



Environmental Statement

Chapter 15: Climate Change

Appendix 15.3: Climate Change Risk Assessment

Document 6.15C

On behalf of
Oxfordshire Railfreight Limited

Prepared by RPS Ltd.
March 2026

Oxfordshire Strategic Rail Freight Interchange

Environmental Statement: Appendix 15.3 – Climate Change Risk Assessment

794-PLN-ESH-12746
Appendix 15.3 – Climate Change Risk Assessment
Rev 03
February 2026

Appendix 15.3 – Climate Change Risk Assessment

Document status

Version	Purpose of document	Authored by	Reviewed by	Approved by	Review date
00	Internal Draft	TM	AP	AP	01/08/2025
01	Issue	TM	AP	AP	04/09/2025
02	Final Issue	TM	AP	AP	04/09/2025
03	Minor updates	TM	AP	AP	13/02/2026

Approval for issue

[REDACTED]	[REDACTED]	February 2026
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1 Introduction

1.1 Overview

- 1.1.1 This appendix to Chapter 15: Climate Change summarises potential changes in climatic parameters at the Proposed Development location and considers whether there is potential for likely significant environmental effects, in line with the UK's guidance on climate change risk assessment (CCRA).
- 1.1.2 Besides climate risks to the Proposed Development itself, there are potential inter-relationships between climate change and several other environmental topic areas reported in other chapters of the Environmental Statement (ES), such as water environment, ecology and landscape. The climate projections summarised in this appendix have been provided to all ES chapter authors in order that any changes in the future baseline or sensitive receptors due to climate change can be evaluated if relevant to the respective impact assessments.
- 1.1.3 Legislation and policy in relation to climate change and CCRA is set out in Appendix 15.1: Climate Change Policy Review.
- 1.1.4 The CCRA has followed the following guidance documents in its approach to assessment and assignment of significance:
- Institute of Sustainability and Environmental Professionals (ISEP, formerly IEMA) Guidance on Climate Change Adaptation and Resilience (IEMA, 2020); and
 - Design Manual for Roads and Bridges (DMRB) LA 114: Climate (National Highways, 2021).
- 1.1.5 The assessment has been informed by both the IEMA and DMRB guidance. The DMRB guidance sets out the requirements for assessing and reporting the effects of highways on climate change, and from climate change on highways. Given the extensive Highway Works proposed, this guidance was considered appropriate to align with, alongside the wider IEMA guidance.

1.2 Methodology

- 1.2.1 The scope of this CCRA is defined in accordance with the Climate Change Committee's recommendations. This appendix considers the climate-related physical risks on the Proposed Development and identifies the current and anticipated risks throughout its lifetime. This appendix evaluates the processes utilised for managing the risks through four key stages:
1. An assessment of the baseline climate to understand present-day vulnerability and assess current climate-related risks, opportunities, and levels of adaptation.
 2. An assessment of future climate projections to understand the future vulnerability.
 3. Identify the vulnerability of the Proposed Development to climate change (including the identification of hazards and receptors) and undertake an assessment of the likelihood and consequence of potential impacts and effects, respectively.
 4. Identify adaptation and mitigation commitments.
- 1.2.2 This CCRA considers climate risks on the operation of the Proposed Development and its users. It doesn't assess climate risks for construction or decommissioning for the following reasons (further detailed at Section 4):
- The construction programme for the Proposed Development is relatively short (construction is anticipated to be phased from 2028 to early 2035), with variations in

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climatic parameters minimal over this period when compared to the present day baseline. It is considered construction work practices will continue to evolve and adapt to associated risks. As such, there are not considered to be any significant climate risks associated with the construction phase, and they have therefore not been considered further.

- The Proposed Development is expected to be delivered over a number of years, and then to be in place indefinitely, subject to viability and market conditions, with no fixed lifetime of decommissioning phase. As such, climate risks in relation to the decommissioning of the Proposed Development have been scoped out.

