New climate projections (UKCP18) (Met Office, 2019) have been released since the publication of the NPSNN. Section 15.3 and Section 15.6 of Chapter 15 (Application Document 6.1) demonstrate the application of the updated UKCP18 Representative Concentration Pathway (RCP) 8.5 scenario against the 2080 projections at the 50% probability level. RCP8.5 is the most similar to the high emissions scenario in UKCP09.

Reference	Requirement	Project response
Paragraph 4.42	<p><i>‘The applicant should take into account the potential impacts of climate change using the latest UK Climate Projections available at the time and ensure any environment statement that is prepared identifies appropriate mitigation or adaptation measures. This should cover the estimated lifetime of the new infrastructure. Should a new set of UK Climate Projections become available after the preparation of any environment statement, the Examining Authority should consider whether they need to request additional information from the applicant.’</i></p>	<p>Section 15.3 and Section 15.6 of Chapter 15 (Application Document 6.1) demonstrate application of the latest UK climate projections, UKCP18 (Met Office, 2019), during the estimated lifetime of the Project. Section 15.5 presents the measures that have been incorporated to increase the Project’s resilience to the effects of climate change.</p>
Paragraph 4.43	<p><i>‘The applicant should demonstrate that there are no critical features of the design of new national networks infrastructure which may be seriously affected by more radical changes to the climate beyond that projected in the latest set of UK climate projections. Any potential critical features should be assessed taking account of the latest credible scientific evidence on, for example, sea level rise (e.g. by referring to additional maximum credible scenarios such as from the Intergovernmental Panel on Climate Change or Environment Agency) and on the basis that necessary action can be taken to ensure the operation of the infrastructure over its estimated lifetime through potential further mitigation or adaptation.’</i></p>	<p>An assessment of the Project’s critical features is presented in Appendix 15.3: Climate Resilience Impacts and Effects (Application Document 6.3) and summarised in Section 15.6 of Chapter 15 (Application Document 6.1). The assessment has considered any potentially critical features of the design which may be seriously affected by climate change beyond what has been projected in UKCP18 (Met Office, 2019). Measures have been implemented within the design to increase the Project’s resilience to the effects of climate change throughout its design life. Measures were identified through the assessment in Appendix 15.3: Climate Resilience Impacts and Effects (Application Document 6.3) and are presented in Section 15.5 of Chapter 15, including the details of how they are secured.</p>
Paragraph 4.44	<p><i>‘Any adaptation measures should be based on the latest set of UK Climate Projections, the Government’s national Climate Change Risk Assessment and consultation with statutory consultation bodies. Any adaptation measures must themselves also be assessed as part of any environmental impact assessment and included in the environment statement, which should set out how and where such measures are proposed to be secured.’</i></p>	<p>Measures to increase the Project’s resilience to the effects of climate change were identified and are described within Section 15.5 of Chapter 15 (Application Document 6.1). The embedded adaptation measures have been based on the latest Independent Assessment of UK Climate Risk – Advice to Government for the UK’s third Climate Change Risk Assessment (CCRA3) – Technical Report (CCC, 2021) and UK Climate Change Risk Assessment (CCRA) (HM Government, 2022). Statutory consultation bodies have been consulted regarding these</p>

Reference	Requirement	Project response
		<p>measures. For example, a meeting was held with the Environment Agency to agree flood modelling climate change scenarios, and to discuss strategies for managing residual flood risks. Consultation in relation to climate change allowances for the Flood Risk Assessment and operational surface water drainage design are detailed within Chapter 14: Road Drainage and the Water Environment (Application Document 6.1). Details of agreed climate change allowances and strategies for managing residual flood risk are provided in Part 6 of Appendix 14.6: Flood Risk Assessment (Application Document 6.3).</p> <p>The Contractors would design the permanent works in accordance with the National Highways DMRB standards identified in Table 2.1 and Table 2.2 in Appendix 15.3 (Application Document 6.3) and use construction materials that would be resilient to the effects of projected future climate change in line with UKCP18 (Met Office, 2018) (REAC Ref. CC001).</p>
<p>Paragraph 4.45</p>	<p><i>'If any proposed adaptation measures themselves give rise to consequential impacts the Secretary of State should consider the impact in relation to the application as a whole and the impacts guidance set out in this part of this NPS (e.g. on flooding, water resources, biodiversity, landscape and coastal change).'</i></p>	<p>As part of the EIA process, a number of mitigation measures have been identified to ensure the Project is resilient to future climate change. These measures were considered an integral part of the Project and potential resultant effects were addressed in the ES.</p>
<p>Paragraph 4.46</p>	<p><i>'Adaptation measures can be required to be implemented at the time of construction where necessary and appropriate to do so.'</i></p>	<p>A number of embedded, good practice and essential mitigation and adaptation measures to address the potential impacts associated with climate change events have been considered in Appendix 15.3: Climate Resilience Impacts and Effects (Application Document 6.3), many of which have been identified within other topic chapters of this Environmental Statement and through the development of the Project's design. Appendix 2.2: Register of Environmental Actions and Commitments (Application Document 6.3) secures the identified good practice and essential mitigation and adaptation measures.</p>

Reference	Requirement	Project response
Paragraph 4.47	<i>'Where adaptation measures are necessary to deal with the impact of climate change, and that measure would have an adverse effect on other aspects of the project and/or surrounding environment (e.g. coastal processes), the Secretary of State may consider requiring the applicant to ensure that the adaptation measure could be implemented should the need arise, rather than at the outset of the development (e.g. reserving land for future extension, increasing the height of an existing sea wall, or requiring a new sea wall).'</i>	<p>Measures to increase the Project's resilience to the effects of climate change were identified and are described within Section 15.5 of Chapter 15 (Application Document 6.1). These measures have been developed to anticipate the adverse effects of climate change and are based on the latest UK CCRA and in consultation with the relevant bodies presented within Chapter 4: EIA Methodology (Application Document 6.1).</p> <p>Where appropriate, measures agreed with the relevant consultation bodies have been embedded within the Project design and are included within Section 15.5 of Chapter 15.</p>
Paragraph 5.17	<i>'Carbon impacts will be considered as part of the appraisal of scheme options (in the business case), prior to the submission of an application for DCO [Development Consent Order]. Where the development is subject to EIA [Environmental Impact Assessment], any Environmental Statement will need to describe an assessment of any likely significant climate factors in accordance with the requirements in the EIA Directive. It is very unlikely that the impact of a road project will, in isolation, affect the ability of Government to meet its carbon reduction plan targets. However, for road projects applicants should provide evidence of the carbon impact of the project and an assessment against the Government's carbon budgets.'</i>	<p>Section 15.5 of Chapter 15 (Application Document 6.1) outlines how measures to reduce the Project's GHG emissions have been applied and developed and how they help contribute to the UK's target for reduction in carbon emissions.</p> <p>In addition, Section 15.6 of Chapter 15 considers the carbon impacts of the Project during the construction and operational phases and compares them to the Government's relevant carbon budgets. The assessment concludes that the Project would not have a material impact on the Government's ability to meet its carbon reduction targets</p>
Paragraph 5.18	<i>'The Government has an overarching national carbon reduction strategy (as set out in the Carbon Plan 2011) which is a credible plan for meeting carbon budgets. It includes a range of non-planning policies which will, subject to the occurrence of the very unlikely event described above, ensure that any carbon increases from road development do not compromise its overall carbon reduction commitments. The Government is legally required to meet this plan. Therefore, any increase in</i>	<p>Section 15.5 of Chapter 15 (Application Document 6.1) outlines how measures to reduce the Project's GHG emissions have been applied and developed and would be further developed in a process of continual improvement during the Project's implementation.</p> <p>In addition, Section 15.6 of Chapter 15 considers the carbon impacts of the Project during the construction and operational phases, compares them to the Government's relevant carbon budgets, and concludes that the Project would not have a material impact on the ability of the Government to meet its carbon reduction targets.</p>

