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MONA OFFSHORE WIND PROJECT

Environmental Statement

Volume 7, Annex 2.4: Water Framework Directive surface water and groundwater assessment

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Image of an offshore wind farm

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Glossary

Term	Meaning
Catchments	An area that serves a watercourse with rainwater. Every part of land where the rainfall drains to a single watercourse is in the same catchment.
Chemical Status	Chemical status is assessed from compliance with environmental standards for chemicals that are priority substances and/or priority hazardous substances.
Diffuse sources	Non-point sources primarily associated with run-off and other discharges related to different land uses such as agriculture and forestry, from septic tanks associated with rural dwellings and from the land spreading of industrial, municipal and agricultural wastes.
Ecology	The study of the relationships among organisms and between those organisms and their non-living environment.
Ecological Potential	Ecological potential in artificial and heavily modified water bodies is determined by an assessment of whether measures are properly in place to mitigate the impacts of any modification on the ecology of the water body
Ecological Status	An expression of the structure and functioning of aquatic ecosystems associated with surface waters. Such waters are classified as being of good ecological status when they meet the requirements of the Water Framework Directive
Ecosystem	A community of interdependent organisms together with the environment they inhabit and with which they interact; community and environment being distinct from adjacent communities and environments
Environmental Objective	Objective setting considered waters that require protection from deterioration as well as waters that require restoration and the timescales needed for recovery.
Ecological Quality Ratio (EQR)	Measure of the deviation of biological elements from undisturbed or reference conditions
Field drainage	Limiting the effect of flooding by maintaining surface water and land drainage systems.
Geology	The scientific study of the origin, history and structure of the earth.
Good Ecological Potential	This is in recognition of the fact that the water body will not achieve the ecological status of an unmodified natural water body without compromising the specified use for that water body
Good Status	A collective term used to refer to the status achieved by a surface water body when both its ecological status and its chemical status are at least good or, for groundwater, when both its quantitative status and chemical status are at least good.
Ground Conditions	An assessment of the history and chemical and physical characteristics of the soil conditions at a site.
Groundwater	All water which is below the surface of the ground in the saturated zone and in direct contact with the ground or subsoil.
Heavily modified water bodies	A body of surface water which, as a result of physical alterations by human activity, is substantially changed in character, as designated in accordance with the provisions of Annex II of the WFD
Hydrology	The study of the movement, distribution, and quality of water.

Term	Meaning
Hydromorphology	A study of the quantity and dynamics of water flow within a water body that has variations in its width, depth, structure and substrate of bed and riparian zone.
Invasive Non-Native Species	Non-native plants or animals that successfully establish themselves in aquatic and fringing habitats and damage natural flora and fauna.
Main rivers	The term used to describe a water course in respect of which the Natural Resources Wales has permissive powers in relation to its management.
Minor watercourses	The term used to describe a water course owned and operated by a local Drainage Board, a Lead Local Flood Authority or a private land owner.
Mitigation Measures	Measures to avoid, prevent, minimise, reduce or, as fully as possible, offset or compensate for any significant adverse effects on the environment, as a result of implementing a plan or programme.
Morphology	Term used to describe channel form and its process of change in shape and direction over time
One-out, all-out	The Water Framework Directive uses the "one-out, all-out" principle in assessing water bodies (i.e., the worst status of the elements used in the assessment determines the final status of the water body).
Programme of Measures	Those actions, defined in detail, which are required to achieve the environmental objectives of the Directive within a river basin district.
Protected Area	Water protected by European legislation including drinking waters, shellfish waters, bathing waters, urban wastewater nutrient sensitive areas or sites designated as Special areas of Conservation or Special Protected Areas
Protected Area Register	A register of protected areas
Quality Element	Biological, hydromorphological, physico-chemical and chemical elements that contribute to the WFD status classification
River Basin District	Administrative area for coordinated water management, composed of multiple river basins (or catchments)
River Basin Management Plan	The purpose of a river basin management plan is to provide a framework for protecting and enhancing the benefits provided by the water environment.
Special Area of Conservation (SAC)	A site designation specified in the Habitats Directive (Council Directive 92/43/EEC). Each site is designated for one or more of the habitats and species listed in the Directive. The Directive requires a management plan to be prepared and implemented for each SAC to ensure the favourable conservation status of the habitats or species for which it was designated. In combination with Special Protection Areas (SPAs), these sites contribute to the Natura 2000 Sites network.
Spring tidal excursion	The distance suspended sediment is transported prior to being carried back on the returning tide.
Surface Water	Inland waters on the land surface (such as reservoirs, lakes, rivers, transitional waters, coastal waters) within a river basin.
Water body	A coherent sub-unit in the river basin (district) to which the environmental objectives of the directive must apply. Hence, the main purpose of identifying “water bodies” is to enable the status to be accurately described and compared to environmental objectives

Term	Meaning
Water Framework Directive (WFD)	Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy. The WFD promotes water management through river basin planning. It covers inland surface waters, estuarine waters, coastal waters and groundwater.
2017 WFD Regulations	The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017. National legislation transposing WFD into law in England and Wales.
Water Quality	The physical, chemical and biological characteristics of water.
Works plans	The Plans showing the areas within which all works associated with the construction of the onshore substation, or installation of the cable, and operation and decommissioning of onshore infrastructure for Mona Offshore Wind Project are undertaken, including access, drainage and landscaping (Document reference B3).

Acronyms

Acronym	Description
BOD	Biochemical Oxygen Demand
CoCP	Code of Construction Practice
DCO	Development Consent Order
DIN	Dissolved Inorganic Nitrogen
DO	Dissolved Oxygen
DrWPA	Drinking Water Protected Area
EMFs	Electromagnetic Fields
EQR	Ecological quality ratio
EQSD	Environmental Quality Standard Directive
HDD	Horizontal Directional Drilling
HMWB	Heavily Modified Water Body
HVAC	High Voltage Alternating Current
INNS	Invasive Non-Native Species
LSO	Less Stringent Objective
MHWS	Mean High Water Springs
MLWS	Mean Low Water Springs
NRW	Natural Resources Wales
RBMP	River Basin Management Plan
SAC	Special Area of Conservation
SIP	Site Improvement Plan
SPA	Special Protection Area

Acronym	Description
SPZ	Source Protection Zone
SWMI	Significant Water Management Issues
TJB	Transition Joint Bay
uPBT	ubiquitous, persistent, bioaccumulative and toxic
WFD	Water Framework Directive
ZoI	Zone of Influence

Units

Unit	Description
%	Percentage
km^2	Square kilometres
m^2	Square metres
m^3	Metres cubed
m	Metre
mm	Millimetres
km	kilometre
kV	Kilovolt

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1 Water Framework Directive surface water and groundwater assessment technical report

1.1 Introduction

1.1.1 Background

1.1.1.1 This Water Framework Directive (WFD) surface water and groundwater assessment technical report provides an assessment of the WFD compliance for the Mona Offshore Wind Project. Specifically, this report considers the potential impact of the onshore elements of the Mona Offshore Wind Project during the construction, operations and maintenance, and decommissioning phases. These elements occur landward of Mean High Water Springs (MHWS) and comprise:

- Mona Landfall
- Onshore Cable Corridor
- Onshore Substation
- 400kV Grid Connection Corridor.

1.1.1.2 In addition to these elements, the WFD surface water and groundwater assessment also considers the temporary construction compounds, storage areas and accesses required to support the construction of the Mona Offshore Wind Project (collectively these elements and onshore elements are referred to as the Mona Onshore Development Area).

1.1.1.3 The technical report draws upon information contained within the following documents:

- Volume 2, Chapter 1: Physical processes of the Environmental Statement
- Volume 3, Chapter 1: Geology, hydrogeology and ground conditions of the Environmental Statement
- Volume 3, Chapter 2: Hydrology and flood risk of the Environmental Statement
- Volume 3, Chapter 3: Onshore ecology of the Environmental Statement
- Volume 7, Annex 3.6: Aquatic invertebrate survey technical report of the Environmental Statement
- Volume 7, Annex 3.15: Fish and eel survey technical report of the Environmental Statement.

1.1.2 Purpose of this report

1.1.2.1 This technical report comprises a WFD compliance assessment to demonstrate how any impact on WFD receptors caused by the different activities that will take place within the Mona Onshore Development Area fits with the objectives of any affected WFD surface water and groundwater bodies within the WFD study area as defined in section 1.3.

1.1.2.2 The compliance assessment for the Mona Onshore Development Area also provides the opportunity to inform the detailed design of the Mona Offshore Wind Project to avoid, minimise, mitigate, or compensate for the risks to WFD surface water and groundwater receptors where the risk assessment determined that the activities have the potential to:

- Cause a surface water body or groundwater body to deteriorate from one WFD status class to another or cause significant localised impacts that could contribute to this happening
- Prevent or undermine action to get surface water and groundwater bodies to good status (e.g. compromise the programme of measures put in place to achieve the ultimate water body objective).

1.1.3 WFD assessment scope

1.1.3.1 In order to achieve the aims outlined within paragraph 1.1.2.2, a staged approach has been adopted in undertaking the WFD compliance assessment in accordance with Advice Note Eighteen: The Water Framework Directive[1] and Water Framework Directive assessment: estuarine and coastal waters[2].

1.1.3.2 A WFD scoping assessment of the Mona Onshore Development Area has been undertaken to review each onshore component in terms of the potential impact to the water environment. The scoping assessment summarises potential impact to the water environment for each component of each WFD quality element. This WFD scoping defines the scope of the detailed assessment and identifies potential issues. A similar exercise was conducted for the Preliminary Environmental Information Report (Mona Offshore Wind Ltd, 2023) and formed the basis for the consultation undertaken with Natural Resources Wales (NRW), as the competent authority, on the key issues for WFD compliance (see section 1.5).

1.2 Legislative and policy context

1.2.1 Introduction

1.2.1.1 Whilst it is recognised that the WFD compliance is an assessment in its own right and a requirement under legislation, the relevant national policy with regard to water quality, water resources and the Water Framework Directive compliance is included in this section to demonstrate the need for this technical report in support of the Development Consent Order (DCO).

1.2.2 Legislation

1.2.2.1 The WFD (Council Directive 2000/60/EC establishing a framework for community action in the field of water policy) was adopted by the European Commission in December 2000. The WFD is transposed into law in England and Wales by The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (hereafter referred to as 'the 2017 WFD Regulations'). The WFD is retained EU legislation and is still applicable in England and Wales as set out in sections 2 and 3 of the European Union (Withdrawal) Act 2018 and the Floods and Water (Amendment etc.) (EU Exit) Regulations 2019. The 2017 WFD regulations require Secretary of State, Welsh Ministers, the Environment Agency and NRW to exercise their 'relevant functions' so as to secure compliance with the WFD (Regulation 3). Under the regulations the Secretary of State, the Welsh Ministers, NRW, and each public body have a specific duty to have regard to the relevant River Basin Management Plan (RBMP), and any supplementary plans made under it, in exercising their functions.

[1] https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/advice-note-18/

[2]https://www.gov.uk/guidance/water-framework-directive-assessment-estuarine-and-coastal-waters

'Having regard to' river basin management plans includes taking account of and considering the environmental objectives and summary of measures contained within the plan when exercising any functions and the effects of those functions on the objectives and measures within the plan (Planning Inspectorate, 2018).

1.2.2.2 Regulation 5(2) (l) (iii) of the Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 (as amended) (the APFP Regulations) requires each Nationally Significant Infrastructure Project Applicant (where applicable) to provide with their application 'a plan with accompanying information identifying *water bodies in a river basin management plan, together with an assessment of any effects on such bodies likely to be caused by the proposed development'.*

1.2.2.3 The Secretary of State will need to consider the implications of the Mona Offshore Wind Project, firstly in relation to the specific duty to have regard to the RMBP and supplementary plans, and secondly, in more general terms in relation to the UK's ability to comply with the WFD.

1.2.3 Planning policy context

1.2.3.1 The Mona Offshore Wind Project will be located in Welsh offshore waters (beyond 12 nautical miles (nm) from the Welsh coast) and inshore waters, with the offshore and onshore infrastructure located wholly within Wales. As set out in Volume 1, Chapter 1: Introduction of the Environmental Statement, the Mona Offshore Wind Project is a Nationally Significant Infrastructure Project as defined by Section 15(3) of the Planning Act 2008 (the 2008 Act). As such, there is a requirement to submit an application for a DCO to the Planning Inspectorate to be decided by the Secretary of State for the Department for Energy Security and Net Zero. As required under Regulation 5(2) (l) (iii) of the APFP Regulations it is essential that any WFD assessment is conducted thoroughly and is easily identified amongst the application documents, together with any relevant plans (see Water Bodies in a River Basin Management Plan (Document Reference B17)).

1.2.4 National Policy Statements

1.2.4.1 There are currently six energy National Policy Statements (NPSs), last updated in November 2023 and adopted in January 2024, three of which contain policy relevant to offshore wind development and the Mona Offshore Wind Project, specifically:

- Overarching NPS for Energy (NPS EN-1) which sets out the UK Government's policy for the delivery of major energy infrastructure (Department for Energy Security & Net Zero, 2024a)
- NPS for Renewable Energy Infrastructure (NPS EN-3) (Department for Energy Security & Net Zero, 2024b)
- NPS for Electricity Networks Infrastructure (NPS EN-5) (Department for Energy Security & Net Zero, 2024c).

1.2.4.2 NPS EN-1 and NPS EN-3 include guidance on what matters are to be considered in water quality and resources. These are summarised in Table 1.1 below. NPS EN-1 and NPS EN-3 also highlight a number of factors relating to the determination of an application and in relation to mitigation. These are summarised in Table 1.2 below.

1.2.4.3 NPS-5 includes guidance on what matters are to be considered in the onshore assessment of electrical networks. These are summarised in Table 1.3. NPS EN-5 also highlights a number of factors relating to the determination of an application and in relation to mitigation. These are summarised in Table 1.4.

Table 1.1: Summary of the NPS EN-1 and NPS EN-3 provisions relevant to WFD Assessment

Summary of NPS EN-1 provision	How and where considered in the Environmental Statement
NPS EN-1	
Where the project is likely to have effects on the water environment, the applicant should undertake an assessment of the existing status of, and impacts of the proposed project on, water quality, water resources and physical characteristics of the water environment, and how this might change due to the impact of climate change on rainfall patterns and consequently water availability across the water environment, as part of the Environmental Statement or equivalent. [Paragraph 5.16.3 of NPS EN-1].	The baseline environment (see section 1.7) is described for the WFD water bodies within the WFD study area (the WFD study area if defined in section 1.3). An assessment of the impacts on water quality, resources and physical characteristics is provided in section 1.9. Volume 4, Chapter 2: Climate change of the Environmental Statement looks at the impact of climate change.
The Environmental Statement should in particular describe: • The existing quality of waters affected by the proposed project and the impacts of the proposed project on water quality, noting any relevant existing discharges, proposed new discharges and proposed changes to discharges • Existing water resources affected by the proposed project and the impacts of the proposed project on water resources, noting any relevant existing abstraction rates, proposed new abstraction rates and proposed changes to abstraction rates (including any impact on or use of mains supplies and reference to Abstraction Licensing Strategies) and also demonstrate how proposals minimise the use of water resources and water consumption in the first instance • Existing physical characteristics of the water environment (including quantity and dynamics of flow) affected by the proposed project and any impact of physical modifications to these characteristics • Any impacts of the proposed project on water bodies or protected areas (including shellfish protected areas) under the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 and Source Protection Zones (SPZs) around potable groundwater abstractions • How climate change could impact any of the above in the future • Any cumulative effects. [Paragraph 5.16.7 of NPS EN-1].	This WFD Assessment has been undertaken in accordance with the Planning Inspectorate Advice Note 18: The Water Framework Directive. The assessment considers the potential impact of the Mona Offshore Wind Project landward of MHWS during the construction, operations and maintenance, and decommissioning phases as outlined in Section 1.9. The assessment and the proposed measures adopted as part of the Mona Offshore Wind Project have taken into account the requirements of the RBMP and WFD to ensure all potential impacts on the water environment are mitigated to within acceptable levels. NRW, Conwy County Borough Council, Denbighshire County Council (Lead Local Flood Authorities) have been consulted during the preparation of the WFD. A climate change allowance of 40% in accordance with the total potential change anticipated for the '2080s' (2070 to 2115) has been used within the conceptual drainage strategy which has been undertaken as part of the FCA in accordance with NPS, PPW and TAN15 standards. Sea levels rise has been taken into account within flood risk analysis to the landfall area. A cumulative impact assessment has been undertaken in Volume 3, Chapter 1: Geology, hydrogeology and ground conditions and Volume 3, Chapter 2: Hydrology and flood risk of the Environmental Statement.

Summary of NPS EN-1 provision	How and where considered in the Environmental Statement
NPS EN-3	
In relation to the cable connection: The applicant should assess the effects of the offshore transmission and any associated infrastructure on the marine, coastal and onshore environment. [Paragraph 2.8.68 of NPS EN-3]	This technical report assesses (Section 1.8 and Section 1.9) the WFD compliance and the potential environmental effects of the Mona Onshore Development Area including the connection of the offshore and onshore export cables at Landfall as they relate to surface and groundwater bodies, in particular, the downstream marine water body which could be indirectly affected by the project through hydrological pathways.
Assessment of environmental effects of transmission infrastructure and any proposed offshore or onshore substations should assess effects both alone and cumulatively with other existing and proposed infrastructure. [Paragraph 2.8.72 of NPS EN-3].	Cumulative effects on onshore WFD compliance are considered in see Volume 3, Chapter 2: Hydrology and flood risk of the Environmental Statement.
In addition, applicants should have regard to the specific ecological and biodiversity considerations that pertain to proposed offshore renewable energy infrastructure developments, namely: • Fish • Intertidal and subtidal seabed habitats and species • Marine mammals • Birds • Wider ecosystem impacts and interactions and other relevant protected migratory species. [Paragraph 2.8.98 of NPS EN-3].	This technical report considers the impacts on the ecological status of the water bodies within the Mona Onshore Development Area including the impacts on fish, invertebrates and other elements of ecological status, in addition to water dependent habitats and species (see Section 1.9).

Table 1.2: Summary of NPS EN-1 policy on decision making relevant to WFD Assessment

Summary of NPS EN-1 provision	How and where considered in the Environmental Statement
The Secretary of State should be satisfied that a proposal has regard to current River Basin Management Plans and meets the requirements of the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (including regulation 19). The specific objectives for particular river basins are set out in River Basin Management Plans. The Secretary of State must refuse development consent where a project is likely to cause deterioration of a water body or its failure to achieve good status or good potential, unless the requirements set out in Regulation 19 are met. A project may be approved in the absence of a qualifying Overriding Public Interest test only if there is sufficient certainty that it will not cause deterioration or compromise the achievement of good status or good potential. The Secretary of State should also consider the interactions of the proposed project with other plans such as Water Resources Management Plans and Shoreline Management Plans [Paragraph 5.16.14 – 5.6.15 of NPS EN-1].	This technical annex has considered the Western Wales River Basin Management Plan 2021-2027 and the WFD assessment has been undertaken to demonstrate that the Mona Onshore Development Area is compliant with the requirements of the WFD and the implementing legislation in England and Wales, i.e. Water Environment (Water Framework Directive) (England and Wales) Regulations 2017. The assessment and the proposed mitigation measures have taken into account the requirements of the RBMP, and in particular the environmental objectives of the water bodies affected, to ensure all potential impacts on the water environment are mitigated to within acceptable levels. Therefore the achievement of the environmental objectives of the water bodies within the WFD study area will not be compromised as a result of the project activities within the Mona Onshore Development Area (see section 1.9).
The Secretary of State should consider proposals to mitigate adverse effects on the water environment and any enhancement measures put forward by the applicant and whether appropriate requirements should be attached to any development consent and/or planning obligations are necessary. [Paragraph 5.16.16 NPS EN-1].	This has been described and considered in Section 1.9 in the assessment of Mona Offshore Wind Project.
The Secretary of State should consider whether mitigation measures are needed over and above any which may form part of the project application. A construction management plan may help codify mitigation at that stage. The risk of impacts on the water environment can be reduced through careful design to facilitate adherence to good pollution control practice. For example, designated areas for storage and unloading, with appropriate drainage facilities, should be clearly marked. The impact on local water resources can be minimised through planning and design for the efficient use of water, including water recycling. If a development needs new water infrastructure, significant supplies or impacts other water supplies, the applicant should consult with the local water company and the EA or NRW. [Paragraph 5.16.8 – 5.16.10 NPS EN-1].	Appropriate mitigation measures are set out in the Outline Code of Construction Practice (CoCP) (Document Reference J 26) which has been prepared as part of the DCO application. The detailed CoCP(s) will be supported via a series of management plans Outline versions of these plans are included as part of the DCO application. The management plans relevant to the WFD Assessment are: • Outline Spillage and Emergency Response Plan (Document Reference J26.1) • Outline Construction Surface Water and Drainage Management Plan (Document Reference J26.6) • Outline Flood Management Plan (Document Reference J26.7) • Outline Soil Management Plan (Document Reference J26.8) • Outline Site Waste and Resource Management Plan (Document Reference 26.9) • Outline Biosecurity Protocol (Document Reference J26.11) • Outline Discovery Strategy for Contaminated Land (Document Reference J26.12) • Outline Landfall Construction Method Statement (Document Reference J26.14) • Outline Onshore Construction Method Statement (Document Reference J26.15).

Table 1.3: Summary of the NPS EN-5 provisions relevant to WFD Assessment

Summary of NPS EN-5 provision	How and where considered in the Environmental Statement
Onshore connection locations for offshore transmission must seek to minimise environmental and other impacts, both onshore and in the marine environment and including to local communities. [Paragraph 2.13.23 of NPS EN-5].	The assessment in this technical report fully considers potential impacts on all relevant onshore ecological features as identified in the baseline studies of the zone of influence (see Volume 7, Annexes 3.1 to 3.15 of the Environmental Statement).
Applicants should consider and address routing and avoidance/minimisation of environmental impacts both onshore and offshore at an early stage in the development process. [Paragraph 2.14.1 of NPS-EN-5].	Potential impacts have been considered at an early stage and in consultation with the relevant stakeholders (see Table 1.5 in this technical report) and where possible addressed through avoidance (see Section 1.8 of this technical report).
In the assessments of their designs, applicants should demonstrate: • How environmental, community and other impacts have been considered and how adverse impacts have followed the mitigation hierarchy i.e. avoidance, reduction and mitigation of adverse impacts through good design How enhancements to the environment post construction will be achieved including demonstrating consideration of how proposals can contribute towards biodiversity net gain (as set out in Section 4.5 of EN-1 and the Environment Act 2021), as well as wider environmental improvements in line with the Environmental Improvement Plan and environmental targets. (Paragraph 4.2.29 of EN-1). [Paragraph 2.14.2 of NPS-EN-5].	The mitigation hierarchy has been followed as described in Section 1.6 of this technical report. The resulting assessment has included consultation with relevant stakeholders to agree the best way to avoid or mitigate impacts (see Table 1.5 in this technical report). A Biodiversity Benefit and Green Infrastructure Statement (Document Reference J 7) is submitted alongside the Environmental Statement as part of the DCO application.

Table 1.4: Summary of the NPS EN-5 policy on decision making relevant to WFD Assessment

Summary of NPS EN-5 policy on decision making	How and where considered in the Environmental Statement
Where biodiversity impacts are identified, including those associated with bird collision with overhead lines, the Secretary of State should be satisfied that all feasible options for mitigation have been considered and evaluated appropriately'. [Paragraph 2.11.1 of NPS EN-5].	The assessment of ecological status of the water bodies affected by the Mona Onshore Development Area in this technical report has followed the mitigation hierarchy and there is no significant risk to the deterioration of any water bodies nor will the project compromise the environmental objectives of these water bodies (see section 1.9).

1.2.5 Additional guidance

1.2.5.1 The design and construction of the Mona Offshore Wind Project will also adhere to the relevant regulatory and industry best practice guidance, including, but not limited to:

- Guidance for Pollution Prevention (GPP) 1: A general guide to preventing pollution (NRW et al., 2020)
- GPP 2: Above ground oil storage tanks (NRW et al., 2017a)
- GPP 4: Treatment and disposal where there is no connection to the public foul sewer (NRW et al., 2017b)
- GPP 5: Works and maintenance in or near water (NRW et al., 2018a)
- GPP6: Working on construction and demolition sites (NRW et al., 2023)
- GPP 8: Safe storage and disposal of used oils (NRW et al., 2017c)
- Pollution Prevention Guidelines (PPG18): Managing Fire Water and Major Spillages (NRW et al., June 2000)
- GPP 20: Dewatering of underground Ducts and Chambers (NRW et al., 2018b)
- GPP 21: Pollution incident response Plans (NRW et al., 2017d)
- GPP 22: Dealing with spills (NRW et al., 2018c)
- GPP 26: Safe storage of drums and Intermediate Bulk Containers (IBCs) (NRW et al., 2018d).

1.3 Study area

1.3.1.1 For the purposes of this WFD Assessment, water bodies that are within, intersect or which are hydrologically connected to the Mona Onshore Development Area have been identified and considered as relevant water bodies for the different stages of the WFD compliance assessment (i.e. the WFD assessment study area).