2 Current Baseline Conditions

2.1 Regional Current Climatic Conditions

- 2.1.1 Data from the Met Office (Met Office, 2016) was used to build a profile of recent regional climatic conditions within the Midlands region (as the Site is located to the north of Oxford and the Met Office considers it to be located within the English Midlands).
- 2.1.2 Mean annual temperatures over the region vary from around 8°C to just over 10°C. Minimum temperatures usually occur around sunrise and maximum temperatures are normally 2 or 3 hours after midday. Since the Midlands region is at some distance from the sea, with its moderating effects on temperature, the annual range is more pronounced than in most parts of the UK. January is the coldest month, with mean daily minimum temperatures varying from just below 0°C to about 1.5°C, whilst July is the warmest month, with mean daily maximum temperatures exceeding 22°C in the south and east Midlands. Frost is a generally widespread characteristic of the Midlands.
- 2.1.3 Average annual sunshine durations over the Midlands range between 1,400 – 1,600 hours per year.
- 2.1.4 Rainfall is generally well-distributed through the year but most rainfall occurs in autumn and winter. Periods of prolonged rainfall can lead to widespread flooding, especially in winter and early spring when soils are usually near saturation.
- 2.1.5 Thunderstorms are most likely to occur from May to September, reaching their peak in July and August, with eastern areas among the most prone in the UK. High intensity rainfall is often associated with summer showers and thunderstorms, rates of 100 mm/hr or more being possible for short periods. Over most of the area, snowfall is normally confined to the months from November to April, except in upland areas where it can occur beyond these months. The number of days with snowfall is, however, highly variable from year to year.
- 2.1.6 The Midlands region is one of the more sheltered parts of the UK in terms of wind speed. Mean wind speeds and strengths of gusts are generally strongest in January and February.

2.2 Local Climate Conditions

- 2.2.1 The average climate conditions between 1991 and 2020 at the Oxford Weather station (the closest weather station to the Proposed Development, approximately 20 km to the south) have been taken from Met Office data (Met Office, 2020) and reproduced in Table 2.1 below.

Table 2.1: Average weather conditions at Oxford Weather Station 1991-2020

Month	Maximum Temperature (°C)	Minimum Temperature (°C)	Days of air frost (days)	Sunshine (hours)	Rainfall (mm)	Days of rainfall ≥1 mm (days)	Monthly mean wind speed at 10 m (knots)
January	7.98	2.38	8.40	63.39	59.57	12.07	10.09
February	8.63	2.32	7.50	81.90	46.77	9.40	9.06
March	11.29	3.64	3.80	118.16	43.16	9.10	10.21
April	14.41	5.29	1.43	165.60	48.65	8.87	8.01
May	17.68	8.17	0.10	200.27	56.91	9.63	8.05
June	20.71	11.14	0.00	197.09	49.69	8.00	7.19

Month	Maximum Temperature (°C)	Minimum Temperature (°C)	Days of air frost (days)	Sunshine (hours)	Rainfall (mm)	Days of rainfall ≥1 mm (days)	Monthly mean wind speed at 10 m (knots)
July	23.06	13.09	0.00	211.99	52.50	8.30	7.53
August	22.50	13.00	0.00	193.28	61.66	9.04	7.32
September	19.44	10.65	0.00	145.30	51.87	8.63	6.98
October	15.09	7.95	0.73	110.15	73.18	10.87	8.02
November	10.88	4.85	3.17	70.75	71.47	12.15	8.50
December	8.23	2.59	8.60	57.60	66.12	11.61	9.26
Annual	15.02	7.12	33.73	1615.48	681.55	117.67	8.35

- 2.2.2 As shown in Table 2.1, average maximum and minimum temperatures are lowest between November and February, whilst average maximum and minimum temperatures are highest between June and September. Most frost occurs between December and February. The average amount of sunshine hours is lowest between November and January and highest between May and August.
- 2.2.3 Rainfall is relatively evenly distributed throughout the year, with the highest averages in October and November. There is also little difference during the year between the number of days of rainfall above 1 mm a month, with the highest averages between October and January. On average, wind speeds are stronger in winter months than in summer months.

2.3 Past Extreme Weather Events

- 2.3.1 A Local Climate Impacts Profile (LCIP) has been reviewed for the Cherwell area, which considered extreme weather events between 2003 – 2008, identifying that ‘*flooding was by far the most significant extreme weather event, with significant flooding occurring 6 times in a 5 year period, 2 of the events being serious and widespread*’. Heatwaves were found to be infrequent during the assessment period (Cherwell District Council, 2016).
- 2.3.2 Oxfordshire County Council have undertaken two LCIPs for the period 1996 to 2009 (Oxfordshire County Council, 2006 and 2010). Together, 356 weather-related incidents were identified, including large storms, heavy rain and flooding, heatwaves, droughts and cold spells/snow. Of these, flooding was both the most frequent and most damaging type of weather event, followed by damage from wind storms, cold spells and heatwaves.
- 2.3.3 As explained in the Oxfordshire County Council summary of future and current vulnerability to climate change in Oxfordshire (AtkinsRealis, 2024), from 2007 to 2024: ‘*the county experienced 20 significant flood events, 12 named storms, 8 cold snaps, 4 major heatwaves and 3 periods of drought. Recent flooding in January 2024 led to 32 flood alerts for Oxfordshire, widespread flooding and major transport disruption*’.
- 2.3.4 The impact of flooding will be assessed in Chapter 9: Water Environment. The impact from other extreme weather events, where appropriate, will be assessed in the below sections.
- 2.3.5 In 2022, a new maximum temperature record was set for Oxford, when temperatures reached 38.1°C (University of Oxford, n.d.).

