

MONA OFFSHORE WIND PROJECT

Preliminary Environmental Information Report

Volume 3, chapter 25: Inter-related effects (onshore)



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Final

Image of an offshore wind farm

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Glossary

Term	Meaning
Inter-related effects	Multiple effects upon the same receptor arising from the Mona Offshore Wind Project. These occur either where a single effect acts upon a receptor over time to produce a potential additive effect or where a number of separate effects, such as underwater sound and collision risk, affect a single receptor.
Project lifetime effects	Assessment of the scope for effects that occur throughout more than one phase of the Mona Offshore Wind Project, (construction, operations and maintenance and decommissioning) to interact to potentially create a more significant effect on a receptor than if just assessed in isolation in these three key project stages.
Receptor-led effects	Assessment of the scope for multiple effects to interact to create inter-related effects on a receptor. Receptor-led effects might be short term, temporary or transient effects, or incorporate longer term effects.

Acronyms

Acronym	Description
DCO	Development Consent Order
EIA	Environmental Impact Assessment
GVA	Gross Value Added
NPS	National Policy Statement
NPS EN-1	Overarching NPS for Energy
NPS EN-3	NPS for Renewable Energy Infrastructure
NPS EN-5	NPS for Electricity Networks Infrastructure
NSIPs	Nationally Significant Infrastructure Projects
PEIR	Preliminary Environmental Information Report
PRoW	Public Rights of Way

Units

Unit	Description
ha	Hectares

25 Chapter 25 – Inter-related effects (onshore)

25.1 Introduction

25.1.1 Overview

This chapter of the Preliminary Environmental Information Report (PEIR) presents the assessment of the potential impact of the Mona Offshore Wind Project on onshore inter-related effects. Specifically, this chapter presents the potential inter-related effects for the Mona Offshore Wind Project during the construction, operations and maintenance, and decommissioning phases. The offshore inter-related effects of the Mona Offshore Wind Project are addressed in volume 2, chapter 15: Inter-related effects (offshore) of the PEIR.

The assessment presented has considered other relevant impact assessments and annexes in this PEIR. These include:

- Volume 3, chapter 16: Geology, hydrogeology, and ground conditions of the PEIR
- Volume 3, chapter 17: Hydrology and flood risk of the PEIR
- Volume 3, chapter 18: Onshore ecology of the PEIR
- Volume 3, chapter 19: Historic environment of the PEIR
- Volume 3, chapter 20: Land use and recreation of the PEIR
- Volume 3, chapter 21: Traffic and transport of the PEIR
- Volume 3, chapter 22: Noise and vibration of the PEIR
- Volume 3, chapter 23: Air quality of the PEIR
- Volume 3, chapter 24: Onshore and intertidal ornithology of the PEIR
- Volume 4, chapter 26: Seascape, landscape, and visual resources of the PEIR
- Volume 4, chapter 28: Climate change of the PEIR
- Volume 4, chapter 29: Socio-economics of the PEIR
- Volume 4, chapter 30: Human health assessment of the PEIR.

25.1.2 Purpose of chapter

25.1.2.1 The primary purpose of the PEIR is outlined in volume 1, chapter 1: Introduction of the PEIR. In summary, the primary purpose of an Environmental Statement is to support the Development Consent Order (DCO) application for Mona Offshore Wind Project under the Planning Act 2008 (the 2008 Act). The PEIR constitutes the Preliminary Environmental Information for Mona Offshore Wind Project and sets out the findings of the EIA to date to support the pre-application consultation activities required under the 2008 Act. The EIA will be finalised following completion of pre-application consultation and the Environmental Statement will accompany the application to the Secretary of State for Development Consent.

25.1.2.2 The PEIR forms the basis for statutory consultation which will last for 47 days and conclude on 28 May 2023. At this point, comments received on the PEIR will be reviewed and incorporated (where appropriate) into the Environmental Statement, which will be submitted in support of the application for Development Consent scheduled for quarter one of 2024.

25.1.2.3 In particular, this PEIR chapter presents:

- the receptor groups identified for the purposes of the inter-related assessment (onshore)
- the potential for effects on receptor groups across the three key project phases (construction, operations and maintenance and decommissioning)
- the potential for multiple effects on a receptor group, as presented within the topic-specific chapter, to interact to create inter-related effects.

25.1.3 Study area

25.1.3.1 Due to the differing spatial extent of effects experienced by different onshore receptors, the study area for potential inter-related effects (onshore) varies according to topic and receptor. The potential inter-related effects (onshore) considered in this chapter are, therefore, also limited to the study areas defined in each of the topic-specific chapters.

25.2 Policy context

25.2.1 National Policy Statements

25.2.1.1 Planning policy on renewable energy infrastructure is presented in volume 1, chapter 2: Policy and legislative context of the PEIR. Planning policy on offshore renewable energy Nationally Significant Infrastructure Projects (NSIPs), specifically in relation to inter-related effects (onshore), is contained in the Overarching National Policy Statement (NPS) for Energy (NPS EN-1; DECC, 2011a), the NPS for Renewable Energy Infrastructure (NPS EN-3; DECC, 2011b) and the NPS for Electricity Networks Infrastructure (NPS EN-5; DECC, 2011c).

25.2.1.2 NPS EN-1 includes guidance on what matters are to be considered in the assessment. This is summarised in Table 25.1 below.

25.2.1.3 Table 25.1 refers to the current NPSs, specifically NPS EN-1 (DECC, 2011a). If the NPSs are updated prior to the application for Development Consent, the revised NPSs will be fully considered in relation to inter-related effects (onshore) within the Environmental Statement.

