MONA OFFSHORE WIND PROJECT

Environmental Statement

Volume 8, Annex 2.2: Climate change risk assessment

Document Number: MOCNS-J3303-RPS-10141

Document Reference: F8.2.2

APFP Regulations: 5(2)(a)

February 2024

F01

Image of an offshore wind farm

www.morganandmona.com/en

Document status

Version	Purpose of document	Authored by	Reviewed by	Approved by	Review date
F01	Application	RPS	Mona Offshore Wind Ltd	Mona Offshore Wind Ltd	February 2024

Prepared by:

RPS

Prepared for:

Mona Offshore Wind Ltd.

Contents

Tables

Figures

Acronyms

Acronym	Description
CCC	Climate Change Committee
CCRA	Climate Change Risk Assessment
GHG	Greenhouse Gas
IEA	International Energy Agency
IPCC	Intergovernmental Panel on Climate Change
LCA	Life Cycle Assessment
MOHC	Met Office Hadley Centre
MSL	Mean Sea Level
PD	Project Description
RCP	Representative Concentration Pathway
TCFD	Taskforce on Climate Related Financial Disclosures
UKCP18	UK Climate Projections 2018

Units

Unit	Description
GW	Gigawatts
km	Kilometres
kn	Kilonewton

1 Climate change risk assessment

1.1 Overview

1.1.1.1 This climate change risk assessment (CCRA) technical report assesses the potential adverse effects on the Mona Offshore Wind Project from climate change, in line with the UK's guidance on climate change risk assessments (refer to section 1.7). The report will inform the assessment of climate change impacts reported in Volume 4, Chapter 2: Climate change of the Environmental Statement.

1.2 Project description

1.2.1.1 For the purpose of the CCRA, the connection agreement for the Mona Offshore Wind Project has a maximum export capacity of 1,500 MW and includes the associated offshore components alongside onshore infrastructure. The Applicant intends to commence construction of the Mona Offshore Wind Project in 2026, with the intention to be fully operational by 2030 to help meet both UK-wide and domestic Welsh renewable energy targets. The initial operational lifetime is intended to be 35 years.

1.2.1.2 The Mona Array Area is located 28.8 km from the Anglesey coastline, 46.5 km from the northwest coast of England and 46.5 km from the Isle of Man, and is wholly located in Welsh offshore waters. The Mona Onshore Development Area will be located within Conwy and Denbighshire, North Wales.

1.3 Methodology

1.3.1.1 The scope of the CCRA is defined in accordance with the Climate Change Committee (CCC) recommendations (CCC, 2021). This report considers the climate-related physical risks on the Mona Offshore Wind Project and identifies the current and anticipated risks throughout its 35 year lifetime. This technical report 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 future vulnerability and adaptation for Wales
3. Identify vulnerability of project components to climate change and undertake an assessment of their likelihood and severity
4. Review potential adaption and mitigation options.

1.4 Policy context

1.4.1 The Paris Agreement

1.4.1.1 The Paris agreement came into force on 4 November 2016 and has been adopted by 196 parties, including the United Kingdom. The overarching aim of the agreement is to set long term goals to guide nations in substantially reducing global greenhouse gas emissions to limit the global temperature increase to 2 degrees Celsius, while pursuing efforts to limit the increase to 1.5 degrees (UN, 2015).

1.4.2 Climate Change Act 2008

1.4.2.1 The Climate Change Act 2008 sets a target for the year 2050 for the reduction of targeted greenhouse gas emissions, whilst providing for a system of carbon budgeting. The Committee on Climate Change was also established under the Act, alongside the requirement for the UK Government to publish a CCRA every five years to assess the risks for the UK from the current and predicted impacts of climate change.

1.4.3 Environment (Wales) Act 2016

1.4.3.1 The Environment (Wales) Act 2016 places a duty on Welsh Ministers to set targets for reducing greenhouse gas (GHG) emissions and establishes the requirement to set carbon budgets (Welsh Government, 2016).

1.4.4 Net Zero Pathway

1.4.4.1 In March 2021, Senedd Cymru approved a net zero target for 2050. The plan is the second emissions reduction target and focuses on the second carbon budget for Wales (2021-2025), following a recommendation report by the CCC.

1.5 Baseline climate

1.5.1 Overview

1.5.1.1 To understand the impact of the Mona Offshore Wind Project on climate change, the baseline environment must be considered. The Mona Offshore Wind Project is located within the Irish Sea Region and, therefore, necessitates the consideration of the offshore climate in addition to the onshore baseline environment.