3 Climate Change Projections

3.1.1 The Met Office Hadley Centre (MOHC) publishes both probabilistic climate change projections and downscaled global circulation model outputs for the UK at various spatial scales. This is called the UKCP18 dataset, first published in November 2018 and at v2.13.0 (MOHC, 2025) at the time of writing. The projections are based on representative concentration pathway (RCP) scenarios used by the Intergovernmental Panel on Climate Change, thereby giving a low-high range in potential global GHG reduction initiatives and resulting rate of climatic effects over a given time period.

3.1.2 The probabilistic projections published at 25 km grid cell scale are considered the most useful for this assessment, being designed to show a range of projection values that reflect uncertainty in modelled outcomes. The CP18 Overview Report (MOHC, 2018a) and supporting factsheets (MOHC, 2018b) for the wider regional and UK context have also been drawn from.

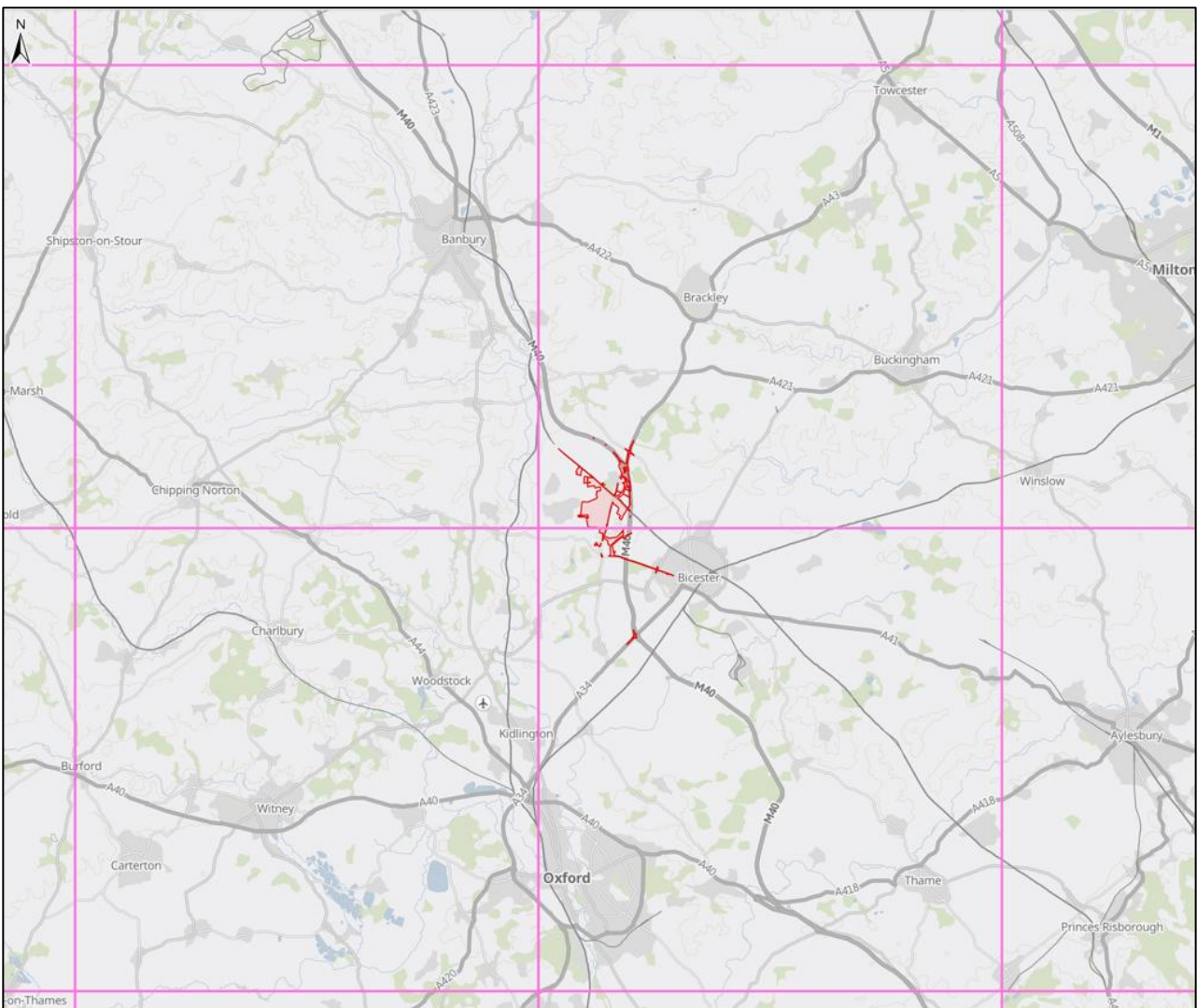


Plate 3.1: Proposed Development Order Limits and 25 km grid cell used for the assessment

3.1.3 It is acknowledged that the Proposed Development spans over two 25 km grid cells. However, given the majority of works and associated operational activities lie within the northern 25km grid cell, and it can be reasonably anticipated that any difference in climate projections for the southern grid cell are negligible, only climate projections for the northern 25 km grid cell are considered.