1.3.1.2 There are sections of the Mona Onshore Development Area that fall within the small coastal inter basins that drain directly, or via smaller streams, to the transitional and coastal water bodies. These areas are not within a formal WFD water body but the potential impacts of the Mona Onshore Development Area are considered in the impact to the downstream marine (transitional or coastal) water bodies.

1.3.1.3 The seabed and coastal areas that may be influenced by changes to physical processes due to the Mona Offshore Wind Project are defined in Volume 2, Chapter 1: Physical processes of the Environmental Statement, as one Spring Tidal Excursion. A Spring Tidal Excursion is the distance suspended sediment is transported prior to being carried back on the returning tide. On this basis the coastal and transitional water bodies that have the potential to be indirectly impacted by the Mona Onshore Development Area are North Wales coastal waterbody and Clywd Estuary transitional water body.

1.3.1.4 The surface water bodies that occur within the Mona Onshore Development Area with their contributing catchment areas are illustrated in Figure 1.1. These water bodies fall within the Zone of Influence (ZoI) of the Mona Offshore Wind Project for the purposes of the WFD assessment. The impact of the different project components on these water bodies is considered in this WFD compliance assessment. Groundwater bodies are displayed in Figure 1.2.

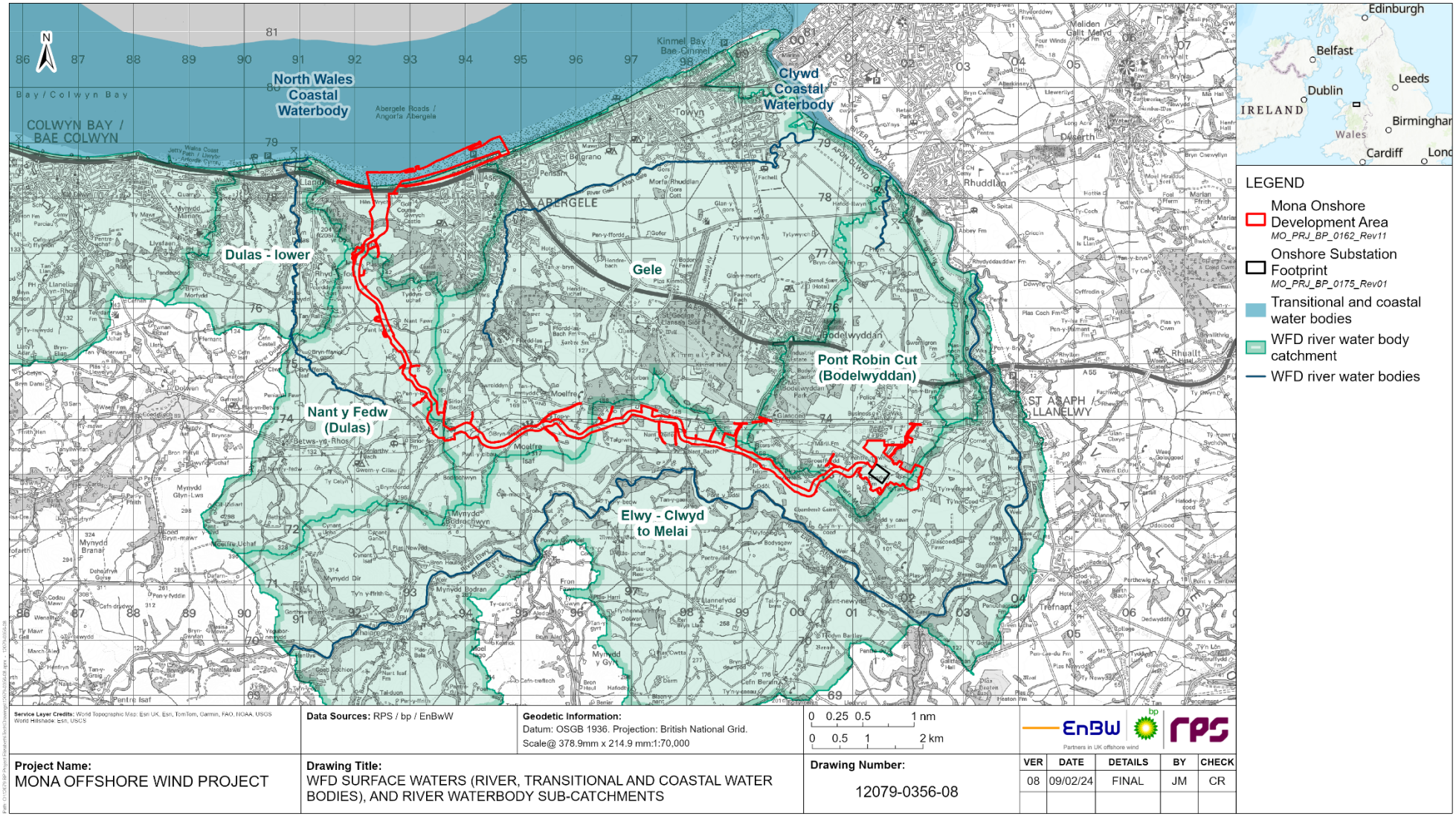

Figure 1.1: WFD surface water bodies within the ZoI of the Mona Onshore Development Area.

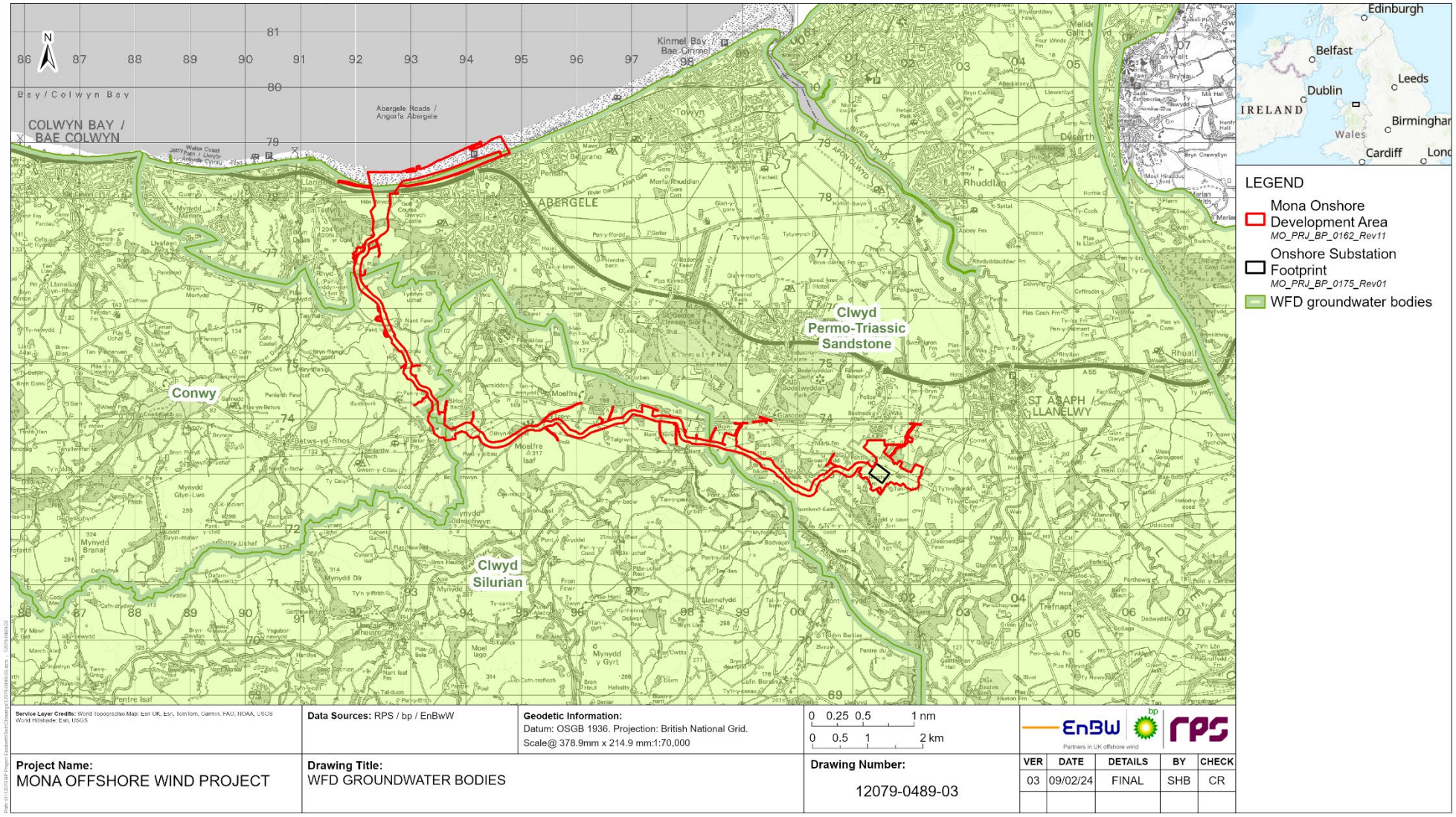

Figure 1.2: WFD Groundwater bodies within the ZoI of the Mona onshore development area

1.4 Project overview

1.4.1.1 The components of the Mona Onshore Development Area that have the potential to impact on the WFD objectives are outlined below. More detail on the nature of these activities is provided in Volume 1, Chapter 3: Project description of the Environmental Statement:

- Mona Landfall - The offshore cables will be connected to the onshore cables at the Transition Joint Bays (TJB). Trenchless techniques will be used to construct the landfall
- Onshore Cable Corridor - The onshore export cables will be buried for the entirety of the Onshore Cable Corridor and 400kV Grid Connection Cable Corridor . The cables will be installed within the Mona Onshore Development Area (this includes both the permanent installation area and temporary working area)
- Joint bays - these are concrete lined pits that provide a clean and dry environment for jointing the sections of cable together
- Link boxes - concrete chambers with a manhole cover set at ground level and contain equipment used to monitor the cables
- Crossings - the Onshore Cable Corridor will cross infrastructure and obstacles such as roads, railways and watercourses. The method employed will depend on the sensitivity and the scale of the feature to be crossed. Where trenchless crossings are used it is likely that these components of the onshore elements can be screened out of the WFD compliance assessment in accordance with NRW Guidance on WFD compliance assessments (NRW, 2023). The Onshore Crossing Schedule is provided in Volume 5, Annex 4.3: Onshore crossing schedule of the Environmental Statement
- Access routes and temporary haul roads – These are particularly important if they cross watercourses. The method of construction to be used can determine the impact on a watercourse e.g. use of temporary culverts if inappropriately installed
- Temporary Construction compounds - Construction compounds will be required along the Onshore Cable Corridor and at the Onshore Substation. The compounds will provide laydown and storage for plant and materials, as well as office space, welfare facilities and parking for construction personnel. These will be located within the Mona Onshore Development Area
- Onshore Substation – The Onshore Substation will include the substation buildings, earthworks to create the platform, a permanent access road and Sustainable Urban Drainage systems to attenuate surface water run-off. The Onshore Substation will comprise up to four buildings. The maximum dimensions of the main building are 15 m high, 40 m wide and 90 m long. An area of temporary works (including temporary construction compounds) will be required to facilitate the substation build.

1.5 Consultation

1.5.1.1 A summary of the key issues raised during consultation activities undertaken to date specific to the WFD assessment is presented in Table 1.5 with an explanation of how these issues have been considered in the production of this technical report.

Table 1.5: Summary of key consultation topics raised during consultation activities undertaken for the Mona Offshore Wind Project relevant to WFD Assessment.

Date	Consultee and type of response	Issues raised	Response to issue raised and/or where considered in this technical report
June 2022	The Planning Inspectorate - Scoping Opinion	Stockpiling of excavated material is identified in the hydrology and flood risk chapter and Water Framework Directive screening, however stockpiling is not mentioned within the Project Description or the geology, hydrogeology and ground conditions sections. The Environmental Statement should confirm the quantities of material to be stockpiled and be consistent in its reporting.	The stockpiling of excavated topsoil and subsoil along the Onshore Cable Corridor is described in Volume 1, Chapter 3: Project description of the Environmental Statement. The potential impacts of stockpiling of excavated materials are reported in the relevant chapters of the Environmental Statement. With regards to the potential risks to the achieving of the WFD objectives, stockpiling of soils is considered as part of the assessment of the Onshore Cable Corridor construction.
June 2022	The Planning Inspectorate - Scoping Opinion	Study areas - The Applicant should seek to agree study areas and receptors with relevant consultation bodies. The Environmental Statement should confirm whether the study area proposed aligns with relevant policy and guidance and provide justification for any divergences. The Environmental Statement should include figures to identify the final study area for each aspect and the location of any static receptors considered in the assessment. The generation assets study areas for Benthic, subtidal and intertidal ecology and Fish and shellfish ecology include a straight-line boundary on the west edge which appears arbitrary from an effects perspective. The study areas should sufficiently encompass the full extent of any receptors likely to be significantly affected.	Surface and groundwater bodies affected by the Mona Onshore Development Area are included in the assessment for both direct and indirect impacts. The seabed and coastal areas that may be influenced by changes to physical processes due to the Mona Offshore Wind Project are defined in Volume 2, Chapter 1: Physical processes of the Environmental Statement, as one spring tidal excursion which is the distance suspended sediment is transported prior to being carried back on the returning tide. On this basis the coastal and transitional water bodies that have the potential to be indirectly impacted by the Mona Onshore Development Area are North Wales Coastal Waterbody and Clywd Estuary Transitional Water body.

Date	Consultee and type of response	Issues raised	Response to issue raised and/or where considered in this technical report
June 2022	The Planning Inspectorate - Scoping Opinion	Marine water quality - The Environmental Statement should identify any likely significant effects on marine water quality from the releases of drilling mud used at the landfall and from the release of bacteria and its enhanced survival due to elevated suspended sediment concentrations (SSC). Subsequent effects on Bathing Waters and benthic and intertidal ecology should be assessed, where significant effects are likely to occur.	Whilst the technical report relates to the assessment of the Mona Onshore Development Area, it is acknowledged that there is a hydrological link to the Transitional and Coastal Water bodies and their protected area interests. Therefore, indirect impact through hydrological pathways is considered using the scoping template from the Environment Agency (2017) guidance “Clearing our Waters” included in Appendix A and the detailed assessment section of this annex. A WFD Assessment of the Offshore elements of the Mona Offshore Wind Project has also been undertaken (Volume 6, Annex 2.2: Water Framework Directive Coastal Waters Assessment).
June 2022	The Planning Inspectorate - Scoping Opinion	The impact of contaminated runoff on the chemical and biological status of surface water receptors arising from the operations and maintenance of the onshore transmission assets. The Inspectorate agrees that operations and maintenance activities are unlikely to generate contaminated runoff and thus there will be low potential for likely significant effects with regards to pollution. The Inspectorate agrees that this matter can be scoped out of further assessment.	The potential for impact on the achievement of the WFD objectives for the water bodies within the WFD assessment study area has been scoped out of the WFD Assessment of the Mona Onshore Development Area.
June 2022	The Planning Inspectorate - Scoping Opinion	The impact of accidental spillages/contaminant release on the quality of surface water and ground receptors during operations and maintenance of the onshore transmission assets. The Scoping Report proposes to scope out accidental pollution resulting from construction, operation and decommissioning of the Proposed Development. The Inspectorate agrees that such effects are capable of mitigation through standard management practices and can be scoped out of the assessment. The Environmental Statement should provide details of the proposed mitigation measures to be included in the Environment Management Plan. The Environmental Statement should also explain how such measures will be secured.	The risks of accidental spillage and contaminant release during the operations and maintenance of the onshore elements has been scoped out of the Environmental Impact Assessment and is therefore, not considered in the WFD Assessment. The potential impact during construction is considered the detailed assessment.

Date	Consultee and type of response	Issues raised	Response to issue raised and/or where considered in this technical report
June 2022	The Planning Inspectorate - Scoping Opinion	The impact of construction, operations and maintenance and decommissioning of the onshore transmission assets on species not listed in paragraph 7.1.3.4 of this EIA Scoping Report, including red squirrel, brown hare, fish, and aquatic invertebrates. The justification for scoping out effects to such species relies upon the avoidance of large parcels of woodland and main watercourses, together with the use of environmentally sensitive construction techniques (such as HDD), and the temporary nature of habitat disturbance and reinstatement requirements. As the likely onshore transmission route and thus likely presence/absence of such species potentially affected by the Proposed Development is not yet known, and as it is not yet known whether techniques such as HDD will be feasible for all locations, the Inspectorate does not agree that effects on species (such as those listed in Part 3, Table 7.4 and not in paragraph 7.1.3.4) can be scoped out of the assessment at this stage. The Environmental Statement should include an assessment of important ecological receptors/features, where likely significant effects could occur.	The implications for fish and aquatic invertebrates has a potential to impact on the biological elements of ecological status and present a risk to the achievement of the water body objectives. These receptors have been considered in the WFD Assessment, see section 1.8 and section 1.9.
May 2022	Natural Resources Wales – Scoping response	For Geology, Hydrogeology and Ground Conditions, NRW (A) note that there are Source Protection Zones at Trofarth Farm and Llannerch Park.	The Source Protection Zones are located outside of the geology, hydrogeology and ground conditions study area (as reported in Volume 3, Chapter 1: Geology, hydrogeology and ground conditions of the Environmental Statement) and therefore, there is no risk associated with these protected areas with regards to WFD objectives.
May 2022	Natural Resources Wales - Scoping response	NRW (A) advise that the potential impact pathway from terrestrial works to the marine environment should also be included."	The study area for the WFD Assessment includes the North Wales coastal water body and the Clywd Estuary Transitional water body.
May 2022	Natural Resources Wales - Scoping response	NRW (A) agree that main rivers and ordinary watercourses should be scoped into the project assessment in Table 6.8 Impacts proposed to be scoped into the project assessment for hydrology and flood risk, due to accidental pollution incidents, as no mitigation has been identified. However, NRW (A) note that a pathway through to the transitional and coastal water bodies has not been identified and should be included (either via a direct pathway or because they are hydrologically linked to rivers).	This pathway from the onshore elements to the marine environment via hydrological pathways from the river water bodies has been identified and is included in the WFD Assessment of the potential impacts from the Mona Onshore Development Area.

Date	Consultee and type of response	Issues raised	Response to issue raised and/or where considered in this technical report
May 2022	Natural Resources Wales - Scoping response	NRW (A) note that the chemical status for the Clwyd has been left blank in Part 4: Annex B: Water Framework Directive Screening; Table 2.1 WFD status classification for surface water (river, transitional and coastal) and groundwater bodies that overlap with the Mona Onshore Transmission Infrastructure Scoping Search Area and Mona Offshore Transmission Infrastructure Scoping Search Area, and the key elements driving status classification. The Cycle 3 WFD classifications were released in late 2021 and should be used for further assessment; these can be found on the Water Watch Wales website Water Watch Wales (naturalresourceswales.gov.uk).	Cycle 3 Classification has been used in the WFD Assessment of the Mona Onshore Development Area.
May 2022	Natural Resources Wales - Scoping response	NRW (A) recommend that the Environment Agency's Water Framework Directive assessment: estuarine and coastal waters (Environment Agency's guidance) is referred to for screening and further detailed assessment, as a number of Water Quality topics have not been identified in Part 4: Annex B: Water Framework Directive Screening, e.g. temperature, oxygen, contaminated sediment, bacterial releases, salinity, and releases of Environmental Quality Standards Directive (EQSD) chemicals. Protected areas as defined under the WFD regulations can be found on the Protected Area Register.	The Environment Agency publication "Clearing our Waters": Water Framework Directive Assessment: Estuarine and Coastal Waters (2017) has been used in the assessment of the potential effects from the Mona onshore development area on the hydrologically connected Transitional and Coastal water bodies. The scoping template from this guidance is included in Appendix A of this technical report.
May 2022	Natural Resources Wales - Scoping response	The impact of contaminated runoff on the quality of transitional and coastal water bodies arising from the construction and decommissioning of the onshore transmission assets.	See above

Date	Consultee and type of response	Issues raised	Response to issue raised and/or where considered in this technical report
May 2022	Natural Resources Wales - Scoping response	Electromagnetic Fields (EMFs) from cabling during the operational phase.	The potential for EMF to impact fish and other aquatic species has been studied extensively, particularly the interference with species such as Atlantic Salmon and the impairment of migration and navigation. The operation of offshore wind energy projects is not expected to negatively affect commercial and recreational fishes. A study by the U.S. Department of the Interior, Bureau of Ocean Energy Management within the south New England area found Negligible effects, if any, on bottom-dwelling species and no negative effects on pelagic species are expected due to their distance from the power cables buried in the seafloor or under main rivers and the level of magnetic field generated from AC cables (CSA Ocean Sciences Inc., 2019). As outlined in Volume 7, Annex 3.15, Fish and eel survey technical report of the Environmental Statement the water courses affected by the Mona Onshore Development Area have limited fishery resource with only two tributaries of the Nant y Fedw (Dulas) river water body with suitable habitat for eels. The impact of EMFs are not considered to be significant for this species. Volume 2, Chapter 3: Fish and shellfish ecology of the Environmental Statement predicted that installation or operation of the export cables would not significantly affect fish and shellfish movement, migration or spawning.
May 2022	Natural Resources Wales - Scoping response	With reference to Section 2.2.1.3 Legislation, NRW (A) would stress that it is not just deterioration at a water body level that must be considered within the assessment, but deterioration of any element within a water body, even if it does not result in deterioration at the water body level. Please also note that compensation is not a requirement in WFD terms.	Noted – the WFD Assessment assesses the potential risk of deterioration on the contributing elements of ecological and chemical status and the potential risk to the prevention of the water body from achieving its environmental objectives by the recommended deadline in the 3rd Cycle RBMP.

Date	Consultee and type of response	Issues raised	Response to issue raised and/or where considered in this technical report
May 2022	Natural Resources Wales - Scoping response	NRW (A) recommend clarification within Section 2.2.1.11 Water body objectives, with respect to the WFD Compliance Assessment. It is not the objective of a Compliance Assessment, for example, “To prevent deterioration in the ecological status of the water body”, but to assess the metrics of the proposed project to understand if there is a risk of deterioration as a result of the works associated with it. NRW (A) encourage the Applicant to refer to the Environment Agency’s Guidance ‘Clearing the Waters for All’, which provides information on how to carry out a WFD Compliance Assessment for activities within transitional (estuarine) and coastal waters.	This has been clarified in this technical report which highlights the requirement to assess the risk to the achievement of the WFD Objectives.
May 2022	Natural Resources Wales - Scoping response	NRW (A) note that it is not easy to understand what activities will be scoped in for the individual construction, operation and decommissioning phases of the project as they are all grouped together in Table 2.3 Potential impacts associated with the construction, operation and decommissioning of the Mona Offshore Wind Project on surface and coastal water bodies.	The scoping of the activities for each stage of the proposed development is detailed in Section 1.8.
May 2022	Natural Resources Wales - Scoping response	With reference to Part 2: Section 8.5/Part 3: Section 11.7 Next Steps, Does the reader agree that the proposed study areas are appropriate for each of the EIA topics? As outlined above, in the case of WFD, NRW (A) advise that all WFD water bodies that fall within the geographic scope of the assessment carried out as part of the wider EIA, in terms of both direct impacts, (e.g. physical footprint of cabling), and indirect impacts (e.g. impacts arising from EMFs on migratory fish) should be considered within the WFD Compliance Assessment. WFD water bodies that overlap with outputs of the proposed numerical modelling should be included within the assessment. Furthermore, NRW (A) agree that the North Wales and Mersey Mouth coastal water bodies, and the Clwyd transitional water body, are included within the assessment, but advise that the list of water bodies is not finalised until the ZoI is fully defined through numerical modelling and other methods.	For surface and groundwater bodies affected by the Mona Onshore Development Area are included in the assessment for both direct and indirect impacts. The seabed and coastal areas that may be influenced by changes to physical processes due to the Mona Offshore Wind Project are defined in Volume 2, Chapter 1: Physical processes of the Environmental Statement, as one spring tidal excursion which is the distance suspended sediment is transported prior to being carried back on the returning tide. On this basis the coastal and transitional water bodies that have the potential to be indirectly impacted by the Mona onshore development area are North Wales Coastal Waterbody and Clywd Estuary Transitional Water body.