Table 25.1: Summary of the NPS EN-1 provisions relevant to inter-related effects (onshore).

Summary of NPS EN-3 and EN-1 provision	How and where considered in the PEIR
The Secretary of State should consider how the accumulation of, and interrelationship between, effects might affect the environment, economy or community as a whole, even though they may be acceptable when considered on an individual basis with mitigation measures in place (NPS EN-1, paragraph 4.2.6).	Project lifetime effects and receptor-led effects are assessed throughout this chapter of the PEIR.

25.3 Consultation

25.3.1.1 None of the issues raised during consultation activities undertaken to date have been specific or applicable to inter-related effects (onshore).

25.4 Data sources

25.4.1.1 The baseline environments for the receptor groups considered in this chapter are specific to each receptor group and set out in the relevant topic-specific chapters of the PEIR. This chapter draws upon the conclusions reached within each chapter of the PEIR for the assessment of inter-related effects. The chapters used to inform volume 3, chapter 25: Inter-related effects (onshore) of the PEIR are outlined in section 25.1.1 of this report above.

25.5 Impact assessment methodology

25.5.1.1 The inter-related effects (onshore) impact assessment has followed the methodology set out in volume 1, chapter 5: EIA methodology of the PEIR. The following definition of inter-related effects has been applied throughout this chapter:

- Multiple effects upon the same receptor arising from the Mona Offshore Wind Project. These occur either where a single effect acts upon a receptor over time to produce a potential additive effect, or where a number of separate effects, such as noise and dust, affect a single receptor, for example residents of a nearby settlement.

25.5.2 Guidance

25.5.2.1 Specific to the inter-related effects (onshore) impact assessment, the Planning Inspectorate Advice Note 9 (Planning Inspectorate, 2018) has been considered, with specific regard to the following text (paragraph 4.13) “ensure that interactions (interactions between aspect assessments includes where a number of separate impacts, e.g. noise and air quality, affect a single receptor such as fauna) between aspect (the Planning Inspectorate refers to ‘aspects’ as meaning the relevant descriptions of the environment identified in accordance with the EIA Regulations) assessments are taken into account relevant to the worst case scenario(s) established and that careful consideration is given to how these are assessed.”

25.5.2.2 The approach also serves to accommodate Planning Inspectorate Advice Note 9 regarding the need to consider the assessment as a whole and not as a series of unconnected specialist reports.

25.5.3 Approach to assessment

25.5.3.1 The approach to assessing inter-related effects within this chapter has followed a four stage process, as summarised in Table 25.2 and outlined below. Further details on the approach summarised above and used to develop this chapter are presented in volume 1, chapter 5: EIA methodology of the PEIR.

Table 25.2: Summary of staged approach to the inter-related effects assessment (onshore) for the Mona Offshore Wind Project.

Stage	Description
1	Assessment of effects undertaken for individual EIA topic areas within volume 3, chapters 16 to 24 and volume 4, chapters 26 to 30 of the PEIR.
2	Review of assessments to identify ‘receptor groups’ requiring assessment within volume 3, chapter 25: Inter-related effects (onshore).
3	Identification of potential inter-related (onshore) effects on identified receptor groups, through a review of the topic-specific assessments within volume 3, chapters 16 to 24 and volume 4, chapters 26 to 30 of the PEIR.
4	Assessment undertaken on how individual effects identified in topic specific assessments may combine to create inter-related effects on each receptor group for: <ul style="list-style-type: none"> • ‘Project lifetime effects’ (i.e. during construction, operations and maintenance and decommissioning phases) • ‘Receptor-led effects’ (i.e. multiple effects on a single receptor).

Stage 1: Topic-specific assessments

25.5.3.2 The first stage of the assessment of inter-related (onshore) effects is presented in each of the individual onshore PEIR topic chapters (see section 25.1.1) and comprises the individual assessments of effects on receptors across the construction, operations and maintenance and decommissioning phases of the Mona Offshore Wind Project.

Stage 2: Identification of receptor groups

25.5.3.3 Stage 2 involved a review of the assessments undertaken in the topic-specific chapters to identify ‘receptor groups’ requiring assessment within the inter-related effects assessment.

25.5.3.4 The term ‘receptor group’ is used to highlight that the approach taken for the inter-related effects assessment will not assess every individual receptor assessed at the EIA stage, but rather potentially sensitive groups of receptors.

25.5.3.5 The receptor groups assessed can be broadly categorised as follows:

- Geological designated sites
- Land/soil (contamination)
- Groundwater, including aquifers
- Surface water bodies (quality and flow)
- Habitats and species
- Landscape designations
- Landscape character
- Buried archaeology
- Historic assets and their setting
- Agricultural land and farm holdings
- Socio-economic factors, including tourism and the renewable energy sector
- Humans (static), including residents, users of schools/hospitals, community facilities and places of work
- Humans (dynamic), including users of the local road/rail network and Public Rights of Way (PRoW).

25.5.3.1 It is important to note that the significance of effects on different receptors in the same receptor group may vary according to the sensitivity of receptors. Therefore, where several receptors have been considered within the assessments of this chapter, a range has been provided for the significance of effect.

Stage 3: Identification of potential inter-related effects on receptor groups

25.5.3.2 Following the identification of receptor groups, the potential inter-related effects on these receptor groups were identified through a review of the impact assessment sections for each topic chapter of the PEIR.

25.5.3.3 The decision as to which impacts may result in inter-related effects upon receptors associated with the Mona Offshore Wind Project was made using professional judgement and the experience of the project team.