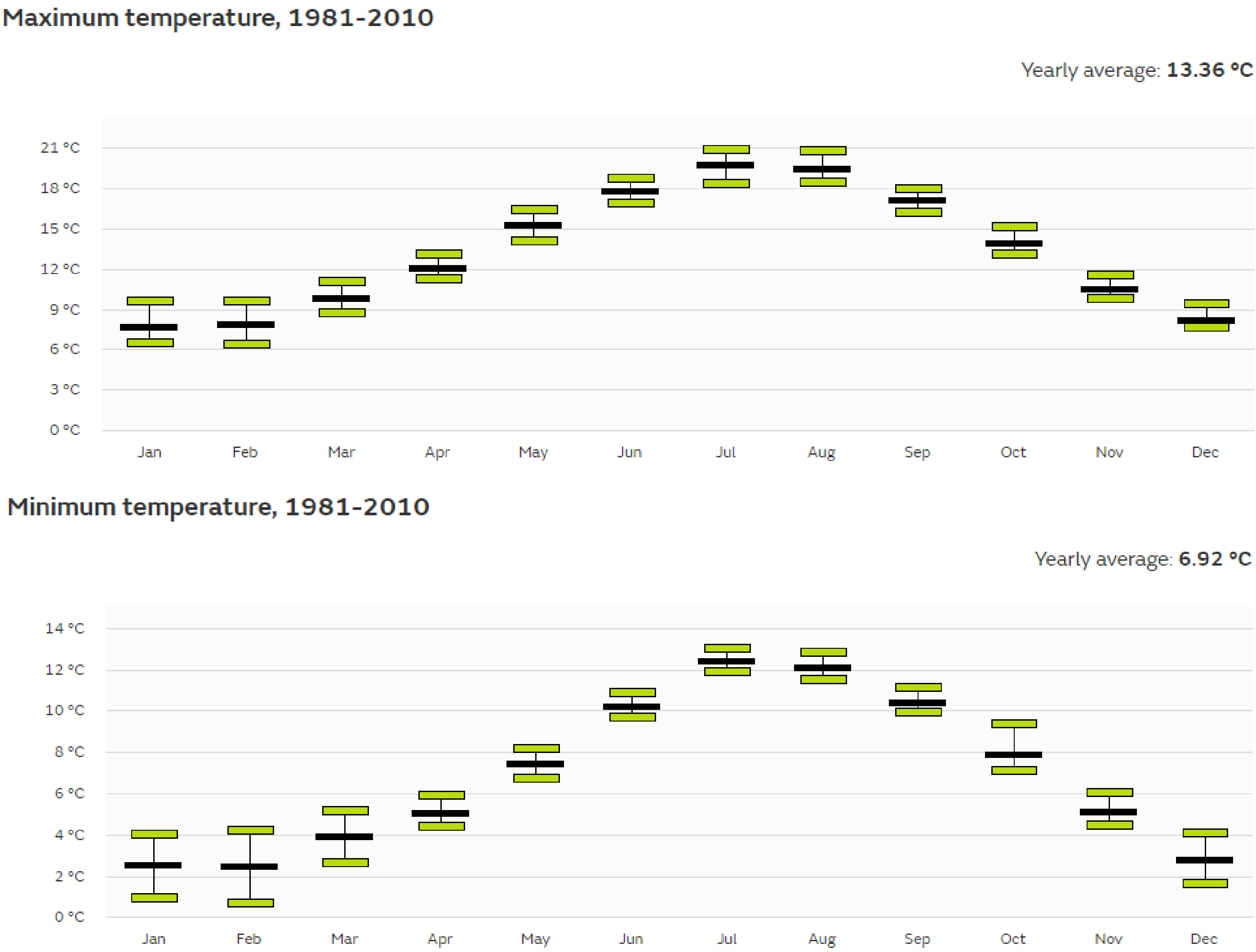
1.5.1.2 Baseline onshore climate conditions have been sourced from Met Office observed data from Rhyl climate station. The observational data from Rhyl climate station has been collected and averaged over 30 years from 1981-2010 (consistent with UKCP18 baseline periods) and reviewed alongside regional observational data averaged over the same period (Met Office, 2020).

1.5.1.3 Baseline offshore climatic conditions have been sourced from observational data collated within the UK Offshore Energy Strategic Environmental Assessment (BEIS, 2022) and Intergovernmental Panel on Climate Change's (IPCC) Sixth Assessment Reporting of the physical science (IPCC, 2021).