Date	Consultee and type of response	Issues raised	Response to issue raised and/or where considered in this technical report
June 2023	Natural Resource Wales (NRW) – Section 42 Consultation	"Volume 1 Chapter 3, Project Description With regard to the watercourse crossings in Section 3.7.2.27,any trenched/open cut crossing would require mitigation for any fish species in the vicinity. These crossings would need assessing as to whether fish rescue will be required prior to drying out the works area."	An assessment of the baseline fish status of each watercourse crossed by the Mona Onshore Development Area has been undertaken and presented in Volume 7, Annex 3.15: Fish and eel survey technical report of the Environmental Statement. There will be no requirement for fish rescue as the watercourses traversed have limited fisheries resource or trenchless construction techniques will be used at watercourses where European Eel are present.
June 2023	NRW - Section 42 Consultation	"Volume 3, Chapter 18 Onshore Ecology With reference to Sections 18.8.2.18 –19, there will be a need for fish rescue and removal at sites that require dewatering and realignment, particularly for species such as eel. NRW (A) are in agreement with the proposed mitigation provided sensitive working methods are adhered to."	As per comment above fish rescue will not be required.
June 2023	NRW - Section 42 Consultation	"Volume 7, Annex 18.1 Terrestrial Ecology Desk Study With reference to Section 2.4.1.1, European Eel are present on the IUCN Red List. It is likely that Eels will be encountered on the water course crossings and therefore, a screening assessment and any applicable avoidance/mitigation should be outlined. Furthermore, NRW (A) note that there is no data for fish within this section. Clarification is sought as to whether studies have been undertaken or surveys completed as we advise there is likely to be Eels and trout present. NRW (A) advise that surveys of crossing points should be undertaken prior to works commencing. We may be able to assist by providing further details of these watercourses."	Any assessment of the baseline fish status of each watercourse crossed by the Mona Onshore Development Area has been undertaken and presented in Volume 7, Annex 3.15: Fish and eel survey technical report of the Environmental Statement. Eel were electrofished in two watercourses which will be crossed by trenchless construction techniques.
June 2023	NRW - Section 42 Consultation	NRW (A) agree with the water bodies identified in the zone of influence of the onshore aspects of the scheme. However, there is currently insufficient detail to assess the impacts and comment on the conclusions.	Crossing schedule has been provided (see Volume 5, Annex 4.3: Onshore crossing schedule of the Environmental Statement) and an assessment of the crossings has been undertaken based on the nature of the channel and the fishery resource as outlined in the Volume 7, Annex 3.15: Fish and eel survey technical report and Volume 7, Annex 3.6: Aquatic invertebrates survey technical report.

Date	Consultee and type of response	Issues raised	Response to issue raised and/or where considered in this technical report
June 2023	NRW - Section 42 Consultation	NRW (A) note the reference to an earlier version of NRW internal guidance: Guidance for assessing activities and projects for compliance with the Water Framework Directive (NRW, 2018). We can provide the latest version of this guidance.	The assessment within this annex has been undertaken in accordance with the 2023 guidance from NRW. Reference to the NRW guidance have been updated.
June 2023	NRW - Section 42 Consultation	NRW (A) would expect to see summary of/signposting to potential for in-combination and/or cumulative effects as described in the NRW internal guidance: OGN72 Complying with the Water Framework Regulations 2017 –how to assess and appraise projects and activities documentation. This can include other project activities taking place in a water body.	In combination and cumulative effects are addressed in Volume 3, Chapter 2: Hydrology and flood risk of the Environmental Statement.
June 2023	NRW - Section 42 Consultation	The description in Section 1.5.2.17 Gele, is inaccurate. Macrophyte sub-element is actually poor status, but it does not drive the classification because of the Heavily Modified Water Body (HMWB) designation. The summary information in Table 1.3 Surface water body classification within the WFD Assessment study area, is correct.	Gele water body description amended to address the inaccuracy in Section 1.5.2.17 of the WFD Assessment annex.
June 2023	NRW - Section 42 Consultation	NRW (A) query whether Table 1.12 Potential impacts associated with Mona onshore development area and outcome of scoping assessment for the WFD compliance assessment for onshore surface water bodies, refers to groundwater rather than surface water despite the title?	Typographical error, Table 1.12 relates to groundwater and the title has been amended in this technical annex.
June 2023	NRW - Section 42 Consultation	In Section 1.7.6.2 Assessment summary and conclusion, with regard to the Western Wales River Basin Management Plan (RBMP) 2022-2027– this plan should be referred to as 2021-2027.	Typographical error amended in this technical annex.
June 2023	NRW - Section 42 Consultation	"Hydro-Morphological Elements of the Water Framework Directive Volume 3, Chapter 18 Onshore Ecology With reference to Section 18.8.2.18 Waterbodies including ponds, ditches and streams, it states that “there will be a temporary loss of riparian habitat where open cut techniques are used to cross ditches and streams.” Depending on the vegetation present, this may be a near permanent loss –i.e. if trees were felled. As such, alternatives such as directional drilling should be considered as compensatory habitat of similar quality and quantity is unlikely to be able to be provided. Open cut crossings are not routinely permitted and would be objected to in unsuitable locations. Details of all open cut crossings should be provided as soon as possible."	Crossing schedule provided (see Volume 5, Annex 4.3: Onshore crossing schedule of the Environmental Statement) and WFD assessment updated on basis of the detail in the crossing schedule and sensitivities of the watercourses and associated riparian habitat.

Date	Consultee and type of response	Issues raised	Response to issue raised and/or where considered in this technical report
June 2023	NRW - Section 42 Consultation	With reference to Section 18.8.2.19 Waterbodies including ponds, ditches and streams, it states that, “Temporary loss of habitat will also occur at Mona Onshore Substation option 7as a result of the realignment of the ordinary watercourse...could impact on the habitat and hydromorphological supporting conditions”. Realigning rivers, unless to restore previous courses, is a very high-risk geomorphological activity (potentially causing large scale negative reactions such as avulsion – which if located near infrastructure could be very costly and risk lives as well as properties) and will impact on hydromorphological condition. As such realignment of watercourses is generally not permitted.	The Mona Onshore Development Area was refined following the Section 42 Consultation: Mona Onshore Substation option 7 was deselected (see Volume 1, Chapter 4: Site selection and consideration of alternatives of the Environmental Statement). A minor watercourse is located at the Onshore Substation platform and will be realigned. The watercourse is a ditch and was dry during site surveys (as reported in Volume 7, Annex 3.15: Fish and eel survey technical report of the Environmental Statement). The ecological value of the channel is low being channelised and homogenous in its form and channel substrate. The opportunity will be taken to improve the new channel to a more natural channel with improved channel form, substrate and sinuosity for net biodiversity benefit.
June 2023	NRW - Section 42 Consultation	With reference to Section 18.8.2.20 Waterbodies including ponds, ditches and streams, it states that, “The impact on ditches and streams crossed by open cut trenching is predicted to be short term and the water courses will be re-instated and, as such, will only be impacted in the short term”. Given that >90% of the UK watercourses are still impacted by dredging undertaken in the 1700’s and 1800’s such a broad-brush statement is not true. Physical modification of watercourses remains the primary reason for waterbody failure in Wales and as such open cut trenching will be objected to in unsuitable locations. Details of all open cut crossings should be provided as soon as possible.	The crossing schedule is provided at Volume 5, Annex 4.3: Onshore crossing schedule of the Environment Statement; the WFD assessment is updated on basis of the detail in the crossing schedule and sensitivities of the watercourses and associated riparian habitat.
June 2023	NRW - Section 42 Consultation	With reference to Section 18.8.2.24 –25 Significance of effect, realignment of watercourses causes damage to geomorphological form and processes that can last centuries’ (A) therefore advise that the conclusion of “Moderate adverse significance” should be reclassified.	Realignment of the watercourse at the Onshore Substation has been considered in the WFD assessment and the mitigation by design to introduce a more natural channel will be implemented in order to achieve net biodiversity benefit.

Date	Consultee and type of response	Issues raised	Response to issue raised and/or where considered in this technical report
June 2023	NRW - Section 42 Consultation	With reference to Section 18.8.2.27 Decommissioning, under the Well-being of Future Generations Act (Wales) 2015, full decommissioning should be the primary aim. Watercourses with abandoned infrastructure will cost taxpayers significant sums in future decades and centuries when these elements become exposed given the naturally mobile nature of rivers. As such, the conclusion of 'no change' in terms of the magnitude of impact in Section 18.8.2.28, needs reconsidering.	The watercourses traversed by the Mona Onshore Development Area are minor watercourses that are ephemeral streams or ditches; they will primarily be crossed using trenchless techniques. Watercourses may also be crossed by the haul road: the method statement for watercourse crossings will be set out in the Onshore Construction Method Statement as part of the CoCP (Document Reference J26.15) and will be agreed with the relevant stakeholders prior to construction. The process of submitting a decommissioning plan to the relevant planning authority for approval is secured as a requirement of the DCO.
June 2023	NRW - Section 42 Consultation	With reference to Section 18.8.2.29 and 21, 22, 23 – all watercourses have a high vulnerability to hydro-morphological impact too.	Noted - Each of the watercourses traversed by the Mona Onshore Development Area have been surveyed for otter, aquatic invertebrates, fish and eels. A note of the condition of each channel has been made and the hydromorphological sensitivity of the watercourse is low with most being ephemeral watercourses or dry ditches.
June 2023	NRW - Section 42 Consultation	In light of the above, the magnitude of the impact in Paragraph 18.8.2.30 needs to be reassessed (by a Geomorphologist).	As above.

1.6 Methodology

1.6.1 Introduction

1.6.1.1 The 2017 WFD Regulations require that the competent authority, and all public authorities, in undertaking their statutory functions must prevent the deterioration in the status of all water bodies and enhance and restore all bodies of water where they are currently not achieving their environmental objectives. This means that new development should not adversely impact upon on the ability of a water body to achieve its environmental objectives.

1.6.1.2 The 2017 WFD Regulations provide for the implementation of the WFD through the designation of all surface waters (rivers, lakes, transitional (estuarine) and coastal waters) and groundwaters as water bodies and the establishment of targets to achieve their environmental objectives.

1.6.1.3 The WFD applies to WFD water bodies. The consideration of the proposals under the WFD will therefore, apply to all surface water bodies and groundwater bodies that have the potential to be impacted by the Mona Onshore Development Area.

1.6.2 Water body classification

1.6.2.1 The WFD specifies the quality elements that are used to assess the ecological and chemical status of a water body. Quality elements are generally biological (e.g. fish, invertebrates, macrophytes) or chemical (e.g. heavy metals, pesticides, nutrients). Classifications indicate where the quality of the environment is good, where it may need improvement, and what may need to be improved. They can also be used, over the years, to plan improvements, show trends and to monitor the effectiveness of the programme of measures identified.

1.6.2.2 Chemical status is assessed from compliance with environmental standards for chemicals that are priority substances and/or priority hazardous substances for surface water and groundwater bodies. These are known as ‘Annex X’ substances listed in the 2017 WFD Regulations. Chemical status is recorded as ‘good’ or ‘fail’. The chemical status of groundwater also considers electrical conductivity. Chemical status for a water body is determined by the worst scoring chemical (one-out-all-out approach).

1.6.2.3 Ecological status classifications can be composed of up to four different assessments and apply to surface water bodies only:

1. An assessment of status indicated by a biological quality element such as fish, invertebrates, or algae. The presence of Invasive Non-Native Species (INNS) is also assessed as a separate test
2. An assessment of compliance with environmental standards for supporting physio-chemical conditions, such as dissolved oxygen, phosphorus, or ammonia
3. An assessment of compliance with environmental standards for concentrations of specific pollutants, such as zinc, cypermethrin or arsenic (these are known as ‘Annex VIII’ substances)
4. In determining high status only, a series of tests is included to make sure that hydromorphology is largely undisturbed.

1.6.2.4 Ecological status is recorded as high, good, moderate, poor or bad. ‘High’ represents ‘largely undisturbed conditions’. Other classes show increasing deviation from undisturbed or reference conditions. This deviation must be expressed as an

Ecological Quality Ratio (EQR) which ranges from zero for bad status to one for high status. As with chemical status, ecological status is determined by the worst scoring component (one-out-all-out approach).

1.6.2.5 Biological status is a sub-set of ecological status where the results of the biological quality elements are assessed (and so ignore physio-chemical and Annex VIII substances and hydromorphology). The one-out-all-out rule is applied again here to give a biological status classification.

1.6.2.6 Quantitative status measures the degree to which a body of groundwater is affected by direct and indirect abstractions (i.e. the available groundwater resource must not be exceeded by the long-term annual average rate of abstraction). Groundwater abstraction must also not cause failure of 'Good' ecological status in water dependent surface waters. This also applies to surface water bodies.

1.6.2.7 Overall status is a composite measure that looks at ecological status, chemical status and quantitative status dependent on the water body type. So, in assessing overall status for surface waters all four assessment types under ecological status (biology, physio-chemical, Annex VIII substances and hydromorphology) as well as incorporating the results of the chemical status assessment (priority substances and priority hazardous substances) contribute to the classification of the water body status. The one-out-all-out rule is applied again here, so a surface water body must be of good or better ecological status, good chemical status and good quantitative status assessment to be given a good overall status.

1.6.3 Water body objectives

1.6.3.1 The completion of a WFD compliance assessment is a staged process where data on the WFD assessment study area and project proposals are assessed with respect to the requirements of the WFD to ascertain if the proposals have the potential to have a detrimental impact on the achievement of the environmental objectives for water bodies connected to the proposal. If the assessment concludes, after taking account of the mitigation proposed, that the proposal may either reduce the quality of any of the contributing elements of the status of the water bodies or prevent the quality elements from achieving the standards required in the RBMP, then this represents a failure to achieve the WFD objectives and the proposal should not go ahead unless justification for the new modification is demonstrated under Article 4.7 of the Directive. The four objectives of the WFD compliance assessment are:

- Objective 1: To prevent deterioration of any contributing quality element to the status of the water body
- Objective 2: To prevent the introduction of impediment to the attainment of Good WFD status for the water body
- Objective 3: To ensure the attainment of the WFD objectives for the water body are not compromised
- Objective 4: To ensure the achievement of WFD objectives in other water bodies within the same catchment are not permanently excluded or compromised.

1.6.4 WFD compliance assessment

1.6.4.1 The WFD surface water and groundwater assessment draws upon a number of other disciplines in determining the potential impact to the environmental objectives of the water bodies that have the potential to be impacted. These include Volume 3, Chapter 1: Geology, hydrogeology and ground conditions, Volume 3, Chapter 2: Hydrology and

flood risk and Volume 3, Chapter 3: Onshore ecology of the Environmental Statement and supporting technical reports for these chapters.

1.6.4.2 To achieve the aims outlined within section 1.1.2, a staged approach has been undertaken in completing the WFD compliance assessment in accordance with the Planning Inspectorate Advice Note Eighteen: Water Framework Directive.

1.6.4.3 The WFD compliance assessment is typically undertaken in three stages:

1. Screening – excludes any activities that do not need to go through the scoping or impact assessment stages
2. Scoping – identifies the receptors that are potentially at risk from your activity and need impact assessment
3. Impact assessment – considers the potential impacts of your activity, identifies ways to avoid or minimise impacts, and shows if your activity may cause deterioration or jeopardise the water body achieving good status.

1.6.4.4 A flow chart, taken form the Planning Inspectorate Advice Note 18: Water Framework Directive for assessing activities and projects for compliance with the WFD has been included below in Figure 1.3. This provides an overview of the recommended process to address the WFD during the pre-application process.

1.6.4.5 An initial screening has been undertaken in Volume 7, Annex 17.4: Water Framework Directive surface water and groundwater assessment of the Preliminary Environmental Information Report to review each component of the Mona Onshore Development Area in terms of potential impacts to the water environment. This initial screening summarised the potential impact to the water environment for each component of each WFD quality element. This screening informed the scoping of the detailed assessment required for the Environmental Statement and WFD compliance assessment, identifying potential issues and provided an opportunity to engage with the relevant authorities to inform the scoping and detailed assessment stages of the WFD compliance assessment.

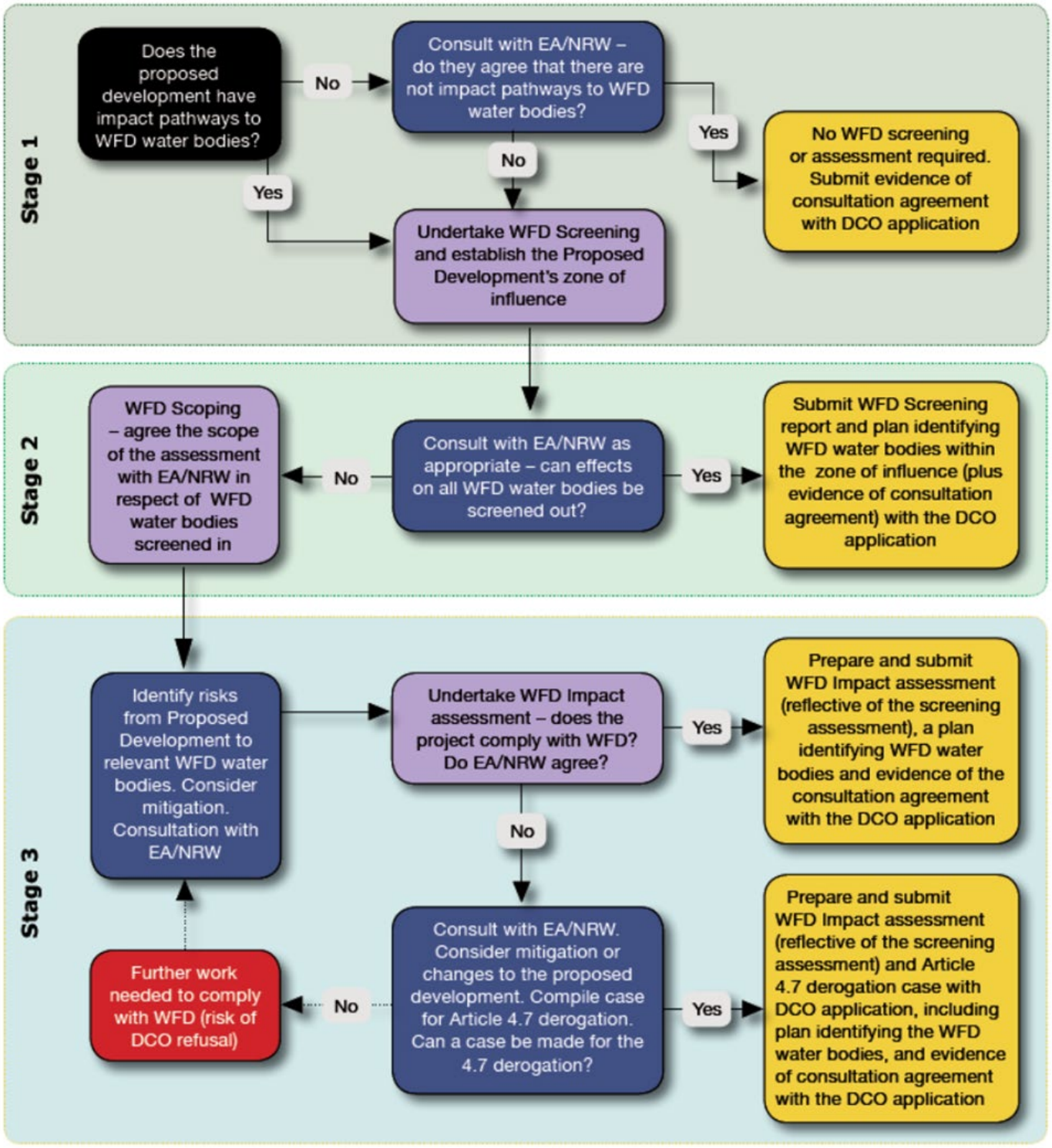

Figure 1.3: Flow chart illustrating the WFD compliance assessment process

1.7 Baseline environment

1.7.1 Desktop study

1.7.1.1 Information on WFD Status of the water bodies within the WFD assessment study area was collected through a detailed desktop review of existing studies and datasets. These are summarised at Table 1.6 below.

Table 1.6: Summary of key desktop sources.

Title	Source	Year	Author
WFD Cycle 3 Rivers and water bodies	WebGIS mapping tool for the 3rd cycle RBMP classification for the ecological and chemical status of WFD water bodies in Wales Water Watch Wales - https://waterwatchwales.naturalresourceswales.gov.uk/en/	2021	NRW
2021 C3 Classification WWW	Database of the classification of individual elements of ecological and chemical status for all water bodies in Wales Water Watch Wales - https://cyfoethnaturiolcymru.sharefile.eu/share/view/sc8f1ea840a594d32a5ac24f3aa3c2350	2021	NRW
RBMP Measures and Objectives	Database of the environmental objectives and measures for all water bodies in Wales Water Watch Wales - https://cyfoethnaturiolcymru.sharefile.eu/share/view/sc0c2a20ae9c2429394326eb75e0eda5d	2022	NRW
Heavily Modified Uses and Mitigation Measures	Database of heavily modified water bodies in Wales, and mitigation measures that need to be implemented to achieve good ecological potential Water Watch Wales - https://cyfoethnaturiolcymru.sharefile.eu/share/view/sdde43d782ae54702ad52b189cadcd827	2022	NRW
Reasons for not achieving good Cycle 3	Database outlining the pressures that are resulting in a water body from not achieving good status (ecological, chemical and quantitative) Water Watch Wales https://cyfoethnaturiolcymru.sharefile.eu/share/view/s11466c27806c4fccb29ba4c6900cc3a1	2022	NRW
Western Wales River Basin Management Plan 2021-2027 - Summary	Summary of the 3rd Cycle River Basin Management Plan for the Western Wales River Basin District (RBD) https://cdn.cyfoethnaturiol.cymru/media/695227/western-wales-rbmp-2021_2027-summary.pdf	2022	NRW
River Basin Management Plan Overview Annex Wales December 2022	Detail on how the RBMPs within Wales have been prepared providing supporting information to the Summary RBMP for Western Wales and Dee RBDs https://cdn.cyfoethnaturiol.cymru/media/695980/wales-rbmp-overview-annex-2021-2027.pdf	2022	NRW

Title	Source	Year	Author
River basin management plans 2021-2027: protected area register	Register of protected areas in the Dee and Western Wales river basin districts for information on: • Drinking water protected areas • Shellfish waters • Bathing (recreational) waters • European sites • Nutrient sensitive areas. https://naturalresources.wales/evidence-and-data/research-and-reports/water-reports/river-basin-management-plans/river-basin-management-plans-2021-2027-protected-area-register/?lang=en	2022	NRW
Abergele (Pensarn) Bathing Water Profile	Bathing Water Profiles - Information on the status of bathing waters in Wales https://environment.data.gov.uk/wales/bathing-waters/profiles/profile.html?_search=abergele&site=ukl1301-40450	2023	NRW
Marine Lake, Rhyl Bathing Water Profile	Bathing Water Profiles - Information on the status of bathing waters in Wales https://environment.data.gov.uk/wales/bathing-waters/profiles/profile.html?site=ukl1302-40550	2023	NRW
Liverpool Bay/Bae Lerpwl Special Protection Area (SPA) – Site Improvement Plan	The plan provides a high level overview of the issues (both current and predicted) affecting the condition of the features on the whole site (in both England and Wales), and outlines the priority measures required to improve the condition of the features Natural England – Access to Evidence http://publications.naturalengland.org.uk/publication/5296526586806272	2015	Natural England
European Site Conservation Objectives for Liverpool Bay/Bae Lerpwl Special Protection Area Site Code: UK9020294	Natural England – Access to Evidence http://publications.naturalengland.org.uk/publication/5089733892898816	2019	Natural England
Core Management Plan (Including Conservation Objectives) for Coedwigoedd Dyffryn Elwy/Elwy Valley Woods Special Area of Conservation (SAC)	This document provides the main elements of the management plan for the site(s) named. It sets out what needs to be achieved on the site(s), the results of monitoring and advice on the action required https://naturalresources.wales/media/671339/Coedwigoedd%20Dyffryn%20Elwy%20WEnvironmental Statement32%20plan.pdf	2012	Countryside Council for Wales

1.7.2 WFD water body status classification

Surface water bodies

1.7.2.1 The WFD Classification of the surface water bodies within the WFD assessment study area is outlined in Table 1.7 for surface water bodies. During the first RBMP cycle (2009-2015) the classification was updated annually. However, it is now updated once every three years for surface waters. The most up to date classification is the 2021 classification. The contributing elements to ecological and chemical status are detailed

and the driving element for the status classification highlighted. A summary of the key issues is outlined below for each water body.

Dulas (Lower)

1.7.2.2 *Biological quality elements* – the key driver for the overall water body status is fish with the conditions for Salmon, Minnow and Stone Loach indicative of poor status. Invertebrates are classified as high status. The key pressure identified by NRW for the poor fish status relates to barrier to fish migration.

1.7.2.3 *Physico-chemical supporting elements* – All parameters with the exception of Phosphorus (Ammonia, Biochemical Oxygen Demand (BOD), Temperature, pH, Dissolved Oxygen (DO)) are capable of supporting high ecological status. Phosphorus is currently only capable of supporting moderate ecological status. The source apportionment undertaken by NRW has identified diffuse sources from agriculture as the major contributor to the moderate phosphorus conditions with minor sources including continuous and intermittent discharges from wastewater treatment, unsewered domestic sewage and suspected groundwater surface water interactions.

1.7.2.4 *Hydromorphology* – the hydrological regime in the Dulas (lower) is considered to be capable of supporting high ecological status however the morphology is less than high as a result of physical modifications creating barriers to fish migration.

1.7.2.5 *Chemical status* – Priority and priority hazardous substances are not assessed in the Dulas (Lower) but the water body has been assigned as high chemical status.

1.7.2.6 *Overall water body status* – Poor.

Nant y Fedw (Dulas)

1.7.2.7 *Biological quality elements* – the biological quality elements for this water body are indicative of good ecological status with invertebrates, macrophytes and phytobenthos all indicative of good ecological status.