- 3.1.4 The Proposed Development is expected to be delivered over a number of years, and then to be in place indefinitely with no fixed lifetime or decommissioning phase. National Highways guidance document DMRB LA 114 states that assessment of climate risks and resilience should take the life span of the project to be 60 years (National Highways, 2021). Climate change projections for two periods in the mid- and late century have therefore been considered: average conditions during 2040-2069 and 2070-2099. These will be used to assess receptors both at the Main Site and the Highway Works elements of the Proposed Development.
- 3.1.5 The Overview Report and factsheets indicate that in general, warmer, wetter winters and hotter, drier summers are predicted, though still with natural variations in that pattern from year to year. No clear trend in wind speeds or storminess is predicted, though the data currently published cannot make projections for local conditions and wind gusts.
- 3.1.6 Within the last two decades, annual average temperature and precipitation records have been consistently set in the UK relative to the preceding baseline period, although generally wetter rather than drier summers have been seen in this period. In the near future, roughly the next years to decade, these natural variations will likely continue to be the most visible year-to-year changes in climate but in subsequent decades, within the Proposed Development's operating lifetime, the anthropogenic climatic changes are expected to become more apparent.
- 3.1.7 Table 3.1 and Table 3.2 show potential climatic changes from the UKCP18 probabilistic dataset averaged over the 2040-2069 and 2070-2099 time periods relative to the 1981-2010 baseline (most recent available baseline within the UKCP18 dataset) for the 25 km grid square in which the site is located. The data presented here is for the emissions pathway RCP8.5, which is a high-emissions scenario assuming 'business as usual' growth globally with little additional mitigation. This is a conservative (worst-case) approach for the assessment.
- 3.1.8 In summary, the data within Table 3.1 shows increased intensity in seasonal precipitation trends: precipitation is predicted to increase during the wettest season and decrease during the driest season. Temperatures are anticipated to increase across the year, both during the coldest and hottest seasons and months. Additionally, humidity is anticipated to increase. Table 3.2 indicates that these trends will continue and amplify towards the end of the century.
- 3.1.9 It should be noted that the UKCP18 probabilistic projections presented in Table 3.1 and Table 3.2 are relative to a 1981-2010 baseline, while the current baseline characterisation has used a 1991-2020 baseline (as presented in Table 2.1). This method was deemed appropriate as the most up-to-date baseline was used for both characterisations: it is not possible to use the 1991-2020 baseline for UKCP18 projections, while the 1981-2010 baseline would reflect the current climatic baseline less accurately than the 1991-2020 baseline, with regard to characterising current climate.
- 3.1.10 The 1981-2010 and 1991-2020 baselines are generally similar, with expected small trends in increases in annual average temperature and precipitation. The driest month in the 1981-2010 baseline, February, changes to March in the 1991-2020 baseline, with the driest season also changing from summer to spring. The coldest month in the 1981-2010 baseline also changes from February to January in the 1991-2020 baseline. Results presented in Table 3.1 and Table 3.2 have used the 1981-2010 baseline months and seasons, but the trends seen are comparable to if the extreme months and seasons were used from the 1991-2020 baseline. For example, both February (the coldest month according to the 1981-2010 baseline) and January (the coldest month according to the 1991-2020 baseline) are predicted to get hotter over the period 2040-2099, and minimum temperatures are also predicted to get hotter.

Table 3.1: Climate Parameter Projections 2040–2069¹

Parameter	Units	10th percentile	Median value	90th percentile
Precipitation – annual average	%	-8.41	-1.19	5.98
Precipitation – driest season	%	-16.02	-1.83	13.71
Precipitation – wettest season	%	-10.67	2.08	16.58
Precipitation – driest month	%	-22.25	1.20	23.69
Precipitation – wettest month	%	-20.09	8.07	33.47
Temperature – annual average	°C	0.91	1.87	2.84
Temperature – hottest season average	°C	1.14	2.56	3.99
Temperature – hottest season maximum	°C	1.01	2.85	4.76
Temperature – coldest season average	°C	0.51	1.65	2.86
Temperature – coldest season minimum	°C	0.43	1.76	3.19
Temperature – hottest month average	°C	1.15	2.91	4.72
Temperature – hottest month maximum	°C	0.97	3.26	5.59
Temperature – coldest month average	°C	0.36	1.60	2.91
Temperature – coldest month minimum	°C	0.42	1.73	3.14
Humidity - Annual	%	3.63	10.41	17.88
Humidity - Summer	%	0.57	10.68	21.13
Humidity - Winter	%	1.08	10.98	21.31

† daily mean, maximum or minimum, as applicable, averaged over time period specified
n.b. 10th and 90th percentile and median values for scenario RCP8.5.