1.5.2 Onshore baseline

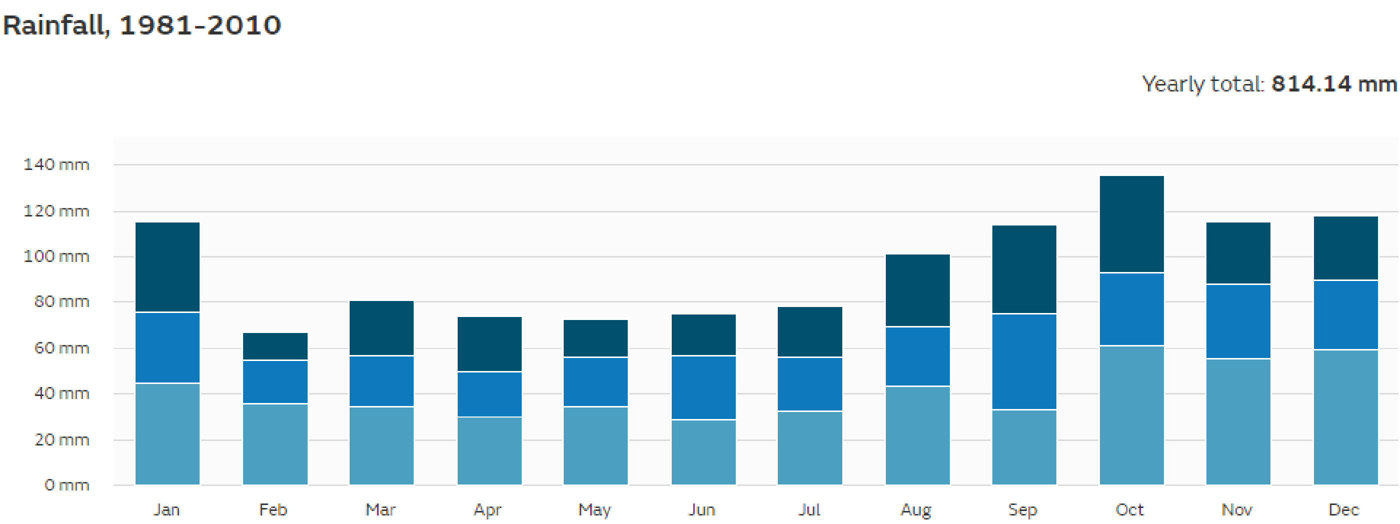
1.5.2.1 North Wales experiences a temperate climate, with annual average maximum and minimum temperatures of 13.36°C and 6.92°C recorded at the Rhyl climate station respectively (Met Office, 2020), as shown in Figure 1.1. During the 1981-2010 baseline period, average maximum temperatures reach 19.75°C in July, and minimum temperatures fall to an average of 2.48°C in February. This is consistent with regional climate patterns for North Wales and northwest England. In the summer months, regional temperatures often fall between 19.09°C and 9.07°C; in the winter months, regional temperatures range between 6.42°C and 0.94°C. In recent years, temperature fluctuations have resulted in extreme high temperatures above 30°C in the summer months.

Figure 1.1: Temperatures recorded at Rhyl climate station (Met Office, 2020)



