Partners in UK offshore wind

[illegible]

[illegible]

[illegible]

Image of an offshore wind farm

[illegible]

D□□□□ □□□□□□□□□□

□□r□□□□□	□□r□□□□□□□□ d□□□□ □□□□	□□□□□r□d□□□□	R□□□□□ □d□□□□	□□□r□□□d□□□□	R□□□□□ d□□□□
F01	Submission at D4	RPS	Mona Offshore Wind Ltd.	Mona Offshore Wind Ltd.	4 Nov 2024

□r□□□r□d□□□□

□r□□□r□d□□□r□□

□R□□□

□

M□□□□□ □□□□□r□□□ □□d□□d□□

Contents

[illegible]

[illegible]

□ □□□r□□

□□r□ □	M□□□□□□
□□□r□□□r□d□□□r□□□□	Projection of how clean the future UK Grid electricity is likely to be based on current policies. It refers to how many grams of carbon dioxide (CO_2) are released to produce a kilowatt hour (kWh) of electricity.
□□□□□ □□□□□ □□□□□□ □□□	The systematic analysis of the potential environmental impacts of products or services during their entire life cycle.
M□r□□□□□□□r□□□□□□□r□□	Accounts for sustained changes in energy consumption and generation sources for the purposes of cost-benefit analysis, including policy appraisal.
□□□r□d□□ □r□□□□□□□□□□	Carbon intensity is a measure of how clean UK Grid electricity is. It refers to how many grams of carbon dioxide (CO_2) are released to produce a kilowatt hour (kWh) of electricity.

□□r□□□□ □□

□□r□□□□ □	D□□□r□□□□□
□□□	Agricultural Land Classification
□□□□□	Bioenergy with Carbon Capture Storage
□□□	Climate Change Committee
□□□	Concentrating solar panels
□□□□	Crew Transfer Vessels
D□□□□□	Department for Energy Security and Net Zero
D□□□□	Digest of UK Energy Statistics
□□	Environmental Impact Assessment
□□D	Environmental Product Declaration
□□□	Future Energy Scenario
□□□	Greenhouse Gas
□□ □	Global Warming Potential
□□□	Heavy Goods Vehicles
□□□□	High Voltage Alternating Current
□□□	International Energy Agency
□□□□	Intergovernmental Panel on Climate Change
□□□	Life Cycle Assessment
MD□	Maximum Design Scenario
□□□□	Offshore Substation Platforms
□D	Project Description
□□□□□□	United Nations Framework Convention on Climate Change

□ □□□□□

□□□□	D□□□r□□□□□□
□□ □□	Carbon dioxide equivalent
□	Grams
□□	Gigawatts
□□	Kilograms
□□	Kilometres
M□□	Megavolt amperes
M□	Megawatts
M□ □	Megawatt Hours
□	Tonnes

□□ □r□□□□□□□□□ □□□□ □□ □R□d□□□□□□□ □r□□□□□□

□□□□ □□r□d□□□□□□□

1.1.1.1 This document forms the Greenhouse Gas (GHG) Reduction Strategy prepared for the Mona Offshore Wind Project.

1.1.1.2 This document provides a strategy to minimise emissions in line with the requirements of National Policy Statement (NPS) EN 1 (DESNZ, 2023). It sets out how whole life carbon emissions will be managed and reduced to ensure that best practice is followed.

□□□□□ □□r□□□□□□□□□□ □□ □R□d□□□□□□□ □r□□□□□

1.1.2.1 This document sets out a strategy to minimise emissions in line with the requirements of National Policy Statement (NPS) EN 1 (DESNZ, 2023) which states:

'Applicants should look for opportunities within the proposed development to embed nature-based or technological solutions to mitigate or offset the emissions of construction and decommissioning.

Steps taken to minimise and offset emissions should be set out in a GHG Reduction Strategy, secured under the Development Consent Order. The GHG Reduction Strategy should consider the creation and preservation of carbon stores and sinks including through woodland creation, hedgerow creation and restoration, peatland restoration and through other natural habitats' [Paragraph 5.3.6 - 5.3.7 of NPS EN-1].