Reference	Requirement	Project response
	<i>carbon emissions is not a reason to refuse development consent, unless the increase in carbon emissions resulting from the proposed scheme are so significant that it would have a material impact on the ability of Government to meet its carbon reduction targets.'</i>	
Paragraph 5.19	<i>'Evidence of appropriate mitigation measures (incorporating engineering plans on configuration and layout, and use of materials) in both design and construction should be presented. The Secretary of State will consider the effectiveness of such mitigation measures in order to ensure that, in relation to design and construction, the carbon footprint is not unnecessarily high. The Secretary of State's view of the adequacy of the mitigation measures relating to design and construction will be a material factor in the decision making process.'</i>	Section 15.5 of Chapter 15 (Application Document 6.1) outlines how measures to reduce the Project's GHG emissions have been applied and developed and would be further developed in a process of continual improvement during the Project's implementation. In addition, Section 15.6 of Chapter 15 considers the carbon impacts of the Project during the construction and operational phases, compares them to the Government's relevant carbon budgets and concludes that the Project would not have a material impact on the ability of Government to meet its carbon reduction targets.
National Planning Policy Framework (NPPF) (Ministry of Housing, Communities and Local Government, 2021)		
Paragraph 154	The NPPF describes ways in which the challenge of climate change can be met. Chapter 14 of the NPPF highlights that planning plays a key role in mitigation against climate change. The policy also states that <i>'new development should be planned for in ways that:</i> <i>a. avoid increased vulnerability to the range of impacts arising from climate change. When new development is brought forward in areas which are vulnerable, care should be taken to ensure that risks can be managed through suitable adaptation measures, including through the planning of green infrastructure; and</i> <i>b. can help to reduce greenhouse gas emissions, such as through its location, orientation and design. Any local requirements for the sustainability of buildings should reflect the Government's policy for national technical standards.'</i>	A risk assessment has been completed and is presented in Appendix 15.3: Climate Resilience Impacts and Effects (Application Document 6.3). A summary of the risk assessment in Section 15.6 of Chapter 15 (Application Document 6.1) demonstrates that a full account of the climate change risks has been provided. Section 15.5 presents adaptation measures for climate change and minimising GHG emissions.

Reference	Requirement	Project response
Paragraph 155	<p><i>'To help increase the use and supply of renewable and low carbon energy and heat, plans should:</i></p> <ul style="list-style-type: none"> <i>a. provide a positive strategy for energy from these sources, that maximises the potential for suitable development, while ensuring that adverse impacts are addressed satisfactorily (including cumulative landscape and visual impacts);</i> <i>b. consider identifying suitable areas for renewable and low carbon energy sources, and supporting infrastructure, where this would help secure their development; and</i> <i>c. identify opportunities for development to draw its energy supply from decentralised, renewable or low carbon energy supply systems and for co-locating potential heat customers and suppliers.'</i> 	<p>The Carbon and Energy Management Plan (Application Document 7.19) presents the energy strategy for the Applicant and identifies potential opportunities to use renewable energy on the Project.</p>
Overarching National Policy Statement for Energy (EN-1) (Department of Energy and Climate Change, 2011a)		
Paragraph 4.8.5	<p><i>'New energy infrastructure will typically be a long-term investment and will need to remain operational over many decades, in the face of a changing climate. Consequently, applicants must consider the impacts of climate change when planning the location, design, build, operation and, where appropriate, decommissioning of new energy infrastructure. The ES should set out how the proposal will take account of the projected impacts of climate change. While not required by the EIA Directive, this information will be needed by the IPC.'</i></p>	<p>This paragraph covers the same material requirements as set out in paragraph 4.40 of the NPSNN. Please see the response to this paragraph in this table above.</p> <p>However, there is an additional reference in 4.8.5 of NPS-1 to considering the decommissioning impacts of new energy infrastructure, where appropriate, which is not covered in NPSNN. It is noted in Chapter 15: Climate of the ES (Application Document 6.1) that GHG emissions from the end-of-life stage (decommissioning) of the Project's permanent works have been scoped out of the assessment due to the anticipated operational life of the Project. This is in line with the Scoping Opinion – see Section 4.10 of Table 1.2 in Appendix 4.1: The Inspectorate's Scoping Opinion and National Highways' Responses (Application Document 6.3).</p>

Reference	Requirement	Project response
Paragraph 4.8.7	<i>'Applicants should apply as a minimum, the emissions scenario that the Independent Committee on Climate Change suggests the world is currently most closely following – and the 10%, 50% and 90% estimate ranges. These results should be considered alongside relevant research which is based on the climate change projections'.</i>	New climate projections (UKCP18) (Met Office, 2019) have been released since the publication of the EN-1, when UKCP09 was applicable. Section 15.3 and Section 15.6 of Chapter 15 (Application Document 6.1) demonstrate the application of the updated UKCP18 Representative Concentration Pathway (RCP) 8.5 scenario against the 2080 projections at the 50% probability level. RCP8.5 is the most similar to the high emissions scenario in UKCP09.
Paragraph 4.8.9	<i>'Where energy infrastructure has safety critical elements (for example parts of new fossil fuel power stations or some electricity sub-stations), the applicant should apply the high emissions scenario (high impact, low likelihood) to those elements. Although the likelihood of this scenario is thought to be low, it is appropriate to take a more risk-averse approach with elements of infrastructure which are critical to the safety of its operation'.</i>	New climate projections (UKCP18) (Met Office, 2019) have been released since the publication of the EN-1, when UKCP09 was applicable. Section 15.3 and Section 15.6 of Chapter 15 (Application Document 6.1) demonstrate the application of the updated UKCP18 Representative Concentration Pathway (RCP) 8.5 scenario against the 2080 projections at the 50% probability level. RCP8.5 is the most similar to the high emissions scenario in UKCP09.
Paragraph 4.8.10	<i>'If any adaptation measures give rise to consequential impacts (for example on flooding, water resources or coastal change) the IPC should consider the impact of the latter in relation to the application as a whole and the impacts guidance set out in Part 5 of this NPS'.</i>	The adaptation measures which are proposed are not expected to give rise to any adverse consequential impacts.
National Policy Statement for Gas Supply Infrastructure and Gas and Oil Pipelines (EN-4) (Department of Energy and Climate Change, 2011b)		
Paragraph 2.2.2	<i>'As climate change is likely to increase risks to some of this infrastructure, from flooding or rising sea levels for example, applicants should in particular set out how the proposal would be resilient to:</i> <ul style="list-style-type: none"> • <i>increased risk of flooding;</i> 	The gas NSIPs are all located in Flood Zone 1 at low risk of flooding from rivers and the sea so would be inherently resilient. The gas pipeline will be located a minimum of 1.2m below ground level where increased temperature/frequency of hot days and increased mean rainfall are not likely to have an adverse impact on the pipeline as the original design parameters are not likely to be breached.