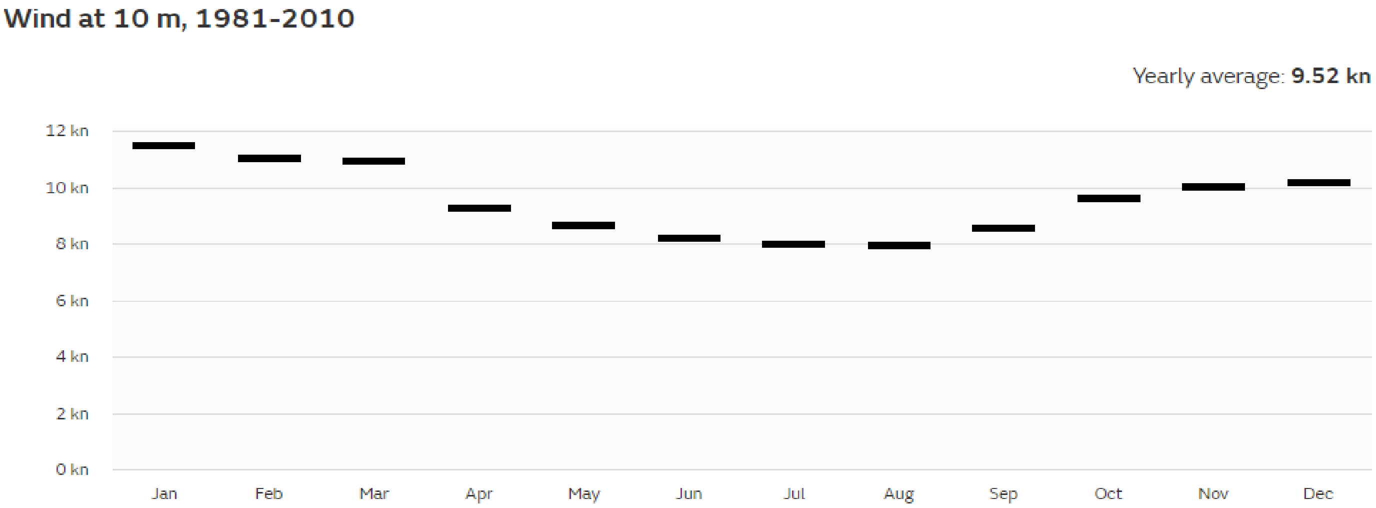
1.5.2.2 Precipitation recorded at the Rhyl climate station (Figure 1.2) is lower than that reported for the regional annual total of 1,304.57 mm, at 814.14 mm a year. However, regional precipitation in North Wales and northwest of England exceeds the UK annual average, which totals 1,142.04 mm. Therefore, North Wales can be considered as a region that is exposed to high rainfall in comparison to the rest of the UK.

Figure 1.2: Precipitation recorded at Rhyl climate station (Met Office, 2020)



1.5.2.3 Regional annual average wind speeds in North Wales and northwest of England region (Figure 1.3) are marginally higher than the annual average for the UK, equalling 9.52 kn, and 9.38 kn, respectively. Moreover, as the Onshore Development Area for the Mona Offshore Wind Project is adjacent to the Irish Sea coastline, it can be predicted that the area will be susceptible to higher wind speeds throughout the year due to its coastal location.

Figure 1.3: Wind speeds recorded in North Wales and northwest England (Met Office, 2020)



1.5.3 Offshore baseline

1.5.3.1 Mean air temperatures range from lows of 7°C in January to 14°C in July, with surface air temperatures exceeding sea surface temperatures during the spring and summer months and falling below sea surface temperatures during the autumn and winter months (BEIS, 2022).

1.5.3.2 Precipitation generally falls 18 days per month during the winter, and 10-15 days per month during the summer. Rainfall intensity and duration varies greatly from day to day (BEIS, 2022).

1.5.3.3 Higher wind speeds can be expected at the Mona Array Area in comparison with the Mona Onshore Development Area due to the lack of obstructions (both man-made and natural) that are not present in open water. Wind conditions are generally westerly and south-westerly throughout the year. During the winter, winds occasionally exceed 14 m/s (with 20% probability) in the Irish Sea to the east of the Isle of Man. During the summer the chance of these higher wind speeds drops to 2% chance (BEIS, 2022).

1.5.3.4 Mean sea level (MSL) is a crucial element of climate change related risks for wind farms – global MSL rose by 0.2 m between 1901 and 2018, and continue to rise (IPCC, 2021). North Wales has been identified as high risk of coastal flooding (Natural Resources Wales, 2022).

1.6 Climate change projections

1.6.1 Overview

1.6.1.1 Climate change has been identified as an event that is already taking place in the UK, in both academic research and in all prior legislation and policy listed. The risks associated with rising temperatures, more frequent extreme weather patterns and rising sea levels in Wales are presented in the Environment Act (Wales) 2016 and are further investigated within this section.

1.6.1.2 The assessment of future climate has been informed by climate projections based on representative concentration pathway (RCP) scenarios used by the IPCC. The RCP scenarios describe different climatic futures, all of which are considered possible depending on the volume of GHG emitted. These provide the basis for future assessments of climate change and possible response strategies, thereby giving a low-high range in potential global GHG reduction initiatives and resulting rate of climatic effects over a given period.

1.6.1.3 Both the onshore and offshore climate projections are informed by the emissions scenario RCP8.5, which is a high-emissions scenario assuming ‘business as usual’ growth globally, with little additional mitigation. This is a conservative (maximum design scenario) approach for the assessment.

