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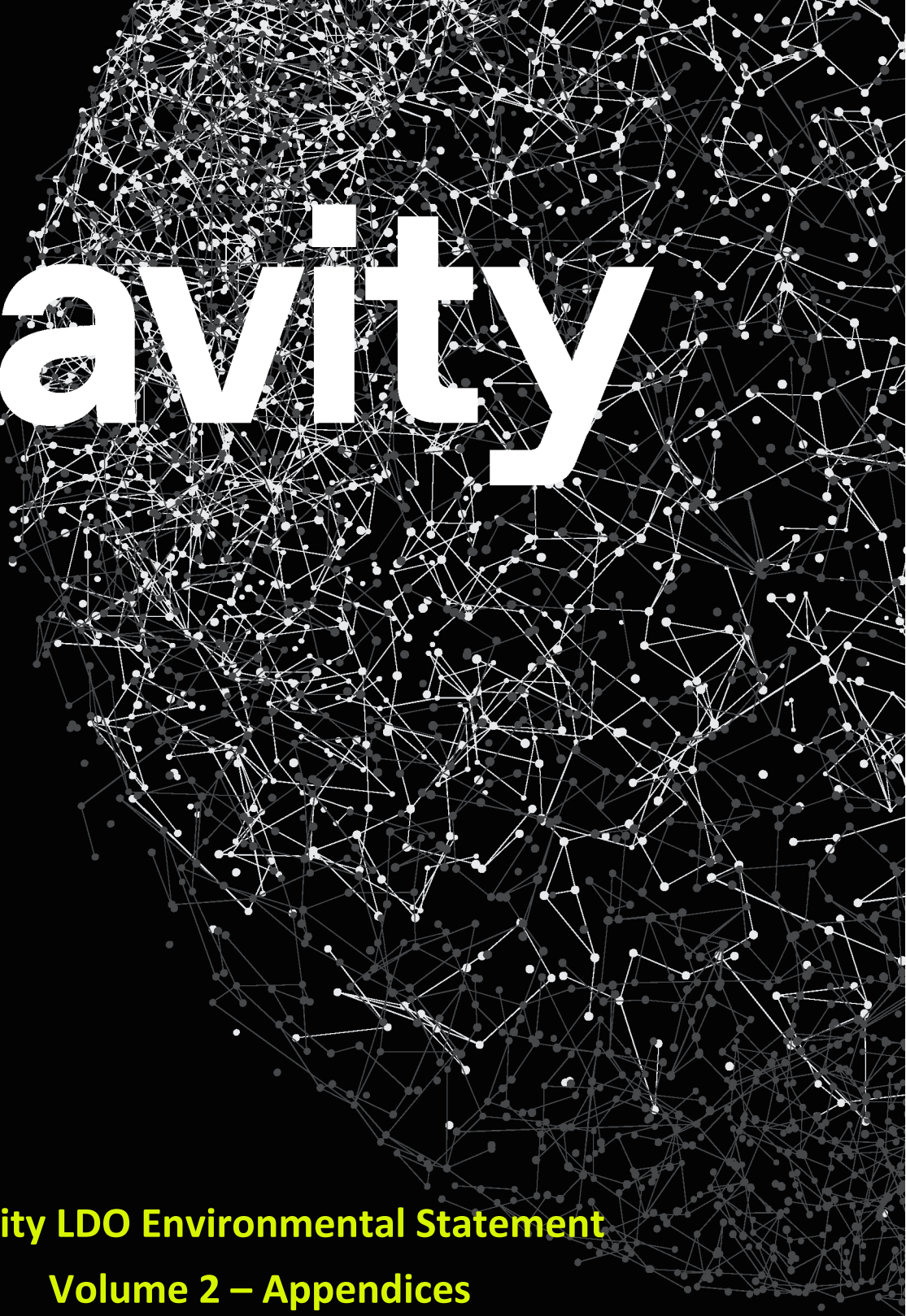

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Appendix 15.1 Climate Change Policy

Appendix 15.1 Climate Change National Legalisation, Policy and Guidance

To satisfy the requirements of the Environmental Impact Assessment (EIA) Regulations, a Greenhouse Gas (GHG) Emissions Assessment and Climate Change Risk Assessment has been undertaken for the Proposed Development. This Appendix sets out the guidance and standards that have been used to inform the scope, methodology, identification of likely significant effects and potential mitigation measures for both assessments.

GHG Emissions Assessment

Legislation

Paris Agreement 2015

The 2015 Paris Agreement declared a long-term temperature target to strengthen the global response to the threat of climate change. This target is to keep a global temperature rise this *century "well below 2 degrees Celsius above pre-industrial levels and to limit the temperature increase even further to 1.5 degrees Celsius"* (the '1.5 Degrees Target').

In 2015 the UK Government signed the Paris Agreement, and in 2016, ratified it. Ratifying the Paris Agreement formally bound the UK to the "*well below 2 degrees*" target (in 2018 reduced further to the 1.5 Degrees Target) and requires the UK Government to translate that commitment into legislative requirements. Through national legislation, the responsibility to realise the 1.5 Degrees Target disseminates from the UK Government to Local Planning Authorities (LPAs) and, ultimately, developers.

Climate Change Act (2008) (2050 Target Amendment) Order 2019

The Climate Change Act (CCA) 2008 established the context for government action on climate change, providing a legally binding framework for the UK to reduce GHG emissions and develop the UK's ability to adapt to climate change. The CCA 2008 requires the Government to compile a Climate Change Risk Assessment every 5 years and develop a National Adaptation Programme to address risks and opportunities from climate change.

In 2019, the CCA 2008 was amended to include a revision of the previous aim of 80% reduction of GHG emissions compared to 1990 levels by 2050. The CCA 2008 now mandates a net zero target by 2050:

"*the net UK carbon account for the year 2050 is at least 100% lower than the 1990 baseline*."

To reach net zero carbon emissions, the UK government has set legally binding carbon budgets, capping the amount of GHG emitted in the UK over a 5-year period.

Carbon Budget Orders 2009, 2011, 2016 and 2021

The Carbon Budget Orders are made in accordance with the duty to set carbon budgets as required by the CCA 2008. These Orders provide the legal requirement to meet the carbon budgets set out in the table below:

Carbon Budget	Carbon Budget Level	Reduction Below 1990 Level
3rd carbon budget (2018- 2022)	2,544 $MtCO_2e$	37% by 2020

4th carbon budget (2023- 2027)	1,950 $MtCO_2e$	51% by 2025
5th carbon budget (2028- 2032)	1,725 $MtCO_2e$	57% by 2030
6th carbon budget (2033-2037)	965 $MtCO_2e$	78% by 2035

Policy

EIA Regulations 2017

Schedule 4 of the 2017 EIA Regulations requires an Environmental Statement to include:

"*4. A description of the factors specified in regulation 4(2) likely to be significantly affected by the development, climate (for example greenhouse gas emissions, impacts relevant to adaptation)*

5. A description of the likely significant effects of the development on the environment resulting from, inter alia:

(f) the impact of the project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change;".