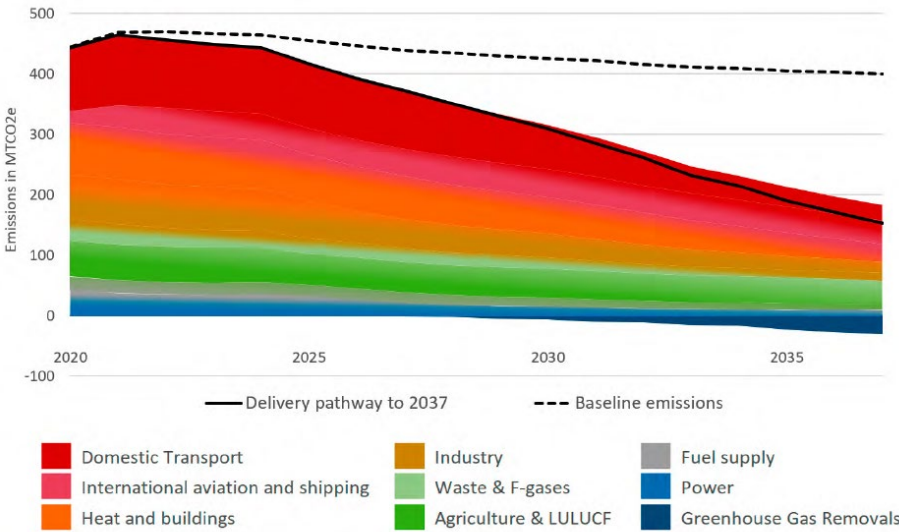
Reference	Requirement	Project response
	<ul style="list-style-type: none"> • <i>effects of rising sea levels and increased risk of storm surge;</i> • <i>higher temperatures;</i> • <i>increased risk of earth movement or subsidence from increased risk of flooding and drought; and</i> • <i>any other increased risks identified in the applicant’s assessment’.</i> 	
National Policy Statement for Electricity Networks Infrastructure (EN-5) (Department of Energy and Climate Change, 2011c)		
Paragraph 2.4.1	<p><i>‘As climate change is likely to increase risks to the resilience of some of this infrastructure, from flooding for example, or in situations where it is located near the coast or an estuary or is underground, applicants should in particular set out to what extent the proposed development is expected to be vulnerable, and, as appropriate, how it would be resilient to:</i></p> <ul style="list-style-type: none"> • <i>flooding, particularly for substations that are vital for the electricity transmission and distribution network;</i> • <i>effects of wind and storms on overhead lines;</i> • <i>higher average temperatures leading to increased transmission losses; and</i> • <i>earth movement or subsidence caused by flooding or drought (for underground cables)’.</i> 	<p>The overhead electric line NSIP works are modifications to supports or diversion of an existing overhead line within proximity of the existing line that it replaces, with no proposed underground cables to be installed.</p> <p>Only the replacement pylon ZB033R (refer to Works Plans (Application Document 2.6)) is to be constructed within Flood Zone 2. The location and design of this pylon foundation and surrounding landscape considers the potential of flooding. The remaining works (pylons ZB019R to ZB026R) are located within Flood Zone 1 and are at low risk of flooding from rivers and the sea so would be inherently resilient. No amendments to substations or other supporting infrastructure is proposed as part of these works.</p> <p>The choice of pylon to be constructed and conductor to be installed has considered the effects of winds and storms, and the potential of transmission losses as part of the design parameters, which are not envisaged to be breached.</p>

Table 1.3 Other national policies relevant to climate

Policies	Description	Project response
Policy paper Agenda 2030: Delivering the Global Goals	The Policy Paper provides an overview and examples of how the UK Government is contributing to the delivery of each of the SDGs. For Goal 13, it refers to the Climate Change Act 2008, among others.	The Applicant has given due consideration to the Climate Change Act 2008 in the assessment methodology, refer to Section 15.3 of ES Chapter 15.
Ten-point plan for a green industrial revolution (2020)	<p>The ten-point plan of November 2020 sets out the UK Government’s high-level plan for a ‘Green Industrial Revolution’ by funding skills and technologies to address the climate challenge. The ten points cover carbon reduction actions, environmental measures and behaviour changes, and include:</p> <ul style="list-style-type: none"> • Point 1: Advancing offshore wind • Point 2: Driving the growth of low carbon hydrogen • Point 3: Delivering new and advanced nuclear power • Point 4: Accelerating the shift to zero emission vehicles • Point 5: Green public transport, cycling and walking • Point 6: Jet zero and green ships • Point 7: Greener buildings • Point 8: Investing in carbon capture, usage and storage • Point 9: Protecting our natural environment • Point 10: Green finance and innovation 	The Project would contribute to point 5 by constructing cycling and walking lanes and to point 10 by promoting innovation (refer to Section 15.5 of Chapter 15 of the ES).
The Energy White Paper – Powering our Net Zero Future (2020)	The Department of Business, Energy, and Industrial Strategy (BEIS) has published The Energy White Paper as a follow on from the Government’s ten-point plan and sets out further specific actions the government will take in the coming ten years to cut carbon emissions from the energy sector, while protecting consumers by assuring affordable costs and providing jobs.	The White Paper will facilitate the further reduction of the operational road user carbon emissions through accelerating the deployment of clean electricity generation and improving the electricity networks to ensure integration of more electric vehicles.