1.6.1.4 The projections used to inform this assessment are contemporary to the time the assessment was undertaken. It can be expected that projections of future climate will evolve due to improvements in climate modelling and scientific understanding of climate systems, alongside improved data regarding the rate of change of global atmospheric carbon dioxide (CO_2) and other GHGs. As such, there is some inherent uncertainty in the projections used. However, in line with relevant guidance (IEMA, 2020), a worst-case scenario has been used and a range of percentile values detailed, where available, to account for such uncertainty. Ensuring the Mona Offshore Wind Project is resilient to worst-case future climate projections will ensure that it will be resilient to any shorter term climate fluctuations or variations in the climate not identified by projections (i.e. regarding rate of change).

1.6.2 Onshore climate projections

1.6.2.1 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 UK Climate Projections 2018 (UKCP18) dataset, first published in November 2018 and at v2.7.0 (MOHC, 2021) at the time of writing. The projections are based on the RCP scenarios (four scenarios presented in the IPCC fifth Assessment report which are included within the UKCP18 database). The probabilistic projections published at a 25 km grid cell scale are considered the most useful for this assessment when considering the onshore elements, 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 upon.

1.6.2.2 The Mona Offshore Wind Project is expected to have a 35 year operating lifetime and fully operational by 2030, but as a key piece of energy infrastructure could also operate in the longer term. Therefore, climate change projections for two periods in the mid- and late century have been considered: average conditions during 2030-2059 and 2060-2089.

1.6.2.3 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. These natural variations are likely to continue to be the most visible year-to-year changes in climate over the next decade, but in subsequent decades within the operating lifetime of the Mona Offshore Wind Project, the anthropogenic climatic changes are expected to become more apparent.

1.6.2.4 Table 1.1 shows potential onshore climatic changes from the UKCP18 probabilistic dataset (averaged over the 2030-2059 and 2060-2089 time periods) relative to the 1981-2010 baseline for the 25 km grid square local to Mona Onshore Development Area. No data was available for the exact location of the onshore elements of the Mona Offshore Wind Project, therefore, the closest 25 km cell also containing coastal land was chosen. Given the proximity of the 25 km cell to the onshore elements of the Mona Offshore Wind Project, it is unlikely that climate projection data would differ considerably between the two locations, and as such the chosen grid cell is considered to deliver a representative prediction of the future climate for the onshore elements of the project.

1.6.2.5 As detailed above, the data presented here is for the emissions pathway RCP8.5, a conservative (maximum design scenario) approach for the assessment.

1.6.2.6 In summary, the data within Table 1.1 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. These trends will continue and amplify towards the latter half of the century.

Table 1.1: Onshore local probabilistic projections under RCP8.5 (UKCP UI, 2022).

† 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.

Parameter†	Units	10th Percentile	Median Value	90th Percentile
Time Period – 2030-2059				
Precipitation – annual average	%	-6.8879824	-0.74113	5.540039
Precipitation – driest season	%	-11.222028	-1.24417	9.697346
Precipitation – wettest season	%	-7.2457557	7.721059	24.649017
Temperature – annual average	°C	0.5279504	1.213122	1.944391
Temperature – hottest season average	°C	0.4752267	1.470728	2.480645
Temperature – coldest season average	°C	0.25522745	1.152319	2.0748556
Temperature – hottest season maximum	°C	0.33141816	1.587492	2.8547227
Temperature – coldest season minimum	°C	0.25367862	1.212088	2.262543
Time Period – 2060-89				
Precipitation – annual average	%	-10.49587	-2.10722	6.0514264
Precipitation – driest season	%	-16.914534	-3.49829	11.298703
Precipitation – wettest season	%	-11.533975	9.191639	32.84316
Temperature – annual average	°C	1.3855772	2.616588	3.9420445
Temperature – hottest season average	°C	1.3919023	3.30357	5.224545
Temperature – coldest season average	°C	0.71030605	2.2671	3.8998168
Temperature – hottest season maximum	°C	1.3459694	3.64827	5.955431
Temperature – coldest season minimum	°C	0.69980836	2.42375	4.290362

1.6.2.7 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.

1.6.3 Offshore climate projections

1.6.3.1 Probabilistic local climate projections consistent with those referenced above and used to illustrate future possible onshore climate trends are not available for offshore regions. As such, the results of marine climate projections as detailed within the UKCP18 Marine Report (Palmer et al., 2018) and interrogated within the UK Climate Risk Independent Assessment (CCRA3), Chapter 4: Infrastructure (Jaroszweski et al., 2021) have been used to examine future trends for wind speed, wave height and sea levels. The projections are based on RCP8.5, with data largely available for the end of the 21st Century. Whilst this is outside of the initial lifetime of the Mona Offshore Wind Project, these projections display climate trends that will begin to be felt throughout this century.