Table 3.2: Climate Parameter Projections 2070–2099¹

Parameter	Units	10th percentile	Median value	90th percentile
Precipitation – annual average	%	-10.26	-0.02	9.61
Precipitation – driest season	%	-25.46	-6.17	16.98
Precipitation – wettest season	%	-12.48	7.67	30.20
Precipitation – driest month	%	-27.01	4.41	37.22
Precipitation – wettest month	%	-22.43	13.14	44.56

¹ Precipitation during the driest month (both within Tables 1.2 and 1.3) shows an unexpected projected increase. It is understood that this is due to February being the driest month in the year in this area of the UK; as winters get milder and wetter it can be expected that precipitation is likely to increase during February as projections indicate. March (the driest month within the 1991-2020 baseline) also shows an increase in precipitation, albeit a lower project increase.

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Parameter	Units	10th percentile	Median value	90th percentile
Temperature – annual average	°C	2.01	3.67	5.36
Temperature – hottest season average	°C	2.60	5.07	7.62
Temperature – hottest season maximum	°C	2.50	5.69	8.98
Temperature – coldest season average	°C	1.20	3.00	4.99
Temperature – coldest season minimum	°C	1.05	3.17	5.61
Temperature – hottest month average	°C	2.74	5.97	9.19
Temperature – hottest month maximum	°C	2.70	6.83	11.02
Temperature – coldest month average	°C	0.88	2.92	4.98
Temperature – coldest month minimum	°C	1.08	3.21	5.48
Humidity - Annual	%	10.58	21.07	32.44
Humidity - Summer	%	4.80	19.90	35.63
Humidity - Winter	%	6.49	22.57	39.10

† daily mean, maximum or minimum, as applicable, averaged over time period specified
n.b. 10th and 90th percentile and median values for scenario RCP8.5

3.1.11 No clear trend for change in wind speed during this time period is shown in the regional projections data. Probabilistic projections do not provide wind speed data.

4 Climate Risk and Resilience Scoping

4.1.1 Based on the information available for the Proposed Development, a high level risk assessment has been undertaken. A climate change risk occurs when a potential climate change hazard has an impact on a Proposed Development receptor. The overall degree of risk is determined by the likelihood of the impact and the degree of consequence to the Proposed Development from the impact. These are both influenced by the sensitivity of receptor to the climate change hazard. The following are therefore key components in the identification and determination of climate change risk to the Proposed Development:

- **Climate change hazard** – a climate change-related event that has the potential to generate an impact on a receptor, for example, increased frequency or magnitude of flooding events or heatwave events. Hazards can be chronic or acute. These have been identified by considering the current baseline and future climate projections.
- **Receptor** – the subject of the climate change hazard. Given the variability in the nature of the potential effects of climate change on the scheme, receptors have been identified on a risk-specific basis, including the workforce, the assets and their operation, maintenance and refurbishment, and end-users.
- **Likelihood** – the probability that the potential impact would occur, based on the probabilistic climate change projections, accounting for embedded design measures.
- **Consequence** – the scale, severity or complexity of the impact, including how it impacts on the Proposed Development in terms of damage, disruption to operation or additional maintenance and repair requirements, accounting for embedded design measures.

4.1.2 Each element of the risk assessment (likelihood and consequence) has been evaluated following the definitions in Table 4.1 and Table 4.2 below. An assessment of significance has been subsequently undertaken in line with the significance matrix presented in Table 4.3 below. IEMA (2020) guidance states that definitions ‘*will vary from scheme to scheme, and should be tailored to a specific project*’, and that it is not within its scope ‘*to prescribe a single approach to the assessment*’. Table 4.1 to Table 4.3 have been adapted from the DMRB LA 114 (National Highways, 2021) guidance.

4.1.3 As set out in paragraph 3.1.4, climate projections in the mid- to late-century have been used to capture the range of climatic changes over the project lifetime, which aligns with the 60 year assessment period as recommended by National Highways (2021) guidance.

Table 4.1: Likelihood Category Definitions

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 can occur once during the lifetime of the project (60 years).