1.7.2.8 *Physico-chemical supporting elements* – All parameters with the exception of Phosphorus (Ammonia, Temperature, pH, DO) are capable of supporting high or good ecological status. Phosphorus is currently only capable of supporting moderate ecological status. The source apportionment undertaken by NRW has identified diffuse sources from agriculture and continuous sewage discharges from the water industry as the major contributors to the moderate phosphorus conditions with minor sources including intermittent discharges from wastewater treatment and unsewered domestic sewage.

1.7.2.9 *Hydromorphology* – the hydrological regime in the Nant y Fedw (Dulas) is considered to be capable of support high ecological status however the morphology is less than high although there is no information available on what the key pressures are for this.

1.7.2.10 *Chemical status* – Priority and priority hazardous substances are not assessed in the Nant y Fedw but the water body has been assigned as high chemical status.

1.7.2.11 *Overall water body status* – Moderate.

Pont Robin Cut (Bodelwyddan)

1.7.2.12 *Biological quality elements* – the biological quality elements for this water body are indicative of poor ecological status with invertebrates the driving element for this status classification. Macrophytes and phytobenthos all indicative of high ecological status.

Further investigations are required to establish what the significant pressures are for this failing element before site specific measures can be identified.

1.7.2.13 *Physico-chemical supporting elements* – The DO levels in this water body are indicative of bad ecological status. Any further deterioration in the lowest status band is not permitted under the WFD. Phosphorus is currently only capable of supporting moderate ecological status. All other parameters (Ammonia, Temperature, pH) are capable of supporting high or good ecological status. The source apportionment undertaken by NRW has identified diffuse sources from agriculture, flood protection structures and intermittent sewage discharges from the water industry, and industry, manufacturing and other business as the major contributors to the DO and phosphorus conditions with minor sources including intermittent discharges from local government.

1.7.2.14 *Hydromorphology* – the hydrological regime in the Pont Robin Cut is not capable of support high ecological status and the morphology is not assessed. There are no pressures identified for this classification.

1.7.2.15 *Chemical status* – Priority and priority hazardous substances are not assessed in the Pont Robin Cut but the water body has been assigned as high chemical status.

1.7.2.16 *Overall water body status* - Poor

Gele

1.7.2.17 *Biological quality elements* – the biological quality elements for this water body are indicative of poor ecological status with the macrophyte sub element driving this classification. The low flow conditions in the water body are impacting on this sub-element. Invertebrates and phytobenthos are indicative of high ecological status.

1.7.2.18 *Physico-chemical supporting elements* – The DO and phosphate levels in this water body are indicative of poor ecological status. All other parameters measured (Ammonia, Temperature, pH) are capable of supporting high ecological status. The source apportionment undertaken by NRW has identified diffuse sources from agriculture as the major contributors to the DO and phosphorus conditions with minor sources including continuous and intermittent discharges from wastewater treatment and unsewered domestic sewage.

1.7.2.19 *Hydromorphology* – the hydrological regime in the Gele is not capable of support high ecological status and the morphology is not assessed. There are no pressures identified for this classification although natural low flow conditions and their impact on macrophytes and phytobentos are one of the reasons the water body is not achieving good ecological status. This is the natural flow regime for this water body and no pressures have been identified on the hydrological regime. The Gele river water body is classed as a heavily modified water body and the mitigation measures required to ensure the water body can achieve good ecological potential have not yet been fully implemented therefore this water body cannot achieve good ecological potential until such times as these measures are in place (see section 1.7.4.2).

1.7.2.20 *Chemical status* – Priority and priority hazardous substances are not assessed but the water body has been assigned as high chemical status.

1.7.2.21 *Overall water body status* - Moderate

Elwy - Clwyd to Melai

1.7.2.22 *Biological quality elements* – monitoring of the biological quality elements for this water body includes fish and invertebrates both of which are indicative of high ecological potential.

1.7.2.23 *Physico-chemical supporting elements* – All parameters with the exception of Phosphorus (Ammonia, BOD, Temperature, pH, DO) are capable of supporting high ecological status. Phosphorus is currently only capable of supporting good ecological status and is the main driver for this status classification. The source apportionment undertaken by NRW has identified diffuse sources from agriculture as the major contributor to the moderate phosphorus conditions with minor sources including continuous and intermittent discharges from wastewater treatment, unsewered domestic sewage and suspected groundwater surface water interactions.

1.7.2.24 *Specific pollutants* – Specific pollutants are monitored in this water body and are indicative of conditions capable of supporting high ecological status.

1.7.2.25 *Hydromorphology* – the hydrological regime in the Elwy - Clwyd to Melai is not capable of support high ecological status and the morphology is not assessed.

1.7.2.26 *Chemical status* – Priority and priority hazardous substances are monitoring in this water body and have both been assigned as High. The chemical status of this water body is, therefore, high.

1.7.2.27 *Overall water body status* - Good

North Wales

1.7.2.28 *Biological quality elements* – monitoring of the biological quality elements for this water body includes invertebrates and phytoplankton with the latter driving the biological status at moderate ecological status whilst invertebrates are classed as good.

1.7.2.29 *Physico-chemical supporting elements* – The Dissolved Inorganic Nitrogen (DIN) and DO levels in this water body indicative of good and high ecological status respectively. The source apportionment undertaken by NRW has identified diffuse sources from agriculture as the major contributor to the moderate phosphorus conditions with minor sources including continuous and intermittent discharges from wastewater treatment, unsewered domestic sewage and suspected groundwater surface water interactions.

1.7.2.30 *Specific pollutants* – Specific pollutants are monitored in this water body and are indicative of conditions capable of supporting high ecological status.

1.7.2.31 *Hydromorphology* – North Wales is a HMWB and requires mitigation measures to ensure that the water body can achieved good ecological potential. The mitigation measures identified to allow this to happen are already in place therefore, the mitigation measures assessment is considered to be good.

1.7.2.32 *Chemical status* – Priority substances are monitoring in this water body and have been assigned as High. Priority hazardous substances are failing and the key parameter causing this fail is mercury and its compounds. The reason for this failure is due to diffuse sources include atmospheric deposition and contaminated sediments from industry.

1.7.2.33 *Overall water body status* – Moderate.

Clwyd

1.7.2.34 *Biological quality elements* – monitoring of the biological quality elements for this water body includes seagrass (angiosperms) and salt marsh which are both considered to be at good ecological status. Macroalgae monitoring is considered to be indicative of high ecological status. The overall biological status is, therefore, good.

1.7.2.35 *Physico-chemical supporting elements* – The DIN levels in this water body are consistent with moderate ecological status and are one of the driving elements in the

ecological status of this water body. The suspected sources are diffuse sources from agriculture, intermittent discharges from wastewater treatment and unsewered domestic sewage.

1.7.2.36 *Hydromorphology* – the Clywd transitional water body is classed as a heavily modified and the mitigation measures required to ensure the water body can achieve good ecological potential have not yet been fully implemented therefore, this water body cannot achieve good ecological potential until such times as these measures are in place (see section 1.5.4).

1.7.2.37 *Chemical status* – Priority and priority hazardous substances are not assessed in the but the water body has been assigned as high chemical status.

1.7.2.38 *Overall water body status* – Moderate.

Groundwater bodies

1.7.2.39 The WFD Classification of the groundwater bodies within the WFD assessment study area is outlined in

1.7.2.40 Table 1.8. The contributing elements to quantitative and chemical status are detailed and the driving element for the status classification highlighted. A summary of the key issues is outlined below for each water body.

Clwyd Permo-Triassic Sandstone

1.7.2.41 *Quantitative status* – All the groundwater tests for quantitative status indicate that the water body is at good quantitative status. Groundwater dependent terrestrial ecosystems and dependent surface waters are satisfactory and there are no issues with saline intrusion or water balance issues due to abstraction pressures.

1.7.2.42 *Chemical status* – All the groundwater tests for chemical status have also been classified as good status. Groundwater is not negatively impacting on drinking water protected areas, surface water dependency or groundwater dependent terrestrial ecosystems. The general chemical standards are all being achieved and there are no issues with saline intrusion impacting on the groundwater chemistry or negative trends in groundwater monitoring.

1.7.2.43 *Overall groundwater status* – Good.

Clwyd Silurian

1.7.2.44 *Quantitative status* – All the groundwater tests for quantitative status indicate that the water body is at good quantitative status. Groundwater dependent terrestrial ecosystems and dependent surface waters are satisfactory and there are no issues with saline intrusion or water balance issues due to abstraction pressures.

1.7.2.45 *Chemical status* – All the groundwater tests for chemical status have also been classified as good status. Groundwater is not negatively impacting on drinking water protected areas, surface water dependency or groundwater dependent terrestrial ecosystems. The general chemical standards are all being achieved and there are no issues with saline intrusion impacting on the groundwater chemistry or negative trends in groundwater monitoring.

1.7.2.46 *Overall groundwater status* – Good.

Conwy

1.7.2.47 *Quantitative status* – All the groundwater tests for quantitative status indicate that the water body is at good quantitative status. Groundwater dependent terrestrial ecosystems and dependent surface waters are satisfactory and there are no issues with saline intrusion or water balance issues due to abstraction pressures.

1.7.2.48 *Chemical status* – All the groundwater tests for chemical status have also been classified as good status with the exception of the chemical surface water dependency test. This test fails due to the contribution of groundwater to failing cadmium and zinc standards in two surface water bodies, the Crafnant river water body and Conwy - tidal limit to Merddwr river water body. Both of these surface water bodies are remote from the proposed Mona onshore development area and will not be further impacted by the proposed development.

1.7.2.49 *Overall groundwater status* - Poor.

Table 1.7: Surface water body classification within the WFD assessment study area

Operational catchment	Water body name and ID	Water body type	Heavily modified water body	Ecological Status/Potential						Chemical Status			Overall water body status	Driving element
				Hydrological regime	Morphology	Specific pollutants	Physio-chemical quality elements	Biological quality elements	Overall ecological status	Priority substances	Priority hazardous substances	Overall chemical status		
Dulas Ganol	Nant y Fedw (Dulas), GB110066059830	River	No	High	Less than High	Not Assessed	Moderate (Phosphorus)	Good	Moderate (Phosphorus)	Not Assessed	Not Assessed	High	Moderate	Phosphorus
Dulas Ganol	Dulas - lower, GB110066059860	River	No	High	Less than High	Not Assessed	Moderate (Phosphorus)	Poor (Fish)	Poor (Fish)	Not Assessed	Not Assessed	High	Poor	Fish
Gele	Pont Robin Cut (Bodelwyddan), GB110066059970	River	No	Less than High	Not Assessed	Not Assessed	Moderate (DO, Phosphorus)	Poor (Invertebrates)	Poor (Invertebrates)	Not Assessed	Not Assessed	High	Poor	Invertebrates
Gele	Gele, GB110066059980	River	Heavily Modified	Less than High	Not Assessed	Not Assessed	Moderate (DO, Phosphorus)	Poor (Macrophytes)	Moderate	Not Assessed	Not Assessed	High	Moderate	DO Phosphorus Mitigation Measures for HMWB
Elwy	Elwy - Clwyd to Melai, GB110066060020	River	No	Less than High	Not Assessed	High	Good (Phosphorus)	High	Good	High	High	High	Good	Phosphorus
Western Wales	Clywd, GB541006608000	Transitional	Heavily Modified	Less than High	Not Assessed	Not Assessed	Moderate	Good	Moderate	Not Assessed	Not Assessed	High	Moderate	DIN Mitigation Measures for HMWB
Western Wales	North Wales, GB641011650000	Coastal	Heavily Modified	Not Assessed	Not Assessed	High	Good	Moderate (Phytoplankton)	Moderate	High	Moderate	Moderate (Mercury)	Moderate	Mercury Phytoplankton

Table 1.8: Groundwater body classification within the WFD assessment study area

Water body name and ID	Quantitative status				Chemical status						Overall water body status	Driving element
	Groundwater Dependent Terrestrial Ecosystems test	Dependent surface water body status	Saline intrusion	Water balance	Drinking water protected area	General chemical test	Groundwater Dependent Terrestrial Ecosystems test	Dependent surface water body status	Saline intrusion	Trend assessment - groundwater supporting element		
Clwyd Permo-Triassic Sandstone	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	
Clwyd Silurian	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	
Conwy	Good	Good	Good	Good	Good	Good	Good	Poor	Good	Good	Poor	Dependent Surface Water Body Status

1.7.3 River Basin Management Plan (RBMP) objectives

1.7.3.1 As required under the WFD Regulations, NRW and other relevant public bodies aim to implement measures to achieve good overall status/potential for surface and groundwaters by 2027. Alternatives to that objective are allowable which may result in two additional options:

- An objective of less than good by 2027 (Less Stringent Objective (LSO)) due to technical infeasibility (no known technical solution is available) or disproportionate cost (unfavourable balance of costs and benefits)
- An extended deadline of good status/potential beyond 2027 for reasons of natural conditions (ecological recovery) or technical infeasibility for a small number of chemicals.

1.7.3.2 The environmental objectives for the water bodies within the WFD assessment study area of the Mona Onshore Development Area are outlined in Table 1.9.

Table 1.9: Water body objectives from Western Wales RBMP

Water body name	Type	Overall water body status	Objective	Derogation type	Reason
Nant y Fedw (Dulas), GB110066059830	River	Moderate	Moderate by 2027	LSO	Disproportionate Cost
Dulas - lower, GB110066059860	River	Poor	Good by 2039	Extended	Natural Conditions
Pont Robin Cut (Bodelwyddan), GB110066059970	River	Poor	Poor by 2027	LSO	Disproportionate Cost
Gele, GB110066059980	River	Moderate	Poor by 2027	LSO	Disproportionate Cost
Elwy - Clwyd to Melai, GB110066060020	River	Good	Good by 2027	n/a	n/a
Clywd, GB541006608000	Transitional	Moderate	Moderate by 2027	LSO	Disproportionate Cost
North Wales, GB641011650000	Coastal	Moderate	Good by 2033	Extended	Natural Conditions
Clwyd Permo-Triassic Sandstone	Groundwater	Good	Good by 2027	n/a	n/a
Clwyd Silurian	Groundwater	Good	Good by 2027	n/a	n/a
Conwy	Groundwater	Poor	Good by 2027	n/a	n/a

1.7.3.3 As can be seen from Table 1.9, there are four water bodies that have been assigned a LSO than the achievement of good status due to the disproportionate cost associated with the implementation of measures required to achieve good status/potential. These water bodies are the Nant y Fedw (Dulas), Pont Robin Cut (Bodelwyddan), Gele river water bodies and Clywd transitional water body. The other water bodies are achieving good status/potential already and the objective is to ensure no further deterioration, i.e. Elwy- Clwyd to Melai river water body and the Clwyd Permo-Triassic Sandstone and Clwyd Silurian groundwater bodies. It is important to demonstrate that the Mona Offshore Wind Project does not increase the risk of deterioration in any of the contributing elements to overall status in these water bodies. For the remaining two water bodies, Dulas (Lower) and North Wales coastal water body, an extended deadline for meeting the environmental objective of good ecological status/potential has been set. The justification for this is that whilst the measures may be in place already or will be implemented during the 3rd Cycle RBMP, natural recovery times mean these water bodies will not reach good status/potential until after 2027.

1.7.3.4 In the case of the North Wales coastal water body the driving element for the status classification is mercury and phytoplankton. The annex to the Western Wales RBMP (NRW, 2022a) identifies the reasons and justification for the alternative objectives set for water bodies. In the case of the North Wales coastal water body, which is failing chemical status due to mercury, the extended deadline of 2033 for the achievement of good ecological potential has been set as mercury is a chemical which is ubiquitous, persistent, bioaccumulative and toxic (uPBTs). The chemical fact sheets for mercury, included in Appendix C of the Planning Overview Annex (Wales) (NRW, 2022b) show that mercury has been phased out of use and further measures would not be practicable. However, because of its persistence in the environment it is likely that there will not be widespread compliance with the relevant Environmental Quality Standard in the next river basin management planning periods.

1.7.3.5 For the Dulas (lower) river water body the justification of the extended deadline of 2039 relates to the fact that measures to address the poor fish status will be in place but will not improve by 2027. The deadline of 2039 has been set by expert judgement due to the natural recovery times for fish in this water body. There will be no direct impact from the Mona Offshore Wind Project on this water body; it is a downstream water body that has a hydrological connection to the Mona Onshore Development Area and water quality will be the key pressure from run-off during construction and decommissioning. There will be no direct physical modifications to the water body from the Mona Onshore Development Area that would impact on the ability of the fish status, and therefore ecological status, to achieve good status in this water body.

1.7.4 Heavily Modified Water Bodies

1.7.4.1 Under Article 4(3) of the WFD, NRW can designate surface water bodies as ‘Heavily Modified Water Bodies’. A Heavily Modified Water Body (HMWB) means a body of surface water which, as a result of physical alterations by human activity, is substantially changed in character, as designated in accordance with the provisions of Annex II of the WFD. If the specified use of such a water body (e.g. flood defence, water abstraction, land drainage) or the ‘wider environment’ would be significantly affected by the restoration measures required to achieve good ecological status, and if no other better, technically feasible, then the environmental objective would be ‘Good Ecological Potential’. This is in recognition of the fact that the water body will not achieve the ecological status of an unmodified natural water body without compromising the specified use for that water body. Those surface water bodies that have been classified as heavily modified are indicated in Table 1.7.

1.7.4.2 As can be seen from Table 1.7, three water bodies within the WFD assessment study area of the Mona Onshore Development Area have been identified as HMWBs. The objective for these water bodies is therefore, based on the 'Ecological Potential' rather than ecological status. Ecological potential in artificial and heavily modified water bodies is determined by an assessment of whether measures are properly in place to mitigate the impacts of any modification on the ecology of the water body. In WFD classification, this is referred to as the mitigation measures assessment. If all mitigation measures are in place, the water body would be classified as being at good potential. If one or more identified mitigation measures are absent the water body would be classified at moderate potential. In both cases, if appropriate biological or chemical classifications are assessed to be at less than good then the potential of the water body is classified by the worst scoring element according to the usual one-out-all-out procedure.

1.7.4.3 Table 1.10 summarises the morphological mitigation measures assessment. It is a requirement of the WFD compliance assessment to determine whether the project will compromise the achievement of the WFD objectives by inhibiting the effectiveness of these measures and preventing the achievement of the objectives in the relevant HMWBs.

Table 1.10: HMWBs in the Mona Onshore Development Area, specified use and mitigation measures to achieve good ecological potential

Water body name	Type	HMWB specified use	Mitigation Tier One	Measure status	Mitigation measures assessment
Gele, GB110066059980	River	Flood Protection	Education	One measure – in place	Moderate
			Operations and maintenance	Six measures – One in place	
			Structural modification	Four measures – none in place	
			Water management	One measure – in place	
			Working with physical form and function	Six measures – One in place	
Clywd, GB541006608000	Transitional	Flood Protection	Operations and maintenance	Six measures – none place	Moderate
			Structural modification	One measure – not in place	
			Working with physical form and function	Two measures – none in place	
North Wales, GB641011650000	Coastal	Coastal Protection	All the relevant and required mitigation measures in this water body have been implemented		Good

1.7.4.4 The Western Wales RBMP recognises that without a programme of measures to address significant water management issues (due to unmitigated physical modifications) deterioration in the ecological condition of some rivers by 2030 is likely unless further action is taken to mitigate the impacts of and control the development of modifications. The importance of measures to address physical modifications and morphological pressures is therefore critical. Whilst there is significant uncertainty

about future trends for physical modifications, recent assessments indicate the effects of climate change and population growth will result in greater demands from flood protection, land drainage and the spread of urban areas. It will be important to demonstrate that the Mona Offshore Wind Project will not introduce further significant hydromorphological pressures that could compromise the attainment of the environmental objectives of the connected water bodies.

1.7.5 Register of Protected Areas

1.7.5.1 A number of waters in the Mona Onshore Development Area are protected under other existing EU legislation which applied directly or indirectly to the UK before December 2020 and have been retained in UK law as a form of domestic legislation known as 'retained EU legislation'. These water dependent protected areas require special protection due to their sensitivity to pollution or their particular economic, social or environmental importance. All of the areas requiring special protection have been identified by NRW, and area mapped and listed in a register of protected areas (required under Article 5 of the WFD). The register of protected areas includes:

- Drinking Water Protected Areas (DrWPA)
- Economically Significant Waters (Shellfish Waters)
- Recreational Waters (Bathing Waters)
- Nutrient Sensitive Areas
- SPAs
- SACs.

1.7.5.2 Protected areas for the WFD are the areas of land and bodies of water that have specific uses which require special protection. These include waters used for drinking water, bathing (recreational waters), commercial shellfish harvesting (economically significant), nutrient sensitive (both in terms of the Urban Wastewater Treatment Directive and the Nitrates Directive) and those that sustain the most precious wildlife species and habitats (European sites). These areas have legally binding objectives in place that protect those uses from potentially harmful activities and new developments. Table 1.11 provides a list of protected areas connected to the water bodies within the Mona Onshore Development Area.

1.7.5.3 Table 1.11 shows a number of bathing waters located in two water bodies, North Wales coastal water body and the Clywd transitional water body. These are Abergele, Kinmel Bay, Rhyl, Rhyl East and Marine Lake.

Drinking Water Protected Areas

1.7.5.4 There are three DrWPA associated with the groundwater bodies within the Mona Onshore Development Area. The Clywd Silurian groundwater DrWPA is currently at risk of failing its protected area objectives due to risk from elevated bacteria, nutrient and pesticides levels. The Clywd Permo-Triassic Sandstone and Conwy groundwater DrWPA are not at risk of failing to achieve their protected area objectives.

Recreational waters (Bathing waters)

1.7.5.5 There are a number of bathing waters associated with the North Wales coastal water body. As identified in the scoping tables for the North Wales and Clywd water bodies in Appendix A the majority of these bathing waters are located more than 2 km from

the Mona Onshore Development Area. Only Abergele (Pensarn) is located within 2 km of the Mona Onshore Development Area. Marine Lake (Rhyl) bathing water is located adjacent to the Clywd transitional water body but is more that 2 km from the Mona Onshore Development Area.

Table 1.11: Protected areas connected to the water bodies within the Mona Onshore Development Area

Water body name and ID	Protected area type					
	Drinking waters	Recreational waters (Bathing waters)	Economically significant waters (Shellfish waters)	Nutrient Sensitive Areas	SACs	SPAs
Nant y Fedw (Dulas), GB110066059830	×	×	×	×	×	×
Dulas - lower, GB110066059860	×	×	×	×	×	×
Gele, GB110066059980	×	×	×	×	×	×
Elwy - Clwyd to Melai, GB110066060020	×	×	×	×	Elwy Valley Woods	×
CLYWD, GB541006608000	×	Marine Lake, (Rhyl)	×	×	×	×
North Wales, GB641011650000	×	Colwyn Bay Colwyn Bay Porth Eirias Abergele (Pensarn) Kinmel Bay (Sandy Cove) Rhyl Rhyl East Prestatyn	Dee (West)	×	Menai Strait and Conwy Bay Dee Estuary (Wales)	Liverpool Bay/Bae Lerpwl (Wales)
Clwyd Permo-Triassic Sandstone, GB41001G202100	Clwyd Permo-Triassic DrWPA (not at risk)	×	×	×	Elwy Valley Woods	×
Clwyd Silurian, GB41002G200100	Clwyd Silurian DrWPA (at risk)	×	×	×	Elwy Valley Woods	×
Conwy, GB41002G203000	Conwy DrWPA (not at risk)	×	×	×	×	×

Economically significant waters (Shellfish waters)

1.7.5.6 The Dee (West) Shellfish Designated water is located within the North Wales coastal water body. This protected area is located outside of the seabed and coastal areas

that may be influenced by changes to physical processes due to the Mona Offshore Wind Project, (defined in Volume 2, Chapter 1: Physical processes of the Environmental Statement) as one Spring Tidal Excursion. On this basis it will not be impacted by the Mona Onshore Development Area.

Nutrient sensitive areas

1.7.5.7 A nutrient sensitive area in the context of urban wastewater treatment is a water body identified as affected by eutrophication or having a surface water abstraction affected by elevated nitrate concentrations from wastewater treatment works. There are no such water bodies with the WFD assessment study area of the Mona Onshore Development Area.

1.7.5.8 Nitrate Vulnerable Areas in Wales previously included on the Protected Area Register have been removed for the final RBMP. The implementing legislation, the Nitrate Pollution Prevention (Wales) Regulations (2013), has been replaced by the Water Resources (Control of Agricultural Pollution) (Wales) Regulations 2021 which have been introduced to reduce losses of pollutants from agriculture to the environment by setting rules for certain farming practices.

European Sites (SACs/SPAs)

1.7.5.9 The provisions of the 2017 WFD Regulations only relate to water dependent habitats and species. The objective is to protect and, where necessary, improve the water environment to work towards achieving the conservation objectives for the water dependent features of these sites.

1.7.5.10 SACs associated with the water bodies that have the potential to be affected by the Mona onshore development area include the Menai Strait and Conwy Bay SAC and Dee Estuary (Wales) SAC which both intersect the North Wales Water body. The Environment Agency Guidance “Clearing Our Waters” (EA, 2017) recommends that protected areas that are greater than 2 km from the development area can be scoped out of the WFD Assessment. This is further supported by the fact that these SACs are largely outside of the study areas for the physical processes study and therefore, there are no indirect pathways of effect.