National Planning Policy Framework (NPFF) 2021

In terms of planning, addressing climate change is one of the core planning principles which the National Planning Policy Framework (NPPF, updated in 2021) expects plan-making and decision-taking to underpin. The NPPF recognises that planning plays a key role in reducing GHG emissions.

Paragraph 152 states:

"*The planning system should support the transition to a low carbon future in a changing climate, taking full account of flood risk and coastal change. It should help to: shape places in ways that contribute to radical reductions in greenhouse gas emissions, minimise vulnerability and improve resilience; encourage the reuse of existing resources, including the conversion of existing buildings; and support renewable and low carbon energy and associated infrastructure*"

Paragraph 154 states:

"*New development should be planned for in ways that:*

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."

Planning Practice Guidance (PPG)

The Planning Practice Guidance (PPG) supports the NPPF. Regarding climate change, the PPG advises how to identify suitable mitigation measures in the planning process to address the impacts of climate change.

Paragraph: 007 Reference ID: 6-007-20140306 discusses how local planning authorities can identify appropriate mitigation measures in plan-making:

"*Every area will have different challenges and opportunities for reducing carbon emissions from new development such as homes, businesses, energy, transport and agricultural related development.*

…The distribution and design of new development and the potential for servicing sites through sustainable transport solutions, are particularly important considerations that affect transport emissions. Sustainability appraisal should be used to test different spatial options in plans on emissions.

Different sectors may have different options for mitigation. For example, measures for reducing emissions in agricultural related development include anaerobic digestion, improved slurry and manure storage and improvements to buildings. In more energy intensive sectors, energy efficiency and generation of renewable energy can make a significant contribution to emissions reduction."

Clean Growth Strategy

The Clean Growth Strategy, published in 2017, sets out the UK's policies and proposals to accelerate the delivery of increased economic growth and decreased emissions. The strategy aims to improve productivity across the UK to provide the best place for innovators and new businesses to start-up and grow. The Strategy also seeks to deliver on social and economic benefits, including higher quality more efficient buildings, rolling out emissions vehicles, and delivering a diverse and reliable energy mix. Key policies and proposals include: developing green finance capabilities, support businesses to improve energy productivity, set out action plans for industrial decarbonisation, phasing out fossil fuel heating, improve energy efficiency of homes and support low carbon heating, support the update of ultra-low emissions vehicles, support clean energy innovation, and work towards zero avoidable waste.

UK Government Ten Point Plan

The Government's Ten Point Plan for a Green Revolution, published in 2020, sets out a series of points to help the UK build back better after the impact of coronavirus. This document sets out a series of. Point 4: Accelerating the Shift to Zero Emission Vehicles and Point 5: Green Public Transport, Cycling and Walking include targets for carbon savings through a combination of supporting manufacturing and uptake of Electric Vehicles, and delivery of safe and direct cycle and walking networks within England.

UK Government Road to Zero

The Road to Zero, published in 2018, sets out the Governments ambitions to reduce emissions associated with the transport industry. This document sets out how the UK Government will reduce emissions from vehicles on the road, promote the uptake of clean vehicles and support the necessary infrastructure, reduce emissions from HGVs and support local action.

Transport Decarbonisation Plan

'Decarbonising Transport A Better, Greener Britain', published in 2021, sets out additional commitments, actions and timings on decarbonising all forms of transport, including measures to increase cycling and walking, and delivering zero emissions buses and coaches, and zero emission fleets of cars, vans, motorcycle and scooters. This document sets out what consultation the Government will undertake to bring these measures forward, key milestones and available funding. The Government will support the delivering of 4,000 new zero emission buses and the infrastructure to support them, a net zero railway network by 2050, stimulate the demand for zero emission trucks, and deliver over £12 billion for decarbonising local transport systems.

Powering our Net Zero Future

The UK Government's Energy White Paper 'Powering our Net Zero Future', published in 2020, builds on the Ten Point Plan to set out a strategy for providing cleaner, greener energy, supporting a green recovery through new green jobs and delivers opportunities to save money on bills for customers. The paper provides an illustrative example of what UK energy use may look like in 2050, which is anticipated to use more decarbonised electricity and hydrogen, incorporation of Direct Air Carbon Capture and Storage, with a markedly less reliance on oil and gas. Cumulatively, the emissions

savings to 2032 from implementing the Energy White Paper will be 230 $MtCO_2e$. this will be achieved by targeting increase in offshore wind output, deploying and investing in Carbon Capture, Usage and Storage, growing the installation of electric heat pumps, and developing 5GW of low-carbon hydrogen production capacity by 2030.

Standards and Guidance

The following standards and guidance documents have been used to inform the carbon scope, methodology, identify likely significant effects and potential mitigation measures.

Environmental Impact Assessment Guide to: Assessing Greenhouse Gas Emission and Significance (IEMA, 2017)

The IEMA guidance defines significance of GHG emissions:

"*GHG emissions have a combined environmental effect that is approaching a scientifically defined environmental limit, as such any GHG emissions or reductions from a project might be considered to be significant*."

Climate Change Risk Assessment

Legislation

Climate Change Act (2008) (2050 Target Amendment) Order 2019

The Climate Change Act (CCA) 2008 established the context for government action on climate change, which sets out the requirement to prepare National Adaptation Programmes that set out the actions that government and others will take to adapt to the challenges of climate change in the UK over the next 5 years.

National Adaptation Programme

The second national adaptation programme (2018 to 2023), published by the Department for Environment, Food & Rural Affairs (Defra) in July 2018, identifies key risks to infrastructure, people and the built environment, and how the government will address climate risks including flood and coastal erosion risk management, water supplies and resources, overheating in buildings, delivery of health and social care services, emergency services, local responders and community resilience.

Climate Change Risk Assessment 2021

The CCA 2008 also requires Government to prepare a five-yearly assessment of the risks for the UK of the current and predicted impacts of climate change. The UK Climate Risk Independent Assessment (CCRA3), published in 2021, sets out the six priority risk areas requiring further action in the UK. These areas are:

- Risks to the viability and diversity of terrestrial and freshwater habitats and species from multiple hazards;
- Risks to soil health from increased flooding and drought;
- Risks to natural carbon stores and sequestration from multiple hazards leading to increased emissions;
- Risks to crops, livestock and commercial trees from multiple hazards;
- Risks to supply of food, goods and vital services due to climate-related collapse of supply chains and distribution networks;
- Risks to people and the economy from climate-related failure of the power system;
- Risks to human health, wellbeing and productivity from increased exposure to heat in homes and other buildings; and
- Multiple risks to the UK from climate change impacts overseas

Policy

EIA Regulations 2017

Schedule 4 of the 2017 EIA Regulations requires an Environmental Statement to include:

"*4. A description of the factors specified in regulation 4(2) likely to be significantly affected by the development, climate (for example greenhouse gas emissions, impacts relevant to adaptation)*

5. A description of the likely significant effects of the development on the environment resulting from, inter alia:

(f) the impact of the project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change;".

National Planning Policy Framework (NPPF)

In terms of planning, addressing climate change is one of the core planning principles which the National Planning Policy Framework (NPPF, updated in 2021) expects plan-making and decision-taking to underpin. The NPPF recognises that planning plays a key role in minimising vulnerability, providing resilience and managing the risks associated with climate change.