Table 4.2: Consequence Category Definitions

Consequence of Impact	Description
Very large adverse	<p>Operation – national level (or greater) disruption to strategic route(s) lasting more than 1 week;</p> <p>Acute impact to functionality with widescale disruption to the operation of the Proposed Development and complete loss of function and usability that is long-term (e.g. greater than 1 week);</p> <p>A large and measurable decrease in receptor lifespan following the occurrence of a climate impact;</p> <p>Major increase in the need for maintenance and repair.</p>
Large adverse	<p>Operation – 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.</p> <p>Disruption to the operation of the Proposed Development with loss of function and usability lasting more than 1 week;</p> <p>Measurable decrease in receptor lifespan following the occurrence of a climate impact;</p> <p>Large increase in necessary maintenance and repairs following the occurrence of a climate event.</p>
Moderate adverse	<p>Operation – regional level disruption to strategic route(s) lasting more than 1 day but less than 1 week.</p> <p>Disruption to the operation of the Proposed Development with some loss of function and usability that is medium term (lasting more than 1 day but less than 1 week);</p> <p>Measurable decrease in receptor performance or lifespan;</p> <p>Moderate increase in necessary maintenance and repairs following the occurrence of a climate event.</p>
Minor adverse	<p>Operation – regional level disruption to strategic route(s) lasting less than 1 day.</p> <p>Minimal disruption to the operation of the Proposed Development with minimal disruption to its function and usability that is short-term (lasting less than one day);</p> <p>A small measurable impact to a receptor’s performance or lifespan due to a chronic effect;</p> <p>Small but measurable increase in necessary maintenance and repairs.</p>
Negligible	<p>Operation – disruption to an isolated section of a strategic route lasting less than 1 day.</p> <p>Very small or no quantifiable impact to a receptor’s performance with no disruption in function and usability of the Proposed Development;</p> <p>No measurable deterioration of a receptor’s lifespan due to a chronic impact;</p> <p>No measurable increase in necessary maintenance and repairs.</p>

Table 4.3: Significance Matrix

		Measure of Likelihood				
		Very low	Low	Medium	High	Very high
Measure of consequence	Very large	Not significant	Significant	Significant	Significant	Significant
	Large	Not significant	Not significant	Significant	Significant	Significant
	Moderate	Not significant	Not significant	Significant	Significant	Significant
	Minor	Not significant	Not significant	Not significant	Not significant	Not significant
	Negligible	Not significant	Not significant	Not significant	Not significant	Not significant

- 4.1.4 Table 4.4 shows the climate change hazards and potential consequences on the Proposed Development and its users that have been identified and the risk scores assigned, following the approach set out in paragraphs 4.1.1 and 4.1.2. Hazards and potential consequences identified have been informed by the Climate Change Committee (CCC) third UK Climate Change Risk Assessment (CCRA3) (CCC, 2021), specifically chapters regarding infrastructure, and health, communities and the built environment. Elements of the Proposed Development have been identified where hazards relate to specific elements.
- 4.1.5 The construction programme for the Proposed Development is relatively short (construction is anticipated to be phased from 2028 to early 2035, see Chapter 2: Description of Development and Alternatives), with variations in climatic parameters minimal over this period when compared to the present day baseline, as set out in Section 2. Any potential consequences that would arise relate to worker health impacts due to heightened temperatures, and increased frequency and intensity of extreme weather events. Construction work practices are being adapted to existing evolving climate conditions and weather in the UK, with industry standard health and safety practices employed with regards to heatstroke or extreme weather events. As such, there are not considered to be any further significant climate risks associated with the construction phase. Risks arising during the construction phase have therefore not been considered further.
- 4.1.6 The Proposed Development is expected to be delivered over a number of years, and then to be in place indefinitely, subject to viability and market conditions, with no fixed lifetime of decommissioning phase. As such, climate risks in relation to the decommissioning of the Proposed Development have been scoped out.

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Table 4.4: Risk scores for the Proposed Development

Hazard	Potential Impact	Embedded Mitigation	How the measure will be secured	Likelihood	Consequence	Significance of Impact
Main Site – Rail Terminal, Warehousing and Buildings						
Increases in average and extreme air temperatures, both in winter and summer.	High temperatures resulting in overheating within buildings leading to worker health impacts.	Building design to include adequate ventilation, in line with building regulations.	Design approach document / project description	Medium	Negligible	Not Significant
	High temperatures leading to increased energy demand for cooling.	Building design to minimise excessive solar gain during the summer. Inclusion of green and blue infrastructure within the Proposed Development's design, which has the potential to reduce urban temperatures.		Very high	Negligible	Not Significant
Changes to rainfall patterns, leading to increased precipitation in winter and reduced precipitation in summer.	Flooding of the site.	Flood risk and drainage is assessed in Chapter 9: Water Environment. Appropriate climate change allowances for rainfall intensity and peak river flows have been considered in the assessment of effects and drainage design. More information can be found in Chapter 9: Water Environment.				
	Structural damage to buildings and pavement resulting from subsidence caused by drought (shrinking and swelling of soils due to excessive rainfall and drought).	Building regulations for structural design with safety margin. All structures will be designed in accordance with current guidance. Pavement foundations will be designed with regard to National	Design approach document / project description	Low	Moderate Adverse	Not Significant