25.5.3.4 Individual effects on each of the key receptors were identified across the three project phases (i.e. project lifetime effects) as well as the interaction of multiple effects on a receptor (i.e. receptor-led effects), as defined in Table 25.3 below.

25.5.3.5 The assessment of inter-related effects on each receptor group is presented within section 25.6 in this chapter.

Table 25.3: Definitions of project lifetime and receptor-led inter-related effects.

Effect type	Definition
Project lifetime effects	Assessment of the scope for effects that occur throughout more than one phase of the Mona Offshore Wind Project (construction, operations and maintenance and decommissioning) to interact to potentially create a more significant effect on a receptor than if just assessed in isolation in these three key project stages.
Receptor-led effects	Assessment of the scope for multiple effects to interact to create inter-related effects on a receptor. Receptor-led effects might be short term, temporary or transient effects, or incorporate longer term effects.

Identifying potential project lifetime effects

25.5.3.6 Table 25.4 below identifies the potential for project lifetime effects to occur for each receptor group and demonstrates how/where potential project lifetime effects have been addressed within the existing chapters of the PEIR.

25.5.3.7 Where potential project lifetime effects on receptor groups have already been considered within the existing chapters of the PEIR, these receptor groups have not been considered further in this assessment of inter-related effects (onshore).

Table 25.4: Potential project lifetime effects.

Receptor group	Relevant PEIR Chapter(s)	Potential effects			Potential for project lifetime effects
		C	O	D	
Geological designated sites	<ul style="list-style-type: none"> Volume 3, chapter 16: Geology, hydrogeology, and ground conditions 	✓	✗	✗	The relevant PEIR chapter concludes that geological designated sites would only be impacted during the construction phase of the Mona Offshore Wind Project. The relevant PEIR chapter does not identify potential effects on geological designated sites during the operations and maintenance and decommissioning phase. Therefore, it is considered that there is no potential for project lifetime effects to occur on this receptor group.
Land/soil (contamination)		✓	✗	✗	The relevant PEIR chapter concludes that existing contaminated land would only be impacted during the construction phase of the Mona Offshore Wind Project. The relevant PEIR chapter does not identify potential effects on contaminated land during the operations and maintenance and decommissioning phase. Therefore, it is considered that there is no potential for project lifetime effects to occur on this receptor group.
Groundwater, including aquifers		✓	✓	✓	The relevant PEIR chapter identified potential effects on aquifers, groundwater quality and flow during the construction, operations and maintenance and decommissioning phase of the Mona Offshore Wind Project. Therefore, it is considered that there is potential for project lifetime effects to occur on this receptor group.
Surface water bodies (quality and flow)	<ul style="list-style-type: none"> Volume 3, chapter 17: Hydrology and flood risk 	✓	✗	✓	The relevant PEIR chapter identified potential effects on surface waterbodies during the construction and decommissioning phase of the Mona Offshore Wind Project. However, the relevant PEIR chapter does not identify potential effects on surface waterbodies during the operations and maintenance phase. Given the extended period of time that will have elapsed between the construction and decommissioning phase of the Mona Offshore Wind Project, it is considered that there is no potential for project lifetime effects to occur on this receptor group.
Habitats and species	<ul style="list-style-type: none"> Volume 3, chapter 18: Onshore ecology Volume 3, chapter 24: Onshore and intertidal ornithology 	✓	✓	✓	The relevant PEIR chapter identified potential effects on habitats and species during the construction, operations and maintenance and decommissioning phase of the Mona Offshore Wind Project. Therefore, it is considered that there is potential for project lifetime effects to occur on this receptor group.
Landscape designations	<ul style="list-style-type: none"> Volume 4, chapter 26: Seascape, landscape, and visual resources 	✓	✓	✓	The relevant PEIR chapter identified potential effects on landscape designations during the construction, operations and maintenance and decommissioning phase of the Mona Offshore Wind Project. Therefore, it is considered that there is potential for project lifetime effects to occur on this receptor group.
Landscape character		✓	✓	✓	The relevant PEIR chapter identified potential effects on landscape character during the construction, operations and maintenance and decommissioning phase of the Mona Offshore Wind Project. Therefore, it is considered that there is potential for project lifetime effects to occur on this receptor group.
Buried archaeology	<ul style="list-style-type: none"> Volume 3, chapter 19: Historic environment 	✓	✗	✗	The relevant PEIR chapter identifies potential effects on buried archaeology during the construction phase of the Mona Offshore Wind Project. However, the relevant PEIR chapter does not identify potential effects on buried archaeology during the operations and maintenance and decommissioning phase of the Mona Offshore Wind Project. Therefore, it is considered that there is no potential for project lifetime effects to occur on this receptor group.
Historic assets and their setting		✓	✓	✓	The relevant PEIR chapter identifies potential effects on the setting of historic assets during the construction, operations and maintenance and decommissioning phase of the Mona Offshore Wind Project. Therefore, it is considered that there is potential for project lifetime effects to occur on this receptor group.
Agricultural land and farm holdings	<ul style="list-style-type: none"> Volume 3, chapter 20: Land use and recreation 	✓	✓	✓	The relevant PEIR chapter identified potential effects on agricultural land and farm holdings during the construction, operations and maintenance and decommissioning phase of the Mona Offshore Wind Project. Therefore, it is considered that there is potential for project lifetime effects to occur on this receptor group.
Recreational resources, including Coastal Areas, Wales Coast Path and NCR 5		✓	✗	✗	The relevant PEIR chapter identifies potential effects on recreational resources, including Coastal Areas, Wales Coast Path and NCR 5 during the construction phase of the Mona Offshore Wind Project. However, the relevant PEIR chapter does not identify potential effects on recreational resources during the operations and maintenance and decommissioning phase of the Mona Offshore Wind Project. Therefore, it is considered that there is no potential for project lifetime effects to occur on this receptor group.