Paragraph 153 states:

"*Plans should take a proactive approach to mitigating and adapting to climate change, taking into account the long-term implications for flood risk, coastal change, water supply, biodiversity and landscapes, and the risk of overheating from rising temperatures. Policies should support appropriate measures to ensure the future resilience of communities and infrastructure to climate change impacts, such as providing space for physical protection measures, or making provision for the possible future relocation of vulnerable development and infrastructure*."

Paragraph 154 states that new development should be planned for in ways that:

"*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."*

Planning Practice Guidance (PPG)

The Planning Practice Guidance (PPG) supports the NPPF. Regarding climate change, the PPG advises how to identify suitable mitigation and adaptation measures in the planning process to address the impacts of climate change.

Paragraph 004 Reference ID: 6-004-20140612 provides guidance on how adaptation and mitigation approaches should be integrated as follows:

"*When [preparing Local Plans and] taking planning decisions local planning authorities should pay particular attention to integrating adaptation and mitigation approaches and looking for 'win-win' solutions that will support sustainable development. This could be achieved in a variety of ways, for example:*

…through the provision of multi-functional green infrastructure, which can reduce urban heat islands, manage flooding and help species adapt to climate change - as well as contributing to a pleasant environment which encourages people to walk and cycle.

Local planning authorities should be aware of and avoid the risk of maladaptation (adaptation that could become more harmful than helpful)."

Paragraph: 005 Reference ID: 6-005-20140306 provides guidance on dealing with the uncertainty of climate risks when promoting adaptation in particular developments:

"*The impact of climate change needs to be taken into account in a realistic way. In doing so, local planning authorities will want to consider:*

- *identifying no or low cost responses to climate risks that also deliver other benefits, such as green infrastructure that improves adaptation, biodiversity and amenity;*

- *building in flexibility to allow future adaptation if it is needed, such as setting back new development from rivers so that it does not make it harder to improve flood defences in future; and*

- *the potential vulnerability of a development to climate change risk over its whole lifetime*"

Standards and Guidance

The following standards and guidance documents have been used to inform the climate change resilience and adaptation scope, methodology, identify likely significant effects and potential mitigation measures.

Environmental Impact Assessment Guide to: Climate Change Resilience and Adaptation (IEMA, 2020)

The IEMA guidance sets out the factors that the assessment should establish the baseline conditions. IEMA guidance states:

"*The current baseline is defined by historic climate conditions and the prevailing conditions at the time of the assessment. … The practitioner needs to consider a range of factors including:*

- *Extremes in short-term weather events that produce sudden shocks that can have substantial effects on some baseline receptors, such as: heat waves; extreme flooding and freezing conditions; gales and hurricane force windstorms; storm surges along coastlines.*

- *Extremes in longer-term climatic variability including: variations in precipitation over one or more seasons resulting in drought or extremely wet conditions; variations in average temperature which might affect receptors reliant on temperature to, for example, time when breeding cycles commence or end (which may be affected by availability of specific food sources); potential changes in prevailing wind directions as the weather system over central Europe changes.*

- *Changes in average climate norms resulting in: sea level rise; increases in freezing/thawing; changes in seasonal rainfall patterns*."

This guidance has also been used to select the appropriate assessment scenario for defining the future baseline. IEMA guidance states:

"The recommended approach is to use a high emissions scenario, in the UK this would be RCP 8.5"

UKCP18 Guidance: How to use the UKCP18 Land Projections (Met Office, 2018)

The UKCP18 Guidance has been used to determine the correct application of the land projections data and to reference the uncertainty and limitations associated with its use.

"*We recommend that you place any analysis using the global, regional and derived projections in the broader uncertainty context of the probabilistic projections, where the information is available*."

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Appendix 15.2 Climate Projections Figures

Figure 15.1 Annual Mean Temperature

Met Office
Hadley Centre

Annual average Mean air temperature anomaly at 1.5m (°C) for years 1961 up to and including 2099, for grid square 337500, 137500, using baseline 1981-2000, and scenario RCP 8.5, showing the 5th, 10th, 25th, 50th, 75th, 90th and 95th percentiles