1.6.3.2 It is virtually certain that sea surface temperatures will continue to increase in the 21st Century, with global mean sea surface temperatures predicted to increase by approximately 2.9°C by 2100 under RCP8.5. It is anticipated that the north Atlantic will warm at a slower rate in comparison to other oceans (IPCC, 2021).

1.6.3.3 The average wave height is predicted to decrease around much of the UK at a factor of about 10% to 20% over the 21st Century, with average wave heights in the Irish Sea decreasing by approximately 0.1 m. However, maximum wave heights in the Irish Sea are anticipated to increase, with projections showing a change in elevation of the height of maximum waves of up to 2 m to the end of the century (Jaroszweski et al., 2021).

1.6.3.4 Given the close relationship between wave heights and wind speeds, average changes in wind speed are predicted to follow similar patterns to those predicted for average wave height, with a reduction in average wind speeds projected for the west and southwest of Ireland. Changes in maximum wind speeds associated with storm surges vary regionally, with changes in the order of +/- 1.5 m/s. However, there is little consensus between models regarding the extent and pattern of such winds in relation to climate change (Palmer et al., 2018). As such, conservatively an increase in maximum wind speed should be anticipated.

1.6.3.5 Global MSL will continue to rise throughout the 21st Century, a change that is projected within all future climate change scenarios. Under RCP8.5, the UK can expect to see sea level rise of approximately 1 m by 2100. This change is regionally variable, with a lesser impact anticipated in the north of the UK. The North Wales coastline can expect to see a MSL rise of approximately 0.6 m by 2100 (Palmer et al., 2018).

1.7 Climate risk and resilience scoping

1.7.1.1 Based on the information available for the Mona Offshore Wind Project, an initial screening exercise identified the relevant climate change risks on the Mona Offshore Wind based on information sourced from the UK Climate Independent Assessment (CCRA3) which are presented in Table 1.2. A high-level assessment of such risks has been undertaken, considering the hazard, potential severity of effect on the development and its users, probability of that effect, and level of influence the development design can have on the risk. The severity of effect score considers the potential consequences of the hazard and the sensitivity of the receptor(s) affected. Each element of the risk assessment has been scored on a scale of one to three, representing low, medium or high; the scores are then summed to give a combined risk score. Table 1.2 defines each of these terms. A combined risk score of five or more when considering the factors in Table 1.3 has been defined as an impact that would be a significant adverse/beneficial effect on the Mona Offshore Wind.

1.7.1.2 Given the variability in the nature of the potential effects of climate change on the development, receptors have been identified on a risk-specific basis, whereby all receptors relate to the continued safe and effective operation of the Mona Offshore Wind. In line with IEMA (2020) guidance, the vulnerability and susceptibility have been considered in determining the severity of risk.

1.7.1.3 The assessment of effects has considered the design measures included within the Mona Offshore Wind Project in determining the combined risk score. As detailed in paragraph 1.7.1.1 a score of 5 or more after considering all design measures is assessed as a significant effect which is presented in the 'significant effect' column. Should an effect be significant, further mitigation is presented where relevant to reduce the residual effect to negligible and not significant in EIA terms.

Table 1.2: Severity, probability and influence factor definitions.

Factor	Score definitions
Severity: the magnitude and likely consequences of the impact should it occur.	**1 =** unlikely or low impact: for example, low-cost and easily repaired property damage; small changes in occupiers' behaviour.
	2 = moderate impacts with greater disruption and/or costs
	3 = severe impact, e.g. risk to individual life or public health, widespread property damage or disruption to business
Probability: reflects both the range of possibility of climatic parameter changes illustrated in CP18 projections and the probability that the possible changes would cause the impact being considered	**1 =** unlikely or low probability of impact; impact would occur only at the extremes of possible change illustrated in projections
	2 = moderate probability of impact, plausible in the central range of possible change illustrated in projections
	3 = high probability of impact, likely even with the smaller changes illustrated as possible in the projections
Influence: the degree to which design of the proposed development can affect the severity or probability of impacts	**1 =** no or minimal potential to influence, outside control of developer, e.g. reliance on national measures or individuals' attitudes/actions; or hypothetical measures would be impracticable
	2 = moderate potential to influence, e.g. a mixture of design and user behaviour or local and national factors; measures may have higher costs or practicability challenges
	3 = strong potential to influence through measures that are within the control of the developer and straightforward to implement

1.7.1.4 Table 1.3 shows the climate change risks to the Mona Offshore Wind Project that have been identified prior to any mitigation and the risk scores assigned, following the approach set out in Table 1.2. Risks associated particularly to the onshore and offshore elements of the Mona Offshore Wind Project have been identified as necessary and design measures detailed which accordingly reduce the risk to an acceptable level and mitigate a potential significant effect.