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Hazard	Potential Impact	Embedded Mitigation	How the measure will be secured	Likelihood	Consequence	Significance of Impact
		Highways' design standards.				
	Consistently decreased precipitation during the driest season resulting in drought and subsequent water shortages.	Water efficient equipment will be installed within the Proposed Development offices to control or limit water usage.	Design approach document / project description	Low	Minor Adverse	Not Significant
Increased frequency and intensity of extreme weather i.e. storms and high winds.	Structural damage to buildings resulting from extreme weather events (storms or snow loads).	Building regulations for structural design with safety margin. All structures will be designed in accordance with current guidance. Appropriate maintenance schedules will be implemented to review and maintain building condition and manage disruption.	Compliance with building regulations. Operational maintenance plans.	Low	Moderate Adverse	Not Significant
Increased humidity.	Increased humidity resulting in damage to building fabric from damp.	Building design to include adequate ventilation in line with building regulations.	Design approach document / project description.	Low	Negligible	Not significant
Main Site Infrastructure, Highways Works						
Increases in average and extreme air temperatures, both	High temperatures and temperature fluctuations causing thermal contraction and	Road design in line with latest available National Highways' design standards. Structures,	Design approach document /	Medium	Minor Adverse	Not Significant

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Hazard	Potential Impact	Embedded Mitigation	How the measure will be secured	Likelihood	Consequence	Significance of Impact
in winter and summer.	expansion of the pavement, resulting in pavement surfaces cracking.	including bridges will be designed in accordance with current guidance and relevant National Highways' design standards.	project description.			
	High temperatures increasing the risk of road accidents due to overheating of vehicles, increased frequencies of vehicle fires or smoke from wildfires moving across the roads.	Road design in line with best practice requirements regarding emergency vehicle access. Regular maintenance of road and parking surfaces.	Design approach document / project description.	Medium	Minor Adverse	Not Significant
	High temperatures causing damage to rail infrastructure, including rail buckling and line sag. This may result in increased maintenance costs, reduced lifespan of components and reduced rail functionality.	Rail lines to be constructed and designed in accordance with manufacturing and British Standards.	Compliance with British Standards.	Low	Moderate Adverse	Not Significant
Changes to rainfall patterns, leading to increased precipitation in winter and reduced precipitation in summer.	Reduced precipitation during summer and increased frequency of extreme weather events may lead to 'summer ice', where residues built up on roads during dry spells	Road drainage will be detailed in Chapter 9: Water Environment of the Environmental Statement. This drainage will be regularly maintained to maximise drainage	Design approach document / project description. Operational maintenance plans.	Medium	Minor Adverse	Not Significant

Appendix 15.3 – Climate Change Risk Assessment

Hazard	Potential Impact	Embedded Mitigation	How the measure will be secured	Likelihood	Consequence	Significance of Impact
	and become slippery following heavy rain.	functionality to minimise risk of residue build-up on roads. Road design in line with best practice requirements regarding emergency vehicle access.				
	Flooding of site.	Flood risk and drainage is assessed in Chapter 9: Water Environment of the Environmental Statement. Appropriate climate change allowances for rainfall intensity and peak river flows have been considered in the assessment of effects and drainage design. Climate change allowances were agreed with statutory consultees. More information can be found in Chapter 9: Water Environment of the Environmental Statement.				
	Structural damage to bridge structure resulting from subsidence caused by drought (shrinking and swelling of soils due to excessive rainfall and drought)	Bridge design in line with National Highways' design standards.	Design approach document / project description.	Very low	Large Adverse	Not Significant
	Increased precipitation during the wettest season causing instability of embankments (rail and highways).	Drainage infrastructure will be designed to adequately manage rainfall and runoff. Detailed within Chapter 9: Water Environment of the Environmental Statement.	Included in drainage strategy	Low	Moderate adverse	Not significant
Increased frequency and intensity of extreme weather i.e.	Increased storm frequencies may cause increased incidence of	Appropriate maintenance schedules will be implemented to	Operational maintenance plans.	Medium	Minor Adverse	Not Significant

Appendix 15.3 – Climate Change Risk Assessment

Hazard	Potential Impact	Embedded Mitigation	How the measure will be secured	Likelihood	Consequence	Significance of Impact
storms and high winds.	debris on rail lines and damage to rail infrastructure.	review and maintain infrastructure condition and manage disruption.				
	Increased frequency and intensity of extreme weather events (storms or snow loads) may cause damage to items such as signs, signals, lighting, fencing, and road markings throughout the Proposed Development. This would result in increased maintenance costs.	Building regulations for structural design with safety margin and ensuring appropriate maintenance schedules are in place. Appropriate maintenance schedules will be implemented to review and maintain infrastructure condition and manage disruption.	Compliance with building regulations. Operational maintenance plans.	Medium	Minor Adverse	Not significant
	Structural damage/increased loading of bridge structure caused by extreme weather events and storms.	Bridge design in line with relevant National Highways' design standards.	Included in design approach document/ project description.	Very low	Large adverse	Not significant