1.7.5.11 The Elwy Valley Woods SAC lies within the Elwy - Clwyd to Melai river water body and overlies the Clwyd Permo-Triassic Sandstone and Clwyd Silurian groundwater bodies. The Mona Onshore Development Area will not directly impact on this protected area. A review of the SAC conservation objectives have established that the qualifying features are not water dependent.

1.7.5.12 Liverpool Bay/Bae Lerpwl (Wales) SPA incorporates all of the North Wales coastal water body. The Site Improvement Plan (SIP) for this SPA notes that water pollution from Shipping and Industry, particularly oil spills, represents a potential threat to the conservation status of the waterbird assemblage. Water quality impacts from the Mona Onshore Development Area, therefore, need to be considered in the WFD Assessment.

1.7.6 INNS

1.7.6.1 Some non-native animals and plants are invasive and can have significant social, economic and environmental impacts. Where they lead to greater erosion some plants, such as Himalayan balsam, *Impatiens glandulifera*, can increase flood risk. Others like American signal crayfish, *Pacifastacus leniusculus*, can decrease river bank stability and most have negative impacts on ecology and leisure activities such as angling and

water sports. There are also significant costs in controlling and safely disposing of invasive species such as Japanese knotweed, *Fallopia japonica*, on development sites and managing species such as zebra mussels, which can block pipes, water intakes and other structures.

1.7.6.2 Many INNS spread rapidly and once they are established, control is often prohibitively expensive or technically infeasible and ultimately unsuccessful. A review of the risk assessment undertaken by NRW during the characterisation of water bodies in the Western Wales RBMP has establish the risk to the environmental objectives of the relevant water bodies from INNS. A summary of the INNS that are presenting a risk or probable risk of the water bodies failing to achieve their environmental objectives is provided in Table 1.12. The North Wales coastal water body is the only water body that is not at risk from INNS within the WFD assessment study area of the Mona Onshore Development Area.

Table 1.12: INNS presenting a risk to the achievement of water body environmental objectives

	INNS causing water body to be at risk							
Water body name and ID	**Water Primrose, *Ludwigia grandiflora***	**Curley Waterweed, *Lagarosiphon, major***	**Himalayan Balsam, *Impatiens glandulifera***	**Topmouth Gudgeon, *Pseudorasbora parva***	**Signal Crayfish, *Pacifastacus leniusculus***	**Redswamp Crayfish, Procambarus clarkii**	**Floating Pennywort, *Hydrocotyle ranunculoides***	**Chinese Mitten Crab, *Eriocheir sinensis***
Nant y Fedw (Dulas), GB110066059830	✓	✓	✓	✓	✓	✓		
Dulas - lower, GB110066059860	✓	✓	✓	✓	✓	✓		
Gele, GB110066059980	✓	✓	✓	✓	✓	✓		
Elwy - Clwyd to Melai, GB110066060020			✓			✓	✓	
CLYWD, GB541006608000								✓

1.8 Scoping assessment

1.8.1 Maximum Design Scenario

1.8.1.1 It is necessary to identify links between the proposed activity and every quality element that could be affected. It is also necessary at this stage to consider activities and how they affect the morphological mitigation measures for those waterbodies, where applicable.

1.8.1.2 For all activities, the scoping phase involves considering each WFD quality element to identify all those where a possible causal link exists. That is, where water body status or objectives could be affected at water body level by the proposed activities.

1.8.1.3 The scoping assessment has been applied for each activity type based on the maximum design scenario (MDS) outlined in Table 1.13. The potential impacts for each activity is provided below which has informed the selection of the activities which will be scoped into the assessment.

1.8.1.4 The MDSs identified in Table 1.13 have been selected as those having the potential to result in the greatest effect on the WFD quality elements and have been used in the scoping process. These scenarios have been selected from the Project Design Envelope provided in Volume 1, Chapter 3: Project description of the Environmental Statement. Effects of greater adverse significance are not predicted to arise should any other development scenario, based on details within the Project Design Envelope (e.g., different infrastructure layout), to that assessed here be taken forward in the final design scheme.

1.8.1.5 The outcome of this initial assessment for onshore surface water bodies is summarised in Table 1.14 and all elements of ecological and chemical status have been scoped in for assessment across the different potential impacts identified in the MDS. The scoping assessment for transitional (Clywd Estuary) and coastal water bodies (North Wales) follows the Environment Agency Guidance, ‘Clearing our Waters’ (EA, 2010). The scoping template contained in this guidance has been used for these water bodies and is included in Appendix 1.

1.8.1.6 Table 1.15 provides a summary of the outcome of the scoping assessment and concludes that water quality (physicochemical supporting conditions and chemical status) in these transitional and coastal water bodies required further detailed assessment.

1.8.1.7 Table 1.16 summarised the elements of the groundwater status that have been scoped in for detailed assessment.

Table 1.13: Maximum design scenario considered for the assessment of potential impacts for WFD Assessment

Potential impact	Phase			Maximum Design Scenario	Justification
	C	O	D		
The impact of habitat disturbance and its impact on the supporting hydromorphological conditions of water bodies during construction, operations and maintenance and decommissioning of the Mona Onshore Development Area	✓	✓	✓	**Construction phase** <u>Onshore Cable Corridor works</u> The areas of the Onshore Cable Corridor that are subject to disturbance are set out below. The key potential for disturbance will result from the water course crossing. <u>Open cut trenching along the Onshore Cable Corridor:</u> The area of the permanent Onshore Cable Corridor is up to 450,000 m^2 based on a corridor measuring 30 m wide and 15 km in length. The temporary working corridor requires an additional 44 m wide corridor making the total width of the Onshore Cable Corridor (temporary and permanent requirements) 74 m wide representing an area of up to 1,110,000 m^2. In localised stretches of the route, the total width of the Onshore Cable Corridor may increase to 100 m (e.g. trenchless crossings) There are up to four cable trenches within the permanent Onshore Cable Corridor, each trench measures up to 2.5 m wide at the top, 1.5 m at the base and the depth is 1.8 m. The area of each joint bay is up to 200 m^2 and each joint bay is up to 2 m deep; the volume of material excavated per joint bay is 400 m^3 (a total of up to 32,000 m^3 of material excavated for the joint bays based on 80 joint bays) The area of each link box is up to 6 m^2 and each link box is 1 m deep; the volume of material excavated per link box is 6 m^3 (a total of up to 480 m^3 of material excavated for the link boxes based on 80 link boxes) There is one haul road within the Onshore Cable Corridor along the length of the corridor; it is 6 m wide excluding passing places. It will be constructed using imported engineered granular fill with geotextile layers with a nominal thickness of 400 mm and a maximum thickness of up to 1,000 mm. Works are expected to take 33-months to complete. <u>Open cut trenching along the 400kV Grid Connection Cable Corridor:</u> The area of the permanent 400kV Grid Connection Cable Corridor is up to 16,000 m^2 based on a corridor measuring 16 m wide and 1 km in length. The temporary working corridor requires an additional 32 m wide corridor (making the total width of the route to grid connection (temporary and permanent requirements) 48 m wide representing an area of up to 48,000 m^2.	The highest risk of impact from the Onshore Cable Corridor on the water environment will occur at watercourse crossings. Typical methods of crossing watercourses fall into two categories – open-cut trenching and trenchless methods. The degree of risk may be considered higher for open-cut because it involves direct disturbance of the watercourse and requires closer proximity of plant machinery to the watercourse. However, trenchless crossings, if fluming of the channel is also required for plant access, can also generate sediment through the placement of the flume in the channel albeit a much lower impact, or if there is a bentonite break out during drilling operations. Trenchless techniques could result in the escape to the watercourse of pressurised drilling fluids (bentonite/mud) through break out of drilling fluids from the underlying bed material or from surface run-off caused by drilling fluid returns at entry and exit points. However, this occurs very infrequently as the drilling process is closely monitored and managed. These drilling fluids may be considered a type of fine sediment with similar general potential impacts to the general construction however the source

Potential impact	Phase			Maximum Design Scenario	Justification
	C	O	D		
				There are up to two cable trenches within the permanent 400kV Grid Connection Cable Corridor, each trench measures up to 2.5 m wide at the top, 1.5 m at the base and the depth is 1.8 m. The area of each joint bay is up to 200 m^2 and each joint bay is up to 2 m deep; the volume of material excavated per joint bay is 400 m^3 (a total of up to 800 m^3 of material excavated for the joint bays based on a maximum of two joint bays) The area of each link box is up to 6 m^2 and each link box is 1 m deep; the volume of material excavated per link box is 6 m^3 (a total of up to 12 m^3 of material excavated for the link boxes based on two link boxes). There is one haul road within the Onshore Cable Corridor along the length of the corridor; it is 6 m wide excluding passing places. It will be constructed using imported engineered granular fill with geotextile layers with a nominal thickness of 400 mm and a maximum thickness of up to 1,000 mm. Works are expected to take 33-months to complete. <u>Trenchless techniques</u> The maximum number of trenchless technique water course crossings along the Onshore Cable Corridor is seven. Dimensions of trenchless technique crossing launch pits and reception pits for watercourse and road crossings are up to 100 m^2 located within the 74 m temporary construction corridor. <u>Temporary Construction compounds</u> One primary construction compound (measuring up to 22,500 m^2) and up to four secondary construction compounds (each measuring up to 15,000 m^2) will be located within the Mona Onshore Development Area. Soils will be removed, and crushed stone or other suitable materials will be used across the entire area to create hardstanding. This will equate to an area 82,500 m² that will temporarily contain construction compounds. These will be in place for the duration of the works (33-months). <u>Onshore Substation</u> The maximum footprint of the Onshore Substation will measure 65,000 m^2: this area will include the substation buildings. The earthworks to create the platform will measure up to 75,000 m^2. The Onshore Substation will comprise up to four buildings. The maximum dimensions of the main building are 15 m high, 80 m wide and 140 m long. Access to the substation will be via a new permanent access road measuring up to 8 m wide (up to 15 m wide including drainage) and 800 m in length, or 12,000 m².	and magnitude of impact is different given the fine particle size and the potential to infiltrate river substrate and sensitive habitats and thus, in the absence of mitigation, could directly and indirectly have a negative impact on all biological quality elements. Installation of the cables by open cut means across watercourses has the potential to impact on the hydromorphology of the river water body in the short to medium term through disturbance of the riparian zone, banks and channel adversely impacting the morphology and bank stability. Where temporary flumes will also be installed in watercourses to enable plant crossing, excavation of the riverbed to 'bed-in' the flume pipe could remove habitat and in-situ life-stages within the substrate, while placement of flumes for plant crossing followed by diversion of flow through the flume will cause loss of habitat through pipe covering, compaction, and crushing of crayfish and fish species in-situ. For benthic macroinvertebrates (excluding crayfish), the impacts are likely to be very localised because of the restricted area of excavation or flume placement (10 m length), coupled with the likelihood of rapid recolonization, predominantly from upstream habitats.

Potential impact	Phase			Maximum Design Scenario	Justification
	C	O	D		
				The maximum area for the attenuation pond is 10,000 m^2. The area of temporary works (including construction compounds) will extend up to 150,000 m^2. Works are expected to take 33-months to complete **Operations and maintenance phase** The expected lifetime of the Mona Offshore Wind Project is 35 years. Disturbance may be caused during operational maintenance. **Decommissioning phase** The Onshore Cable and 400kV Grid Connection Cable will remain in situ however, other onshore infrastructure (e.g. link boxes) may be removed. The maximum number of link boxes along the Onshore Cable Corridor is 80 and two on the 400kV Grid Connection Cable Corridor. The area of each link box is up to 6 m². Therefore, 492 m² of land will need to be disturbed. The Onshore Substation and permanent access road will be removed. This will equate to an area of 87,000 m^2 that will be subject to temporary works. As per construction disturbance can be assumed to take place if these activities are within the ZoI of any of the sensitive ecological receptors screened in for assessment.	The realignment of the ordinary watercourse adjacent to the onshore substation could impact on the habitat and hydromorphological supporting conditions for this reach of the minor tributary of the Pont Robin Cut (Bodelwyddan) river water body. The construction compounds will be set back from water courses to ensure no direct impact or loss of habitat Maintenance during the operational phase represents limited potential for disturbance. The Onshore Cable Corridor and 400kV grid connection cable shall remain in situ in decommissioning phase with only the link boxes needing removal. The maximum area of these represents the maximum area that will be subject to disturbance during decommissioning of the project.
The impact of pollution caused by accidental spills/contaminant release during construction and decommissioning of the Mona Onshore Development Area	✓	×	✓	**Construction phase** <u>Trenchless techniques at the Transition Joint Bay:</u> The maximum design scenario assumes up to four ducts installed by trenchless techniques such as Horizontal Directional Drilling (HDD), thrust bore or micro tunnel at the landfall with a corresponding number of punch out locations in the nearshore area. The trenchless techniques will extend up to 1 km below Mean Low Water Springs (MLWS) to the TJB located above MHWS. The compound will extend up to 200 m x 150 m and will accommodate the TJB works as well as any HDD works required, including supporting equipment and facilities.. The duct assembly working area measures up to 40,000 m2. The temporary works area for trenchless technique pipe string installation measures up to 20 m x 50 m.	Activities required for the construction and decommissioning of the Mona Onshore Development Area may result in accidental spills/contaminant release which could adversely affect protected or notable habitats and species. The use of trenchless techniques for the construction of the landfall represents the greatest area for construction and therefore also represents the greatest threat of

Potential impact	Phase			Maximum Design Scenario	Justification
	C	O	D		
				The offshore export cables will be connected to the onshore export cables at the TJBs. The TJB is a concrete lined pit within which the jointing of the offshore export cable to the onshore export cable takes place within clean and dry conditions. The TJBs are up to 4 m deep covering an area of up 1,200 m^2. One TJB is required per export cable therefore, there will be up to four TJBs. <u>Open cut trenching along the Onshore Cable Corridor:</u> The area of the permanent Onshore Cable Corridor is up to 450,000 m^2 based on a corridor measuring 30 m wide and 15 km in length. The temporary working corridor requires an additional 44 m wide corridor (making the total width of the Onshore Cable Corridor (temporary and permanent requirements) 74 m wide representing an area of up to 1,110,000 m^2. In localised stretches of the route, the total width of the Onshore Cable Corridor may increase to 100 m (e.g. where trenchless crossings require a wider working width) There are up to four cable trenches within the permanent Onshore Cable Corridor, each trench measures up to 2.5 m wide at the top, 1.5 m at the base and the depth is 1.8 m. The area of each joint bay is up to 200 m^2 and each joint bay is up to 2 m deep; the volume of material excavated per joint bay is 400 m^3 (a total of up to 32,000 m^3 of material excavated for the joint bays based on 80 joint bays). The area of each link box is up to 6 m^2 and each link box is 1 m deep; the volume of material excavated per link box is 6 m^3 (a total of up to 480 m^3 of material excavated for the link boxes based on 80 link boxes) There is one haul road within the Onshore Cable Corridor along the length of the corridor; it is 6 m wide excluding passing places. It will be constructed using imported engineered granular fill with geotextile style layers with a nominal thickness of 400 mm and a maximum thickness of up to 1,000 mm. Works are expected to take 33-months to complete. <u>Open cut trenching along the 400kV Grid Connection Cable Corridor:</u> The area of the permanent 400kV Grid Connection Cable Corridor is up to 16,000 m^2 based on a corridor measuring 16 m wide and 1 km in length. The temporary working corridor requires an additional 32 m wide corridor (making the total width of the route to grid connection (temporary and permanent requirements) 48 m wide representing an area of up to 48,000 m^2. There are up to two cable trenches within the permanent 400kV Grid Connection Cable Corridor, each trench measures up to 2.5 m wide at the top, 1.5 m at the base and the depth is 1.8 m.	contamination as spills would be easier to contain in a smaller area. The use of open cut trenching along the Onshore Cable Corridor and 400kV Corridor represents the greatest area for construction and therefore also represents the greatest threat of contamination as spills would be easier to contain in a smaller area. The maximum area of the Onshore Substation, permanent road, and construction compounds represent the greatest area for potential contamination. The maximum area of decommissioning represents the greatest area for potential contamination. Concrete will be used during the construction process at the joint bays, link boxes, and as foundations for built structures such as Onshore Substation. The use of cement and concrete in the construction of the hardstanding areas and associated infrastructure has the potential to impact upon water quality. Fresh concrete and cement is highly alkaline and therefore is likely to affect water quality if washed into the water courses along the onshore cable corridor. Construction of Mona Onshore infrastructure involve the use of plant and machinery as well as the

Potential impact	Phase			Maximum Design Scenario	Justification
	C	O	D		
				The area of each joint bay is up to 200 m^2 and each joint bay is up to 2 m deep;[2] the volume of material excavated per joint bay is 400 m^3 (a total of up to 800 m^3 of material excavated for the joint bays based on a maximum of two joint bays) The area of each link box is up to 6 m^2 and each link box is 1 m deep; the volume of material excavated per link box is 6 m^3 (a total of up to 12 m^3 of material excavated for the link boxes based on two link boxes). There is one haul road within the Onshore Cable Corridor along the length of the corridor; it is 6 m wide excluding passing places. It will be constructed using imported engineered granular fill with geotextile layers with a nominal thickness of 400 mm and a maximum thickness of up to 1,000 mm. Works are expected to take 33-months to complete. <u>Trenchless techniques</u> The maximum number of trenchless technique water course crossings along the Onshore Cable Corridor is seven. Dimensions of trenchless technique crossing launch pits and reception pits for watercourse and road crossings are up to 100 m^2 located within the 74 m temporary construction corridor. <u>Temporary Construction compounds</u> One primary construction compound (measuring up to 22,500 m^2) and up to four secondary construction compounds (each measuring up to 15,000 m) will be located within the Mona Onshore Development Area. Soils will be removed, and crushed stone or other suitable materials will be used across the entire area to create hardstanding. This will equate to an area 82,500 m² that will temporarily contain construction compounds. These will be in place for the duration of the works (33-months). <u>Onshore Substation</u> The maximum footprint of the Onshore Substation will measure 65,000 m^2: this area will include the substation buildings. The earthworks to create the platform will measure up to 75,000 m^2. The Onshore Substation will comprise up to four buildings. The maximum dimensions of the main building are 15 m high, 80 m wide and 140 m long. Access to the substation will be via a new permanent access road measuring up to 8 m wide (up to 15 m wide including drainage) and 800 m in length, or 12,000 m². The maximum area for the attenuation pond is 10,000 m^2. The area of temporary works (including construction compounds) will extend up to 150,000 m^2.	associated temporary storage of construction materials, oils, fuels and chemicals in designated areas within the temporary site compounds and in suitable mobile bowsers on the working spread. There is the potential for spillage or release of fuel oil and other dangerous substances which could impact on the surface water bodies associated with the working area. It is also possible that small residue amounts left on site may be mobilised by surface run-off and washed into the receiving waterbodies. Any use of concrete, for example, to cover cable conduits in open cut construction poses a risk to aquatic species such as invertebrates and fish. Crossing of temporary flumes/bridges also poses a risk of spillage of such pollutants. Oils and petroleum in particular can have large impacts on aquatic species, and depending on the extent of a spill, may reduce respiration rates by altering oxygen exchange at the water-air interface or cause complete elimination of invertebrates and fish from streams. During decommissioning, the dismantling of the Onshore Substation and link boxes has the potential to cause adverse impacts on surrounding watercourses and receptors. The use of heavy vehicles and the removal of the

Potential impact	Phase			Maximum Design Scenario	Justification
	C	O	D		
				Works are expected to take 33-months to complete. **Operations and maintenance phase** The expected lifetime of the Mona Offshore Wind Project is 35 years. Disturbance may be caused during operational maintenance. **Decommissioning phase** The Onshore Cable and 400kV Grid Connection Cable will remain in situ however, other onshore infrastructure (e.g. link boxes) may be removed. The maximum number of link boxes along the Onshore Cable Corridor is 80 and two on the 400kV Grid Connection Cable Corridor. The area of each link box is up to 6 m². Therefore, 492 m² of land will need to be disturbed. The Onshore Substation and permanent access road will be removed. This will equate to an area of 87,000 m^2 that will be subject to temporary works. As per construction disturbance can be assumed to take place if these activities are within the ZoI of any of the sensitive ecological receptors screened in for assessment.	infrastructure may lead to an increased risk of contaminated run-off, reducing the water quality (in turn WFD classification) in surrounding watercourses.
Increase in suspended sediments due to construction, operational and maintenance and/or decommissioning related activities, and the potential impact to physical features	✓	×	✓	**Construction phase** Trenchless techniques at the Transition Joint Bay: The maximum design scenario assumes up to four ducts installed by trenchless techniques such as HDD, thrust bore or micro tunnel at the landfall with a corresponding number of punch out locations in the nearshore area. The trenchless techniques will extend up to 1 km below MLWS to the TJBs located above MHWS. The compound will extend up to 200 m x 150 m and will accommodate the TJB works as well as any trenchless techniques works required, including supporting equipment and facilities. The duct assembly working area measures up to 40,000 m2. The temporary works area for trenchless technique pipe string installation measures up to 20 m x 50 m. The offshore export cables will be connected to the onshore export cables at the TJBs. The TJB is a concrete lined pit within which the jointing of the offshore export cable to the onshore export cable takes place within clean and dry conditions. The TJBs are up to 4 m deep covering an area of up 1,200 m^2. One TJB is required per export cable therefore, there will be up to four TJBs. <u>Open cut trenching along the Onshore Cable Corridor:</u> The area of the permanent Onshore Cable Corridor is up to 450,000 m^2 based on a corridor measuring 30 m wide and 15 km in length. The temporary working corridor requires an	Potential impacts associated with pollution from mobilised suspended solids (sediment) is generally considered a significant risk to water bodies. Suspended sediment due to run off from stripped construction areas and excavations can have a negative impact on water quality, water dependant habitats and aquatic ecology. This is particularly true in sloping areas with underlying clay following topsoil stripping as well as areas of moderate to high rainfall. Suspended solids within surface water bodies may have an effect on: • The survival of fish eggs in gravel beds or spawning grounds as a result of deoxygenation caused by sediment deposition;

Potential impact	Phase			Maximum Design Scenario	Justification
	C	O	D		
				additional 44 m wide corridor (making the total width of the Onshore Cable Corridor (temporary and permanent requirements) 74 m wide representing an area of up to 1,110,000 m^2. In localised stretches of the route, the total width of the Onshore Cable Corridor may increase to 100 m (e.g. trenchless crossings) There are up to four cable trenches within the permanent Onshore Cable Corridor, each trench measures up to 2.5 m wide at the top, 1.5 m at the base and the depth is 1.8 m. The area of each joint bay is up to 200 m^2 and each joint bay is up to 2 m deep; the volume of material excavated per joint bay is 400 m^3 (a total of up to 32,000 m^3 of material excavated for the joint bays based on 80 joint bays) The area of each link box is up to 6 m^2 and each link box is 1 m deep; the volume of material excavated per link box is 6 m^3 (a total of up to 480 m^3 of material excavated for the link boxes based on 80 link boxes) There is one haul road within the Onshore Cable Corridor along the length of the corridor; it is 6 m wide excluding passing places. It will be constructed using imported engineered granular fill with geotextile layers with a nominal thickness of 400 mm and a maximum thickness of up to 1,000 mm. Works are expected to take 33-months to complete. <u>Open cut trenching along the 400kV Grid Connection Cable Corridor:</u> The area of the permanent 400kV Grid Connection Cable Corridor is up to 16,000 m^2 based on a corridor measuring 16 m wide and 1 km in length. The temporary working corridor requires an additional 32 m wide corridor (making the total width of the route to grid connection (temporary and permanent requirements) 48 m wide representing an area of up to 48,000 m^2. There are up to two cable trenches within the permanent 400kV Grid Connection Cable Corridor, each trench measures up to 2.5 m wide at the top, 1.5 m at the base and the depth is 1.8 m. The area of each joint bay is up to 200 m^2 and each joint bay is up to 2 m deep; the volume of material excavated per joint bay is 400 m^3 (a total of up to 800 m^3 of material excavated for the joint bays based on a maximum of two joint bays) The area of each link box is up to 6 m^2 and each link box is 1 m deep; the volume of material excavated per link box is 6 m^3 (a total of up to 12 m^3 of material excavated for the link boxes based on two link boxes). There is one haul road within the Onshore Cable Corridor along the length of the corridor; it is 6 m wide excluding passing places. It will be constructed using imported engineered granular	• The survival of plants and algae by smothering; and • The survival of young fish and aquatic invertebrates such as mayfly larvae through gill damage from sediment particles. Once a sediment load enters a river it can result in long-term changes that cause chronic harm. Sediment causes river hydromorphological changes, which in turn change the dynamics of the river into the future. Both bed and suspended materials, and subsequent changes in channel form associated with changes in sediment supply, may affect benthic invertebrates in many ways at various stages in their life cycle. Direct mortality is the first stage in the damage that sediment causes to a benthic invertebrate population. Subsequent stages can be caused by sediment that infiltrates the river bed and decreases oxygen supply in interstitial areas, and destroys habitat for juvenile stages of the many benthic invertebrate life cycles. The sediment subsequently provides a medium for macrophyte growth. Macrophytes can smother the river substrate and habitat further, and can trap more sediment which exacerbates the problem in the long term. Sediment infiltration of river bed gravels can also have a negative effect on fish species.