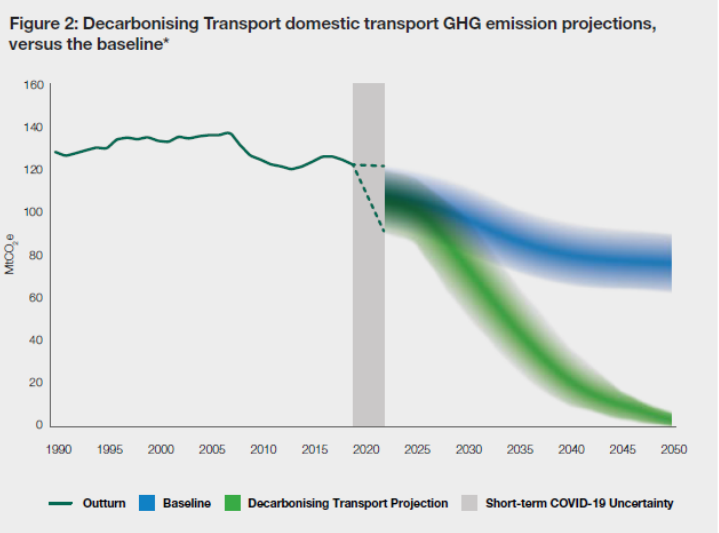
Policies	Description	Project response
		<p>The Applicant has presented a sensitivity test for related carbon emission reduction projections in the impact significance assessment (Section 15.6 of Chapter 15 of the ES).</p>
<p>Net Zero Strategy: Build Back Greener (2021)</p>	<p>The Net Zero Strategy ('the Strategy') dated October 2021 was presented to Parliament pursuant to Section 14 of the Climate Change Act 2008. The Strategy elaborates policies and proposals, including budget allocations, for:</p> <ul style="list-style-type: none"> • Reducing emissions across the economy (with selected targets and details) <ul style="list-style-type: none"> – Power – power system fully decarbonised by 2035 – Fuel supply and hydrogen – deliver 5GW of low carbon hydrogen production capacity by 2030 whilst halving the emissions from oil and gas – Industry – deliver four carbon capture usage and storage (CCUS) clusters, capturing 20-30 MtCO_{2e} across the economy, including 6 MtCO_{2e} of industrial emissions, per year by 2030 – Heat and buildings - decarbonising the way buildings are heated and powered – Transport – start to mobilise additional public and private investment of around £220 million in line with the 2037 delivery pathway, and remove all emissions at the tailpipe and kickstart zero emissions international travel – Natural resources, waste and fluorinated gases – treble woodland creation rates in England, contributing to the UK's overall target of increasing planting rates to 30,000 hectares per year by the end of this Parliament – Greenhouse Gas Removals (GGR) – an ambition to deploy at least 5 MtCO_{2e} / year of engineered GGRs by 2030 • Supporting the transition across the economy <ul style="list-style-type: none"> – Innovation for net zero – Green investment – Green jobs, skills, and industries 	<p>The Applicant has identified further carbon reduction / innovation opportunities for the construction phase, as part of the Carbon & Energy Management Plan (refer to Section 15.5 of Chapter 15 of the ES).</p>

Policies	Description	Project response
	<ul style="list-style-type: none"> – Embedding net zero in Government – Local climate action – Empowering the public and business to make green choices – International leadership and collaboration <p>Selected key commitments for the transport sector include the following:</p> <ul style="list-style-type: none"> • An additional £620 million for zero-emission vehicle grants and electric vehicle (EV) infrastructure. • A further £350 million on top of up to £1 billion allocated to the Automotive Transformation Fund to facilitate electrification of UK vehicles and support their supply chains. • Trials of three zero-emission heavy goods vehicle (HGV) technologies at scale on UK roads to determine their operational benefits, as well as their infrastructure needs. • £2 billion investment to help enable half of journeys in towns and cities to be cycled or walked by 2030. • £3 billion to create integrated bus networks, more frequent services and bus lanes to speed journeys. <p>The Strategy also reports on the progress of the ten-point plan for a green industrial revolution.</p> <p>It is noted that the Strategy does not provide a full implementation plan up to 2050, when net zero is to be reached. It is clarified in the Strategy that many of the policies will be phased in gradually, with action taken now to facilitate investment into new low-carbon technologies. Further understanding of the challenges will enable informed decisions on how to scale up, to reach net zero by 2050.</p> <p>The indicative delivery pathway up to 2037 (Carbon Budget 6) is presented in the figure below, copied from the Strategy.</p>	

Policies	Description	Project response
	<p>Figure 1: Indicative delivery pathway to 2037 by sector</p>  <p>Source: BEIS Analysis (2021)</p>	
<p>Decarbonising Transport – A Better, Greener Britain (2021)</p>	<p>Decarbonising Transport (‘the Plan’ or ‘the TDP’), prepared by the Department for Transport (DfT) and issued in 2021, identifies the commitments and actions needed to decarbonise the UK’s transport system by 2050, in line with the UK’s net zero commitments. It builds on the Net Zero Strategy: Build Back Greener (2021) and the targets and policies identified therein (as outlined above). With the key aim of combatting climate change, the Plan also elaborates on and quantifies co-benefits related to improved air quality, reduced noise levels, improved health, reduced congestion, increased employment and growth.</p> <p>Strategic priorities are identified as follows (with selected commitments, actions and timings):</p>	<p>The Project presents a sensitivity test for related carbon emission reduction projections in the impact significance assessment (Section 15.6 of Chapter 15 of the ES).</p>

	<ul style="list-style-type: none"> • Priority 1: accelerating modal shift to public and active transport <ul style="list-style-type: none"> – This will be the natural first choice, supported by better quality infrastructure for cycling and walking and a cohesive, integrated and affordable net zero public transport network – £2 billion will be invested over five years and by 2030, the aim is to have half of all journeys in towns and cities cycled or walked – For longer journeys cars face competition from zero emission high speed rail and coaches – Cars will be used differently and less often, for example by stimulating increased average road vehicle occupancy • Priority 2: decarbonisation of road vehicles <ul style="list-style-type: none"> – By 2030, the sale of new petrol and diesel cars and vans will end – By 2035, all new cars and vans must be 100% zero emission at the tailpipe – By 2035, 6,000 high powered charge points (150-350 kW) along the strategic road network • Priority 3: decarbonising how we get our goods <ul style="list-style-type: none"> – By 2035, all new LGVs (from 3.5 -26t) and HGVs under 26t must be 100% zero emissions at the tailpipe – By 2040, the sale of all non-zero emission HGVs above 26t must have ended – Modal shift from road to more sustainable alternatives such as rail, cargo bike and inland waterways – A sector-wide Hydrogen Strategy will be developed, that includes the transportation sector • Priority 4: UK as a hub for green transport, technology, and innovation <ul style="list-style-type: none"> – UK to be internationally recognised leader in green technology, science, and research – Current public research and development investment in transport decarbonisation is £1.5 billion 	
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Policies	Description	Project response
	<ul style="list-style-type: none"> – Commitment by UK Government to increase total research and development investment in green recovery (and transition to net zero) to 2.4% of gross domestic product by 2027 • Priority 5: place-based solutions <ul style="list-style-type: none"> – quantifiable carbon reductions will become a fundamental part of local transport planning and funding – embedding transport decarbonisation principles in spatial planning and transport policy making – at least 12 billion GBP will be invested in the current Parliament period in local transport measures to reduce emissions • Priority 6: Reducing carbon in a global economy <ul style="list-style-type: none"> – UK aviation will be net zero by 2040 (subject to consultation) and UK shipping by 2050 – The Plan also presents projections for domestic UK GHG emissions, among others, as a result of transport decarbonisation, against the baseline representing current Government policy (refer to the figure below (Figure 2 from the Plan)). 	