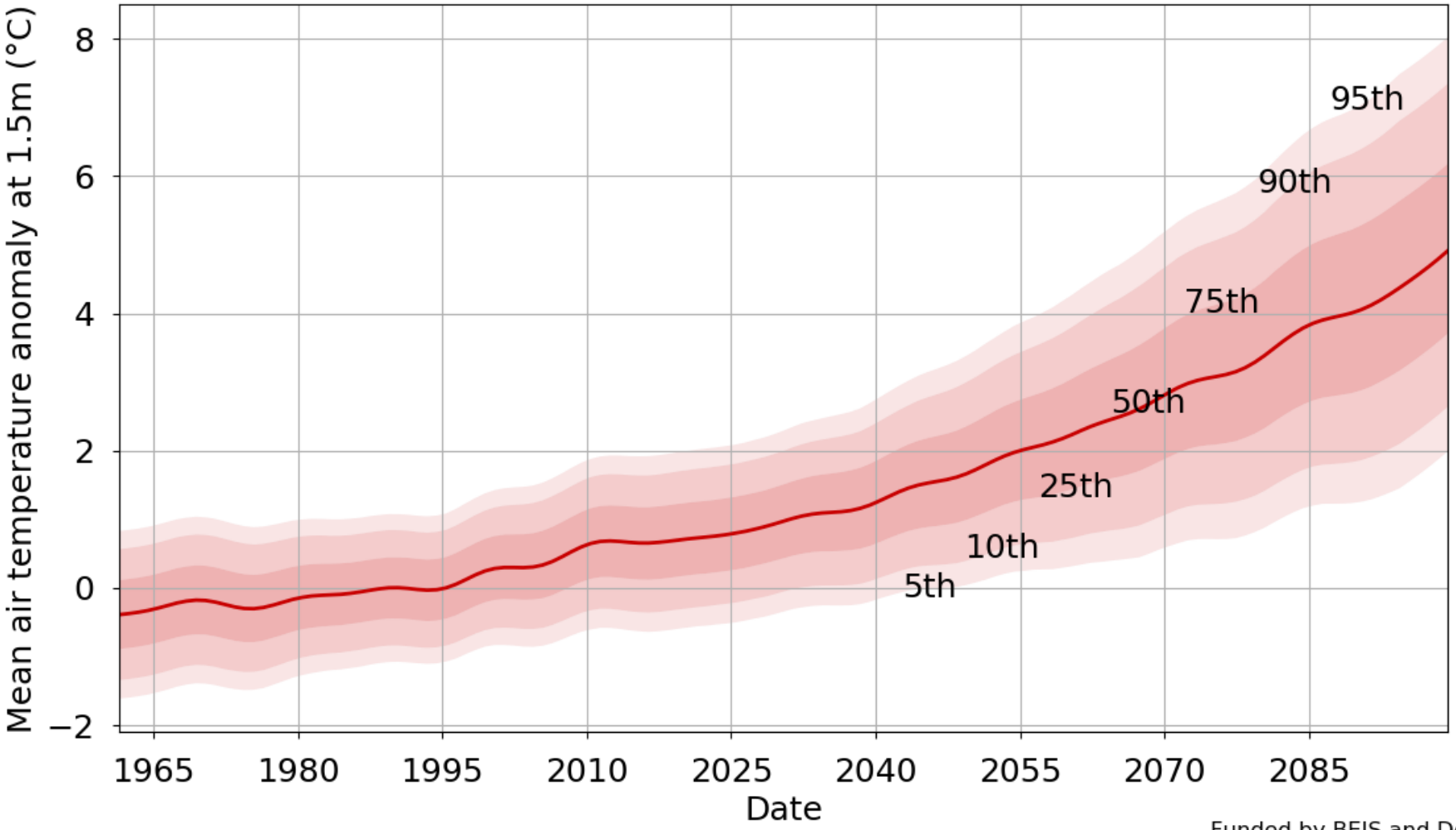

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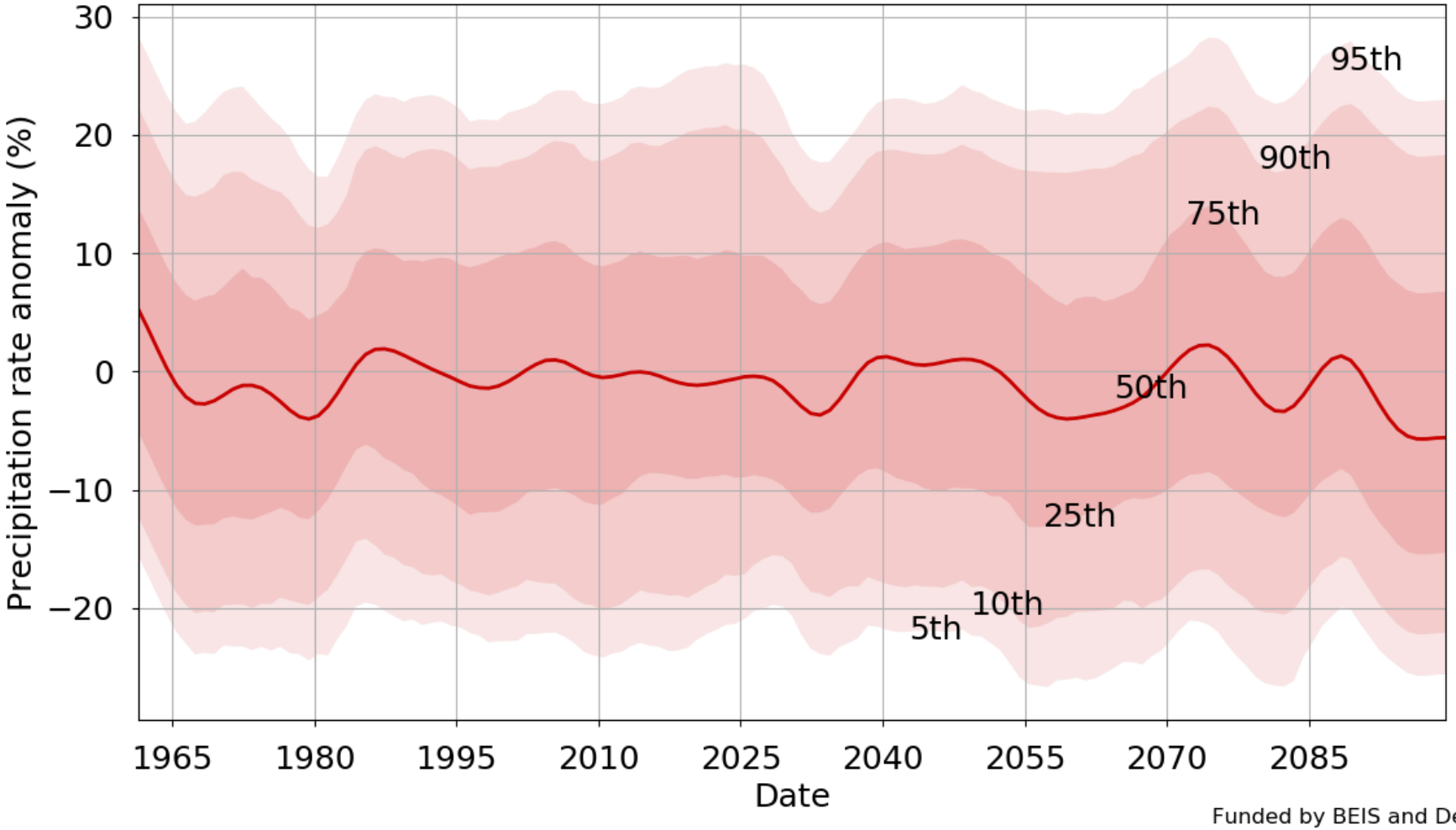
Figure 15.2 Average Annual Precipitation

Met Office
Hadley Centre

Annual average Precipitation rate anomaly (%) for years 1961 up to and including 2099, for grid square 337500, 137500, using baseline 1981-2000, and scenario RCP 8.5, showing the 5th, 10th, 25th, 50th, 75th, 90th and 95th percentiles



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Appendix 15.2 Climate Projections Figures