1.1.2.2 This Strategy should be read in conjunction with Volume 4, Chapter 2: Climate change of the Environmental Statement (ES) (APP-076) as supporting information.

1.1.2.3 This GHG Reduction Strategy illustrates the design considerations applied to date to reduce GHG emissions, along with potential further opportunities which can be considered through the next stages of the project lifecycle. It sets out how whole life carbon emissions will be managed and reduced during the detailed design stage and throughout the construction, operation and maintenance, and decommissioning phases, to ensure that best practice is followed. This GHG Reduction Strategy is intended to be embedded throughout the design process, procurement and whole life of the Mona Offshore Wind Project.

1.1.2.4 The Applicant, alongside the appointed principal designer and contractors, will use the information in this GHG Reduction Strategy to actively identify and pursue carbon reduction opportunities and mitigate carbon risks as part of the integrated scheme development.

□□□□□ □□□□□

1.1.3.1 The GHGs considered in this GHG Reduction Strategy are those in the 'Kyoto Basket' of global warming gases expressed as their CO2-equivalent (CO2e) global warming potential (GWP), listed within Annex A of the Kyoto Protocol

(an international treaty to limit and reduce GHGs). This is denoted by CO2e units in emissions factors and calculation results. GWPs used are typically the 100-year factors in the Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report (IPCC, 2013) or otherwise defined for national reporting under the United Nations Framework Convention on Climate Change.

1.1.3.2 This GHG Reduction Strategy illustrates the design considerations made by the Project to date to reduce GHG emissions, along with further potential opportunities which can be considered through the next stages of the project lifecycle.

□□□□ □□ □□□□□□□□□□□□□ □□□□

1.2.1.1 As part of the ES, an assessment of emissions associated with the construction, operation and maintenance, and decommissioning stages of the Mona Offshore Wind Project has been completed and reported within Volume 4, Chapter 2: Climate change of the ES (APP-076). Due to the nature of the Mona Offshore Wind Project, the gross GHG emissions total is dominated by avoided emissions associated with the displacement of projected marginal generation of the UK Grid. Remaining emissions, which will be focused on within this GHG Reduction Strategy, arise from emissions associated with material use and fuel consumption over the project lifetime, predominantly during the construction stage.

1.2.1.2 This GHG Reduction Strategy considers the emissions reported within the ES, and details emission reduction measures to be considered by the design team and during procurement processes, where practicable

□□□□ □ □□d□□□□□□□d□□□□□□d□rd□□

□□□□□□□ □ □□r□□□□ □

1.3.1.1 The following standards and guidance have been used to inform the preparation of this GHG Reduction Strategy:

- PAS 2080 – Carbon Management in Buildings and Infrastructure (BSI, 2023); and
- Institute of Environmental Management and Assessment (IEMA) Guide: Environmental Impacts Assessment Guide to: Assessing Greenhouse Gas Emissions and Evaluating their Significance (IEMA, 2022).

□□□□□□□ □□□□□8□□

1.3.2.1 There are multiple technical requirements in the PAS 2080:2023 technical standard when considering GHG reduction in infrastructure projects. Key considerations include:

- following the PAS 2080 carbon reduction hierarchy;
- implementing a carbon management process to help an organisation meet the requirements of PAS 2080 when delivering assets and/or programmes of work;

- quantifying, assessing and reporting a scheme's carbon emissions to inform scheme development and overall asset management;
- engaging with other value chain members, as early as possible, in a collaborative way to identify whole life low carbon solutions, including the selection of relevant low carbon materials and products, innovative design solutions and construction methods;
- defining the specific carbon management actions to be undertaken, and the key strategies and approaches to implement the culture and behaviour changes necessary for delivering carbon reduction, specifically:
  - collaborative working across the value chain;
  - implementing the carbon reduction hierarchy when identifying potential opportunities to reduce carbon; and
  - raising major carbon challenges to design development and construction planning, where key carbon risks are identified.