Table 1.3: Risk scores for the Mona Offshore Wind Project.

Risk	Potential consequences	Design Approach	Severity	Probability	Influence	Total score	Significant
Onshore							
Increases in average and extreme temperatures, both in winter and summer.	• Consistently heightened temperatures could lead to efficiency losses due to overheating, or the failure of electrical equipment.	Substation may be located outside or within a building. Should it be located within a building, appropriate cooling plant will be designed to account for a range of temperature conditions. These are not likely to be required should the substation be located externally given the tempersture ratings of equipment and adequate airflow would reduce the risk.	1	1	2	4	No
Changes to rainfall patterns, leading to increased annual precipitation.	• Damage to substation and associated electrical equipment, including export cables resulting in disruption to operations.	Cabling to be buried at an appropriate level below ground to limit and avoid potential risk. Employing a flexible operation and maintenance strategy will aid in mitigating this risk. Allowing for flexible scheduling will mean the frequency of maintanence can be scaled by need, accounting for factors such as an increased intensity and frequency of rainfall, if necessary. This will enable the minimisation of disruptions through quick and effective identification of issues.	1	1	2	4	No
Increased frequency of flood events resulting from increased precipitation intensity.	• Damage to substation and associated electrical equipment, including export cables resulting in disruption to operations.	Onshore flood risk and mitigation is assessed in Volume 3, Chapter 2: Hydrology and flood risk of the Environmental Statement, which details suitable attenuation and drainage design to manage flood risk. The Onshore Substation site is located within Flood Zone 1 and is considered at low risk from fluvial and tidal sources.					

Risk	Potential consequences	Design Approach	Severity	Probability	Influence	Total score	Significant
Increased frequency and intensity of extreme weather i.e. storms.	• Extreme storm events, including cold weather events, may cause structural damage to substation and associated electrical equipment, including export cables, through increased loading and ice accretion, resulting in disruption to operations.	Cabling to be buried at an appropriate level below ground to limit and avoid potential risk. Employing a flexible operation and maintenance strategy will aid in mitigating this risk. Allowing for flexible scheduling will mean the frequency of maintenance can be scaled by need, accounting for factors such as an increased number of storm events, if necessary. This will enable the minimisation of disruptions through quick and effective identification of issues.	1	1	2	4	No
Increased wind speeds and changes to wind patterns.	• Substation infrastructure may be subject to physical damage from extreme wind forces. • Increased wind speeds may increase occurrence and incursion of coastal spray inland, resulting in salt build up on electrical infrastructure associated with the substation.	Cabling to be buried at an appropriate level below ground to limit and avoid potential risk. Employing a flexible operation and maintenance strategy will aid in mitigating this risk. Allowing for flexible scheduling will mean the frequency of maintenance can be scaled by need, accounting for factors such as an increased number intensity and frequency of wind, if necessary. This will enable the minimisation of disruptions through quick and effective identification of issues.	1	1	1	3	No
Increase in mean sea level.	• May result in the increased frequency of coastal flooding, which may damage the associated electrical equipment, including export cables, resulting in disruption to operations.	Onshore flood risk and mitigation is assessed in Volume 3, Chapter 2: Hydrology and flood risk of the Environmental Statement.					

Risk	Potential consequences	Design Approach	Severity	Probability	Influence	Total score	Significant
Offshore							
Increases in average and extreme air temperatures, both in winter and summer	• Heating/overheating of turbine mechanisms may result in failure of electrical equipment and gear boxes. • Heating/overheating may inhibit power infrastructure performance and export. • Expansion of turbine materials leading to degradation. • Operating conditions could be impacted, leading to a shut down of turbines resulting in decreased electricity generation.	Safety margin within the turbine design to be fitted with automatic shutdowns/lockdowns with regards to spinning too fast.	1	1	2	4	No
Increase in sea surface temperatures and ocean acidification	• Increased temperatures and ocean acidification may lead to accelerated corrosion of submerged structures, including export cables.	Application of anti-corrosion protective coatings.	1	1	2	4	No
Changes to rainfall patterns, leading to increased annual precipitation	• Increased wear and tear resulting in erosion and degradation of blade surfaces, increasing drag and thereby decreasing energy production.	Regular inspections be carried out to assess turbine condition.	1	1	2	4	No