Figure 15.3 Maximum Average Summer Temperature

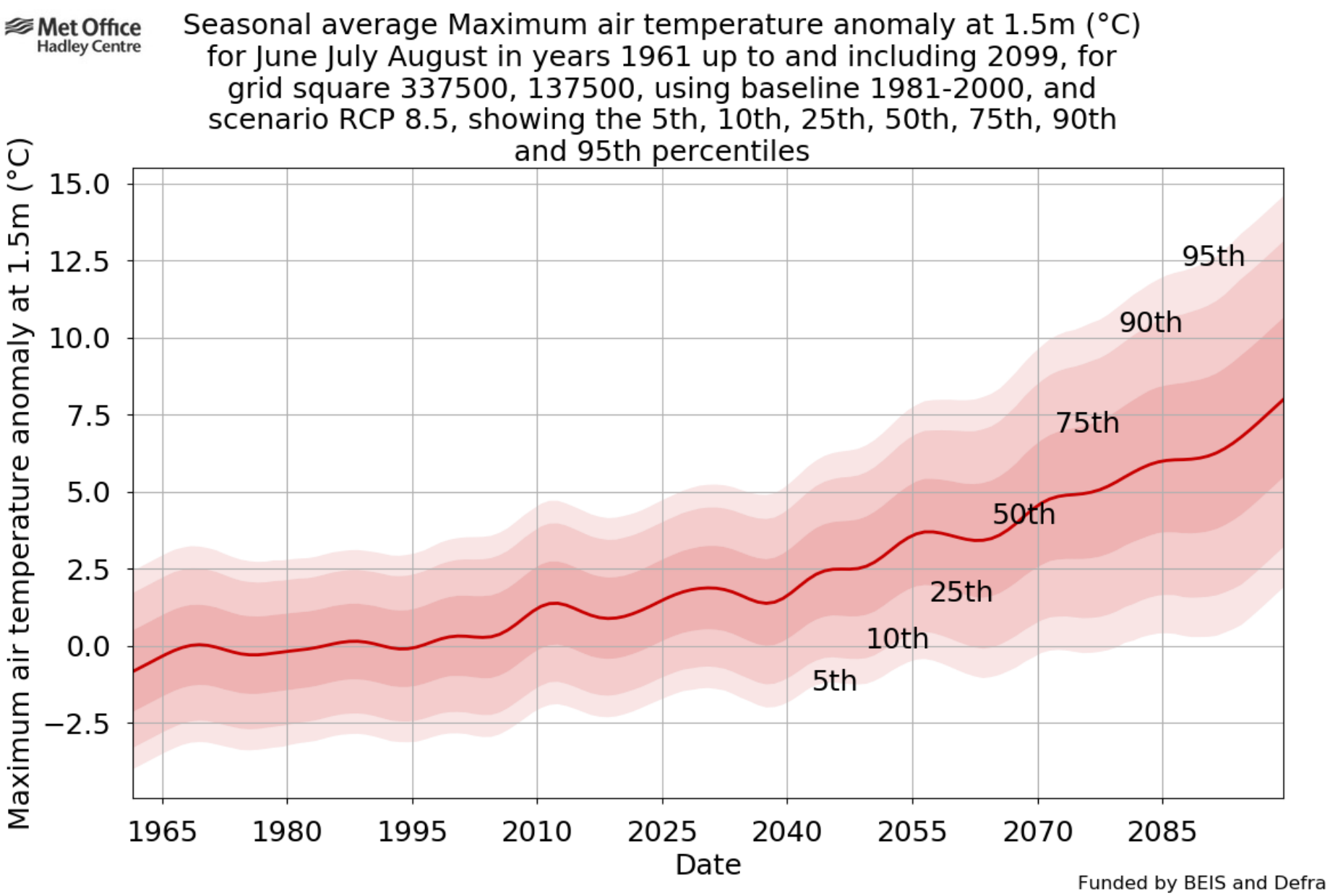
Met Office
Hadley Centre
Seasonal average Maximum air temperature anomaly at 1.5m (°C)
for June July August in years 1961 up to and including 2099, for
grid square 337500, 137500, using baseline 1981-2000, and
scenario RCP 8.5, showing the 5th, 10th, 25th, 50th, 75th, 90th
and 95th percentiles
Maximum air temperature anomaly at 1.5m (°C)
15.0
12.5
10.0
7.5
5.0
2.5
0.0
−2.5
95th
90th
75th
50th
25th
10th
5th
1965
1980
1995
2010
2025
2040
2055
2070
2085
Date
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Figure 15.4 Average Summer Precipitation

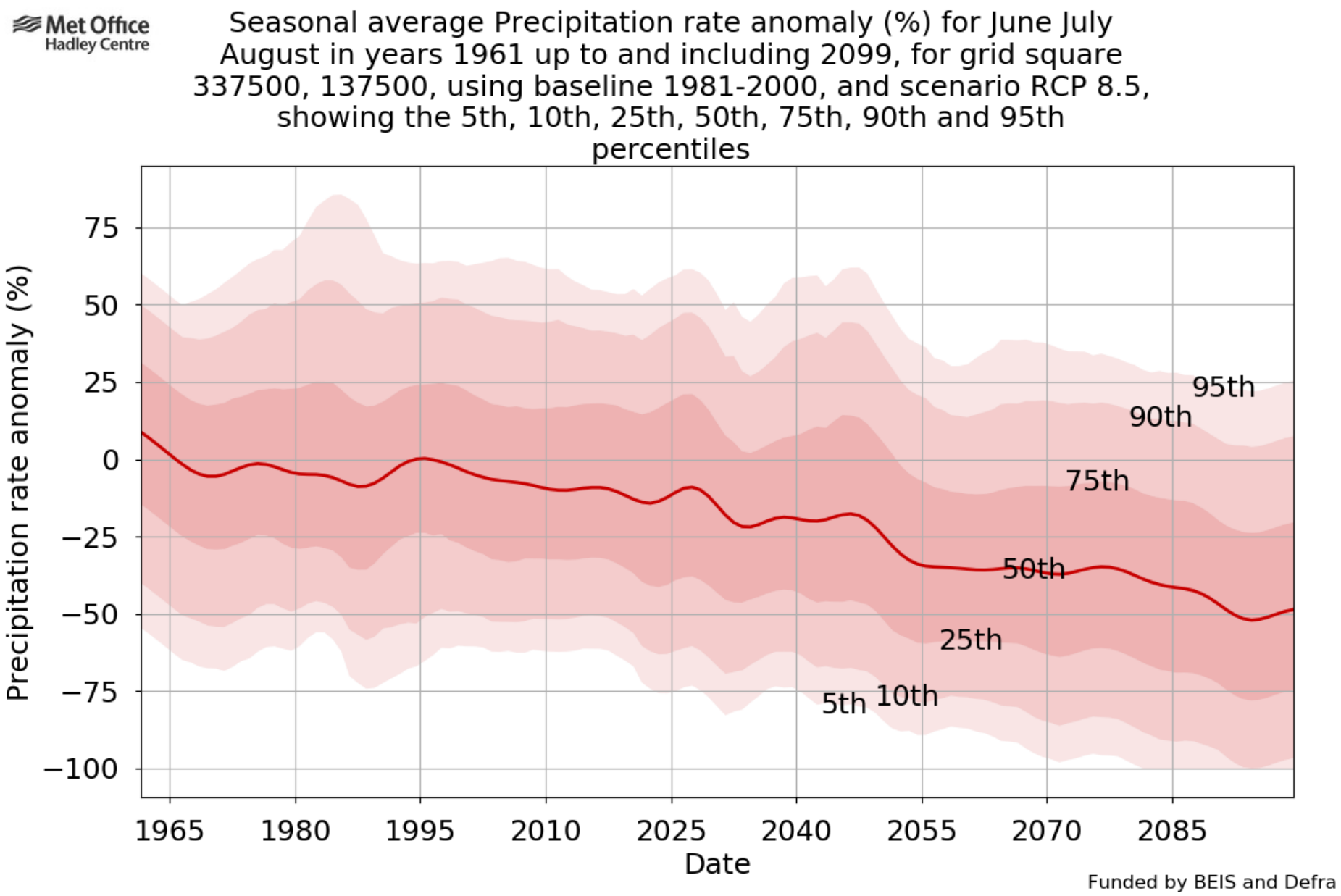
Met Office
Hadley Centre
Seasonal average Precipitation rate anomaly (%) for June July August in years 1961 up to and including 2099, for grid square 337500, 137500, using baseline 1981-2000, and scenario RCP 8.5, showing the 5th, 10th, 25th, 50th, 75th, 90th and 95th percentiles
Precipitation rate anomaly (%)
75
50
25
0
−25
−50
−75
−100
1965
1980
1995
2010
2025
2040
2055
2070
2085
Date
95th
90th
75th
50th
25th
10th
5th
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Figure 15.5 Minimum Average Winter Temperature