1.3.2.2 This GHG Reduction Strategy follows a data collection and analysis methodology which adheres to the requirements of the PAS 2080 standard. The Strategy assesses carbon use for the whole lifecycle of the project and promotes embodied carbon management and commitment to achieving carbon reductions.

[illegible]

1.3.3.1 The ability to affect change to achieve GHG emissions reduction for the project naturally reduces over time. This makes it important that the emissions reduction measures are considered from the outset or at the earliest practical point.

1.3.3.2 The need to ensure that GHG mitigation measures are implemented does not end at the pre-application Environmental Impact Assessment (EIA) stage, but extends after consent has been granted for the proposed project, in addition to throughout the project lifetime.

1.3.3.3 The IEMA GHG Management Hierarchy provides a structure set out as eliminate, reduce, substitute and compensate. The IEMA (2022) GHG in EIA Guidance provides a variation of these steps for practitioners in EIA to follow to identify opportunities that direct GHG mitigation action for a project:

- ***'Do not build:*** *evaluate the basic need for the proposed project and explore alternative approaches to achieve the desired outcome/s;*
- ***Build less:*** *realise potential for re-using and/or refurbishing existing assets to reduce the extent of new construction required;*
- ***Design clever:*** *apply low carbon solutions (including technologies, materials and products) to minimise resource consumption and embodied carbon during the construction, operation, user's use of the project, and at end-of-life;*

- ***Construct efficiently:*** *use techniques (e.g., during construction and operation) that reduce resource consumption and associated GHG emissions over the life cycle of the project; and*
- ***Offset and remove emissions:*** *as a complementary strategy to the above, adopt off-site or on-site means to offset and/or sequester GHG emissions to compensate for the HG emissions arising from the project.'*

□□□□ □ □□m□□m□□d□□□ □m□□□□□□

□□m□□□□ □ □□r□□□□ □

An assessment of emissions associated with the Mona Offshore Wind Project has been completed and reported within Volume 4, Chapter 2: Climate change of the ES (APP-076), considering a maximum design scenario that represents a conservative assessment of associated emissions. The assessment therefore likely presents an overestimate of emissions associated with the construction, operation and maintenance, and decommissioning of the Mona Offshore Wind Project. Further, such emissions represent a business-as-usual scenario with no emissions reduction measures applied. The GHG Reduction Strategy seeks to define a strategy to reduce these emissions.

1.4.1.1 GHG emissions caused by an activity are often categorised into 'scope 1', 'scope 2' or 'scope 3' emissions, following the guidance of the World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD) Greenhouse Gas Protocol suite of guidance documents (WRI and WBCSD, 2004) where:

- Scope 1 emissions: direct GHG emissions from sources owned or controlled by the Applicant, e.g., from combustion of fuel at an installation.
- Scope 2 emissions: caused indirectly by consumption of purchased energy, e.g., from generating electricity supplied through the national grid to an installation.
- Scope 3 emissions: all other indirect emissions occurring as a consequence of the activities of the Applicant, e.g., in the upstream extraction, processing and transport of materials consumed or the use of sold products or services.

1.4.1.2 This GHG Reduction Strategy includes emissions from all three scopes, where this is material and reasonably possible from the information and emissions factors available, to capture the impacts attributable to the Mona Offshore Wind Project. These emissions are not separated out by defined scopes (Scopes 1, 2 or 3) in the assessment.

1.4.1.3 Emissions associated with the construction, operation and maintenance, and decommissioning phases are detailed within sections 1.4.2, 1.4.3, and 1.4.4 below. Each stage of a project can be attributed to the following life cycle analysis (LCA) stages, which have been referenced throughout the sections below:

- materials and construction: LCA stages A1-A5;
- operation and maintenance: LCA stages B1-B5; and

- decommissioning: LCA stages C1-C4.