Potential impact	Phase			Maximum Design Scenario	Justification
	C	O	D		
				fill with geotextile layers with a nominal thickness of 400 mm and a maximum thickness of up to 1,000 mm. Works are expected to take 33-months to complete. <u>Trenchless techniques</u> The maximum number of trenchless technique water course crossings along the Onshore Cable Corridor is seven. Dimensions of trenchless technique crossing launch pits and reception pits for watercourse and road crossings are up to 100 m^2 located within the 74 m temporary construction corridor. <u>Temporary Construction compounds</u> One primary construction compounds (measuring 150 m x 150 m) and up to four secondary construction compounds (each measuring 150 m x 100 m) will be located along the Onshore Cable Corridor. The compounds will be located within the Mona Onshore Development Area . Soils will be removed, and crushed stone or other suitable materials will be used across the entire area to create hardstanding. This will equate to an area 82,500 m² that will temporarily contain construction compounds. These will be in place for the duration of the works (33-months). <u>Onshore Substation</u> The maximum footprint of the Onshore Substation will measure 65,000 m^2: this area will include the substation buildings. The earthworks to create the platform will measure up to 75,000 m^2. The Onshore Substation will comprise up to four buildings. The maximum dimensions of the main building are 15 m high, 80 m wide and 140 m long. Access to the Onshore Substation will be via a new permanent access road measuring up to 8 m wide (up to 15 m wide including drainage) and 800 m in length, or 12,000 m². The maximum area for the attenuation pond is 10,000 m^2. The area of temporary works (including construction compounds) will extend up to 150,000 m^2. Works are expected to take 33-months to complete. **Operations and maintenance phase** The expected lifetime of the Mona Offshore Wind Project is 35 years. Disturbance may be caused during operational maintenance. **Decommissioning phase**	Potential sources of fine sediment during the construction phase include: • Topsoil stripping/soil and vegetation clearance • Trench excavation and backfilling across watercourses (open-cut only) • Installation of temporary crossing structures and associated movement of plant machinery • Bank disturbance caused by plant equipment • Run-off from topsoil and subsoil storage • Construction of dams and overpumping to divert flow and allow excavation of the pipeline trench under dry conditions in the channel • Water over-pumping and discharge of sediment laden water back to the watercourse • Removal of flumes/dams/crossing culverts • Reinstatement of bank soils and vegetation. There is also a potential to impact on drainage with the pathway to water courses and drainage ditches shortened resulting in faster delivery of water from the working corridor to water courses with possible changes to the flow regime which could result in impacts to biology

Potential impact	Phase			Maximum Design Scenario	Justification
	C	O	D		
				The Onshore Cable and 400kV Grid Connection Cable will remain in situ however, other onshore infrastructure (e.g. link boxes) may be removed. The maximum number of link boxes along the Onshore Cable Corridor is 80 and two on the 400kV Grid Connection Cable Corridor. The area of each link box is up to 6 m². Therefore, 492 m² of land will need to be disturbed. The Onshore Substation and permanent access road will be removed. This will equate to an area of 87,000 m² that will be subject to temporary works. As per construction disturbance can be assumed to take place if these activities are within the ZoI of any of the sensitive ecological receptors screened in for assessment.	and morphology through pressures such as scouring. The Onshore Cable Corridor could provide a pathway for sediment laden run-off which could impact on the morphology of the channel resulting in a change in flow types, substrate condition and channel type. During decommissioning, the dismantling of the onshore substation and each link box has the potential to cause adverse impacts on surrounding watercourses and receptors. The use of heavy vehicles and the removal of the infrastructure may lead to an increase in turbid runoff, reducing the water quality (in turn WFD classification) in surrounding watercourses.
The impact of spreading Invasive and Non-native Species (INNS) during construction and decommissioning of the Mona onshore development area	✓	×	✓	**Construction phase** <u>Trenchless techniques at the Transition Joint Bay:</u> The maximum design scenario assumes up to four ducts installed by trenchless techniques such as HDD, thrust bore or micro tunnel at the landfall with a corresponding number of punch out locations in the nearshore area. The trenchless techniques will extend up to 1 km below MLWS to the TJBs located above MHWS. The compound will extend up to 200 m x 150 m and will accommodate the TJB works as well as any HDD works required, including supporting equipment and facilities. The duct assembly working area measures up to 40,000 m2. The temporary works area for trenchless technique pipe string installation measures up to 20 m x 50 m. The offshore export cables will be connected to the onshore export cables at the TJBs. The TJB is a concrete lined pit within which the jointing of the offshore export cable to the onshore export cable takes place within clean and dry conditions. The TJBs are up to 4 m deep	Construction and decommissioning of the Mona onshore development area may cause the spread of INNS, which could adversely affect the status of native protected or notable habitats and species and present a risk in the achievement of the environmental objectives of the water bodies affected. The use of open cut trenching methods for water course crossings along the onshore cable route and 400kV grid connection cable route represent the greatest potential for spreading INNS. The maximum area required for the construction of

Potential impact	Phase			Maximum Design Scenario	Justification
	C	O	D		
				covering an area of up 1,200 m^2. One TJB is required per export cable therefore, there will be up to four TJBs. <u>Open cut trenching along the Onshore Cable Corridor:</u> The area of the permanent Onshore Cable Corridor is up to 450,000 m^2 based on a corridor measuring 30 m wide and 15 km in length. The temporary working corridor requires an additional 44 m wide corridor (making the total width of the Onshore Cable Corridor (temporary and permanent requirements) 74 m wide representing an area of up to 1,110,000 m^2. In localised stretches of the route, the total width of the Onshore Cable Corridor may increase to 100 m (e.g. trenchless technique crossings) There are up to four cable trenches within the permanent Onshore Cable Corridor, each trench measures up to 2.5 m wide at the top, 1.5 m at the base and the depth is 1.8 m. The area of each joint bay is up to 200 m^2 and each joint bay is up to 2 m deep; the volume of material excavated per joint bay is 400 m^3 (a total of up to 32,000 m^3 of material excavated for the joint bays based on 80 joint bays) The area of each link box is up to 6 m^2 and each link box is 1 m deep; the volume of material excavated per link box is 6 m^3 (a total of up to 480 m^3 of material excavated for the link boxes based on 80 link boxes) There is one haul road within the Onshore Cable Corridor along the length of the corridor; it is 6 m wide excluding passing places. It will be constructed using imported engineered granular fill with geotextile layers with a nominal thickness of 400 mm and a maximum thickness of up to 1,000 mm. Works are expected to take 33-months to complete. <u>Open cut trenching along the 400kV Grid Connection Cable Corridor:</u> The area of the permanent 400kV Grid Connection Cable Corridor is up to 16,000 m^2 based on a corridor measuring 16 m wide and 1 km in length. The temporary working corridor requires an additional 32 m wide corridor (making the total width of the route to grid connection (temporary and permanent requirements) 48 m wide representing an area of up to 48,000 m^2. There are up to two cable trenches within the permanent 400kV Grid Connection Cable Corridor, each trench measures up to 2.5 m wide at the top, 1.5 m at the base and the depth is 1.8 m. The area of each joint bay is up to 200 m^2 and each joint bay is up to 2 m deep; the volume of material excavated per joint bay is 400 m^3 (a total of up to 800 m^3 of material excavated for the joint bays based on a maximum of two joint bays)	the Onshore Cable Corridor, 400kV Grid Connection Cable, and the associated infrastructure represents the maximum area that INNS can be spread but the mobilisation of INNS on machinery and plant between river water bodies is a key concern. The maximum area required for the construction of the Onshore Substation and permanent access road represents the maximum area that INNS can be spread. The Onshore Cable Corridor and 400kV grid connection cable shall remain in situ in decommissioning phase; other infrastructure (e.g. link boxes) may be removed. The maximum area of these represents the maximum area that INNS can be spread.

Potential impact	Phase			Maximum Design Scenario	Justification
	C	O	D		
				The area of each link box is up to 6 m^2 and each link box is 1m deep; the volume of material excavated per link box is 6 m^3 (a total of up to 12 m^3 of material excavated for the link boxes based on two link boxes). There is one haul road within the Onshore Cable Corridor along the length of the corridor; it is 6 m wide excluding passing places. It will be constructed using imported engineered granular fill with geotextile style layers with a nominal thickness of 400 mm and a maximum thickness of up to 1,000 mm. Works are expected to take 33-months to complete. <u>Trenchless techniques</u> The maximum number of trenchless technique water course crossings along the Onshore Cable Corridor is seven. Dimensions of trenchless technique crossing launch pits and reception pits for watercourse and road crossings are up to 100 m^2 located within the 74 m temporary construction corridor. <u>Construction compounds</u> One primary construction compounds (measuring 150 m x 150 m) and up to four secondary construction compounds (each measuring 150 m x 100 m) will be located along the Onshore Cable Corridor. The compounds will be located within the Mona onshore development area. Soils will be removed, and crushed stone or other suitable materials will be used across the entire area to create hardstanding. This will equate to an area 82,500 m^2 that will temporarily contain construction compounds. These will be in place for the duration of the works (33-months). <u>Onshore Substation</u> The maximum footprint of the Onshore Substation will measure up to 75,000 m^2, this area will include the platform and substation buildings (65,000 m^2) and the earthworks to create the platform. The Onshore Substation will comprise up to four buildings. The maximum dimensions of the main building are 15 m high, 80 m wide and 140 m long Access to the substation will be via a new permanent access road measuring up to 8 m wide and 1.25 km in length, or 10,000 m^2. The maximum search area for landscape planting around the Onshore Substation is 469,733 m^2. This area includes the footprint of the Onshore Substation, landscape planting and the attenuation pond. Therefore, the area that will be subject to temporary works will be 150,000 m^2. Works are expected to take 33-months to complete	

Potential impact	Phase			Maximum Design Scenario	Justification
	C	O	D		
				Operations and maintenance phase The expected lifetime of the Mona Offshore Wind Project is 35 years. Disturbance may be caused during operational maintenance. **Decommissioning phase** The Onshore Cable and 400kV Grid Connection Cable will remain in situ however, other onshore infrastructure (e.g. link boxes) may be removed. The maximum number of link boxes along the Onshore Cable Corridor is 80 and two on the 400kV Grid Connection Cable Corridor. The area of each link box is up to 6 m². Therefore, 492 m² of land will need to be disturbed. The Onshore Substation and permanent access road will be removed. This will equate to an area of 87,000 m^2 that will be subject to temporary works. As per construction disturbance can be assumed to take place if these activities are within the ZoI of any of the sensitive ecological receptors screened in for assessment.	
Electromagnetic Fields (EMFs) from cabling during the operational phase	×	✓	×	**Operational Phase** Onshore Cable Corridor: • There are up to four cable trenches (12 export cables) within the permanent Onshore Cable Corridor, each trench measures up to 2.5 m wide at the top, 1.5 m at the base and the depth is 1.8 m over a 15 km distance. 400kV Grid Connection Cable Corridor: • There are up to two cable trenches (12 export cables) within the permanent 400kV Grid Connection Cable Corridor, each trench measures up to 2.5 m wide at the top, 1.5 m at the base and the depth is 1.8 m over a 1 km distance.	The potential for EMF from power cables to impact fish and other aquatic species has been studied extensively, particularly the interference with species such as Atlantic Salmon and the impairment of migration and navigation. The key operational impact on water bodies from EMFs is from the onshore cable corridor and the 400kV Grid Connection Cable Corridor. The maximum design scenario presents the greatest extent to which the EMF may impact on the biological elements of ecological status.

Table 1.14: Potential impacts associated with Mona Onshore Development Area and outcome of scoping assessment for the WFD compliance assessment for onshore surface water bodies in the WFD study area

Potential impact	Biological supporting elements				Hydro-morphological supporting elements		Physico-chemical supporting elements	Chemical	
	Fish	Invertebrates	Macrophytes	Macrophytes and phytobentos combined	Hydrological regime	Morphology		Priority hazardous substances	Priority substances
The impact of habitat disturbance and its impact on the supporting hydromorphological conditions of water bodies during construction, operations and maintenance and decommissioning of the Mona Onshore Development Area	Scoped in				Scoped in		Scoped in	Scoped out Habitat disturbance should not result in release of any priority or priority hazardous substances	
The impact of pollution caused by accidental spills/contaminant release during construction and decommissioning of the Mona Onshore Development Area	Scoped in				Scoped out – should not have any impact on the physical attributes of the water bodies		Scoped in	Scoped in	
Increase in suspended sediments due to construction, operational and maintenance and/or decommissioning related activities, and the potential impact to physical features	Scoped in				Scoped in		Scoped in	Scoped in	
The impact of spreading INNS during construction and decommissioning of the Mona Onshore Development Area	Scoped in				Scoped in		Scoped in	Scoped out INNS will not result in an increase in priority or priority hazardous substances	

Potential impact	Biological supporting elements				Hydro-morphological supporting elements		Physico-chemical supporting elements	Chemical	
	Fish	Invertebrates	Macrophytes	Macrophytes and phytobentos combined	Hydrological regime	Morphology		Priority hazardous substances	Priority substances
Electromagnetic Fields (EMFs) from cabling during the operation of the Mona Onshore Development Area	Scoped out The potential for EMF to impact fish and other aquatic species has been studied extensively, particularly the interference with species such as Atlantic Salmon and the impairment of migration and navigation. The operation of offshore wind energy projects is not expected to negatively affect commercial and recreational fishes. A study by the U.S. Department of the Interior, Bureau of Ocean Energy Management within the south New England area found Negligible effects, if any, on bottom-dwelling species and no negative effects on pelagic species are expected due to their distance from the power cables buried in the seafloor or under main rivers and the level of magnetic field generated from AC cables (CSA Ocean Sciences Inc., 2019). Furthermore, fish and eel surveys undertaken for the watercourses traversed by the Mona onshore development area identified only two watercourses that contain European eel and no watercourses with fish.				Scoped out EMFs will not impact on the hydromorphology of the water bodies affected		Scoped out EMFs will not impact on the physico-chemical supporting elements of the water bodies affected	Scoped out EMFs will not impact on the chemical status of the water bodies affected	

Table 1.15: Summary of scoping exercise undertaken in accordance with the Environment Agency Guidance, WFD Assessment: Estuarine and Coastal Waters in the WFD assessment study area

Receptor	Water Body	Potential risk to receptor?	Note the risk issue(s) for impact assessment
Hydromorphology	North Wales	No	The North Wales coastal water body is a HMWB with the specified use being Coastal Protection Use. The mitigation measures assessment is Good - which means that NRW have implemented all the relevant and required mitigation measures in the water body. Whether the water body will actually achieve Good Ecological Potential will now depend on the other relevant elements in the water body. In the case of the North Wales Coastal water body the driving elements for status are Phytoplankton and Mercury levels.
	Clwyd	No	The Clwyd transitional water body is a HMWB with the specified use being Flood Protection Use. The mitigation measures assessment is moderate - which means that NRW have yet to implemented all the relevant and required mitigation measures in the water body. Until the water body mitigation measures are implemented the water body will not achevive good ecological potential irrespective of the status of the other contributing elements. The mitigation measures required as identified by NRW relate to dredging ativiites and alteration to flood defense structures. The potential impact from the onshore infrastructure will have no impact on the ability to implement these measures nor will it result in any changes to the supporting morphological condition in the transitional water body.
Biology: habitats	North Wales	No	No footprint of the Mona Onshore Development Area in this water body therefore no direct impact on sensitive habitats. Indirect impacts are addressed under Water Quality.
	Clwyd	No	
Biology: fish	North Wales	No	Fish migration in the marine or freshwater environment will not be at risk from the proposed activities.
	Clwyd	No	
Water quality	North Wales	Yes	A broad range of potential pollutants which may include chemicals from the EQSD list can accumulate on surfaces during construction. These can subsequently be washed off during high rainfall/storm events, polluting the receiving waterbodies and should therefore be assessed further.
	Clwyd	Yes	During the construction phase, there is a potential risk of accumulation of standing water on the Mona Onshore Development Area and accidental discharges of untreated run-off whilst the temporary and the operational surface water drainage system is being constructed. Potential risk of contamination from the operational and maintenance activities have been scoped out with agreement form the Planning Inspectorate.

Receptor	Water Body	Potential risk to receptor?	Note the risk issue(s) for impact assessment
Protected areas	North Wales	Yes	The following protected areas with water dependent qualifying features are all within 2 km of the Mona Onshore Development Area SPA - Liverpool Bay/Bae Lerpwl (Wales) – water pollution is a potnetila threat tot he conservation status of the qualifying features for this SPA. Bathing Waters - Abergele (Pensarn).
	Clwyd	Yes	The following protected areas are all within 2 km of the Mona Onshore Development Area SPA - Liverpool Bay/Bae Lerpwl (Wales) – water pollution is a potential threat to the conservation status of the qualifying features for this SPA. Bathing Waters – Marine Lake (Rhyl).
Invasive Non-Native Species	North Wales	Yes	The NRW INNS risk assessment for the North Wales Water Body notes that there is no risk from INNS to this water body.The Onshore infrastructure is unlikely to result in the spread of INNS in this coastal water body. However the introduction of new INNS to the North Wales water body cannot be ruled out during the construction of the landfall.
	Clwyd	Yes	The Mona Onshore Development Area will not directly impact on the Clywd transitional water body and the potential for marine INNS to be spread is not significant. However the introduction of new INNS due to hydrological connectivity to the Clwyd water body cannot be ruled out during the construction of the Mona Onshore Development Area.

Table 1.16: Potential impacts associated with Mona onshore development area and outcome of scoping assessment for the WFD compliance assessment for groundwater bodies in the WFD assessment study area

Potential impact	Quantitative Status				Chemical Status					
	Groundwater Dependent Terrestrial Ecosystems test	Dependent surface water body status	Saline Intrusion	Water Balance	Drinking Water Protected Area	General Chemical Test	Groundwater Dependent Terrestrial Ecosystems test	Dependent Surface Water Body Status	Saline Intrusion	Trend Assessment - Groundwater supporting element
The impact of pollution caused by accidental spills/contaminant release during construction and decommissioning of the Mona Onshore Development Area. Deterioration in groundwater quality in glacial till and bedrock aquifers through the disturbance and mobilisation of existing areas of contaminated land associated with recent or historical land-use and the historical Llanddulas Beach Landfill site. Alteration to groundwater quantity or quality in the glacial till superficial aquifers, Clywd Limestone Group bedrock aquifer (Principal aquifer) and Ffernant Formation and Warwickshire Group (Secondary A aquifers).	Scoped out (see Volume 3, Chapter 1: Geology, hydrogeology and ground conditions of the Environmental Statement). The construction of the onshore transmission assets has the potential to impact the hydrogeological regime at sites that are dependent on groundwater. Protected sites identified within the geology, hydrogeology and ground conditions study area are not considered to have a direct groundwater dependence contributing to their designation.	Scoped out (see Volume 3, Chapter 1: Geology, hydrogeology and ground conditions of the Environmental Statement). Small surface watercourses present within study area and crossed by the Mona Onshore Development Area do not receive significant groundwater discharge (baseflow) given their position above glacial till or localised areas of exposed bedrock where groundwater is expected to present at significant depth. Flow in these watercourses is dependent on surface runoff as opposed to groundwater discharge.	Scoped Out (Saline Intrusion not identified as a potential impact - see Volume 3, Chapter 1: Geology, hydrogeology and ground conditions of the Environmental Statement).	Scoped out Scoped in (see Volume 3, Chapter 1: Geology, hydrogeology and ground conditions of the Environmental Statement).	Scoped out (see Volume 3, Chapter 1: Geology, hydrogeology and ground conditions of the Environmental Statement). All active, licensed, groundwater abstractions are at low risk of any impact resulting from the construction, operation and decommissioning of the transmission assets. Trofarth Farm SPZ - Located over 8km from the Mona Onshore Development Area and above Silurian bedrock aquifer of the Elwy Formation. Given the low permeability of this Secondary B aquifer and the large distance from the Mona Onshore Development Area it not considered to be at any risk. Llannerch Park SPZ This abstraction source is unlikely to be at any risk as it is considered to be located in a different groundwater catchment from the Mona Onshore Development Area.	Scoped in (see Volume 3, Chapter 1: Geology, hydrogeology and ground conditions of the Environmental Statement).	Scoped out (see Volume 3, Chapter 1: Geology, hydrogeology and ground conditions of the Environmental Statement). The construction of the onshore transmission assets has the potential to impact the hydrogeological regime at sites that are dependent on groundwater. Protected sites identified within the geology, hydrogeology and ground conditions study area are not considered to have a direct groundwater dependence contributing to their designation.	Scoped out (see Volume 3, Chapter 1: Geology, hydrogeology and ground conditions of the Environmental Statement) Small surface watercourses present within geology, hydrogeology and ground conditions study area and crossed by the Proposed Onshore Development Area do not receive significant groundwater discharge (baseflow) given their position above glacial till or localised areas of exposed bedrock where groundwater is expected to present at significant depth. Flow in these watercourses is dependent on surface runoff as opposed to groundwater discharge.	Scoped Out (Saline Intrusion not identified as a potential impact - see Volume 3, Chapter 1: Geology, hydrogeology and ground conditions of the Environmental Statement)	Scoped out Construction, operation and decommissioning of the Onshore assets should not impact on the long term trends in the groundwater given the assessment undertaken (see Volume 3, Chapter 1: Geology, hydrogeology and ground conditions of the Environmental Statement)

1.9 Detailed assessment

1.9.1 Introduction

1.9.1.1 Based on the outcomes of the scoping assessment, this detailed assessment establishes whether the activities associated with Mona Onshore Development Area will:

- Cause deterioration in water body status
- Impinge upon protected areas designated under the European Directives listed in Article 5 of the WFD and outlined in section 1.7.5 of this annex
- Prevent the achievement of WFD status objectives.

1.9.1.2 This is the stage of the assessment where evidence is provided to demonstrate that the proposed works are compliant. Specifically, for each quality element it must be shown that the activities scoped into the assessment will not cause a deterioration in status of any of the contributing quality elements nor prevent the achievement of WFD status objectives. Where appropriate it is also the stage where design mitigation, aimed at reducing the effect of an activity, is discussed.

1.9.1.3 The assessment looks at each individual water body traversed by Mona Onshore Development Area in the context of its status, the main contributing elements to the status classification, the objective of the water body and scoped in activities.

1.9.2 Measures adopted as part of the Mona Offshore Wind Project

1.9.2.1 For the purposes of the WFD Assessment process, the term 'measures adopted as part of the project' is used to include the following measures (adapted from IEMA, 2016):

- Measures included as part of the project design. These include modifications to the location or design of the Mona Offshore Wind Project which are integrated into the application for consent. These measures are secured through the consent itself through the description of the development and the parameters secured in the DCO and/or marine licences (referred to as primary mitigation in IEMA, 2016)
- Measures required to meet legislative requirements, or actions that are generally standard practice used to manage commonly occurring environmental effects and are secured through the DCO requirements and/or the conditions of the marine licences (referred to as tertiary mitigation in IEMA, 2016).

1.9.2.2 A number of measures (primary and tertiary) have been adopted as part of the Mona Offshore Wind Project to reduce the potential for impacts on the environmental objectives of the water bodies that could potentially be affected by the Mona Onshore Development Area. These are outlined in Table 1.17. As there is a commitment to implementing these measures, they are considered inherently part of the design of the Mona Offshore Wind Project and have therefore been considered in the assessment presented in sections 0 and 1.9.4 below (i.e. the determination of potential impact on a water body's objective, including protected area objectives, assumes implementation of these measures).

Table 1.17: Measures adopted as part of the Mona Offshore Wind Project.

Measures adopted as part of the Mona Offshore Wind Project	Justification	How the measure will be secured
Primary measures: Measures included as part of the project design		
The Mona Onshore Cable Corridor, 400kV Grid Connection Cable Corridor and the construction site accesses will be designed to minimise land take and to avoid, where possible, impacts on existing drainage networks and features.	To minimise impacts on existing drainage networks and features.	This commitment has been achieved through the site selection process and documented in Volume 1, Chapter 4: Site selection and consideration of alternatives of the Environmental Statement.
All major crossings (such as major roads and rail crossings) will be undertaken using trenchless techniques .	To minimise impacts on existing drainage networks and features.	The commitment, which is secured as a requirement of the DCO, is documented in Volume 5, Annex 4.3: Onshore crossing schedule of the Environmental Statement.
The haul road will be constructed from an engineered fill, with geotextile layers, the material will be granular and semi-permeable of an appropriate standard together with areas of tarmac for car parking as documented in the Outline Construction Method Statement (Document Reference J26.15) and appended to the Outline CoCP.	To control flood risk and reduce run-off.	The preparation of a detailed CoCP is secured as a requirement of the draft DCO (Document Reference C1). The detailed CoCP will include a detailed Onshore Construction Method Statement.
The diversion of the ordinary watercourse at the Onshore Substation will be appropriately designed to ensure the existing watercourse capacity is maintained (i.e. conveyance of existing flows without increasing fluvial flood risk upstream) and the opportunity will be taken to improve the new channel to a more natural channel with improved channel form, substrate and sinuosity for net biodiversity benefit as documented in the Outline Operational Drainage Management Strategy (Document Reference J28)"	To improve the physical condition of the channel, bed and riparian zone.	The preparation of a detailed Operational Drainage Management Strategy is secured as a requirement of the draft DCO (Document Reference C1).
A pre-construction drainage scheme will be designed for both the Mona Onshore Cable Corridor and Onshore Substation work sites as documented in the Outline Construction Surface Water and Drainage Management Plan (Document Reference J26.6) and appended to the Outline CoCP.	To ensure that the water quality and flow rates are unaffected.	The preparation of a detailed CoCP is secured as a requirement of the draft DCO (Document Reference C1). The detailed CoCP will include a detailed Construction Surface Water and Drainage Management Plan.
The construction compounds will be micro sited to avoid ordinary water courses. All potential locations for temporary construction compounds avoid direct impact on water courses. The construction compound within	To avoid the direct damage of these features and reduce potential for pollution.	The preparation of a detailed CoCP is secured as Requirement 9 of the draft DCO (Document Reference C1).