Policies	Description	Project response
	<p>Figure 2: Decarbonising Transport domestic transport GHG emission projections, versus the baseline*</p>  <p>* Historic emissions are from published Her Majesty's Government (HMG) GHG statistics. Our projections are produced using a range of models, including the National Transport Model (road transport), and Tractor Decarbonisation Network Strategy (rail), and Aviation model, adjusted for decarbonising transport measures. The shipping baseline and projections are based on the latest analysis by the CCC (https://www.thccc.org.uk/publication/skth-carbon-budget/), which draw on research commissioned by DfT. Given the emerging nature of zero emission shipping fuels, the projections should be interpreted as possible scenarios for meeting the net zero goal that the government has announced for the UK maritime sector rather than estimates of the impact of specific policies. Baseline forecasts are not consistent with the 2019 BEIS Energy and Emission Projections (EEP), as these use different methodologies. Where feasible, uncertainty in projections reflects uncertainty on policy design, GDP, fuel prices, trip rates, and historic volatility in emissions. The range in the policy line declines as we move out to 2050, due to a higher proportion of zero emission vehicles. Transport emission projections exclude military aircraft and shipping.</p> <p>The projections show a range of carbon emission reductions, with lower and higher bounds, reflecting an uncertainty about the precise impact of the measures presented in the Plan. Policies and proposals will have to be refined over time to fulfil the carbon budgets and net zero target.</p>	
<p>Transitioning to Zero Emission Cars and Vans: 2035 Delivery Plan (2021)</p>	<p>In this plan, HM Government sets out the actions it will take to realise ambitions to phase out the sales of all new petrol and diesel cars and vans by 2030, and that all new cars and vans will be fully zero emissions at the tailpipe from 2035. The plan brings together commitments on investment, regulation and policy changes.</p>	<p>The Applicant has presented a sensitivity test for related carbon emission reduction projections in the impact significance assessment (Section 15.6 of Chapter 15 of the ES).</p>

Policies	Description	Project response
<p>Net Zero Highways: our 2030 / 2040 / 2050 plan (2021)</p>	<p>In July 2021, National Highways published ‘Net Zero Highways: our 2030 / 2040 / 2050 plan’ (‘the Plan’) for achieving a net zero future for the strategic road network, in compliance with the UK’s net zero obligations.</p> <p>It aligns with the UK’s commitment to be a net zero economy by 2050, DfT’s Decarbonising Transport: A Better, Greener Britain, the Industrial Decarbonisation Strategy (2021) and CCC’s Sixth Carbon Budget Report (2020).</p> <p>The Plan also affirms that a net zero Britain will still travel by road in 2050 and refers to the Committee on Climate Change’s forecast that traffic levels will be higher in 2050 than today even taking into account the ambitious actions of the Sixth Carbon Budget.</p> <p>National Highways formulates the aim of the plan as follows: ‘This plan aims to ensure our roads support the social and economic goals of our nation, while making sure we do so in an environmentally sound way.’</p> <p>The Plan has set net zero targets in three areas.</p> <p>Net zero for corporate operations by 2030. This relates to energy used to light and power the network, travel by traffic officers, energy used in offices and other travel. Commitments / actions include:</p> <ul style="list-style-type: none"> • Replacing 70% of road lighting with LEDs by 2027 • Generating 10% of National Highways’ electricity requirement from renewable sources on or near to its own sites by 2030 • Buying certified, renewable electricity for network lighting and operations (already achieved since 2020) • Non-traffic officer vehicles 100% electric by 2027 and traffic officer vehicles by 2030 • Planting at least 3 million trees between 2021 and 2030 <p>Net zero for maintenance and construction by 2040</p> <p>Key actions included within the plan in relation to reducing emissions from maintenance and construction activities include both the embodied carbon of material assets as well as their transportation, and include the following:</p>	<p>The Applicant has set out measures to reduce emissions relating to the construction , operation and maintenance of the Project in the Carbon and Energy Management Plan (Application Document 7.19) so that it aligns with the trajectory and targets set out in the Net Zero Highways Plan (refer to Section 15.6 of Chapter 15 of the ES).</p> <p>The Project would serve as a pathfinder project to test and adopt low carbon innovation and approaches (refer to Section 15.5 of Chapter 15 of the ES and Carbon and Energy Management Plan, Application Document 7.19).</p> <p>With regard to the user emissions, the Project would not impact the ability of the Government to reach the net zero target by 2050.</p>

Policies	Description	Project response
	<ul style="list-style-type: none"> • Launching a zero-carbon construction innovation programme focusing on asphalt, cement, concrete and steel, being the core construction products, with National Highways taking the lead to create more transparency in the industry • Developing a near-zero plan for each procurement category by the end of 2022 • Strategic partnerships with other infrastructure owners and suppliers in place (2022) • Providing clarity to the supply chain on what materials will be needed, including carbon content, and work with suppliers to develop and agree on a roadmap to net zero for key construction products • Specifications (Manual of Contract Documents for Highway Works), and Standards (Design Manual for Roads and Bridges) have integrated net-zero thinking by 2022 and 2025 respectively • Working with and supporting manufacturers and Government on Carbon Capture and Storage (CCS) solutions. Providing market surety for CCS versions of cement and steel • Designing and building the first net-zero major road enhancement scheme, open by 2035 • Finalising in 2021 and rolling out the Digital Roads vision by which capacity of existing roads will be increased thus reducing new construction (Digital Roads was published in 2021, refer to description below) • Following a trajectory of 0-10% reduction in emissions by 2025, 40-50% by 2030, 70-80% by 2035 and net zero by 2040 against the 2020 baseline. <p>Net zero carbon travel on National Highways’ roads by 2050. This covers emissions from users of the National Highways network. Commitments / actions include the following:</p> <ul style="list-style-type: none"> • Publishing a proposed approach to zero-carbon HGV trials by the end of 2022 • Publishing a blueprint for EV charging services along the network by 2023 • Investigating energy storage in support of EV charging at motorway service areas • Integrating a strong modal shift programme in Road Period 3 (RP3) 	

Policies	Description	Project response
	<ul style="list-style-type: none"> Delivering £950 million of charging infrastructure by 2023, aiming at providing at least six 150-350kW charge points at each motorway service area Investment plan for HGV charging / fuelling by 2028 for RP4 	
Digital Roads (2021)	<p>Digital Roads, issued by National Highways in August 2021, intends to improve the way roads are designed, built, operated, and used. It presents the 2025 ambitions around three themes:</p> <ul style="list-style-type: none"> Digital design and construction. This includes digitally enabled design (accounting for environmental impact / carbon emissions where possible), off-site fabrication and modular construction (reducing carbon emissions and shortening road closures) and automated construction. Digital operations. This includes intelligent asset management (focusing on pre-emptive interventions) that improves asset resilience and increases asset life (and reduces carbon emissions). Digital for customers. This includes providing customers with real-time information on travel times, which will reduce congestion (and carbon emissions). <p>In the 2050 vision, key focus areas that drive improved environmental outcomes are as follows:</p> <ul style="list-style-type: none"> Digital Twin: digital representation of each physical entity, enabling improvement in their design, construction, maintenance and operation. Connected Services: enabling smoother-flowing traffic / reduced congestion. Autonomous vehicles: enabling smoother-flowing traffic / reduced congestion. 	The Applicant will implement the principles of the Digital Roads across its portfolio of projects.
Industrial Decarbonisation Strategy (2021)	<p>HM Government, through the Department of Business, Energy, and Industrial Strategy (BEIS), has published the Industrial Decarbonisation Strategy ('the Strategy') in March 2021. It covers the complete UK industrial sector accounting for about one sixth of UK emissions.</p> <p>The aim of the Strategy is to demonstrate how the net zero target can be reached without pushing emissions and business abroad, and what the role of the Government is in this.</p>	The Applicant would identify further low-carbon opportunities for implementation in the Project (Section 15.5 of Chapter 15 of the ES and Carbon and Energy Management Plan, Application Document 7.19).