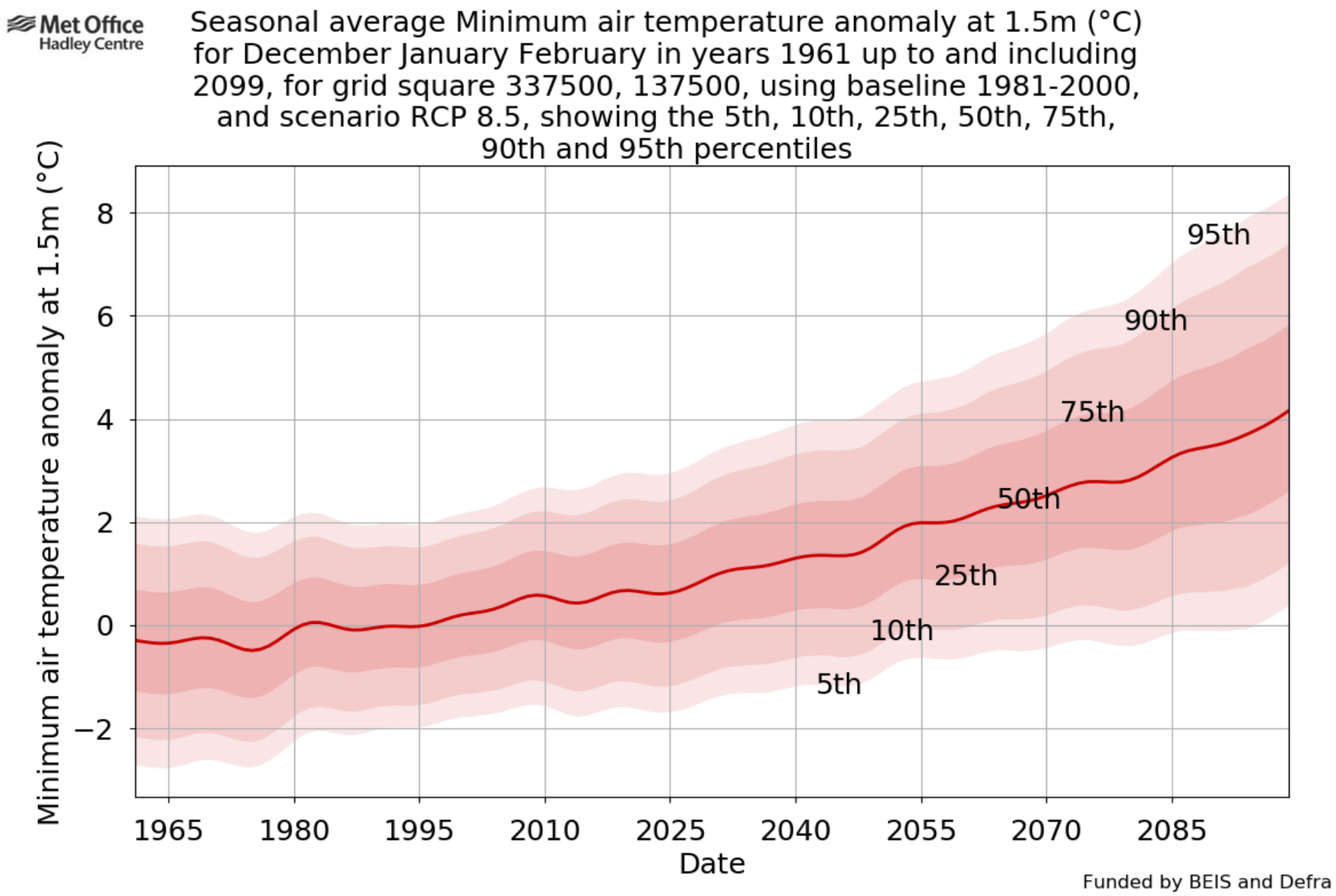
Met Office
Hadley Centre
Seasonal average Minimum air temperature anomaly at 1.5m (°C)
for December January February in years 1961 up to and including
2099, for grid square 337500, 137500, using baseline 1981-2000,
and scenario RCP 8.5, showing the 5th, 10th, 25th, 50th, 75th,
90th and 95th percentiles
Minimum air temperature anomaly at 1.5m (°C)
8
6
4
2
0
−2
95th
90th
75th
50th
25th
10th
5th
1965
1980
1995
2010
2025
2040
2055
2070
2085
Date
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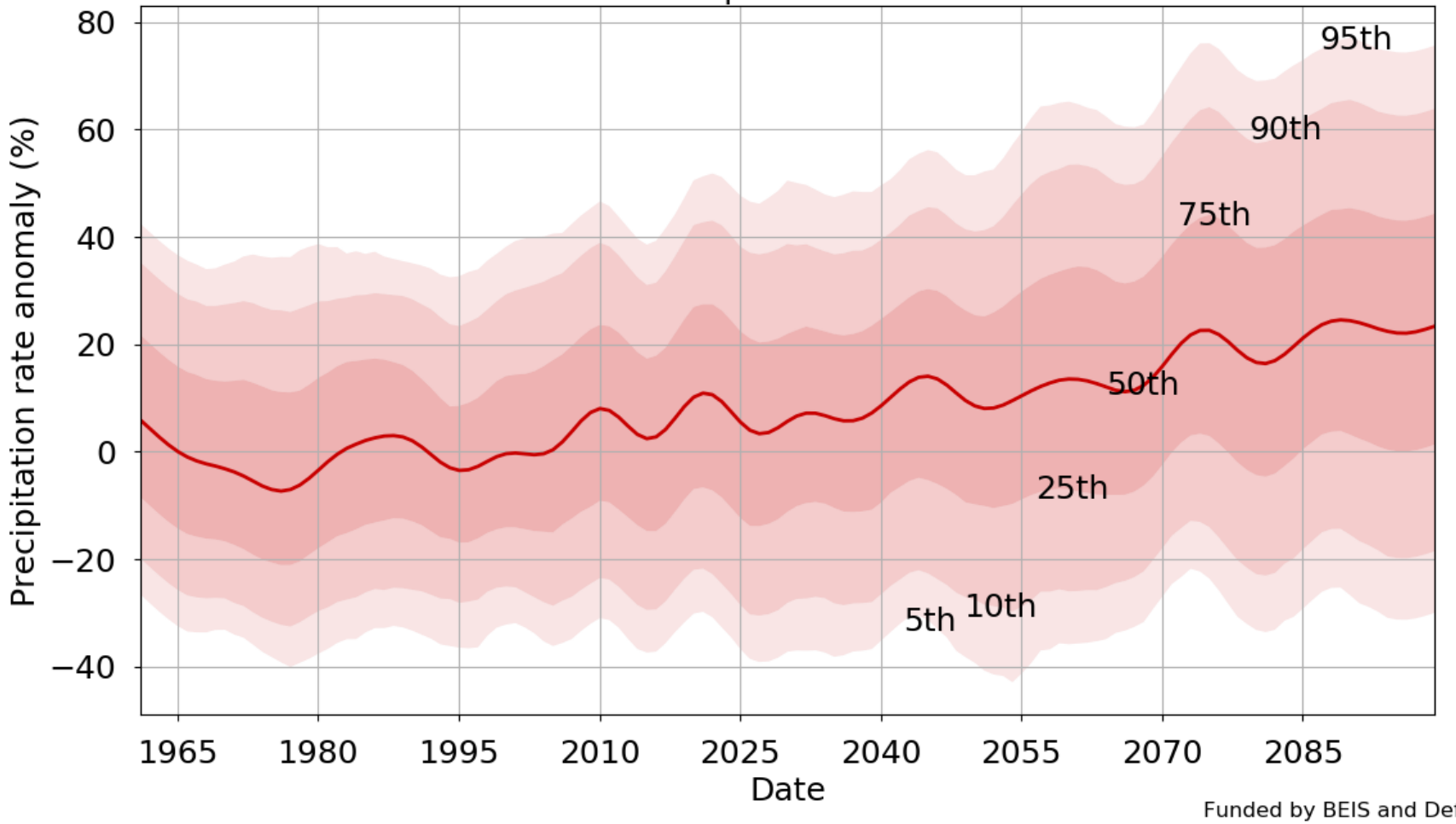
Figure 15.6 Average Winter Precipitation