1.4.1.4 As the Mona Offshore Wind Project is currently in the relatively early stages of design and development, data related to specific metrics for site-specific design details (including chosen manufacturer of wind turbines, substation design etc.) are currently unavailable. Therefore, emissions resulting from the manufacturing and construction of the wind turbines, cabling, onshore substation and associated site infrastructure (onshore and offshore) have been calculated via published benchmark carbon intensities, the application of material or fuel emission factors to approximate material or fuel quantities, and published LCA literature. Detailed methodology for the assessment of emissions resulting from the Mona Offshore Wind Project can be found within Volume 8, Annex 2.1: Greenhouse gas assessment of the ES (APP-182).

□□□□□□ □□□□r□□□□□□

1.4.2.1 The estimated GHG emissions arising from the consumption of materials and fuels to construct the Mona Offshore Wind Project are presented in Table 1.1. These values are presented in Volume 8, Annex 2.1 and Volume 4, Chapter 2 of the ES (APP-182 and APP-076, respectively). Additional details on the data, calculations and methodology can be sought from both these documents.

□□□□□□□□□□□□□□□ □□□d□□□□□r□□□□□□□□□□□M□□□□ □□□□r□□ □□d□r□□□□□□ □□□ □□ □□□□□□

□□□ □□□□ □ □□□□□	M□□□□ □ □□□□r□□ □ □□d□r□□□□□ □□ □□□□□□ □□□ □ □□□□	□□r□□□□□□ □□□r□□□□□□□ □□□□r□□□□□ □□ □□□□□□ □□ □□□□□r□ □□□r□□□□□
□□□□ □□	□ □□□□r□□□□r□□r□□□r□□	
	Wind turbines (blades and tower)	591,343	29%
	Wind turbines (foundations)	1,067,040	52%
	Offshore Substation Platforms (OSP) (topsides)	49,400	2%
	OSP (foundations)	59,280	3%
	Inter-array cables	20,617	1%
	Interconnector cables	9,516	<1%
	Offshore export cables	22,838	1%
	Scour protection	63,809	3%
	□ □□□□r□□□□r□□r□□□□r□□		
	Onshore export cables	11,419	<1%
	400 kV grid connection cables	1,142	<1%
	Joint bays and Transition Joint Bays	1,310	<1%
	□□□ □□□□d□□ □□□□□r□□□d□□ □□□□□r□□		

□□□□ □□□□ □ □□□□□□	M□□□□ □ □□□□□□r□□ □ □□d□□r□□□□□□ □□ □□□□□□□□ □□□□ □ □□□□	□□r□□□□□□□□□ □□□□r□□□□□□□□□ □□□□□r□□□□□□ □□□□□□□ □□ □□□□□□□□□□r□ □□□□□r□□□□□□
Mona Onshore Substations and associated plant	16,718	<1%
Onshore traffic	70,551	3%
Vessels	54,945	3%
Helicopters	892	<1%
□□□□□□	□□□□□□8□8□	□

1.4.2.2 Emissions arising from embodied carbon associated with the materials used to construct the wind turbines have been assessed to comprise the majority of construction stage GHG emissions arising from the Mona Offshore Wind Project. Emissions resulting from the use of fuel (i.e., from helicopter, vessel and traffic movements) have also been assessed as significantly contributing to construction stage emissions.

1.4.2.3 Specifically, emissions associated with the following items comprise the largest contributors to construction stage emissions:

- Wind turbines (foundations) comprise 52% of construction stage emissions;
- Wind turbines (blades and tower) comprise 29% of construction stage emissions;
- Total transport emissions comprise 6% of construction stage emissions; and
- OSP (total of topsides and foundations) comprise 5% of construction stage emissions.

1.4.2.4 Emissions associated with the wind turbines have been calculated to arise from the raw material supply of steel and glass reinforced plastic used to construct the foundations, blades and towers. Given detailed product information is not currently available, emissions associated with the turbine manufacture are not included within the calculation of emissions.