Receptor group	Relevant PEIR Chapter(s)	Potential effects			Potential for project lifetime effects
		C	O	D	
Socio-economic factors, including employment, Gross Value Added (GVA), supply chain demand, housing/accommodation/local services demand, tourism, and recreation.	<ul style="list-style-type: none"> Volume 4, chapter 29: Socio-economics 	✓	✓	✓	The relevant PEIR chapter identifies potential effects on socio-economic factors during the construction, operations and maintenance and decommissioning phase of the Mona Offshore Wind Project. Therefore, it is considered that there is potential for project lifetime effects to occur on this receptor group.
Humans (static), including residents, users of schools/hospitals, community facilities and places of work	<ul style="list-style-type: none"> Volume 3, chapter 21: Traffic and transport Volume 3, chapter 22: Noise and vibration Volume 3, chapter 23: Air quality Volume 4, chapter 26: Seascape, landscape, and visual resources Volume 4, chapter 30: Human health assessment. 	✓	✓	✓	The relevant PEIR chapters identify potential effects on humans (static), including residents, users of schools/hospitals, community facilities and places of work during the construction, operations and maintenance and decommissioning phase of the Mona Offshore Wind Project. Therefore, it is considered that there is potential for project lifetime effects to occur on this receptor group.
Humans (dynamic), users of the local road/rail network and PRow	<ul style="list-style-type: none"> Volume 3, chapter 20: Land use and recreation Volume 3, chapter 21: Traffic and transport Volume 3, chapter 22: Noise and vibration Volume 3, chapter 23: Air quality Volume 4, chapter 26: Seascape, landscape, and visual resources Volume 4, chapter 30: Human health assessment. 	✓	✓	✓	The relevant PEIR chapters identify potential effects on humans (dynamic), including users of the local road/rail network and PRow during the construction, operations and maintenance and decommissioning phase of the Mona Offshore Wind Project. Therefore, it is considered that there is potential for project lifetime effects to occur on this receptor group.

25.5.3.8 Based on the information above, the following receptor groups may experience project lifetime effects and have been considered within the assessment of inter-related effects (onshore):

- Groundwater, including aquifers
- Habitats and species
- Landscape designations
- Landscape character
- Historic assets and their setting
- Agricultural land and farm holdings
- Socio-economic factors, including tourism and the renewable energy sector
- Humans (static), including residents, users of schools/hospitals, community facilities and places of work
- Humans (dynamic), users of the local road/rail network and PRow.

Identifying potential receptor-led effects

25.5.3.9 Table 25.5 below identifies the potential for receptor-led effects to occur for each receptor group identified and demonstrates how/where potential receptor-led effects have been addressed within the existing chapters of the PEIR.

25.5.3.10 Where potential receptor-led effects on receptor groups have already been considered within the existing chapters of the PEIR, these receptor groups have not been considered further in this assessment of inter-related effects (onshore).

Table 25.5: Potential receptor-led effects.

Potential interaction between topic area and receptor group														
Receptor group	Geology, hydrogeology, and ground conditions	Hydrology and flood risk	Onshore ecology	Historic environment	Land use and recreation	Traffic and transport	Noise and vibration	Air quality	Onshore and intertidal ornithology	Seascape, landscape, and visual resources	Climate change	Socio-economics	Human health assessment	Receptor-led effect considered in the PEIR ?
Geological designated sites	Yes	No	No	No	No	No	No	No	No	No	No	No	No	The potential receptor-led effects of the Mona Offshore Wind Project on this receptor group are considered in volume 3, chapter 16: Geology, hydrogeology and ground conditions.
Land/soil (contamination)	Yes	No	No	No	No	No	No	No	No	No	No	No	No	The potential receptor-led effects of the Mona Offshore Wind Project on this receptor group are considered in volume 3, chapter 16: Geology, hydrogeology and ground conditions.
Groundwater, including aquifers	Yes	Yes	No	No	No	No	No	No	No	No	No	No	No	The potential receptor-led effects of the Mona Offshore Wind Project on this receptor group are considered in volume 3, chapter 16: Geology, hydrogeology and ground conditions and volume 3, chapter 17: Hydrology and flood risk.
Surface water bodies (quality and flow)	Yes	Yes	Yes	No	No	No	No	No	No	No	No	No	No	The potential receptor-led effects of the Mona Offshore Wind Project on this receptor group are considered in volume 3, chapter 16: Geology, hydrogeology and ground conditions, volume 3, chapter 17: Hydrology and flood risk and volume 3, chapter 18: Onshore ecology.
Habitats and species	No	Yes	Yes	No	No	No	Yes	Yes	Yes	No	No	No	No	The potential receptor-led effects of the Mona Offshore Wind Project on this receptor group are considered in volume 3, chapter 17: Hydrology and flood risk, volume 3, chapter 18: Onshore ecology, volume 3, chapter 22: Noise and vibration, volume 3, chapter 23: Air quality and volume 3, chapter 24: Onshore and intertidal ornithology.
Landscape designations	No	No	No	Yes	Yes	No	Yes	No	No	Yes	No	No	No	The potential receptor-led effects of the Mona Offshore Wind Project on these receptor groups are considered in volume 3, chapter 19: Historic environment, volume 3, chapter 20: Land use and recreation, volume 3, chapter 22: Noise and vibration and volume 4, chapter 26: Seascape, landscape and visual resources.
Landscape character	No	No	No	Yes	Yes	No	No	No	No	Yes	No	No	No	