Risk	Potential consequences	Design Approach	Severity	Probability	Influence	Total score	Significant
Increased frequency and intensity of extreme weather i.e. storms	• Increased wear and tear of mechanical systems from high wind speeds. • Damage to turbines from fatigue and erosion as a result of the impact force of rain and hail. Results in degradation of blade surfaces, increasing drag and thereby decreasing energy production. • Increased loading from ice build up.	Turbines to be fitted with automatic shutdowns/lockdowns with regards to spinning too fast from storms.	1	1	2	4	No
Increased wind speeds and changes to wind patterns	• Increased occurrence of wind speeds beyond the cut-off point of the turbines leading to a more frequent shut down of turbines. • Increased wear and tear of mechanical systems from high wind speeds.	Regular inspection routine. Turbines to be fitted with automatic shutdowns/lockdowns with regards to spinning too fast from storms.	1	1	2	4	No
Increase in mean sea level	• Additional loading on turbine structure, resulting in structural stress and additional corrosion.	Application of anti-corrosion protective coatings.	1	2	1	4	No
Increased wave height	• Degradation of turbine structures and foundations due to additional loading. • Degradation to turbine foundations and undersea cabling due to scour from sediment transfer. Failure at cable joints may also result.	Regular inspection routine. Integrated scour protection.	1	1	2	4	No
Changes in the tidal range	• Degradation to turbine foundations and undersea cabling due to scour from sediment transfer. Failure at cable joints may also result.	Integrated scour protection.	1	1	1	3	No

1.7.1.5 When considering the proposed mitigation within the above Table 1.3, the potential risk posed to the Mona Offshore Wind Project would be reduced to an acceptable and non-significant level in EIA terms.

1.8 References

Climate Change Committee. (2021). Independent Assessment of Climate Risk. Advice to Government for the UK's third Climate Change Risk Assessment (CCRA3). [Online] https://www.theccc.org.uk/wp-content/uploads/2021/07/Independent-Assessment-of-UK-Climate-Risk-Advice-to-Govt-for-CCRA3-CCC.pdf [accessed 08/09/2022]

Department for Business, Energy & Industrial Strategy (BEIS). (2022). UK Offshore Energy Strategic Environmental Assessment: Appendix 1F: Climate & Meteorology. [Online] *A1f - Climate and meteorology (publishing.service.gov.uk) [accessed: 08/09/2022]

HM Government. (2022). UK Climate Change Risk Assessment 2022. Presented to Parliament pursuant to Section 56 of the Climate Change Act 2008. [Online] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1047003/climate-change-risk-assessment-2022.pdf [accessed 08/09/2022]

IEMA (2020) Environmental Impact Assessment Guide to: Climate Change Resilience & Adaptation [online] available at: https://www.iema.net/resources/reading-room/2020/06/26/iema-eia-guide-to-climate-change-resilience-and-adaptation-2020 [accessed: 08/09/2022]

IPCC. (2021). Climate Change 2021: The Physical Science Basis. [Online] https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_FullReport.pdf [accessed 08/09/2022]

Jaroszweski, D., Wood, R., and Chapman, L. (2021) Infrastructure. In: The Third UK Climate Change Risk Assessment Technical Report. [Betts, R.A., Haward, A.B., Pearson, K.V. (eds)] Prepared for the Climate Change Committee, London

Met Office. (2020). UK Climate Averages. [Online] https://www.metoffice.gov.uk/research/climate/maps-and-data/uk-climate-averages/gcmwbpsb4 [accessed 08/09/2022]

Natural Resources Wales (2021) Flood Risk Assessment Wales.

Palmer et al. (2018) UKCP18 Marine Report. [Online] https://www.metoffice.gov.uk/pub/data/weather/uk/ukcp18/science-reports/UKCP18-Marine-report.pdf. [accessed 08/09/2022]

UKCP UI (2022). PDF/CDF for probabilistic projections (25km) over UK, 1961-2100. [Online] https://ukclimateprojections-ui.metoffice.gov.uk/jobs/8993587c6cd9d8fe5b846c70ba1bf82e [accessed 08/09/2022]

United Nations. (2015). Environment (Wales) Act 2016 Factsheet.

Welsh Government. (2016). Environment (Wales) Act 2016 Factsheet. [Online] https://gov.wales/sites/default/files/publications/2019-05/environment-wales-act-2016-overview [accessed 08/09/2022]