1.4.2.5 Emissions associated with transport have been calculated to arise from fuel consumption by heavy and lightweight vehicles (56% of transport emissions), vessel movements (43% of transport emissions, and helicopters (<1% of transport emissions) over the construction period.

1.4.2.6 Emissions associated with OSPs have been calculated to arise from the raw material supply of steel used to construct the OSP foundations and topsides.

1.4.2.7 These elements are the key emissions sources that should be focussed on when looking to implement GHG reductions, as these have the greatest potential to impact construction phase emissions. Reduction opportunities are further detailed within section 1.5.

1.4.2.8 The impact of the construction of the Mona Offshore Wind Project on existing land use has also been addressed within Volume 4, Chapter 2: Climate change of the ES (APP-076). This accounts for the onshore and offshore habitat and land use change associated with the Mona Array Area, Mona Offshore Cable Corridor and Access Areas, the Mona Onshore Development Area, Mona Onshore Substation, and Mona 400 kV Grid Connection Cable Corridor. Habitat and land use change within such areas is associated with the installation of onshore and offshore cables and construction compounds, excavation works, buildings, and the construction of access roads. Key consideration has been given to land with high carbon stock such as woodland and peat, and the potential for its disturbance by construction activities.

1.4.2.9 Volume 7, Annex 7.1 of the ES (APP-168) highlights areas of woodland located near Gwrych Castle that fall into the Mona Onshore Development Area and may be of value in relation to carbon storage, however the Mona Offshore Wind Project is committed to a trenchless crossing under the woodland (REP1-007) and therefore will not disturb the carbon storage. The annex does not identity any further areas of value due to the nature of the baseline environment as predominantly agricultural farmland – this land does not have high soil or vegetation carbon stocks (e.g. peat) that would be subject to disturbance by construction. Furthermore, no soil or woodland of high carbon storage value has been identified at the onshore substation location.

1.4.2.10 Intertidal surveys with specific reference to the potential presence of peat or similar organic material have been undertaken, and did not identify any areas of peat or similar organic material (Volume 3, Chapter 5 of the ES ([APP-068]). The offshore land use change would be constrained to the Mona Array Area and Offshore Cable Corridor and would not directly impact any carbon stores. The land use would be affected throughout the construction and operations and maintenance phases of the development. However, through the decommissioning process it is anticipated that the existing baseline environment would be restored or improved (i.e. where structures will be left in situ and could provide biodiversity benefit). As no carbon stores are directly affected by the Mona Offshore Wind Project and the habitat is anticipated to return back to its pre-development habitat (or improved as described above) after decommissioning the change concerning the carbon storage value of the land use would be minimal.

□□□□□ □ □□r□□□□□□d□ □□□□□□□□□□

1.4.3.1 The estimated GHG emissions arising from the replacement and maintenance of materials and consumption of fuels throughout the operational lifetime of the Mona Offshore Wind Project (which has been assumed to be 35 years for the purpose of the climate change assessment) are presented in Table 1.2. These values are presented in Volume 8, Annex 2.1 (APP-182) and Volume 4, Chapter 2 of the ES (APP-076). Additional details on the data, calculations and methodology can be sought from both these documents.

□□□□□□□□□□□□□□□□□□□□ □□□□d□□□□r□□□□□□□□d□□ □□□□□□□□□□□□□□□□□□□□M□□□□□□ □□□□□□r□□□□ □□d□□r□□□□□□□□ □□□□ □□□□□□□□□□

□□□□ □□□□□□	□□□□□ □	M□□□□□□ □□□□□□r□□□ □□d□ □r□□□□□□□□□ □□□□□□□□□□ □□□□ □ □□□□□	□□r□□□□□□□□□□ □□□□□r□□□□□□□□□□□□□□ □□□□□r□□□□□□□□□□□□□□ □□ □□□□□□□□□□
□□□□□□□	Materials	65,344	60%
	Onshore traffic	35,725	33%
	Vessels	5,443	5%
	Helicopters	594	<1%
	Third Party Route Deviation	1,202	1%
	Land use change	Negligible	n/a
	□□□□□□	□□8□□□8	

1.4.3.2 Emissions arising from material replacement of substations and cables have been assessed to comprise the majority of operation and maintenance stage GHG emissions arising from the Mona Offshore Wind Project (60% of all operation and maintenance stage emissions). As such, this is the key emissions source that should be focussed on when looking to implement GHG reductions.