Potential interaction between topic area and receptor group														
Receptor group	Geology, hydrogeology, and ground conditions	Hydrology and flood risk	Onshore ecology	Historic environment	Land use and recreation	Traffic and transport	Noise and vibration	Air quality	Onshore and intertidal ornithology	Seascape, landscape, and visual resources	Climate change	Socio-economics	Human health assessment	Receptor-led effect considered in the PEIR ?
Buried archaeology	No	No	No	Yes	No	No	No	No	No	No	No	No	No	The potential receptor-led effects of the Mona Offshore Wind Project on these receptor groups are considered in volume 3, chapter 19: Historic environment and volume 4, chapter 26: Seascape, landscape and visual resources.
Historic assets and their setting	No	No	No	Yes	No	No	No	No	No	Yes	No	No	No	
Agricultural land and farm holdings	No	No	No	No	Yes	No	No	No	No	No	No	No	No	The potential receptor-led effects of the Mona Offshore Wind Project on this receptor group are considered in volume 3, chapter 20: land use and recreation.
Socio-economic factors, including tourism and the renewable energy sector	No	No	No	No	Yes	No	Yes	No	No	Yes	No	Yes	No	The potential receptor-led effects of the Mona Offshore Wind Project on this receptor group are considered in volume 4, chapter 29: Socio-economics.
Humans (static), including residents, users of schools/hospitals, community facilities and places of work	Yes	Yes	No	Yes	No	Yes	Yes	Yes	No	Yes	No	Yes	Yes	The potential receptor-led effects of the Mona Offshore Wind Project on these receptor groups with respect to geology, hydrology and ground conditions, hydrology and flood risk, historic environment, land use and recreation, traffic and transport, noise and vibration, air quality, seascape, landscape and visual resources and socioeconomics on these receptor groups are considered in volume 4, chapter 30: Human health.
Humans (dynamic), users of the local road/rail network and PRoW	No	No	No	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes	Yes	

25.5.3.11 Based on the information presented in Table 25.5 above, all the identified receptor-led effects have been considered within the relevant chapters of the PEIR. Notably, potential receptor-led effects on humans (static or dynamic) have been assessed within volume 4, chapter 30: Human health of the PEIR. Therefore, receptor-led effects are not considered further in this assessment of inter-related effects (onshore).

Stage 4: Assessment of inter-related effects on each receptor group

25.5.3.12 The significance of the individual effects is presented in the summary of impacts, mitigation measures and monitoring tables for each receptor group within Table 25.6. All conclusions for significance of effect assume the successful implementation of mitigation measures where required (i.e. the residual effect).

25.5.3.13 A descriptive assessment of the scope for these individual effects to interact to create a different or greater effect is then undertaken. This assessment incorporates qualitative and, where possible, quantitative assessments. The assignment of significance of effect to any such inter-related effect is not undertaken, rather, any inter-related effects that may be of greater significance than the individual effects acting in isolation on a given receptor are identified and discussed within this chapter of the PEIR.

25.5.3.14 The inter-related effects assessment presents and utilises the maximum significant adverse effects for the Mona Offshore Wind Project (i.e. the Maximum Design Scenarios, including successful implementation of measures adopted as part of the Mona Offshore Wind Project where appropriate), noting that individual effects may not be significant at the topic-specific level but could become significant when their inter-related effect is assessed.

25.5.3.15 Effects of negligible significance or greater (e.g. minor, moderate, major) may occur during one phase of the project life cycle. For example, effects may occur during the construction phase but not the operations and maintenance or decommissioning phases. Where this is the case, it has been made clear that there will be no inter-related effects across the project phases. Effects of negligible significance identified in the individual topic assessments have been included, since there is the potential for inter-related effects to increase the level (significance) of effect when considered in conjunction with other sources.

25.6 Assessment of inter-related effects

25.6.1.1 For each of the receptor groups listed in section 25.5.3.5 above, the scope for impacts to these receptors to create project lifetime effects over all the project phases and/or receptor-led effects through interacting together on the receptor group in question has been explored and discussed in the following sections.

25.6.1.2 Table 25.6 lists the inter-related effects (project lifetime effects) that are predicted to arise during the construction, operations and maintenance, and decommissioning phases of the Mona Offshore Wind Project.

Table 25.6: Summary of the potential project-lifetime effects.