Policies	Description	Project response
	<p>The Strategy sets out how the UK will drive progress in the 2020s, to deliver the 5GW hydrogen production ambition by 2030, and position hydrogen to help meet the Sixth Carbon Budget and net zero commitments.</p> <p>The Strategy expects that emissions will need to reduce by at least two-thirds by 2035 and by at least 90% by 2050, with 3 MtCO_{2e} captured through Carbon Capture, Usage and Storage (CCUS) and around 20 TWh switching to low carbon fuels by 2030.</p> <p>The Strategy consists of a number of subjects, among others:</p> <ul style="list-style-type: none"> • Getting investors to choose low carbon. The Government considers that the market will find the most cost-effective way to decarbonisation. The role of the Government is to facilitate overcoming barriers that currently hamper investments in the field, for example the use of carbon pricing, funding mechanisms for CCUS and hydrogen, a policy framework that promotes fuel switching, creating a market for negative emissions technology, and the avoidance of carbon leakage. • Getting consumers to choose low carbon. Consumers may tend to procure cheaper but higher-carbon products instead of newly developed low-carbon products. The Government may help by creating demand through a number of measures including developing proposals for data transparency, new product standards and product labelling, and by using public procurement to drive change and support businesses to make greener choices. • Adopting low-regret technologies and building infrastructure, such as CCUS and fuel switching, to low-carbon hydrogen and electrification, which are robust against future uncertainties. Furthermore, the Government: <ul style="list-style-type: none"> – will consider the CCC recommendation to set targets for ore-based steelmaking to reach near-zero emissions by 2035 – will explore options to decarbonise dispersed cement production sites together with the industry • Improving energy and resource efficiency. The Government will provide support with implementation of energy management systems, heat recovery and reuse, energy efficiency at dispersed sites, and will support resource efficiency, working towards a circular economy model. 	

Policies	Description	Project response
	<ul style="list-style-type: none"> ● Accelerating innovation of low-carbon technologies. As innovation will reduce the cost of decarbonisation and maintain the competitiveness of the industry, the Government will provide support to: <ul style="list-style-type: none"> – innovation in fuelling switching technologies including low-carbon electricity, biomass and hydrogen – demonstration projects for CCUS in a range of industrial sectors – development of industrial digital technologies for energy efficiency – research into advanced technologies – developments in innovation ● Net zero in a global market, focusing on the global aspects and international cooperation, with a leading role for the UK ● Levelling up, using the net zero transition to create inward investment and securing jobs for the long term. 	
National Highways licence (DfT, 2015)	The need for carbon reduction is included in National Highways' licence. Under Environment (5.23), it states that the licence holder should: 'Calculate and consider the carbon impact of road projects and factor carbon into design decisions and seek to minimise carbon emissions and other greenhouse gases from its operations'.	The Applicant has calculated its carbon impact, factored carbon into design decisions and taken action to minimise its carbon emissions (Section 15.5 of Chapter 15 of the ES)
The National Adaptation Programme and the Third Strategy for Climate Adaptation Reporting (Defra, 2018)	The second National Adaptation Programme (NAP) sets out the Government's response to the second Climate Change Risk Assessment (CCRA2), dated 2017. The NAP identifies actions to address climate change risks in six priority areas of which the following two have direct relevance to the Project: <ul style="list-style-type: none"> ● Flooding and coastal change risks to communities, businesses and infrastructure ● Risks to health, well-being and productivity from high temperatures 	Section 15.5 of Chapter 15 and Appendix 15.3 present the measures that have been incorporated to increase the Project's resilience to the effects of climate change, including flooding and high temperatures.

Policies	Description	Project response
<p>Independent Assessment of UK Climate Risk – Advice to Government for the UK’s third Climate Change Risk Assessment (CCRA3) (CCC, 2021)</p>	<p>The third independent assessment of the UK’s climate risks comprised a comprehensive assessment and has identified sixty-one risks and opportunities. The independent report advised that, in the transport sector, more action was needed on the following priority risks:</p> <ul style="list-style-type: none"> • Risks to infrastructure from cascading failures • Risks from river, surface water and groundwater flooding • Risks from coastal flooding and erosion • Risks from slope and embankment failure • Risks to bridges and pipelines from flooding and erosion • Risks from slope and embankment failure • Risks from high and low temperatures, high winds, lightning 	<p>This document was used, together with (UKCP18 (Met Office, 2018) and UK Climate Change Risk Assessment (HM Government, 2022) to identify risks pertinent to the Project and Section 15.5 of Chapter 15 and Appendix 15.3 present the measures that have been incorporated to increase the Project’s resilience to these risks.</p>
<p>UK Climate Change Risk Assessment 2022 (HM Government, 2022).</p>	<p>The UK Climate Change Risk Assessment 2022 outlines the independent advice from CCC (CCC, 2021).</p>	<p>This document was used, together with (UKCP18 (Met Office, 2018) and CCRA3 (CCC, 2021) to identify risks pertinent to the Project and Section 15.5 of ES Chapter 15 and Appendix 15.3 present the measures that have been incorporated to increase the Project’s resilience to these risks.</p>
<p>Preparing for Climate Change on the Strategic Road Network – Third Adaptation Report under the Climate Change Act (2022)</p>	<p>This National Highways report built on the CCRA3 (CCC, 2021) and UK Climate Change Risk Assessment 2022 (HM Government, 2022) and identifies key areas of risk including the following:</p> <ul style="list-style-type: none"> • Increased precipitation, including risks of flooding, waterlogging of pavement surfaces and ground saturation affecting geotechnical assets • Temperature changes, including deformation of asphalt and expansion of concrete 	<p>Section 15.5 of ES Chapter 15 and Appendix 15.3 present the measures that have been incorporated to increase the Project’s resilience to the effects of climate change, including the key risks identified in the Third Adaptation Report.</p>