1.4.3.3 Further reduction measures should also be identified for fuel use by vessels, onshore transport and helicopters, which comprises 39% of operation and maintenance stage emissions. Emissions reduction measures are detailed within section 1.5, and are closely linked to those detailed for the construction phase given the similarity in emissions sources.

□□□□□□□ D□□□□ □ □□□□□□□□□□

1.4.4.1 The estimated GHG emissions arising from the decommissioning stage of the Mona Offshore Wind Project are presented in Table 1.3.

1.4.4.2 Volume 4, Chapter 2 of the ES (APP-076) states that throughout the decommissioning process, it is anticipated that the existing baseline environment, which is not currently believed to be a significant carbon store, would be restored.

□□□□□□□□□□□□□□□□□□□□ □□□□d□□□□□ □ □□□□□□□□□□□□□□□□□□□□M□□□□□□ □□□□□□r□□□□ □□d□□r□□□□□□□□ □□□ □□ □□□□□□□□□□

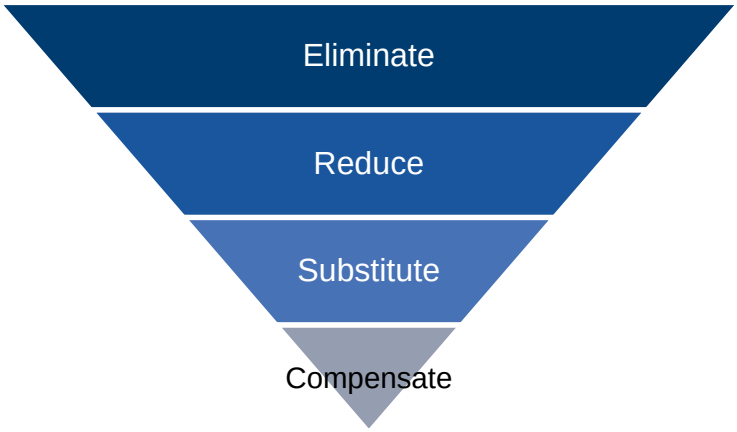
□□□□ □□□□□□	□□□□□ □	M□□□□□□ □□□□□□r□□ □ □□d□□r□□□□□□□ □□ □□□□□□□□□□ □□□□ □ □□□□□	□□r□□□□□□□□□□ □□□□□r□□□□□□□□□□□□□□ □□□□□r□□□□□□□□□□□□□□ □□ □□□□□□□□□□
□□□□□□□	Onshore traffic	70,551	56%
	Vessels	54,945	43%

□□□□ □□□□ □ □□□□□□		M□□□□□ □□□□□r□□ □ □d□r□□□□□ □□ □□□□□□ □□□ □ □□□□	□□r□□□□□□□□ □□□□r□□□□□□□□ □□□r□□□□□□□□□□ □□ □□□□□□□
	Helicopters	892	<1%
	Land use change	Negligible	n/a
	□□□□□	126,387	100%

□□□□ R□d□□□□□□ □□□r□□□□□□□

□□□□□ □ □r□□□ □

1.5.1.1 As outlined within section 1.3, GHG reduction opportunities identified below follow the GHG management hierarchy (i.e., eliminate, reduce, substitute, and compensate). Priority should be given to emissions removal, followed by carbon and energy reductions (through the optimisation of project design), and then to substitution measures (through the procurement of low carbon products and engaging with suppliers with a low carbon footprint). Finally, having considered and implemented the above steps, offsetting is recommended as a final point of emissions reduction.