Description of impact	Residual effects			Assessment of project lifetime effects	Significance of effect
	C	O	D		
Groundwater, including aquifers					
Potential impacts due the alteration or deterioration of aquifer and ground water quality	Up to Minor adverse	Up to Minor adverse	Up to Minor adverse	Following the implementation of measures adopted as part of the Mona Offshore Wind Project, project lifetime effects would be no greater than those experienced during the construction phase (i.e. minor adverse). Therefore, it is considered that the project lifetime effects of the Mona Offshore Wind Project on groundwater, including aquifers and ground water will be minor adverse , which is not significant in EIA terms.	Minor adverse
Habitats and species					
Potential impacts of habitat loss, disturbance, fragmentation, isolation, contamination (e.g. site runoff) and Invasive and Non-native Species (INNS)	Up to Minor adverse	Up to Minor adverse	Up to Minor adverse	Following the implementation of measures adopted as part of the Mona Offshore Wind Project and further mitigation, project lifetime effects would be no greater than those experienced during the construction phase (i.e. minor adverse). Therefore, it is considered that the project lifetime effects of the Mona Offshore Wind Project on habitats and species will be minor adverse , which is not significant in EIA terms.	Minor adverse
Landscape designations					
Potential impact of the Mona Offshore Generation Assets on landscape designations	Up to Moderate adverse	Up to Moderate adverse	Up to Moderate adverse	Following the implementation of measures adopted as part of the Mona Offshore Wind Project, project lifetime effects would be no greater than those experienced during the construction phase (i.e. moderate adverse). Therefore, it is considered that the project lifetime effects of the Mona Offshore Wind Project on landscape designations will be moderate adverse , which, for the purposes of the volume 4, chapter 26: Seascape, landscape and visual impact assessment, is not significant in EIA terms.	Moderate adverse (not significant in EIA terms)
Potential impact of the Mona Onshore Transmission Infrastructure, including Mona Onshore Substations on landscape designations	Up to Minor adverse	Up to Minor adverse	Up to Minor adverse	Following the implementation of measures adopted as part of the Mona Offshore Wind Project, project lifetime effects would be no greater than those experienced during the construction phase (i.e. minor adverse). Therefore, it is considered that the project lifetime effects of the Mona Offshore Wind Project on landscape designations will be minor adverse , which is not significant in EIA terms.	Minor adverse
Landscape character					
Potential impact of the Mona Offshore Generation Assets on landscape character	Up to Minor adverse	Up to Minor adverse	Up to Minor adverse	Following the implementation of measures adopted as part of the Mona Offshore Wind Project, project lifetime effects would be no greater than those experienced during the construction phase (i.e. minor adverse). Therefore, it is considered that the project lifetime effects of the Mona Offshore Wind Project on landscape character will be minor adverse , which is not significant in EIA terms.	Minor adverse
Potential impact of the Mona Onshore Transmission Infrastructure (excluding Mona Onshore Substations) on landscape character	Up to Minor adverse	Up to Minor adverse	Up to Minor adverse	Following the implementation of measures adopted as part of the Mona Offshore Wind Project, project lifetime effects would be no greater than those experienced during the construction phase (i.e. minor adverse). Therefore, it is considered that the project lifetime effects of the Mona Offshore Wind Project on landscape character will be minor adverse , which is not significant in EIA terms.	Minor adverse
Potential impact of the Mona Onshore Substation on landscape character	Up to Major adverse	Up to Major adverse	Up to Major adverse	Volume 4, chapter 26: Seascape, landscape and visual impact assessment states that significant effects (up to major adverse) on landscape character are anticipated during the construction, operations and maintenance and decommissioning phase of the Mona Onshore Substations. However, once landscape mitigation planting has become established, it is considered that project lifetime effects of the Mona Offshore Wind Project on landscape character will be moderate adverse , which, for the purposes of the volume 4, chapter 26: Seascape, landscape and visual impact assessment, is not significant in EIA terms.	Moderate adverse (not significant in EIA terms)
Historic assets and their setting					
Potential loss or harm to above ground historic assets	Up to Moderate adverse	N/A	Up to Minor adverse	Volume 3, chapter 19: Historic environment states that potential loss or harm to above ground historic assets during the operations and maintenance phase of the Mona Offshore Wind Project were scoped out of the assessment on the basis that they were unlikely to be significant. Given the extended period of time that will have elapsed between the construction and decommissioning phase and following the implementation of measures adopted as part of the project, it is considered that project lifetime effects of the Mona Offshore Wind Project on above ground historic assets will be minor adverse , which is not significant in EIA terms.	Minor adverse

