Hampshire Water Transfer and Water Recycling Project

Environmental Statement – Appendix 10.2 Climate change resilience assessment methodology

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1.1 Introduction

1.1.1 This appendix presents the methodology of the climate change resilience (CCR) assessment, which has been undertaken to determine the potential effects of climate change on the Hampshire Water Transfer and Water Recycling Project (hereafter referred to as the 'Proposed Development') as presented in the Environmental Statement (ES) Chapter 10 Carbon and climate change, Volume I (Document reference 6.1, DCO Volume 6).

1.2 Approach

1.2.1 The approach carried out for each step of the CCR assessment is set out below.

Step 1: Identifying climate variables

1.2.2 The first step of the CCR assessment would identify the climate variables and hazards within the study area, receptors associated with the Proposed Development and the likely impacts of climate change.

1.2.3 The receptors for the assessment comprise of individual components associated with the Proposed Development, where section-specific climate hazards can be identified.

1.2.4 Those receptors identified should include both known receptors (such as receptors reported/known to have already experienced a climate-related event (i.e. flooding)) and unknown receptors which are yet to be impacted according to available data and literature.

1.2.5 The climate variables likely to change as a result of climate change are identified from climate projection data accessed from the UK Climate Projection (UKCP) database [1] for climate variables applicable to the site.

Step 2: Climate vulnerability assessment

1.2.6 Where it is identified that receptors are considered to have the potential to be vulnerable to climate change with consideration for primary and tertiary mitigation, a climate vulnerability assessment is undertaken. The risks to the Proposed Development and its associated infrastructure are qualitatively identified through a hazard likelihood and consequence matrix. The descriptors of likelihood and consequence are provided in Table 1-1 and Table 1-2. The matrix is detailed in Table 1-3.

Table 1-1 Descriptors of likelihood for climate hazards

Likelihood	Description
Almost certain (5)	The climate hazard is likely to occur numerous times during each phase of the Proposed Development, e.g. approximately once per year.
Likely (4)	The climate hazard is likely to occur on several occasions during each phase of the Proposed Development e.g. approximately once every five years.

Likelihood	Description
Moderate (3)	The climate hazard will occur on limited occasions during each phase of the Proposed Development e.g. approximately once every ten years.
Unlikely (2)	The climate hazard will occur infrequently during each phase of the Proposed Development e.g. approximately once every 15 years.
Very unlikely (1)	The climate hazard may occur once during each phase of the Proposed Development e.g. the event could occur once over the lifetime of the project.

Table 1-2 Descriptors of consequences as a result of climate hazards

Consequence	Description
Catastrophic (5)	Permanent damage to infrastructure, resulting in a severe lasting effect to the Proposed Development to function. Very significant adverse effect to the surrounding environs requiring remediation and restoration.
Major (4)	Extensive damage to infrastructure requiring major repairs and maintenance, resulting in a severe effect to the Proposed Development to function. Significant adverse effect to the surrounding environs.
Moderate (3)	Limited damage to infrastructure requiring maintenance or minor repair, resulting in a potential effect to the Proposed Development to function. Adverse effect to the surrounding environs.
Minor (2)	Small and localised damage to infrastructure and a minor effect to the Proposed Development to function. Potential for slight adverse effect to the surrounding environs.
Insignificant (1)	No damage to infrastructure or the ability of the Proposed Development to function. No adverse effect to the surrounding environs.

Table 1-3 Likelihood/consequence matrix for determining risk rating

Likelihood	Consequence				
	Insignificant	Minor	Moderate	Major	Catastrophic
Almost certain	Low	Medium	High	Extreme	Extreme
Likely	Low	Medium	Medium	High	Extreme
Moderate	Low	Low	Medium	High	Extreme
Unlikely	Low	Low	Medium	Medium	High
Very unlikely	Low	Low	Low	Low	Medium

1.2.7 Where climate risks are identified as 'low', the resilience of the Proposed Development to projected effects of climate change is considered to be 'high' without the need for secondary mitigation, and effects are considered to be not significant.

Step 3: Mitigation and resilience rating

1.2.8 For climate risks identified as 'medium', 'high' or 'extreme' in the likelihood/consequence matrix in Step 2 (see Table 1-3), secondary mitigation measures are identified. With the proposed mitigation measures taken into consideration, a residual risk rating is then assessed. For each hazard, a resilience rating is identified as one of the following:

1. High – strong degree of climate resilience. Remedial action or adaptation may be required but is not a priority.
2. Moderate – a moderate degree of climate resilience. Remedial action or adaptation is recommended.
3. Low – a low level of climate resilience. Remedial action or adaptation is required as a priority.

1.3 Definition of significance

1.3.1 For climate change risks assessed in Step 2 as having a 'low' risk rating, the significance of the CCR assessment is determined as 'not significant'.

1.3.2 For climate change risks assessed as having a 'medium', 'high' or 'extreme' risk rating, the significance of effect is assessed based on the residual risk and resilience rating (Step 3) for each climate impact. The matrix presented in Table 1-4, is based on industry good practice and is used to identify the significance of effect based on the risk and resilience rating for the CCR assessment.

Table 1-4 Significance criteria

Risk Rating	Resilience rating		
	High	Minor	Low
Extreme	Significant	Significant	Significant
High	Not significant	Significant	Significant
Medium	Not significant	Not significant	Significant
Low	Not significant	Not significant	Not significant

References

[1] Met Office, *UK Climate Projection: Headline Findings August 2022,* 2022 [Online].


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