Measures adopted as part of the Mona Offshore Wind Project	Justification	How the measure will be secured
Work Area No. 13 will be set back from the tributary of the Gele River.		
Tertiary measures: Measures required to meet legislative requirements, or adopted standard industry practice		
All construction work will be undertaken in accordance with the detailed CoCP (Document reference J26). The purpose of the Outline CoCP is to set out a written set of standards and measures that will be implemented during the construction process to ensure a consistent and effective approach to managing potential impacts in order to minimise nuisances to communities and to safeguard the environment. The measures include strategies, control measures and monitoring procedures for managing the potential environmental impacts and limiting disturbance from construction activities as far as reasonably practicable. The detailed CoCP will be in general accordance with the Outline CoCP within the DCO application (Document Reference J26) and include regulatory guidance and industry best practice guidance including: • A detailed Construction Surface Water Drainage Management Plan. It will set out the methods for managing surface water runoff and groundwater, to protect the local environment and sensitive receptors and include measures to prevent surface water flooding during construction • A detailed Spillage and Emergency Response Plan to set out pollution prevention measures and an emergency response plan for accidents and spillages.	To accord with guidance and best practice for construction works.	The preparation of a detailed CoCP is secured as a requirement of the draft DCO (Document Reference C1). The detailed CoCP will include the following detailed management plans: Spillage and Emergency Response Plan Surface Water and Drainage Management Plan; Flood Management Plan; Soil Management Plan; Site Waste and Resource Management Plan; Biosecurity Protocol; Discovery Strategy for Contaminated Land; Landfall Construction Method Statement; Onshore Construction Method Statement
Preparation of a detailed Operational Drainage Management Strategy for the Onshore Substation. The detailed Strategy will be in general accordance with the Outline Operational Drainage Management Strategy (Document Reference J28). It will set out how existing runoff rates to the surrounding water environment will be maintained at pre-development rates. The detailed Operational Drainage Management Strategy will provide the detailed design of the realigned watercourse and will	To address the requirements of NPS EN-1, the TAN-15, NRW.	The preparation of a detailed Operational Drainage Management Strategy is secured as a requirement of the draft DCO (Document Reference C1).

Measures adopted as part of the Mona Offshore Wind Project	Justification	How the measure will be secured
ensure that 8 m buffer is maintained between the banks of the ordinary watercourse and the Onshore Substation.		
Preparation of a detailed Construction Method Statement that will be in general accordance with the Outline Construction Method Statement (Document Reference J26.15). The detailed Construction Method Statement will also include: • A detailed method statement for watercourse crossings (e.g. for temporary culvert crossings, appropriately sized flume pipes, equal to or greater than the diameter of the flume upstream and to an agreed length, will be placed on or below the hard bed of the watercourse). The watercourse crossing method statement will provide design details for each watercourse crossing location and would be agreed with the relevant authority prior to construction. • Cable conduits will be suitable sealed using water blocking materials at Transition Joint Bays, Joints Bays and Link Boxes so prevent the tracking of water along the cable route.	To control flood risk and pollution.	The preparation of a detailed CoCP is secured as a requirement of the draft DCO (Document Reference C1). The detailed CoCP will include a detailed Construction Method Statement.
The design of the oil storage and delivery facility at the Onshore Substation during the operations and maintenance will be in accordance with industry standards for pollution prevention as set out in the Design Principles (Document Reference J3).	To reduce the risk of surface water pollution	The design of the oil storage and delivery facility at the Onshore Substation during the operations and maintenance will be in accordance with industry standards for pollution prevention as set out in the Design Principles (Document Reference J3).
The preparation and implementation of a detailed Soil Management Plan setting out soil handling good practice.	To minimise soil loss and damage/compaction.	The preparation of a detailed CoCP, that will include a detailed Soil Management Plan, is secured as a requirement of the draft DCO (Document Reference C1).
A Decommissioning Plan to ensure effective management of environmental risk during the decommissioning of the Onshore Substation and removal of link boxes.	To control water quality impacts	The process of submitting a decommissioning plan to the relevant planning authority for approval is secured as a requirement of the DCO.

1.9.3 Deterioration in water body status

1.9.3.1 As part of the project design process, a number of designed-in measures have been proposed to reduce the potential impacts for the water environment. As there is a commitment to implementing these measures, they are considered inherently part of the design of Mona Onshore Development Area and have therefore, been considered in the assessment presented in this detailed WFD compliance assessment. These measures are considered standard industry practice for this type of development. The construction measures set out below are contained within the Outline CoCP (Document Reference J26).

1.9.3.2 The Western River Basin Management Plan (NRW, 2022a) states that the 2021 water body classification is the baseline from which deterioration is not permitted and therefore, this is the status classification that must not deteriorate when considering the impact of Mona Onshore Development Area on the 'no deterioration of water body status objective.

1.9.3.3 The detailed assessment demonstrates that taking into consideration the mitigation measures committed to through the CoCP, the outline method statement for water course crossings, Volume 3, Chapter 1: Geology, hydrogeology and ground conditions, Volume 3, Chapter 2: Hydrology and flood risk and Volume 3, Chapter 3: Onshore ecology of the Environmental Statement as well as a series of supporting management plans such as the Outline Spillage Prevention and Emergency Response Plan (Document Reference J26.1) and the Outline Biosecurity Protocol (Document Reference J26.11) will ensure that there will be no deterioration in the individual elements of ecological and chemical status and therefore, no deterioration in the overall WFD status classification outlined in Section 1.6.2 of this annex.

1.9.3.4 Table 1.18 and Table 1.19 provide the justification for this assessment based on the different quality elements, the potential impacts scoped into the WFD assessment and mitigation measures for the Mona Onshore Development Area.

1.9.4 Protected area objectives

1.9.4.1 A number of protected areas, listed on the register are located within the WFD assessment study area of the Mona Onshore Development Area. These protected areas have their own monitoring and assessment requirements to determine their condition. They are often assessed for additional pollutants or requirements relevant to their designation. For example, faecal coliform levels are assessed within shellfish and bathing waters. Therefore, it is important that the standards required for these protected areas are also met. If they are not met, a water body which would otherwise meet the requirements of the WFD, may have the status reduced to 'less than good' as it is not meeting the protected area objectives. The water bodies within the Mona Onshore Development Area that contain protected areas listed in the register of protected areas are detailed in Table 1.11.

1.9.4.2 As outlined in section 1.7.5 and Table 1.11 the protected areas linked to the water bodies within the WFD assessment study area for the Mona Onshore Development area include drinking waters in the groundwaters, bathing waters in the North Wales coastal water body and the Clywd transitional water body and European sites in the North Wales coastal water body and the Elwy - Clwyd to Melai river water body.

Drinking Water Protected Areas (DrWPAs)

1.9.4.3 As outlined in Volume 3, Chapter 1: Geology, hydrogeology and ground conditions of the Environmental Statement there will be no direct impact on licensed abstractions or existing SPZs given that they are remote from the Mona Onshore Development Area. Trofarth Farm SPZ is located over 8km from the Mona Onshore Development Area, whilst Llannerch Park SPZ is unlikely to be at any risk as it is considered to be located in a different groundwater catchment.

1.9.4.4 Any direct impacts on the drinking water sources are avoided and with the mitigation strategy developed during the design of the project and laid out in the CoCP (Document Reference J26) and its appendices, the quality of the drinking water sources will not be compromised by the Mona Onshore Development Area.

Table 1.18: Summary of mitigation measures to ensure the surface water body status does not deteriorate

Activity	Biological supporting elements				Hydro-morphological supporting elements		Physico-chemical supporting elements	Chemical	
	Fish	Invertebrates	Macrophytes	Macrophytes and Phytobentos combined	Hydrological Regime	Morphology		Priority hazardous substances	Priority Substances
Habitat disturbance and its impact on the supporting hydromorphological conditions of water bodies during construction, operations and maintenance and decommissioning of the Mona Onshore Development Area	The preparation of the temporary working corridor has the potential to increase suspended sediment load to water courses and ultimately to downstream transitional and coastal water bodies with the associated impacts that this can have on the biological quality elements. The potential for the spread of INNS is also a significant risk. Measures will be set in place to minimise the potential for pollution from sediment deposition into watercourses and from works vehicles, including measures to prevent transfer of invasive plant or animal species between watercourses. All construction work will be undertaken in accordance with good environmental practice based on legal responsibilities and guidance in accordance with the general overarching guidance on good environmental management. The method of achieving this will be through the Outline CoCP (Document Reference J26) and associated management plans (as listed in Table 1.17) will ensure that the Mona Offshore Wind Project will not result in a deterioration in the status of biological supporting elements using 2021 as the baseline status. The CoCP and management plans will ensure that the Mona Offshore Wind Project will not result in a deterioration in the status of biological supporting elements using 2021 as the baseline status. **Watercourse crossings** The method that will be used to cross each watercourse is set out in Volume 5, Annex 4.3: Onshore crossing schedule of the Environmental Statement. The majority watercourses will be traversed by trenchless techniques methods thereby avoiding direct impact. Only two watercourses have the potential to be crossed using trenched construction methodologies but these have been assessed as low sensitivity, heavily modified and incapable of supporting fish or macroinvertebrates (see Volume 7, Annex 3.6: Aquatic invertebrate survey technical report and Volume 7, Annex 3.15: Fish and eel survey technical report of the Environmental Statement). The Outline Onshore Construction Method Statement (Document Reference J26.15) includes the methodologies for watercourse crossings to avoid significant impact of both open cut and trenchless crossings and is included as part of the DCO application. The Outline Spillage and Emergency Response Plan (Document Reference J26.1) includes a bentonite breakout plan in the unlikely event that such an event occurs. Should these measures be employed the water course crossings should not result in a significant impact or deterioration in the baseline status as a result of habitat disturbance from water course crossings. **Temporary Bridges and flumes** All watercourses surveyed are of low sensitivity with the exception of a tributary of the Nant y Fedw (Dulas) which had eel present during field surveys undertaken in 2023 see Volume 7, Annex 3.15: Fish and eel survey technical report of the Environmental Statement. This watercourse will be crossed using trenchless techniques and there is a farm track to the west of the crossing which has an existing crossing of the watercourse, and provides an option for off route haul road location without the need to flume or bridge the watercourse.				As set out in Volume 5, Annex 4.3: Onshore crossing schedule of the Environmental Statement trenchless techniques will be employed on the main rivers crossed by the Mona Offshore Wind Project and assessed as part of the WFD compliance assessment. This will ensure that there will be no direct morphological impact on these water bodies for the purposes of WFD classification. There are two possible locations where the Onshore Cable Corridor may cross an ordinary watercourse by trenched means. These are the tributary of the River Gele at the temporary construction compound although it is likely that micro siting will ensure that crossing this watercourse can be avoided. The second location is for the permanent access track to the Onshore Substation. This watercourse has been assessed from a morphological and ecological perspective and it is of low grade and not capable of supporting fish or macroinvertebrates. For open cut crossings of small or less sensitive water courses such as the two identified above the Outline Onshore Construction Method Statement (Document Reference J26.15) for water course crossings outlines the different methods that can be used to install the cable. In all cases the cable will be installed in near dry conditions through the isolation of the section of channel in question. The Outline Surface Water and Drainage Management Plan (Document Reference J26.6) how field drainage will be managed during construction and reinstated post construction. The application of this plan will ensure that impacts on surface water drainage will not be significant and will not present a risk the supporting hydromorphological conditions of the water bodies affected. The Onshore Substation will result in the construction of low permeability surfacing, increasing the rate of surface water run-off from the site. An Outline Operational Drainage Strategy (Document Reference J28) has been developed to ensure the existing run-off rates and quality to the surrounding water environment are maintained at pre- development rates.	A detailed soil management plan will be prepared that will ensure recognised soil handling good practice is effectively implemented on site to minimise soil loss and damage/compaction that could impact on the supporting physico-chemical conditions of the water bodies affected. The detailed plan will be in general accordance with the Outline Soil Management Plan (Document Reference J26.8). Dewatering of cable trenches during the construction period will be in accordance with the Outline Surface Water and Drainage Management Plan (Document Reference J26.6) and will ensure that suspended solids loads to water courses are not significantly increased to ensure that sediment bound nutrients and contaminants do not have a pathway to surface waters.	Scoped Out	

Activity	Biological supporting elements				Hydro-morphological supporting elements		Physico-chemical supporting elements	Chemical	
	Fish	Invertebrates	Macrophytes	Macrophytes and Phytobentos combined	Hydrological Regime	Morphology		Priority hazardous substances	Priority Substances
	The Outline Onshore Construction Method Statement (Document Reference J26.15) includes details on how the haul road will cross these smaller watercourses and ditches which will ensure these low sensitivity water courses will not be significantly impacted.								
The impact of pollution caused by accidental spills/contaminant release during construction and decommissioning of the Mona Onshore Development Area	Oils and petroleum in particular from construction machinery used during the preparation of the Mona Offshore Wind Project Onshore Cable Corridor can have large impacts on aquatic species, and depending on the extent of a spill, may reduce respiration rates by altering oxygen exchange at the water-air interface or cause complete elimination of invertebrates and fish from streams. Pollution prevention measures to address the risk from accidental spills and measures for mitigating spills should they occur are included in the Outline CoCP and supporting management plans i.e. Outline Surface Water and Drainage Management Plan (Document Reference J26.6) and Outline Spillage and emergency response plan (Document Reference J26.1). The design of the oil storage and delivery facility at the Onshore Substation during the operations and maintenance will be in accordance with industry standards for pollution prevention as set out in the Design Principles (Document Reference J3).				Scoped out.		As per biological supporting elements.	Oils and petroleum spills in particular from construction machinery used during the preparation of the Mona Offshore Wind Project Onshore Cable Corridor could impact on the chemical status of the water bodies traversed. Pollution prevention measures to address the risk from accidental spills and measures for mitigating spills should they occur are included in the Outline CoCP and supporting management plans i.e. Outline Surface Water and Drainage Management Plan (Document Reference J26.6) and Outline Spillage and emergency response plan (Document Reference J26.1) Decommissioning of the Onshore Substation equipment including transformers and oil interceptors will be in such a manner that all oils are removed separately and contained appropriately for removal from site and will be detailed in the Decommissioning Plan.	
Increase in suspended sediments due to construction, operational and maintenance and/or decommissioning related activities, and the potential impact to physical features	The preparation of the temporary working corridor has the potential to increase suspended sediment load to water courses and ultimately to downstream transitional and coastal water bodies with the associated impacts that this can have on the biological quality elements. The potential for the spread INNS is also a significant risk. Measures will be set in place to minimise the potential for pollution from sediment deposition into watercourses and from works vehicles, including measures to prevent transfer of invasive plant or animal species between watercourses. All construction work will be undertaken in accordance with good environmental practice based on legal responsibilities and guidance in accordance with the general overarching guidance on good environmental management. The method of achieving this will be through the Outline CoCP (Document Reference J26) and associated management plans (as listed in Table 1.17) will ensure that sediment laden surface run-off from the Mona Offshore Wind Project Onshore Cable Corridor will not result in a deterioration in the status of biological supporting elements. The CoCP and management plans will ensure that the Mona Offshore Wind Project will not result in a deterioration in the status of biological supporting elements using 2021 as the baseline status. Dewatering of cable trenches during the construction period will be in accordance with the Outline Surface Water and Drainage Management Plan (Document Reference J26.6) and will ensure that suspended solids loads to water courses are not significantly increased to ensure there is no significant impact to the biological elements				In addition to the pollution prevention measures laid out in the Outline Construction Surface Water and Drainage Management Plan (Document Reference J26.6), preconstruction drainage will also be installed along the Onshore Cable Corridor and 400kV Grid Connection Corridor to ensure minimal impact on existing land land drainage. This will ensure that drainage from the surrounding land is not directed to the working corridor with only rainfall incident on the corridor collecting sediment laden water ensuring the volumes of water for treatment in advance of discharge is significantly reduced. These measures will ensure that significant sediment export to the existing drainage network and water courses will be avoided and will not result in a change to the channel form or significant habitat disturbance.		There is potential for sediment bound nutrients (ammonia phosphorus and Nitrates) and other contaminants to reduce the quality of the supporting physico-chemical conditions particularly DO, BOD, P. The measures outlined to address the potential impact to the biology will ensure that the physico chemical supporting conditions will not be put at risk of a deterioration in their individual status.	As with the physico-chemical elements sediment bound contaminants could carry priority or priority hazardous substances into the aquatic environment. The measures outlined to address the potential impact to the biology will ensure that the quality elements for chemical status will not be put at risk of deterioration in their individual status.	

Activity	Biological supporting elements				Hydro-morphological supporting elements		Physico-chemical supporting elements	Chemical	
	Fish	Invertebrates	Macrophytes	Macrophytes and Phytobentos combined	Hydrological Regime	Morphology		Priority hazardous substances	Priority Substances
The impact of spreading INNS during construction and decommissioning of the Mona Onshore Development Area	INNS can negatively affect the health of our water environment and are a direct threat to the ecological objectives of a water body. INNS are also considered to be one of the main threats to biodiversity worldwide. The full implementation of the Outline Biosecurity Protocol (Document Reference J26.11) will ensure that the Mona Offshore Wind Project will not result in a deterioration in the biological elements as a result of INNS.				The proliferation of INNS can change the hydromorphology of a water body and result in a deviation from the supporting hydromorphological conditions expected. INNS can lead to greater erosion of the riparian zone. Some plants, such as Himalayan balsam, can expose river banks when they die back during the winter months resulting in greater risks of erosion. Others like American signal crayfish can decrease river bank stability. These pressures can impact on the hydromorphology of the water body. The full implementation of the Outline Biosecurity Protocol (Document Reference J26.11) will ensure that the Mona Offshore Wind Project will not result in a deterioration in the status as a result of INNS.		INNS can alter the physico chemical supporting conditions particularly resulting in changes to dissolved oxygen levels The full implementation of the Outline Biosecurity Protocol (Document Reference J26.11) will ensure that the Mona Offshore Wind Project will not result in a deterioration in the status as a result of INNS.	Scoped out	

Table 1.19: Summary of mitigation measures to ensure the groundwater body status does not deteriorate

Potential Impact	Quantitative Status					Chemical Status				
	Groundwater Dependent Terrestrial Ecosystems test	Dependent Surface Water Body Status	Saline Intrusion	Water Balance	Drinking Water Protected Area	General Chemical Test	Groundwater Dependent Terrestrial Ecosystems test	Dependent Surface Water Body Status	Saline Intrusion	Trend Assessment - Groundwater supporting element
The impact of pollution caused by accidental spills/contaminant release during construction and decommissioning of the Mona Onshore Development Area	Scoped out (see Volume 3, Chapter 1: Geology, hydrogeology and ground conditions of the Environmental Statement)	Scoped out (see Volume 3, Chapter 1: Geology, hydrogeology and ground conditions of the Environmental Statement)	Scoped out (see Volume 3, Chapter 1: Geology, hydrogeology and ground conditions of the Environmental Statement)	Scoped out (see Volume 3, Chapter 1: Geology, hydrogeology and ground conditions of the Environmental Statement)	Scoped out (see Volume 3, Chapter 1: Geology, hydrogeology and ground conditions of the Environmental Statement)	The impact significance as assessed in Volume 3, Chapter 1: Geology, hydrogeology and ground conditions of the Environmental Statement, assuming the mitigation measures outlined in Table 1.17 is negligible and therefore no further mitigation is required to ensure groundwater quality is protected. The measures adopted as part of the Mona Offshore Wind Project will be adequate to ensure the risk to the water quantities in the groundwater bodies are not adversely affected	Scoped out (see Volume 3, Chapter 1: Geology, hydrogeology and ground conditions of the Environmental Statement)	Scoped out (Volume 3, Chapter 1: Geology, hydrogeology and ground conditions of the Environmental Statement)	Scoped out (Volume 3, Chapter 1: Geology, hydrogeology and ground conditions of the Environmental Statement)	Scoped out

Potential Impact	Quantitative Status					Chemical Status				
	Groundwater Dependent Terrestrial Ecosystems test	Dependent Surface Water Body Status	Saline Intrusion	Water Balance	Drinking Water Protected Area	General Chemical Test	Groundwater Dependent Terrestrial Ecosystems test	Dependent Surface Water Body Status	Saline Intrusion	Trend Assessment - Groundwater supporting element
Deterioration in groundwater quality in glacial till and bedrock aquifers through the disturbance and mobilisation of existing areas of contaminated land associated with recent or historical land-use and the historical Llanddulas Beach Landfill site.						The impact significance as assessed in Volume 3, Chapter 1: Geology, hydrogeology and ground conditions of the Environmental Statement is minor, assuming the mitigation measures outlined in Table 1.17 including the Outline CoCP (Document reference J26) and Outline Landfall Construction Method Statement Document (Document Reference J26.14) therefore no further mitigation is required to ensure groundwater quality is protected.				
Alteration to groundwater quantity or quality in the glacial till superficial aquifers, Clywd Limestone Group bedrock aquifer (Principal aquifer) and Ffernant Formation and Warwickshire Group (Secondary A aquifers).				The impact significance, as assessed in Volume 3, Chapter 1: Geology, hydrogeology and ground conditions of the Environmental Statement, assuming the mitigation measures outlined in Table 1.17 is negligible for all phases of the development and therefore no further mitigation is required to ensure groundwater quality is protected. The measures in the CoCP will be adequate to ensure the water quantities in the groundwater bodies are not adversely affected		The impact significance, as assessed in Volume 3, Chapter 1: Geology, hydrogeology and ground conditions of the Environmental Statement, assuming the mitigation measures outlined in Table 1.17 is negligible for all phases of the development and therefore no further mitigation is required to ensure groundwater quality is protected.				

Recreational Waters (Bathing Waters)

1.9.4.5 Abergele (Pensarn) is located within 2 km of the Mona Onshore Development Area. Marine Lake at Rhyl bathing Water is located adjacent to the Clywd transitional water body but is more than 2 km from the Mona Onshore Development Area.

1.9.4.6 Pathogens are unlikely to be a source of contamination as the working area will be fenced off in advance of construction and the land application of slurry and manures in the working area will not occur in advance of construction. The location of septic tanks and their percolation area is not considered as a significant risk to bathing waters based on the Abergele (Pensarn) bathing water profile. Any potential for septic tanks and their percolation area to be located within the construction area will be noted in pre-construction site investigation surveys and protective measures taken to ensure that they are not impacted. On this basis there will be no pathogen source within the working area during the construction period and therefore no potential to impact on the downstream coastal and transitional water bodies and associated bathing waters.

1.9.4.7 Nutrient export from the project will be limited with welfare facilities at the main compound and secondary compounds adequately managed through the site waste management plan. Particulate phosphorus export from sediment laden water will be adequately managed through soil management measures and pollution prevention measures to ensure no impact on the Urban Waste Water Treatment Directive sensitive areas within the River Wensum and River Yare.

Economically Significant Waters (Shellfish Waters)

1.9.4.8 The Dee (West) Shellfish Designated water is located within the North Wales coastal water body. As outlined in section 1.7.5 this designated shellfish water will not be impacted by the Mona Onshore Development Area.

Nutrient Sensitive Areas

1.9.4.9 There are no water bodies within the WFD assessment study area of the Mona Onshore Development Area that have been designated as nutrient sensitive in the context of urban wastewater treatment.

1.9.4.10 Nitrate vulnerable areas in Wales previously included on the Protected Area Register have been removed for the final RBMP.

European Sites (SACs/SPAs)

1.9.4.11 The provisions of the WFD Regulations 2017 only relate to water dependent habitats and species. The objective is to protect and, where necessary, improve the water environment to work towards achieving the conservation objectives for the water dependent features of these sites.

1.9.4.12 The Elwy Valley Woods SAC lies within the Elwy - Clwyd to Melai river water body and overlies the Clwyd Permo-Triassic Sandstone and Clwyd Silurian groundwater bodies. The Mona Onshore Development Area will not directly impact on this protected area. A review of the conservation objectives have established that the qualifying features are not water dependent.

1.9.4.13 Liverpool Bay/Bae Lerpwl (Wales) SPA incorporates all of the North Wales coastal water body. The SIP for this SPA notes that water pollution from Shipping and Industry, particularly oil spills, represents a potential threat to the conservation status of the waterbird assemblage. Potential impacts from the Mona Onshore Development Area

on surface water and groundwater status have been assessed in Table 1.14, Table 1.15 and Table 1.16. The mitigation measures proposed will not compromise the achievement of the conservation objectives of this European Site.