Description of impact	Residual effects			Assessment of project lifetime effects	Significance of effect
	C	O	D		
Potential impacts on the setting of historic assets and historic landscape	Up to Minor adverse	Up to Minor adverse	Up to Minor adverse	Following the implementation of measures adopted as part of the Mona Offshore Wind Project, project lifetime effects would be no greater than those experienced during the construction phase (i.e. minor adverse). Therefore, it is considered that project lifetime effects of the Mona Offshore Wind Project on the setting of historic assets and historic landscape will be minor adverse , which is not significant in EIA terms.	Minor adverse
Agricultural land and farm holdings					
Potential impacts due to the loss of agricultural land	Up to Moderate adverse	Up to Moderate adverse	Up to Moderate adverse	Following the implementation of measures adopted as part of the Mona Offshore Wind Project, project lifetime effects would be no greater than those experienced during the construction phase (i.e. moderate adverse). Volume 3, chapter 20: Land use and recreation states that up to 5.0 (ha) of Subgrade 3a ALC land would be permanently lost following construction of the Mona Onshore Substation. This the loss of agricultural land falls below the 20ha threshold for significance provided in Technical Advice Note (TAN) 6: planning for sustainable rural communities (Welsh Government, 2010) and is not significant in EIA terms. Therefore, it is considered that project lifetime effects of the Mona Offshore Wind Project on agricultural land and farm holdings will be moderate adverse , which is not significant in EIA terms.	Moderate adverse (not significant in EIA terms)
Potential impacts due to disruption of farm holdings	Minor adverse	Minor adverse	Minor adverse	Following the implementation of measures adopted as part of the Mona Offshore Wind Project, project lifetime effects would be no greater than those experienced during the construction phase (i.e. minor adverse). Therefore, it is considered that project lifetime effects of the Mona Offshore Wind Project on agricultural land and farm holdings will be minor adverse , which is not significant in EIA terms.	Minor adverse
Socio-economic factors					
Potential impact on local tourism and recreation	Minor adverse	Minor adverse	Minor adverse	Following the implementation of measures adopted as part of the Mona Offshore Wind Project, project lifetime effects would be no greater than those experienced during the construction phase (i.e. minor adverse). Therefore, it is considered that project lifetime effects of the Mona Offshore Wind Project on socio-economic factors, including tourism and recreation will be minor adverse , which is not significant in EIA terms.	Minor adverse
Potential impact on employment, GVA, supply chain demand and housing/accommodation/local services demand	Up to Moderate beneficial	Up to Moderate beneficial	Up to Minor beneficial	Following the implementation of measures adopted as part of the Mona Offshore Wind Project, project lifetime effects would be no greater than those experienced during the construction phase (i.e. moderate beneficial). Therefore, overall it is considered that project lifetime effects of the Mona Offshore Wind Project on socio-economic factors, including employment, GVA, supply chain demand and housing/accommodation/local services demand will be moderate beneficial , which is significant in EIA terms.	Moderate beneficial
Humans (static)					
Potential impact on traffic and transport, including driver delay, severance, pedestrian delay, pedestrian amenity, accidents and road safety and abnormal loads	Up to Minor adverse	N/A	N/A	Volume 3, chapter 21: Traffic and transport states that potential impacts on traffic and transport during the operations and maintenance and decommissioning phase of the Mona Offshore Wind Project were scoped out of the assessment on the basis that they were unlikely to be significant. Therefore, it is considered that there is no potential for project lifetime effects of the Mona Offshore Wind Project to occur on humans (static) as result of driver delay, severance, pedestrian delay, pedestrian amenity, accidents and road safety and abnormal loads.	None
Potential impact of dust soiling and suspended particulate matter associated with onsite construction and decommissioning activities (e.g. excavation, earthworks)	Negligible	N/A	Negligible	Volume 3, chapter 21: Air quality states that potential impacts of dust soiling during the operations and maintenance phase of the Mona Offshore Wind Project were scoped out of the assessment on the basis that they were unlikely to be significant. Following the implementation of measures adopted as part of the Mona Offshore Wind Project, project lifetime effects would be no greater than those experienced during the construction phase (i.e. negligible). Therefore, it is considered that project lifetime effects of the Mona Offshore Wind Project on humans (static) will be negligible , which is not significant in EIA terms.	Negligible
Potential impact of noise associated with offshore piling, Mona Landfall and Mona Onshore Cable Corridor	Up to Moderate adverse	N/A	Negligible	Volume 3, chapter 22: Noise and vibration states that potential impacts on noise and vibration during the operations and maintenance phase of the Mona Offshore Wind Project (excluding the Mona Onshore Substation) were scoped out of the assessment on the basis that they were unlikely to be significant. Given the extended period of time that will have elapsed between the construction and decommissioning phase of the Mona Offshore Wind Project, and following the implementation of measures adopted as part of the project, it is considered that project lifetime effects of the Mona Offshore Wind Project on humans (static) will be minor adverse , which is not significant in EIA terms	Minor adverse

Description of impact	Residual effects			Assessment of project lifetime effects	Significance of effect
	C	O	D		
Potential impact of noise associated with the Mona Onshore Substation	Minor adverse	Minor adverse	Minor adverse	Following the implementation of measures adopted as part of the Mona Offshore Wind Project, project lifetime effects would be no greater than those experienced during the construction phase (i.e. minor adverse). Therefore, it is considered that project lifetime effects of the Mona Offshore Wind Project on humans (static) will be minor adverse , which is not significant in EIA terms.	Minor adverse
Potential impact of the Mona Offshore Generation Assets on views and visual amenity	Up to Moderate adverse	Up to Moderate adverse	Up to Moderate adverse	Following the implementation of measures adopted as part of the Mona Offshore Wind Project, project lifetime effects would be no greater than those experienced during the construction phase (i.e. moderate adverse). Therefore, it is considered that project lifetime effects of the Mona Offshore Wind Project on humans (static) will be moderate adverse , which, for the purposes of the volume 4, chapter 26: Seascape, landscape and visual impact assessment, is not significant in EIA terms.	Moderate adverse (not significant in EIA terms)
Potential impact of the Mona Onshore Transmission Infrastructure (excluding Mona Onshore Substations) on views and visual amenity	Up to Minor adverse	Up to Minor adverse	Up to Minor adverse	Following the implementation of measures adopted as part of the Mona Offshore Wind Project, project lifetime effects would be no greater than those experienced during the construction phase (i.e. minor adverse). Therefore, it is considered that project lifetime effects of the Mona Offshore Wind Project on humans (static) will be minor adverse , which, is not significant in EIA terms.	Minor adverse
Potential impact of the Mona Onshore Substation on views and visual amenity	Up to Moderate adverse	Up to Major adverse	Up to Moderate adverse	Volume 4, chapter 26: Seascape, landscape and visual impact assessment concludes that, following the implementation of measures adopted as part of the Mona Offshore Wind Project, the construction and decommissioning phase would result in up to moderate adverse temporary effects on views and visual amenity, which is not significant in EIA terms. Significant effects (up to major adverse) on views and visual amenity are only anticipated during the operations and maintenance phase of the Mona Onshore Substations. However, once landscape mitigation planting has become established, it is considered that project lifetime effects on humans (static) will be moderate adverse , which, for the purposes of the volume 4, chapter 26: Seascape, landscape and visual impact assessment, is not significant in EIA terms.	Moderate adverse (not significant in EIA terms)
Humans (dynamic)					
Potential impact on traffic and transport, including severance, pedestrian delay, pedestrian amenity	Up to Minor adverse	N/A	N/A	Volume 3, chapter 21: Traffic and transport states that potential impacts on traffic and transport during the operations and maintenance and decommissioning phase of the Mona Offshore Wind Project were scoped out of the assessment on the basis that they were unlikely to be significant. Therefore, it is considered that there is no potential for project lifetime effects of the Mona Offshore Wind Project to occur on humans (dynamic) as result of driver delay, severance, pedestrian delay, pedestrian.	None
Potential impact of dust soiling associated with onsite construction activities (e.g. excavation, earthworks)	Negligible	N/A	Negligible	Volume 3, chapter 21: Air quality states that potential impacts of dust soiling during the operations and maintenance phase of the Mona Offshore Wind Project were scoped out of the assessment on the basis that they were unlikely to be significant. Following the implementation of measures adopted as part of the Mona Offshore Wind Project, project lifetime effects would be no greater than those experienced during the construction phase (i.e. negligible). Therefore, it is considered that project lifetime effects of the Mona Offshore Wind Project on humans (dynamic) will be negligible , which is not significant in EIA terms.	Negligible
Potential impact of noise associated with offshore piling, Mona Landfall and Mona Onshore Cable Corridor	Up to Moderate adverse	N/A	Negligible	Volume 3, chapter 22: Noise and vibration states that potential impacts on noise and vibration during the operations and maintenance phase of the Mona Offshore Wind Project (excluding the Mona Onshore Substation) were scoped out of the assessment on the basis that they were unlikely to be significant. However, given the extended period of time that will have elapsed between the construction and decommissioning phase of the Mona Offshore Wind Project, and following the implementation of measures adopted as part of the project, it is considered that project lifetime effects of the Mona Offshore Wind Project on humans (static) will be minor adverse , which is not significant in EIA terms	Minor adverse
Potential impact of noise associated with the Mona Onshore Substation	Minor adverse	Minor adverse	Minor adverse	Following the implementation of measures adopted as part of the Mona Offshore Wind Project, project lifetime effects would be no greater than those experienced during the construction phase (i.e. minor adverse). Therefore, it is considered that project lifetime effects of the Mona Offshore Wind Project on humans (dynamic) will be minor adverse , which is not significant in EIA terms.	Minor adverse
Potential impact of the Mona Offshore Generation Assets on views and visual amenity	Up to Moderate adverse	Up to Moderate adverse	Up to Moderate adverse	Following the implementation of measures adopted as part of the Mona Offshore Wind Project, project lifetime effects would be no greater than those experienced during the construction phase (i.e. moderate adverse). Therefore, it is considered that project lifetime effects of the Mona Offshore Wind Project on humans (dynamic) will be moderate adverse , which, for the purposes of the volume 4, chapter 26: Seascape, landscape and visual impact assessment, is not significant in EIA terms.	Moderate adverse (not significant in EIA terms)