Met Office
Hadley Centre

Seasonal average Precipitation rate anomaly (%) for December January February in years 1961 up to and including 2099, for grid square 337500, 137500, using baseline 1981-2000, and scenario RCP 8.5, showing the 5th, 10th, 25th, 50th, 75th, 90th and 95th percentiles



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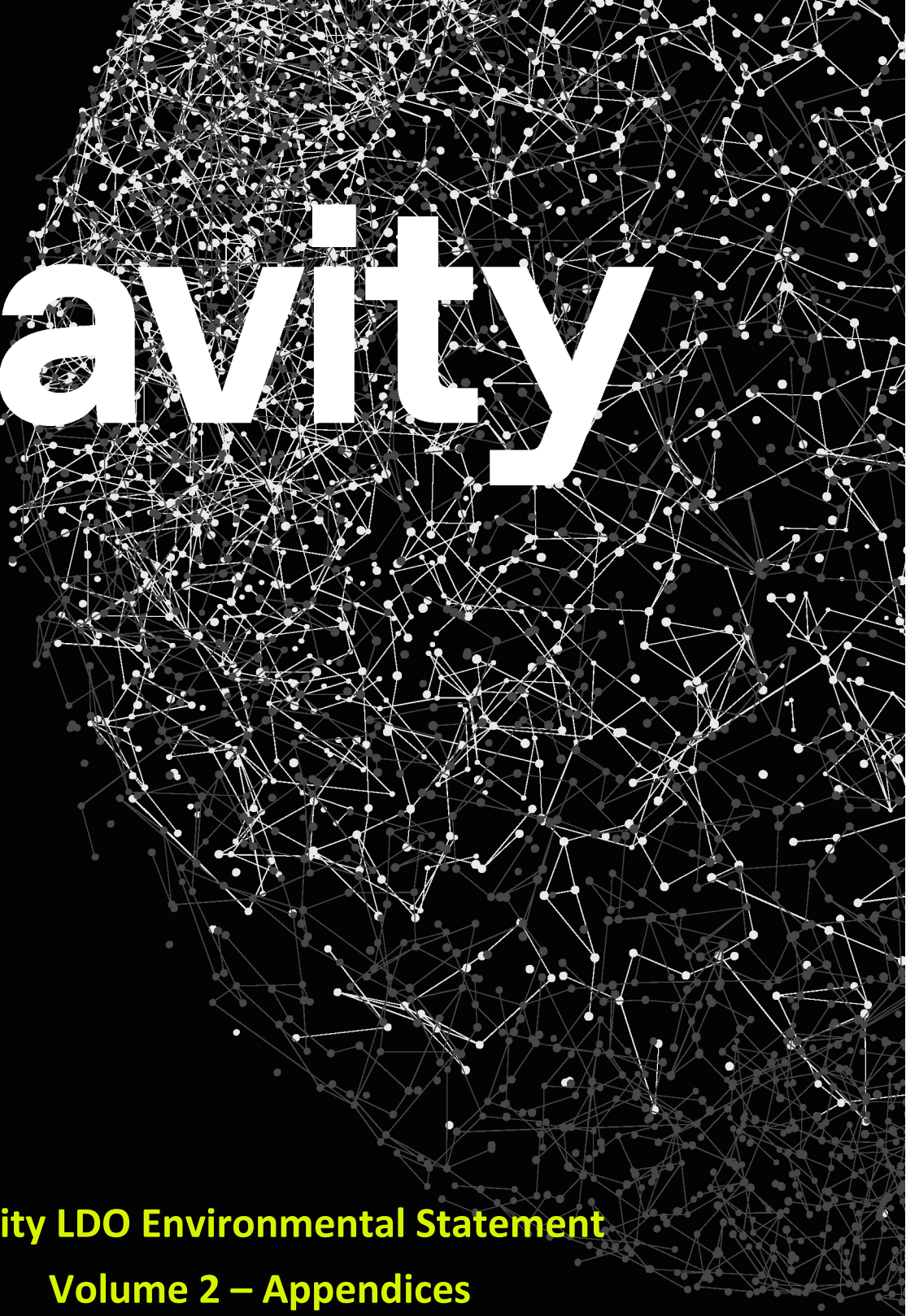

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Appendix 15.3 Climate Projections Data

Appendix 15.3: Summary of Evolving Baseline Climate Projections

This document summarises the UK Climate Change Projections 2018 (UKCP18), produced by the UK Met Office, under the RCP8.5 probabilistic land projections for the 25 km grid cell within which the Site is located (SP 337500 237500). This Appendix presents the climate projections for the assessment year (2032) and 25 year intervals up to 2099 as this is the last available year with data. For context, 2021 figures have also been provided. This document should be read alongside **Chapter 15 Climate Change** and **Appendix 15.2 Figures**.

Average Climatic Norms

Temperature

Figure 15.2.1 and **Table 15.3.1** show the projections for annual average mean air temperature. The projections show an almost continuous increase in annual average temperature over the next 80 years.

Table 15.3.1: Mean average anomaly at 1.5 m (Â°C)

Date	Percentile						
	5th	10th	25th	50th	75th	90th	95th
2021	-0.5572	-0.2792	0.2007	**0.7291**	1.2564	1.7355	2.0157
2032	-0.2804	0.0124	0.5018	**1.0501**	1.5951	2.0964	2.4017
2040	-0.1514	0.1508	0.6699	**1.2700**	1.8790	2.4303	2.7766
2050	0.0818	0.4426	1.0464	**1.7252**	2.4244	3.0733	3.4648
2075	0.7118	1.2253	2.0922	**3.0804**	4.1257	5.0684	5.6215
2099	1.9895	2.6375	3.7023	**4.9084**	6.1739	7.3406	8.0202

Eight years after the completion of construction in 2032, the mean annual air temperature may increase from 1.05°C to 1.27°C above 1981-2000 baseline temperatures. This is a change of 0.22°C for this time period. The 50th percentile shows a 1.73ºC increase by 2050 and 4.91ºC increase by 2099. The uncertainty around these estimates range from 0.08 to 3.46ºC for 2050 and 1.99 to 8.02ºC for 2099.

Precipitation

Figure 15.2.2 and **Table 15.3.2** shows the projections for the annual average precipitation rate. The projections show that annual precipitation is likely to vary from year to year, with both increases and decreases over the next 80 years.