□□□r□□□□□□□□M□ □□d□ □ □□□8□□ □ □M□□□□□□ □□□□ □r□r□□□□

□□□□□ M□□□□r□□□□□r□□r□□d□□□□□□□r□□□□□d□□□□□□

1.5.2.1 The primary purpose of the Mona Offshore Wind Project is to generate renewable electricity, contributing to the UK Government's ambition to deliver 50 GW offshore wind by 2030, and avoid the need for fossil fuel generated electricity and reduce he UK Grid carbon intensity. The avoided emissions associated with the displacement of projected marginal generation of the UK Grid has been detailed within Volume 8, Annex 2.1: Greenhouse gas assessment of the ES (APP-182), and assessed within Volume 4, Chapter 2: Climate change of the ES (APP-076). The Applicant has incorporated into the

design a number of measures to avoid or prevent GHG emissions which include but are not limited to the following:

- During the route planning and site selection process, the Applicant established principles, including "*Shortest route preference to reduce impacts by minimising footprint for the Mona Offshore Cable Corridor and Access Areas and Mona Onshore Cable Corridor*" (Site Selection and Consideration of Alternatives chapter of the ES, AS-016) which has reduced the materials required and subsequently the GHG emissions associated with them. .
- The project has been designed to include a series of temporary construction compounds along the onshore export cable corridor and at the onshore substation. The siting and design of these will allow the storage of equipment and materials on site, resulting in reduced construction traffic and plant travel. This, in turn, will reduce the traffic movements and associated emissions.

1.5.2.2 Measures are also included in various management plans, including but not limited to the following:

- The Applicant is committed to planting at the onshore substation to provide visual screening and ecological mitigation and enhancement. An Outline Landscape and Ecology Management Plan (REP2-034) details. This additional vegetation planting is likely to provide carbon sequestration benefits.
- An Outline Site Waste Management Plan (REP2-056) has been developed as part of the Outline Code of Construction Practice (J26 F03) which will be updated post-consent and will be maintained during the construction process phases to record the movement of waste from the construction areas onshore. Waste from the construction of the onshore elements of the project will be managed in accordance with the principles of the waste hierarchy (i.e., avoid, reduce, reuse, recycle, recover and disposal).
- The Draft Development Consent Order (C1 F05) requires an Offshore Environmental Management Plan to be developed pre-construction which will include waste management and disposal arrangements. Waste from the construction of the offshore elements of the project will be managed in accordance with the principles of the waste hierarchy (i.e., avoid, reduce, reuse, recycle, recover and disposal).

□□□□□□ □□r□□□r□r□d□□□□□□□□□r□□□□□□□

1.5.3.1 Emissions are mitigated by applying the carbon reduction strategy set out is section 1.5.1. Those opportunities at the top of the hierarchy have a greater potential to reduce emissions and are prioritised where practicable. The following reduction opportunities will be considered through subsequent stages of the project lifecycle, where feasible and practicable. with the aim of reducing emissions associated with the Mona Offshore Wind Farm:

□ Eliminate

1.5.3.2 A “do not build” scenario is not considered in this GHG Reduction Strategy as the Mona Offshore Wind Project will contribute to the UK Government’s ambition to deliver 50 GW offshore wind by 2030, avoiding the need for fossil fuel generated electricity and reducing the UK Grid carbon intensity.

Reduce/Substitute

1.5.3.3 The following are considered the main reduction opportunities available to reduce emissions associated with the Mona Offshore Wind Project, where the opportunities may be available, are practicable, and do not compromise the overall aims and deliverability of the project:

- optimising project design resulting in reduced demand for goods and services;
- making different purchasing decisions to favour low-carbon products or services;
- purchasing from suppliers with a low carbon footprint; and
- engaging with suppliers to reduce emissions across the value chain.

1.5.3.4 Reduction strategies will focus on the elements of the project which have the have the greatest potential to impact emissions. These will include, but is not limited to, wind turbine foundations, wind turbines blades and tower, transport emissions and OSP topsides and foundations during construction and replacement of substations and cables and transport emissions during operation and maintenance.