Description of impact	Residual effects			Assessment of project lifetime effects	Significance of effect
	C	O	D		
Potential impact of the Mona Onshore Transmission Infrastructure (excluding Mona Onshore Substations) on views and visual amenity	Up to Minor adverse	Up to Minor adverse	Up to Minor adverse	Following the implementation of measures adopted as part of the Mona Offshore Wind Project, project lifetime effects would be no greater than those experienced during the construction phase (i.e. minor adverse). Therefore, it is considered that project lifetime effects of the Mona Offshore Wind Project on humans (dynamic) will be minor adverse , which, for the purposes of the volume 4, chapter 26: Seascape, landscape and visual impact assessment, is not significant in EIA terms.	Minor adverse
Potential impact of the Mona Onshore Substation on views and visual amenity	Up to Moderate adverse	Up to Major adverse	Up to Moderate adverse	Volume 4, chapter 26: Seascape, landscape and visual impact assessment concludes that, following the implementation of measures adopted as part of the Mona Offshore Wind Project, the construction and decommissioning phase would result in up to moderate adverse temporary effects on views and visual amenity, which is not significant in EIA terms. Significant effects (up to major adverse) on views and visual amenity are only anticipated during the operations and maintenance phase of the Mona Onshore Substations. However, once landscape mitigation planting has become established, it is considered that project lifetime effects on humans (dynamic) will be moderate adverse , which, for the purposes of the volume 4, chapter 26: Seascape, landscape and visual impact assessment, is not significant in EIA terms.	Moderate adverse (not significant in EIA terms)

25.7 Summary

25.7.1.1 The tables presented within this chapter assess potential inter-related effects arising from the Mona Offshore Wind Project on a range of receptor groups. Much of the content of these tables has been based upon assessments of individual impacts presented in the topic-specific PEIR chapters. The identification of potential inter-related effects has been based on a largely qualitative assessment using expert judgement and noting that inter-related effects have already been accounted for, in many instances, within the assessments in the topic-specific chapters.

25.8 Conclusion

25.8.1.1 This chapter has defined the potential inter-related effects (onshore) considered to arise from the Mona Offshore Wind Project. Project lifetime and receptor-led effects have been defined to differentiate between two types of inter-related effect that may arise during the construction, operations and maintenance and decommissioning phase of the Mona Offshore Wind Project.

25.8.1.2 For all the receptor groups identified, following the implementation of measures adopted as part of the project and further mitigation (if required), impacts arising during the construction, operations and maintenance and decommissioning phase of the Mona Offshore Wind Project are unlikely to result in significant adverse project-lifetime effects.

25.8.1.3 However, there is the potential for significant beneficial project-lifetime effects to occur on the following receptor groups identified in this chapter:

- Socio-economic factors: potential moderate beneficial impact of the Mona Offshore Wind project on employment, GVA, supply chain demand and housing/accommodation/local services demand.

25.8.1.4 All potential receptor-led effects identified for each receptor group have been considered within the relevant chapters of the PEIR, as shown in Table 25.5 above. Therefore, the potential significance of receptor-led effects of the Mona Offshore Wind Project on each receptor group has not been considered further in this chapter.

25.9 References

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