Table 15.3.2: Annual Precipitation rate anomaly (%)

Date	Percentile						
	5th	10th	25th	50th	75th	90th	95th
2021	-22.1815	-18.1573	-8.8880	**-1.0880**	9.7271	20.5737	25.7780
2032	-23.4227	-18.6175	-11.9336	**-3.5445**	6.0070	13.8251	17.9380
2040	-21.8120	-17.9292	-8.5329	**1.2525**	10.9499	18.7130	22.9771
2050	-22.3786	-18.1327	-10.0864	**0.8204**	10.6545	18.6102	23.5301
2075	-21.9964	-17.1651	-8.8620	**1.9082**	13.5221	22.2625	28.1432
2099	-25.5847	-22.0786	-15.3419	**-5.5775**	6.7451	18.2812	22.9434

Eight years after the completion of construction in 2032, average annual precipitation may change from -3.54% to 1.25% above 1981-2000 baseline precipitation. This is a change of -4.79% for this time period. The 50th percentile shows a 0.82% decrease in 2050 and a -5.58% decrease in 2099. The uncertainty around these estimates range from -22.38 to 23.53% in 2050 and -25.58 to 22.94% in 2099.

Seasonal Changes

Summer

Figure 15.2.3 and **Table 15.3.3** show the projections for average summer (June, July, August) maximum air temperature. The projections show an overall increase in maximum temperate over the next 80 years.

Table 15.3.3 Maximum Summer air temperature anomaly at 1.5m (Â°C)

Date	Percentile						
	5th	10th	25th	50th	75th	90th	95th
2021	-2.1343	-1.4354	-0.2668	**1.0394**	2.3612	3.5844	4.2862
2032	-1.4503	-0.7454	0.4741	**1.8220**	3.2043	4.4549	5.2069
2040	-1.7785	-0.9905	0.3016	**1.7205**	3.1775	4.5000	5.3149
2050	-1.1383	-0.3085	1.1071	**2.7148**	4.3479	5.7922	6.6763
2075	-0.2388	0.8934	2.8151	**4.9348**	7.1219	9.1392	10.3584
2099	1.8810	3.1907	5.4586	**7.9854**	10.6414	13.1196	14.5863

Eight years after the completion of construction in 2032, maximum summer air temperature may increase from 1.82°C to 1.72°C above 1981-2000 baseline temperatures. This is a change of -0.1°C for this time period. The 50th percentile shows a 2.71ºC increase by 2050 and a 7.99ºC increase by 2099. The uncertainty around these estimates range from -1.14 to 6.68ºC for 2050 and 1.88 to 14.59ºC for 2099.

Figure 15.2.4 and **Table 15.3.4** show the projections for average summer precipitation rate. The projections show an overall decline in precipitation over the next 80 years.

Table15.3.4: Average Summer Precipitation rate anomaly (%)

Date	Percentile						
	5th	10th	25th	50th	75th	90th	95th
2021	-72.2299	-60.4025	-39.6815	**-13.9076**	14.5236	38.5314	52.9306
2032	-81.6422	-68.8212	-46.3120	**-20.4699**	5.5063	33.3956	50.7302
2040	-75.1631	-63.3870	-43.4182	**-19.4792**	8.1555	38.9242	58.8237
2050	-84.8390	-73.2069	-52.2726	**-25.1392**	5.1010	33.2058	50.5319
2075	-95.2780	-83.2084	-61.2141	**-35.0712**	-7.6552	17.8783	33.5728
2099	-100	-96.6928	-74.6120	**-48.6258**	-20.4545	7.4011	25.3198

Eight years after the completion of construction in 2032, average summer precipitation may change from -20.47% to -19.48% compared to 1981-2000 baseline precipitation. This is a change of 0.99% for this time period. The 50th percentile shows a -25.14% decrease in 2050 and a -48.63% decrease in 2099. The uncertainty around these estimates range from -84.84 to 50.53% in 2050 and -100 to 25.32% in 2099.

Together, the above projections suggest that summers will become warmer and drier. Natural variations may mean that some cooler and/or wet summers will occur.

Winter

Figure 15.2.5 and **Table 15.3.5** show the projections for average winter (December, January, February) minimum air temperature. The projections show an overall increase in minimum temperate over the next 80 years.

Table 15.3.5: Minimum Winter air temperature anomaly at 1.5m (Â°C)

Date	Percentile						
	5th	10th	25th	50th	75th	90th	95th
2021	-1.6194	-1.1157	-0.2742	**0.6597**	1.5944	2.4336	2.9512
2032	-1.3395	-0.8099	0.0683	**1.0585**	2.0379	2.9366	3.4743
2040	-1.1902	-0.6294	0.2802	**1.2990**	2.3460	3.3121	3.8828
2050	-0.9442	-0.3835	0.5527	**1.6075**	2.6883	3.6783	4.2852
2075	-0.2887	0.3833	1.5039	**2.7810**	4.0930	5.3216	6.1010
2099	0.3802	1.2025	2.5923	**4.1581**	5.8145	7.3871	8.3561

Eight years after the completion of construction in 2032, minimum winter air temperature may increase from 1.06°C to 1.30°C above 1981-2000 baseline temperatures. This is a change of 0.24°C for this time period. The 50th percentile shows a 1.61ºC increase by 2050 and a 4.16ºC increase by 2099. The uncertainty around these estimates range from -0.94 to 4.29ºC for 2050 and 0.38 to 8.36ºC for 2099.

Figure 15.2.6 and **Table 15.3.6** shows the projections for average winter precipitation rate. The projections show an overall increase in precipitation over the next 80 years.

Table 15.3.6: Average Winter Precipitation rate anomaly (%)

Date	Percentile						
	5th	10th	25th	50th	75th	90th	95th
2021	-29.8085	-21.7654	-6.6462	**10.9081**	27.4491	42.7262	51.2845
2032	-37.0572	-27.3263	-9.5678	**7.1830**	23.3060	38.6364	49.6799
2040	-35.1837	-26.5372	-9.4668	**8.5645**	24.7266	39.4921	49.6210
2050	-39.3346	-27.5777	-9.8069	**8.5184**	25.4208	41.0173	51.5019
2075	-23.6230	-14.0244	2.9362	**22.6013**	44.1184	64.1533	76.0836
2099	-30.0185	-18.5529	1.3013	**23.3458**	44.3060	63.8435	75.6165

Eight years after the completion of construction in 2032, average summer precipitation may change from 9.77% to 6.39% compared to 1981-2000 baseline precipitation. This is a change of 3.38% for this time period. The 50th percentile shows a 4.63% increase in 2050 and a 18.91% increase in 2099. The uncertainty around these estimates range from -36.62 to 46.66% in 2050 and -31.85 to 69.90% in 2099.

In the UK, the heaviest snowfalls tend to occur when the air temperature is between zero and 2°C[1]. There is less certainty in the magnitude of change to snow occurrence and amount, although climate models do show a downward trend in both falling and lying snow over time.

Together, the above projections suggest that winters will become milder and wetter. Natural variations may mean that some cold and/or dry winters may still occur.

[1] https://www.metoffice.gov.uk/weather/learn-about/weather/types-of-weather/snow/how-does-snow-form