

Appendix 12.1: Steps Involved in Assessing Climate Change Resilience and Adaptation in EIA and Determining the Significance of Impacts

Table 1: Climate Change Resilience and Adaptation Criteria in EIA

Preapplication Stage	Pre-EIA	Step 0: Building climate resilience into the project	- Consider the resilience of the project to climate change impacts during the design stage, including early phases of design. This can be done through delivery of a climate change risk assessment, or by following the principles set out in Steps 2 - 6 below; - Identify appropriate mitigation measures (to reduce the effect of impacts) and incorporate these into design as necessary; and - Reflect the outcome of design for resilience in the Environmental Statement under the description of the project/alternatives studied.
	Scoping	Step 1: Scoping CC Requirements for the EIA	- Identify the scale and scope of the project, including design life; - Identify the climate change projections for use in the assessment; - Identify key climatic variables relevant to the project; - Identify likely effects; and - Engage with and discuss the above with stakeholders/regulators.
	EIA / Environmental Statement	Step 2: Defining the future (climate) baseline	- Define baseline conditions under historic/existing climate conditions; - Define future baseline, using selected climate change projections. This will summarise projected changes in key climate variables (e.g. increase in rainfall, increase in mean summer temperature, wind strength); and - Produce summary of projected future climate changes for non-climate expert audience.
		Step 3: Identifying and determining sensitivity of receptors	- Identify receptors within the elements of the project; - Evaluate the selected receptors to identify their susceptibility and vulnerability as well as their importance; and - Evaluate the selected receptors whether the susceptibility and vulnerability as well as their value/ importance

			changes with future climatic projections identified in Step 2.
		Step 4: Reviewing and determining magnitude of the effect	- Review effects likely to arise from the project identified at Step 2; - Consider probability and consequence to determine the magnitude of the effect; and - Consider the magnitude of the effects identified by other topics and evaluate whether the probability and/or consequence of the effect changes with future climatic projections.
		Step 5: Determination of significance	- Use the sensitivity of receptors identified at Step 3 and the magnitude of the effect identified at Step 4 alongside professional judgement to determine whether the effect is significant/the degree of effect; - Assess the significance of the project effects under the existing climate baseline using standard methodologies for each relevant environmental topic; - Assess the in-combination climate impact applying the significance criteria developed by the relevant environmental topics and using the outcome of the evaluation of sensitivity of receptors/magnitude of effect identified at Step 3 and Step 4; and - Determine whether the significance/degree of the effect remains the same or changes with the future climate conditions.
		Step 6: Developing additional adaptation/ EIA mitigation measures	- Identify additional (secondary) mitigation measures against timescale of future likely significant effects; - Fixed elements for full duration need mitigation built in based on predicted climate effects (less desirable); - Project elements subject to maintenance/future change can have mitigation set for future implementation based on actual climate effects being observed (more desirable); and - Prepare, if appropriate, a Climate Change Resilience and Adaptation Plan that covers the above and includes allocation of responsibilities and funding streams.

Table 2: Criteria for Determining a Receptor's Susceptibility to Climate Change

Vulnerability Category	Description (probability and frequency of occurrence)
High susceptibility	Receptor has no ability to withstand/not be substantially altered by the projected changes to the existing/prevaling climatic factors (e.g. lose much of its original function and form).
Moderate susceptibility	Receptor has some limited ability to withstand/not be altered by the projected changes to the existing/prevaling climatic conditions (e.g. retain elements of its original function and form).
Low susceptibility	Receptor has the ability to withstand/not be altered much by the projected changes to the existing/prevaling climatic factors (e.g. retain much of its original function and form).

Table 3: Criteria for Determining a Receptors Vulnerability to Climate Change

Vulnerability Category	Description (probability and frequency of occurrence)
High vulnerability	Receptor is directly dependent on existing/prevaling climatic factors and reliant on these specific existing climate conditions continuing in future (e.g. river flows and groundwater level) or only able to tolerate a very limited variation in climate conditions.
Moderate vulnerability	Receptor is dependent on some climatic factors but able to tolerate a range of conditions (e.g. a species which has a wide geographic range across the entire UK but is not found in southern Spain).
Low vulnerability	Climatic factors have little influence on the receptors (consider whether it is justifiable to assess such receptors further within the context of EIA – i.e. it is likely that such issues should have been excluded through the EIA scoping process).

Table 4: Criteria for Likelihood Categories

Likelihood Category	Description (probability and frequency of occurrence)
Very High	The event occurs multiple times during the lifetime of the project (60 years), e.g. approximately annually, typically 60 events.
High	The event occurs several times during the lifetime of the project (60 years), e.g. approximately once every five years, typically 12 events.
Medium	The event occurs limited times during the lifetime of the project (60 years), e.g. approximately once every 15 years, typically 4 events.
Low	The event occurs during the lifetime of the project (60 years), e.g. once in 60 years.
Very Low	The event may occur once during the lifetime of the project (60 years).

Table 5: Criteria for Magnitude of Change

Consequence of Impact	Description
Very Large Adverse	National-level (or greater) disruption to strategic route(s) lasting more than 1 week.
Large Adverse	National-level disruption to strategic route(s) lasting more than 1 day but less than 1 week OR Regional level disruption to strategic route(s) lasting more than 1 week.
Moderate Adverse	Regional level disruption to strategic route(s) lasting more than 1 day but less than 1 week
Minor Adverse	Regional level disruption to strategic route(s) lasting less than 1 day.
Negligible	Disruption to an isolated section of a strategic route lasting less than 1 day.