1.5.3.5 Where practicable, the project team will be offered carbon management training, covering the carbon management principles. Such training would raise awareness and engagement within project design team, upskilling and empowering team members to seek carbon reductions during project design and procurement.

□ □□m □□□□□r□□□□d□□□□□

1.5.3.6 Consideration of embodied carbon will be embedded within the design evolution of the Mona Offshore Wind Project and play a role in determining the final designs specified. This is of particular importance where the quantities of materials used are significant, resulting in a large magnitude of estimated emissions. In such cases effort would be made to reduce associated emissions where practicable, and without compromising the overall aims and deliverability of the project, through optimising project design. For example, choosing substation building designs and wind turbine/offshore substation foundation options that are less material intensive.

1.5.3.7 Further, efficiencies in logistics could be explored to include consideration of journey distances for material procurement, reducing the distance that goods travel through intelligent route planning systems and intermediate storage.

[illegible]

1.5.3.8 The Mona Offshore Wind Project is limited by market availability of low carbon resources and it is not possible to predict the level of decarbonisation for many necessary products for the delivery of the Mona Offshore Wind Project. As such, the Applicant will seek to explore opportunities of low carbon criteria within procurement activities, in partnership with the supply chain.

[illegible]

1.5.3.9 It can be helpful to differentiate suppliers when procuring products, based on the amount of GHG emissions generated by their goods and services. Requests for such information during contractor tendering will inform procurement decisions and enable emissions reductions, where possible.

[illegible]

1.5.3.10 Where possible, suppliers should be engaged during the procurement process to ensure emissions reductions are applied to materials used and construction processes throughout the contract length and during construction, operations and maintenance and decommissioning.

Compensate

1.5.3.11 As outlined in paragraph 1.5.1.1, offsetting is recommended as a final point of emissions reduction following the implementation of all other measures to reduce absolute emissions arising from the construction, operation and maintenance, and decommissioning of the Mona Offshore Wind Project, as outlined above.

1.5.3.12 The nature of the Mona Offshore Wind Project enables the renewable energy generated by the project to be transmitted to the UK grid, contributing to national electricity decarbonisation. By facilitating the expansion of renewable energy supply, the Mona Offshore Wind Project would assist the UK Government target of achieving a fully decarbonisation power system by 2035 and aim to become net zero by 2050.

1.5.3.13 The assessment of emissions arising from the Mona Offshore Wind Project (see Volume 4, Chapter 2: Climate change of the ES (APP-076)) identifies that the magnitude of calculated avoided emissions over the life-time of the project results in significant avoided emissions, which exceed emissions arising from the construction, operation and maintenance, and decommissioning of the infrastructure.

[illegible]

1.5.4.1 The climate change assessment presented within Volume 4, Chapter 2 of the ES (APP-076) and supporting technical reports has detailed the initial quantification of GHG emissions associated with the early design considerations of the Mona Offshore Wind Project.

1.5.4.2 The Applicant, alongside the appointed principal designer and contractors, will use the information in this GHG Reduction Strategy to actively identify and pursue carbon reduction opportunities and mitigate carbon risks.

References

British Standards Institution (2023) PAS 2080 – Carbon Management in Buildings and Infrastructure.

Department for Energy Security & Net Zero (DESNZ, 2023) Overarching National Policy Statement for Energy (NPS EN-1). Available: EN-1 Overarching National Policy Statement for Energy (publishing.service.gov.uk). Accessed May 2024.

IEMA (2022) Environmental Impact Assessment Guide to: Assessing Greenhouse Gas Emissions and Evaluating their Significance. 2nd Edition. [Online] Available: assessing-greenhouse-gas-emissions-and-evaluating-their-significance (iema.net). Accessed: February 2024.

IPCC (2013) Climate Change 2013: The Physical Science Basis. Available: https://www.ipcc.ch/report/ar5/wg1/. Accessed February 2024.

WRI and WBSCD (2004) A Corporate Accounting and Reporting Standard.