Policies	Description	Project response
	<ul style="list-style-type: none"> • Different climate variables acting together, for example, changes to ground shrinkage / earth pressures affecting dependent assets such as structures and drainage. <p>A key purpose of the report has been to report on progress since the last adaptation report. Since then, National Highways has achieved the following:</p> <ul style="list-style-type: none"> • Publication of standards for design that take account of climate change (standards applied since by projects) • Development of new guidance, for instance on ground hazards • Establishment of monitoring processes • Updates to data on key risks such as flooding and geotechnical risk • Progress on pilot projects to adapt to climate change • Research on key climate risks <p>Following review of the latest Met Office UK Climate Projections (UKCP18), new key risks and actions have been identified for the following categories:</p> <ul style="list-style-type: none"> • Precipitation - risks to assets identified from review of the increase in mean precipitation (winter), and extreme precipitation (winter and summer) variables • Temperature - this includes risks to assets identified from review of the increase in mean temperature (summer), and change in extreme temperature (summer and winter) • The interaction between temperature and precipitation - this includes interacting risks where both temperature changes and precipitation are a component • Additional risks (this includes risks to assets identified from review of sea level rise, change in storminess (wind speed), change in storminess (lightning), change in the number of fog days, freeze-thaw, change in snowfall and solar radiation risks) <p>The key approach to address the risks is to focus on design standards, monitoring and adaptive management. With regards to the additional risks, many of these are dealt with through processes for managing health and safety or dealing with severe weather risks.</p>	<p>Flood risk related measures are summarised in Section 15.5 of ES Chapter 15 and described in detail in ES Chapter 14.</p>

Table 1.4 Regional and local policies for climate

Strategy/plan	Policy and/or description
Kent Environment Strategy (Kent County Council, 2016)	<p>To address national and local drivers and legislation, in 2016 Kent County Council committed to:</p> <ul style="list-style-type: none"> • reduce the emissions across the county by 34% by 2020 and 60% by 2030 from a 2005 baseline • generate more than 15% of energy in Kent from renewable sources by 2020 from a 2012 baseline • review climate risk assessment for public sector services • develop resilience plans and risk assessments • report using the Severe Weather Impacts Monitoring System
<p>Kent and Medway Energy and Low Emissions Strategy (Kent County Council / Medway Council, 2020); and Kent and Medway Energy and Low Emissions Strategy – Implementation Plan (Kent County Council / Medway Council, 2021)</p>	<p>As part of the wider Kent Environment Strategy, the Kent and Medway Energy and Low Emissions Strategy aims to achieve its vision that <i>'by 2050 the county of Kent has reduced emissions to net-zero and is benefiting from a competitive, innovative and resilient low carbon economy, where no deaths are associated with poor air quality'</i>.</p> <p>Priorities have been identified, including: Setting emission reduction pathways (carbon budgets) to 2050 Establishment of a climate emergency investment fund Transport, travel and digital connectivity (smart connectivity and mobility modal shift programme) Renewable energy generation Green infrastructure Supporting low-carbon business</p> <p>An implementation plan sets out the actions taken from 2020 to 2023 in support of these priorities. The plan is updated on a regular basis.</p>
Adapting to climate change – Action Plan (Essex County Council, 2011)	<p>The Action Plan is a living and adaptable document, which highlights the priorities for continuous development on adaptation including the following:</p> <ul style="list-style-type: none"> • Understanding Essex County Council risk threshold • Focusing on actions that manage and address risks associated with current climate variability and extremes as a starting point • Balancing the management of climate and non-climate risks • Ensuring climate risk management is integrated into Essex County Council decision making, policies and planning, especially in areas responsible for long-term assets • Avoiding actions that stop or limit future adaptation • Reviewing the continued effectiveness of adaptation decisions in light of any climatic and organisational changes • Working in partnership with key stakeholders (internally and externally)

Strategy/plan	Policy and/or description
London Borough of Havering Climate Change Action Plan (London Borough of Havering, 2021a)	The Climate Change Action Plan is built around the following nine topics: people, public protection, business continuity, stakeholder and community, waste management, procurement, transport, built environment and energy management.
Havering Local Plan 2016-2031 (London Borough of Havering, 2021b)	The Havering Local Plan, adopted in November 2021, sets out the vision and strategy for future growth and sustainable development around four priorities: communities, places, opportunities and connections.
Medway Climate Change Action Plan (Medway Council, 2021)	The Medway Climate Change Action Plan aligns with the Kent and Medway Energy and Low Emissions Strategy, adopted by Medway's cabinet in January 2021, and the 10 priority areas identified therein. The Action Plan includes the implementation plan of the Strategy for Medway. In addition, the Action Plan includes climate adaptation and resilience actions based on the Climate Change Risk and Impact assessment (CCRIA) developed by Kent County Council.
Gravesham Local Plan Core Strategy (Gravesham Borough Council, 2014)	CS18: Climate Change, covering flood risk, water quality, sustainable drainage and surface water runoff, water demand management and carbon reduction.
Gravesham Local Plan 5 Year Review (Gravesham Borough Council, 2019)	The Gravesham Local Plan Core Strategy (2014) was reviewed in 2019 in line with the NPPF. The strategy was reassessed and it was determined that Policy CS18 requires no modification.
Core Strategy and Policies for Management of Development (Thurrock Council, 2015)	CSTP25 – Addressing climate change CSTP26 – Renewable or low-carbon energy generation CSTP27 – Management and reduction of flood risk PMD13 – Decentralised, renewable and low-carbon energy generation PMD14 – Carbon neutral development
Brentwood Local Plan 2016-2033 (Brentwood Borough Council, 2022)	The Brentwood Local Plan, adopted in March 2022, contains a number of strategic policies, including: BE01: Carbon Reduction and Renewable Energy BE08: Strategic Transport Infrastructure BE09: Sustainable Means of Travel and Walkable Streets
Dartford and Gravesham Sustainable Community Strategy 2008 – 2011 (Dartford Borough Council and Gravesham Borough Council, 2008)	ET1 – To reduce carbon emissions ET1(a) – Ensure all partner agencies reduce their organisational carbon footprint ET1(b) – Introduce appropriate planning policies and work with developers to reduce energy use.
Corporate Plan 2017 – 2020 (Dartford Borough Council, 2017)	ET1 – To reduce carbon emissions ET2 – Ensure that development in Dartford is sustainable, with high standards of design, layout and energy efficiency
The London Plan: The Spatial Development Strategy for Greater London (Greater London Authority, 2021)	Policy GG6 Increasing efficiency and resilience Policy SI 2 Minimising greenhouse gas emissions Policy SI 3 Energy infrastructure Policy SI 4 Managing heat risk