Appendix 15.3 – Climate Change Risk Assessment

- 4.1.7 Risks arising from flooding (including the influence of climate change) are assessed as part of the planning application within Chapter 9: Water Environment, where appropriate drainage, flood management and resilience have been provided.
- 4.1.8 Elevated average temperatures and sustained heightened temperatures, have been identified as resulting in potential consequences on worker health, damage to pavements and rail infrastructure, and increased incidence of road accidents (i.e. due to overheating, vehicle fires and visibility). Such potential consequences are mitigated through suitable design measures embedded in the Proposed Development, alongside suitable operational maintenance. Alongside the appropriate design of the road network by the Applicant, and implementation of operational management plans, the severity of such potential consequences will be minimised by the Road Operator (National Highways) by implementing appropriate mitigation measures.
- 4.1.9 Any significant decrease in annual or dry season rainfall could exacerbate water supply stress within the region. The Applicant can aid in increasing water security through choice of water-efficient fittings and landscaping/SuDS design. Thames Water has an obligation to plan for resilience supplies to customers, taking into account population growth and the impacts of climate change, and outlines its approach to adapting to change within its Water Resources Management Plan (Thames Water, 2024).
- 4.1.10 While no clear trend in wind speed is shown in the projections, national climate risk and resilience assessments (CCC, 2021) have noted that weather extremes such as winter storms may become more likely, which would include high winds. However, risks of gale force winds in the UK already exist and as such, the Proposed Development is expected to be designed for structural resilience to these conditions.
- 4.1.11 In conclusion, the assessment of effects has taken into account embedded mitigation measures in determining the combined risk score. Considering such embedded mitigation measures, the potential risk posed to the Proposed Development as a result of climate change hazards would be reduced to negligible (not-significant level) in EIA terms.

References

- AtkinsRealis (2024). A summary of the current and future climate vulnerability of Oxfordshire. Available at: <https://storymaps.arcgis.com/stories/a7b4bd6979984f46aa09d421a4b3ab3d>. Accessed August 2025
- Cherwell District Council (2016). Cherwell Local Plan 2011-2031. Available at: <https://www.cherwell.gov.uk/downloads/download/45/adopted-cherwell-local-plan-2011-2031-part-1-incorporating-policy-bicester-13-re-adopted-on-19-december-2016>. Accessed August 2025
- Climate Change Committee (2021). Independent Assessment of UK Climate Risk, Advice to the Government for the UK's third Climate Change Risk Assessment (CCRA3). Available at: <https://www.theccc.org.uk/publication/independent-assessment-of-uk-climate-risk/>. Accessed August 2025
- IEMA (2020). Environmental Impact Assessment Guide to: Climate Change Resilience & Adaptation. Available at: <https://www.iema.net/media/mabhqino/iema-eia-climate-change-resilience-june-2020.pdf>. Accessed August 2025
- Met Office (2016). Midlands: Climate. Available at: https://www.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/weather/learn-about/weather/regional-climates/midlands_-_climate-met-office.pdf. Accessed August 2025
- Met Office (2020). UK Climate Averages Oxford. Available at: <https://www.metoffice.gov.uk/research/climate/maps-and-data/uk-climate-averages/gcpn7mp10>. Accessed August 2025
- MOHC (2025). UK Climate Projections User Interface v2.13.0. Available at: <https://ukclimateprojections-ui.metoffice.gov.uk/ui/home>. Accessed August 2025
- MOHC (2018a). UKCP18 Science Overview Report. Available at: <https://www.metoffice.gov.uk/pub/data/weather/uk/ukcp18/science-reports/UKCP18-Overview-report.pdf>. Accessed August 2025
- MOHC (2018b). UKCP18 Factsheets. Available at: <https://www.metoffice.gov.uk/research/approach/collaboration/ukcp/using-ukcp/guidance>. Accessed August 2025
- National Highways (2021). Standards for Highways: LA 114: Climate. Available at: <https://www.standardsforhighways.co.uk/tses/attachments/d1ec82f3-834b-4d5f-89c6-d7d7d299dce0?inline=true>. Accessed August 2025
- Oxfordshire County Council (2006). Local Climate Impacts Profile 2006.
- Oxfordshire County Council (2010). Local Climate Impacts Profile 2007-09.
- Thames Water (2024). Water Resources Management Plan: Keeping water flowing for the future. Available at: <https://www.thameswater.co.uk/media-library/home/about-us/regulation/water-resources/wrmp24/overview.pdf>. Accessed August 2025
- University of Oxford (n.d.) A Brief Summary of Oxford's Climate. [Online] <https://www.geog.ox.ac.uk/research/climate/rms/oxford-climate.html>. Accessed July 2025.