References

- Brentwood Borough Council (2022). Brentwood Local Plan 2016-2033. <https://www.brentwood.gov.uk/documents/20124/533660/Brentwood+Local+Plan+2016-2033.pdf/e42126c6-8fa7-1281-7ab7-fcb62ba38a51?t=1648472176542>
- Parliament of the United Kingdom (2008). Climate Change Act (CCA). Climate Change Act (2050 Target Amendment) (2019) Climate Change Act 2008 (legislation.gov.uk)
- Committee on Climate Change (2019). Reducing UK emissions: 2019 Progress Report to Parliament. Accessed September 2020. <https://www.theccc.org.uk/wp-content/uploads/2019/07/CCC-2019-Progress-in-reducing-UK-emissions.pdf>
- Climate Change Committee (CCC) (2021) Independent Assessment of UK Climate Risk – Advice to Government for the UK’s third Climate Change Risk Assessment (CCRA3). Accessed April 2022. [Independent-Assessment-of-UK-Climate-Risk-Advice-to-Govt-for-CCRA3-CCC.pdf](https://www.theccc.org.uk/wp-content/uploads/2021/04/Independent-Assessment-of-UK-Climate-Risk-Advice-to-Govt-for-CCRA3-CCC.pdf)
- Dartford Borough Council (2017). Corporate Plan 2017 – 2020. Accessed June 2020. https://www.dartford.gov.uk/_data/assets/pdf_file/0015/190311/corporate-plan-update-v72017finalv2.pdf
- Dartford Borough Council and Gravesham Borough Council (2008). Dartford and Gravesham Sustainable Community Strategy 2008 – 2011. Accessed November 2021. <http://committeedmz.dartford.gov.uk/documents/s22589/20082011FINALDartfordandGraveshamSustainableCommunityStrategy2008.2011.pdf>
- Department for Business, Energy and Industrial Strategy (2016). The Carbon Budget Order 2016. <https://www.legislation.gov.uk/uksi/2016/785/contents/made>
- Department for Business, Energy and Industrial Strategy (BEIS) (2021). Annual Statement of Emissions for 2019. Accessed March 2022. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/978537/annual-statement-emissions-2019.pdf
- Department for Business, Energy and Industrial Strategy (BEIS) (2022). Energy and Emission Projections: Net Zero Strategy Baseline (partial interim update December 2021). Accessed March 2022. <https://www.gov.uk/government/publications/energy-and-emissions-projections-net-zero-strategy-baseline-partial-interim-update-december-2021>
- Department for Energy and Climate Change (2011a). Overarching National Policy Statement for Energy (EN-1). https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/47854/1938-overarching-nps-for-energy-en1.pdf
- Department for Energy and Climate Change (2011b). National Policy Statement for Gas Supply Infrastructure and Gas and Oil Pipelines (EN-4). https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/37049/1941-nps-gas-supply-oil-en4.pdf
- Department for Energy and Climate Change (2011c). National Policy Statement for Electricity Networks (EN-5). https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/37050/1942-national-policy-statement-electricity-networks.pdf

Department of Energy and Climate Change (2011d). The Carbon Budget Order 2011. <https://www.legislation.gov.uk/ukxi/2011/1603/made#:~:text=This%20Order%20sets%20the%20carbon,the%20Climate%20Change%20Act%202008.>

Department for Environment, Food & Rural Affairs (Defra) (2018). The National Adaptation Programme and the Third Strategy for Climate Adaptation Reporting. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/727252/national-adaptation-programme-2018.pdf Department for Transport (2014). National Policy Statement for National Networks. Accessed June 2020. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/387223/npsnn-web.pdf

Department for Transport (2015). National Highways licence. Accessed June 2022. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/431389/strategic-highways-licence.pdf

Department for Transport (2021). Decarbonising Transport: A Better, Greener Britain. Accessed September 2021. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1009448/decarbonising-transport-a-better-greener-britain.pdf

Essex County Council (2011). Adapting to climate change – Action Plan.

Gravesham Borough Council (2014). Gravesham Local Plan Core Strategy. Accessed June 2020. <https://www.gravesham.gov.uk/home/planning-and-building/local-plan/gravesham-local-plan-core-strategy>

Gravesham Borough Council (2019). Gravesham Local Plan 5 Year Review.

Greater London Authority (2021). The London Plan: The Spatial Development Strategy for Greater London. Accessed November 2021. https://www.london.gov.uk/sites/default/files/the_london_plan_2021.pdf

HM Government (2020). Ten-point Plan for a Green Industrial Revolution. The Ten Point Plan for a Green Industrial Revolution ([publishing.service.gov.uk](https://assets.publishing.service.gov.uk))

HM Government (2021a). Industrial Decarbonisation Strategy. Accessed March 2021. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/975953/6.7348_BEIS_Industrial_Decarbonisation_Strategy_Large_Print_PRINT.pdf

HM Government (2021c). Transitioning to zero emission cars and vans: 2035 delivery plan. Accessed September 2021. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1005301/transitioning-to-zero-emission-cars-vans-2035-delivery-plan.pdf

HM Government (2021d). Net Zero Strategy: Build Back Greener. Accessed October 2021. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1033990/net-zero-strategy-beis.pdf

HM Government (2022) UK Climate Change Risk Assessment. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1047003/climate-change-risk-assessment-2022.pdf Kent County Council (2016). Kent Environment Strategy. Accessed June 2020. https://www.kent.gov.uk/__data/assets/pdf_file/0020/10676/KES_Final.pdf

Kent County Council / Medway Council (2020). Kent and Medway Low Emissions Strategy. June 2020. https://www.kent.gov.uk/__data/assets/pdf_file/0009/112401/Kent-and-Medway-Energy-and-Low-Emissions-Strategy.pdf

Kent County Council / Medway Council (2020). Kent and Medway Low Emissions Strategy – Implementation Plan. May 2021.

https://www.kent.gov.uk/__data/assets/pdf_file/0004/121954/Kent-and-Medway-Energy-and-Low-Emissions-Strategy-Implementation-Plan-2020-2023.pdf

London Borough of Havering (2021a). London Borough of Havering Climate Change Action Plan. <https://drive.google.com/file/d/1kp6xVX-gGc4AW9Kqv8fFrucOBgnsjnhQ/view>

London Borough of Havering (2021b). Havering Local Plan 2016-2031.

https://www.havering.gov.uk/download/downloads/id/5300/havering_local_plan_2016_-_2031.pdf

Medway Council (2021). Medway Climate Change Action Plan. June 2021.

https://www.medway.gov.uk/downloads/file/5872/medway_climate_change_action_plan_-_june_2021

Met Office (2019). UK Climate Projections 2018 (UKCP18). Accessed June 2020.

<https://www.metoffice.gov.uk/research/approach/collaboration/ukcp/index>

Ministry of Housing, Communities and Local Government (2021). National Planning Policy Framework. Accessed November 2021.

<https://www.gov.uk/government/publications/national-planning-policy-framework--2>

National Highways (2021a). Digital Roads. Accessed August 2021.

<https://nationalhighways.co.uk/media/2chotw13/introducing-digital-roads.pdf>

National Highways (2021b). Net Zero Highways: Our 2030/2040/2050 Plan. Accessed September 2021. <https://nationalhighways.co.uk/media/eispcjem/net-zero-highways-our-2030-2040-2050-plan.pdf>

Thurrock Council (2015). Core Strategy and Policies for Management of Development. Accessed June 2020.

https://www.thurrock.gov.uk/sites/default/files/assets/documents/core_strategy_adopted_2011_amended_2015.pdf

United Nations (1992). The United Nations Framework Convention on Climate Change.

<https://unfccc.int/resource/docs/convkp/conveng.pdf>

United Nations (2015). The Paris Agreement. Accessed 2015.

https://unfccc.int/sites/default/files/english_paris_agreement.pdf

United Nations (2021). The Glasgow Climate Pact.

https://unfccc.int/sites/default/files/resource/cop26_auv_2f_cover_decision.pdf

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