1.9.4.14 On this basis, the Mona Onshore Development Area will not compromise the protected area objectives for the water bodies impacted and therefore will not cause any deterioration in status or compromise the achievement of the objectives for the water bodies in question.

1.9.5 Achievement of the WFD objectives

1.9.5.1 During the River Basin Management cycle characterisation of the water bodies to establish the key pressures and associated pathways that are resulting in a status classification of less than good status were determined. A programme of measures is then put in place to assist in the achievement of the WFD objectives. The key objective of the WFD was to achieve good ecological status or potential by 2015, however extended timelines can apply where there are justifiable reasons (e.g. due to issues with disproportionate cost, affordability, technical difficulties). In these instances, the objective of the achievement of good status may be the end of the second river basin management cycle in 2021, or the third river basin management cycle in 2027. Where good status is unlikely to be achieved then less stringent objectives can apply to a water body.

1.9.5.2 Table 1.20 outlines the objectives for each water body within the WFD study area of the Mona onshore development area and the key quality elements driving the status. The Significant Water Management Issues (SWMI), where known, resulting in a status of less than good are summarised and the measures that are recommended in the RBMP to achieve the WFD objectives are identified. Currently there are a number of the water bodies that are not achieving good status and in some cases, as highlighted in Table 1.20, less stringent objectives will be necessary as certain water bodies are not predicted to be achieving good status by the end of the third river basin management cycle, (i.e. 2027). The final column of Table 1.20 assesses the potential impact on the achievement of the WFD objectives and concludes for all water bodies that Mona Onshore Development Area will not prevent the achievement of the WFD objectives.

Table 1.20: Significant Water Management Issues (SWMI), Source, Programme of measures and assessment of impact of the project on the WFD objectives

Water Body Name	Type	Overall Status	Driving Element	Significant Water Management Issue	Source Activity	RBMP Measures	Objective	Derogation Type	Reason	Impact on WFD Objectives
Nant y Fedw (Dulas), GB110066059830	River	Moderate	Phosphorus	Diffuse sources from agriculture (Dairy/beef)	Agriculture and rural land management	Manage pollution from rural areas (15 National Measures)	Moderate by 2027	LSO	Disproportionate Cost	The SWMI for this water body is phosphate levels from diffuse (agriculture) and point sources Sewage discharges). Measures have been recommended to ensure the achievement of the WFD objective. The construction of Mona Offshore Wind Project will not prevent the implementation or effectiveness of these measures given the design mitigation and the pollution prevention measures as outlined in Table 1.18.
				Point Source from water industry	Sewage discharge (continuous)	Manage pollution from sewage and waste water (7 National Measures)				
Dulas - lower, GB110066059860	River	Poor	Fish	Diffuse sources from agriculture (Dairy/beef)	Agriculture and rural land management	Manage pollution from rural areas (15 National Measures)	Good by 2039	Extended	Natural Conditions	The SWMI for this water body is phosphate levels from diffuse agricultural sources. Measures have been recommended to ensure the achievement of the WFD objective. The construction of Mona Offshore Wind Project will not prevent the implementation or effectiveness of these measures given the design mitigation and the pollution prevention measures as outlined in Table 1.18.
				Physical Modification Barriers to fish migration	Unknown	Investigation into source of pressure				
Pont Robin Cut (Bodelwyddan), GB110066059970	River	Poor	Invertebrates	Diffuse sources from agriculture (Dairy/beef)	Agriculture and rural land management	Manage pollution from rural areas (15 National Measures)	Poor by 2027	LSO	Disproportionate Cost	The SWMI for this water body is phosphate levels from diffuse agricultural sources. Measures have been recommended to ensure the achievement of the WFD objective. The construction of Mona Offshore Wind Project will not prevent the implementation or effectiveness of these measures given the design mitigation and the pollution prevention measures as outlined in Table 1.18.
Gele GB110066059980	River	Moderate	DO Phosphorus Mitigation Measures for HMWB	Diffuse sources from agriculture (Dairy/beef)	Agriculture and rural land management	Manage pollution from rural areas (15 National Measures)	Poor by 2027	LSO	Disproportionate Cost	The SWMI for this water body is phosphate levels from diffuse agricultural sources. Measures have been recommended to ensure the achievement of the WFD objective. The construction of Mona Offshore Wind Project will not prevent the implementation or effectiveness of these measures given the design mitigation and the pollution prevention measures as outlined in Table 1.18. The Gele is also a HMWB and not all mitigation measures have been implemented to allow the achievement of good ecological potential. However the Mona Offshore Wind Project will not prevent the long term achievement of these measures given the temporary nature of any physical modification to minor water courses (no main rivers are directly affected). There are only two low sensitivity minor watercourses that could potentially be crossed used trenched technologies which can be achieved easily given the width of the channel, existing riparian zone and adjacent land use.
				Flood Protection	Physical Modification	HMWB Mitigation Measures as outlined in Table 1.10				
Elwy - Clwyd to Melai, GB110066060020	River	Good	Phosphorus	Hydrological Regime	Natural	Fisheries Habitat Restoration	Good by 2027	n/a	n/a	This water body is currently achieving its environmental objective so the focus will be on ensuring it does not deteriorate in status. The construction of Mona Offshore Wind Project will not increase the risk of deterioration in the water body status given the design mitigation and the pollution prevention measures as outlined in Table 1.18.
Clywd GB541006608000	Transitional	Moderate	DIN	Diffuse sources from agriculture (Dairy/beef)	Agriculture and rural land management	There is some information	Moderate by 2027	LSO	Disproportionate Cost	The SWMI for this water body is DIN levels which are suspected to be from diffuse agricultural sources and point sources including sewage discharges and domestic

Water Body Name	Type	Overall Status	Driving Element	Significant Water Management Issue	Source Activity	RBMP Measures	Objective	Derogation Type	Reason	Impact on WFD Objectives
			Mitigation Measures for HMWB	Point Source from water industry	Sewage discharge (continuous)	that points to a possible reason for not achieving good status. Further investigations are required before site specific measures can be identified.				sewage. Measures have been recommended to ensure the achievement of the WFD objective. The construction of Mona Offshore Wind Project will not prevent the implementation or effectiveness of these measures given the design mitigation and the pollution prevention measures as outlined in Table 1.18. The Clywd is also a HMWB and not all mitigation measures have been implemented to allow the achievement of good ecological potential. However the Mona Offshore Wind Project will not prevent the long term achievement of these measures given that this water body is not directly impacted by the project but rather is hydrologically connected to upstream water bodies..
				Point source from Domestic/General public	Unsewered domestic sewage					
North Wales GB641011650000	Coastal	Moderate	Mercury Phytoplankton	Diffuse Source	Atmospheric deposition	Mercury is a chemical which is a uPBT. Mercury has been phased out of use and further measures would not be practicable. However, because of its persistence in the environment it is likely that there will not be widespread compliance with the relevant environmental quality standard in the next river basin management planning periods	Good by 2033	Extended	Natural Conditions	As mercury is a uPBT which has been phased out of use the persistence of this chemical requires ongoing monitoring to establish when the Environmental Quality Standard is achieved (currently predicted as 2033). The construction of Mona Offshore Wind Project will not introduce new sources of mercury.
				Diffuse Source	Contaminated water body bed sediments					
Clwyd Permo-Triassic Sandstone GB41001G202100	Groundwater	Good	n/a	n/a	n/a	n/a	Good by 2027	n/a	n/a	This water body is currently achieving its environmental objective so the focus will be on ensuring it does not deteriorate in status. The construction of Mona Offshore Wind Project will not increase the risk of deterioration in the water body status given the design mitigation and the pollution prevention measures as outlined in Table 1.19.
Clwyd Silurian GB41002G200100	Groundwater	Good	n/a	n/a	n/a	n/a	Good by 2027	n/a	n/a	This water body is currently achieving its environmental objective so the focus will be on ensuring it does not deteriorate in status. The construction of Mona Offshore Wind Project will not increase the risk of deterioration in the water body status given the design mitigation and the pollution prevention measures as outlined in Table 1.19.

Water Body Name	Type	Overall Status	Driving Element	Significant Water Management Issue	Source Activity	RBMP Measures	Objective	Derogation Type	Reason	Impact on WFD Objectives
Conwy GB41002G203000	Groundwater	Poor	Dependent Surface Water Body Status	Managing pollution from mines	Metal (non-coal) mining	Managing pollution from mines Deliver metal (non-coal) mine water preventative and remediation programme as identified under the Metal Mine Strategy for Wales Ongoing metal mine remediation in relation to Gwydir Forest Mines	Good by 2027	n/a	n/a	This groundwater body is failing to achieve good status due to the contribution of groundwater to failing cadmium and zinc standards in two surface water bodies, the Crafnant river water body and Conwy - tidal limit to Merddwr river water body. Both of these surface water bodies are remote from the Mona onshore development area and will not be impacted by the proposed development. The Mona Offshore Wind Project will not interfere with the ongoing metal mine remediation in relation to Gwydir Forest Mines.

1.9.6 Assessment summary and conclusion

1.9.6.1 A WFD assessment has been undertaken for the onshore elements of the Mona Offshore Wind Project. The assessment is based on guidance developed by the Environment Agency and Planning Inspectorate and is undertaken in a staged approach to ensure that those components of the project and the associated activities are assessed in the context of the quality elements that contribute to overall WFD status.

1.9.6.2 The key focus of the assessment was to ensure that the onshore elements of the Mona Offshore Wind Project do not result in a deterioration in the current WFD status of the water bodies within the WFD study area, based on the 2021 baseline as reported in the Western Wales RBMP 2021-2027, and also to ensure that the project does not compromise the achievement of the WFD objectives for the improvement in the overall status of these water bodies. The assessment also considers the protected areas linked to the water bodies in question and ensures that the protected area objectives are also unaffected.

1.9.6.3 The scoping stage of the WFD compliance assessment has concluded that there were a number of components and activities associated with onshore elements of the Mona Offshore Wind Project that represented a risk to the WFD status and objectives and therefore were scoped into the assessment. The relevant quality elements contributing to the overall status were considered and how each potential impact could affect these.

1.9.6.4 The overall conclusion of the WFD compliance assessment is that there will be no risk of deterioration in status or the prevention of the achievement of the objectives for the relevant water bodies nor will the protected area objectives be compromised.

1.10 References

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Appendix A: WFD scoping assessment for coastal and transitional water bodies

A.1. WFD Scoping Assessment – North Wales coastal waterbody

A.1.1 Water Framework Directive assessment: scoping template for activities in estuarine and coastal waters

Use this template to record the findings of the scoping stage of your Water Framework Directive (WFD) assessment for an activity in an estuary or coastal water.

If your activity will:

- take place in or affect more than one water body, complete a template for each water body
- include several different activities or stages as part of a larger project, complete a template for each activity as part of your overall WFD assessment

The WFD assessment guidance for estuarine and coastal waters will help you complete the table.

Your activity	Description, notes or more information
Applicant name	*Mona Offshore Wind Ltd*
Application reference number (where applicable)	*N/A*
Name of activity	*Mona Onshore Development Area*
Brief description of activity	*The area in which the landfall, onshore cable corridor, onshore substation, mitigation areas, temporary construction facilities (such as access roads and construction compounds), and the connection to National Grid infrastructure will be located*
Location of activity (central point XY coordinates or national grid reference)	*British National Grid 464017, 5900320*
Footprint of activity (ha)	*Approximately 210 ha based on the maximum design scenario for the onshore cable corridor (permanant and temporary requirements), Grid connection cable corridor (permanant and temporary requirements) and the onshore substation footprint.*
Timings of activity (including start and finish dates)	*Construction programme of approximately 36 months for onshopre elements. Project to become operational by 2030*

Extent of activity (for example size, scale frequency, expected volumes of output or discharge)	*The capacity of the Mona Offshore Wind Project is over 350MW. The onshore infrastructure will consist of up to 12 onshore export cables buried in up to four trenches and an onshore High Voltage Alternating Current (HVAC) substation to allow the power to be transferred to the National Grid via the existing Bodelwyddan National Grid substation*
Use or release of chemicals (state which ones)	*Chemicals used on site will be mainly oils and diesel fuels during construction, however there will be no direct release of chemicals.*

[1] Water body information can be found in the Environment Agency's catchment data explorer and the water body summary table. Magic maps provide additional information on habitats and protected areas. Links to these information sources can be found in the WFD assessment guidance for estuarine and coastal waters.

Water body[1]	Description, notes or more information
WFD water body name	*North Wales*
Water body ID	*GB641011650000*
River basin district name	*Western Wales*
Water body type (estuarine or coastal)	*Coastal*
Water body total area (ha)	*40991*
Overall water body status (2021)	*Moderate*
Ecological status	*Moderate*
Chemical status	*Fail*
Target water body status and deadline	*Good (2033)*
Hydromorphology status of water body	*Not assessed*
Heavily modified water body and for what use	*Yes- Coastal Protection*
Higher sensitivity habitats present	*Mussel Beds are present within the Offshore intertidal area (approximately 3 hectares) which could be indirectly impacted by the Mona Onshore Development Area*
Lower sensitivity habitats present	*Cobbles, gravel and shingle, Intertidal soft sediment and Rocky shore are all lower sensitivity habotats present within the Mona Onshore Development Area*
Phytoplankton status	*Moderate*
History of harmful algae	*No (based on information from bathing water profiles)*
WFD protected areas within 2 km	*Liverpool Bay/Bae Lerpwl (Wales) SPA, Abergele (Pensarn) Bathing Water*

A.1.2 Specific risk information

Consider the potential risks of your activity to each of these receptors: hydromorphology, biology (habitats and fish), water quality and protected areas. Also consider INNS.

A.1.3 Section 1: Hydromorphology

Consider if hydromorphology is at risk from your activity.

Use the water body summary table to find out the hydromorphology status of the water body, if it is classed as heavily modified and for what use.

Consider if your activity:	Yes	No	Hydromorphology risk issue(s)
Could impact on the hydromorphology (for example morphology or tidal patterns) of a water body at high status		Impact assessment not required	*No. The onshore landfall, export cable, substation and grid connection cable will have no direct impact on this coastal water body and will not result in any physical changes to the water body*
Could significantly impact the hydromorphology of any water body		Impact assessment not required	*Whilst there may be temporary impacts for the river water bodies traversed by the cable corridors and the realignment of a minor water course for the onshore substation option has the potential to impact on these water bdoies there will be no impact to other coastal or transitional water bodies*
Is in a water body that is heavily modified for the same use as your activity		Impact assessment not required	*Not modified for the same activity. North Wales coastal water body is designated as a HMWB for coastal protection and is currently good for the mitigation measures meaning that all mitigaiton measures required to acheive good ecological potential are in place.*

Record the findings for hydromorphology and go to section 2: biology.

A.1.4 Section 2: Biology

A.1.4.1 Habitats

Consider if habitats are at risk from your activity.

Use the water body summary table and Magic maps, or other sources of information if available, to find the location and size of these habitats.

[2] Higher sensitivity habitats have a low resistance to, and recovery rate, from human pressures.

[3] Lower sensitivity habitats have a medium to high resistance to, and recovery rate from, human pressures.

Higher sensitivity habitats [2]	Lower sensitivity habitats [3]
Mussel beds, including blue and horse mussel	cobbles, gravel and shingle
	intertidal soft sediments like sand and mud
	rocky shore

[4] Note that a footprint may also be a temperature or sediment plume. For dredging activity, a footprint is 1.5 times the dredge area.

Consider if the footprint[4] of your activity is:	Yes	No	Biology habitats risk issue(s)
0.5 km^2 or larger		✓	*No: Whilst the Mona Onshore Development Area extends into the North Wales water body the footprint of the activity associated with the onshore activities in this coastal water body is zero, i.e. <0.5 km^2*
1% or more of the water body's area		✓	*No: Whilst the Mona Onshore Development Area extends into the North Wales water body the footprint of the activity associated with the onshore activities is zero i.e. <1% of waterbody's area*
Within 500 m of any higher sensitivity habitat		✓	*No footprint of the Mona Onshore Development Area in this water body therefore no direct impact on sensitive habitats. Indirect imapcts are addressed under Water Quality*
1% or more of any lower sensitivity habitat		✓	*No: Footprint not 1% or more of any lower sensitivity habitat*

A.1.4.2 Fish

Consider if fish are at risk from your activity, but only if your activity is in an estuary or could affect fish in or entering an estuary.

Consider if your activity:	Yes	No	Biology fish risk issue(s)
Is in an estuary and could affect fish in the estuary, outside the estuary but could delay or prevent fish entering it or could affect fish migrating through the estuary		Go to next section	*No: The works do not have the potential to delay or prevent fish entering the Clywd Estuary. Construction works for the onshore elements of the proposal will take place within river water body catchments and not the estuary.* *The potential for EMF to impact fish and other aquatic species has been studied extensively, particularly the interference with species such as Atlantic Salmon and the impairment of migration and navigation. The operation of offshore wind energy projects is not expected to negatively affect commercial and recreational fishes. A study by the U.S. Department of the Interior, Bureau of Ocean Energy Management within the south New England area found Negligible effects, if any, on bottom-dwelling species and no negative effects on pelagic species are expected due to their distance from the power cables buried in the seafloor or under main rivers and the level of magnetic field generated from AC cables (CSA Ocean Sciences Inc., 2019).*
Could impact on normal fish behaviour like movement, migration or spawning (for example creating a physical barrier, noise, chemical change or a change in depth or flow)			
Could cause entrainment or impingement of fish			

Record the findings for biology habitats and fish and go to section 3: water quality.

A.1.5 Section 3: Water quality

Consider if water quality is at risk from your activity.

Use the water body summary table to find information on phytoplankton status and harmful algae.

Consider if your activity:	Yes	No	Water quality risk issue(s)
Could affect water clarity, temperature, salinity, oxygen levels, nutrients or microbial patterns continuously for longer than a spring neap tidal cycle (about 14 days)	✓		*A broad range of potential pollutants, such as hydrocarbons i.e. fuels can accumulate on surfaces of the working area. These can subsequently be washed off during high rainfall/storm events, polluting the receiving waterbodies and should therefore be assessed further.* *During the operation phase of the proposed development, mitigation measures will be in place to include pollution prevention measures such as bunding of storage areas, full retention oil interceptors at the substation, documenting spill procedures and keeping spill kits in the vicinity of storage, as identified in the Environmental Statement.* *During the construction phase, there is a potential risk of accumulation of standing water on the application site and accidental discharges of untreated run-off whilst the temporary and the operational surface water drainage system is being constructed. Given that the estimated construction phase for the proposed development is estimated to be 32 months, the impacts associated with the construction phase must be assessed further.* *The Dissolved Inorganic Nitrogen (DIN) and dissolved oxygen (DO) levels for this water body are good. Particulate bound nutrients could find a pathway to the this coastal water body through Hydrological links.* *Pathogens are unlikely to be a source of contamination as the working area will be fenced off in advance of construction and the land application of slurry and manures in the working area will not occur in advance of construction. The location of septic tanks and there percolation area is not considered as a significant risk to bathing waters based on the Abergele (Pensarn) bathing water profile. Any potential for spetic tanks and their percolation area will be noted in pre-construction site investigation surveys and protective measures taken to ensure that they are not impacted.* *On this basis there will be no pathogen source within the working area during the construction period and therefore no potential to impact on the downstream coastal water body and associated bathing waters at Abergele (Pensarn), Colwyn Bay (Porth Eirias) and Colwyn Bay*
Is in a water body with a phytoplankton status of moderate, poor or bad	✓		*Phytoplankton classification is moderate.* *However the construction, operational and decommissioning phases of the development are unlikely to present significant sources of nutrients that would result in further impact to this status element.*

Is in a water body with a history of harmful algae		✓	*The bathing water profiles for Colwyn Bay Porth Eirias and Colwyn Bay (https://environment.data.gov.uk/wales/bathing-waters/profiles/) note that blooms of the algae Phaeocystis do occur along this coastline during warm and calm weather in May and June. This typically produces a cream or brown coloured scum along the water's edge, but is otherwise harmless.* *Abergele (Pensarn) – Algal Blooms can occur at any beach during the bathing season and are usually noticeable by a surface scum. This beach has no history of such blooms.* *It is assumed for the purpose of this assessment that harmful algal blooms are therefore not a common occurrence in this coastal water body.*

Consider if water quality is at risk from your activity through the use, release or disturbance of chemicals.

If your activity uses or releases chemicals (for example through sediment disturbance or building works) consider if:	Yes	No	Water quality risk issue(s)
The chemicals are on the Environmental Quality Standards Directive (EQSD) list	✓		*During the construction phase, there is a potential risk of accumulation of standing water on the application site and accidental discharges of untreated run-off whilst the temporary and the operational surface water drainage system is being constructed.* *During construction a broad range of potential pollutants which may include chemicals from the EQSD list can accumulate on surfaces. These can subsequently be washed off during high rainfall/storm events, polluting the receiving waterbodies and should therefore be assessed further.* *The operations and maintenance activities are unlikely to generate contaminated runoff and thus there will be low potential for likely significant effects with regards to pollution. The Planning Inspectorate agreed that impact of contaminated runoff on the chemical and biological status of surface water receptors arising from the operations and maintenance of the onshore transmission assets can be scoped out of further assessment*
It disturbs sediment with contaminants above Cefas Action Level 1		Impact assessment not required	*There will be no disturbance of sediment within the Marine environment as part of the Onshore infrastructure.*

[5] Carry out your impact assessment using the Environment Agency's surface water pollution risk assessment guidance, part of Environmental Permitting Regulations guidance.

If your activity has a mixing zone (like a discharge pipeline or outfall) consider if:	Yes	No	Water quality risk issue(s)
The chemicals released are on the Environmental Quality Standards Directive (EQSD) list		✓	*There will be no direct discharges of chemicals into the coastal water body.*

Record the findings for water quality go on to section 4: WFD protected areas.

A.1.6 Section 4: WFD protected areas

Consider if WFD protected areas are at risk from your activity. These include:

- special areas of conservation (SAC)
- special protection areas (SPA)
- shellfish waters
- bathing waters
- nutrient sensitive areas
-

Use Magic maps to find information on the location of protected areas in your water body (and adjacent water bodies) within 2 km of your activity.

[6] Note that a regulator can extend the 2 km boundary if your activity has an especially high environmental risk.

Consider if your activity is:	Yes	No	Protected areas risk issue(s)
Within 2 km of any WFD protected area[6]	✓		**SAC – Coedwigoedd *Dyffryn* Elwy/Elwy Valley Woods** *The Mona Onshore Development Area will not directly impact on this protected area. A review of the conservation objectives have established that the qualifying features are not water dependent.* **SPA – *Liverpool* Bay/Bae Lerpwl (Wales)** *The SIP for this SPA notes that water pollution from Shipping and Industry, particularly oil spills, represents a potential threat to the conservation status of the waterbird assemblage. Water quality impacts from the Mona Onshore Development Area therefore need to be considered.* **Bathing Waters – *Abergele* (Pensarn)** *Pathogens are unlikely to be a source of contamination as the working area will be fenced off in advance of construction and the land application of slurry and manures in the working area will not occur in advance of construction. The location of septic tanks and there percolation area is not considered as a significant risk to bathing waters based on the Abergele (Pensarn) bathing water profile. Any potential for spetic tanks and their percolation area to be located within teh construction area will be noted in pre-construction site investigation surveys and protective measures taken to ensure that they are not impacted.* *On this basis there will be no pathogen source within the working area during the construction period and therefore no potential to impact on the downstream coastal water body and associated bathing waters at Abergele (Pensarn), Colwyn Bay (Porth Eirias) and Colwyn Bay*

Record the findings for WFD protected areas and go to section 5: invasive non-native species.

A.1.7 Section 5: Invasive Non-Native Species (INNS)

Consider if there is a risk your activity could introduce or spread INNS.

Risks of introducing or spreading INNS include:

- Materials or equipment that have come from, had use in or travelled through other water bodies
- Activities that help spread existing inns, either within the immediate water body or other water bodies.

Consider if your activity could:	Yes	No	INNS risk issue(s)
Introduce or spread INNS		✓	*The negative effects of invasive non- native species has been risk assessed as part of the Western Wales River Basin Managemetn Plan. The latest assessment was completed in 2014 and determined that INNS were probably not placing the North Wales water body at risk of failing to acheive its Environmental Objectives.* *The Onshore infrastructure is unlikely to result in the spread of INNS in this coastal water body. However the introduction of new INNS to the North Wales water body cannot be ruled out during the construction of the landfall.* *The risk to river water bodies is assessment in the main WFD Technical Annex.*

Record the findings for INNS and go to the summary section.

A.1.8 Summary

Summarise the results of scoping here.

Receptor	Potential risk to receptor?	Note the risk issue(s) for impact assessment
Hydromorphology	No	*The North Wales Coastal Water body is a heavily modified water body with the specified use being Coastal Protection Use. The mitigaiton measures assessment is Good – which means that NRW have implemented all the relevant and required mitigation measures in the water body. Whether the water body will actually achieve Good Ecological Potential will now depend on the other relevant elements in the water body. In the case of the North Wales Coastal water body the driving elements for status are Phytoplankton and Mercury levels*
Biology: habitats	No	*No footprint of the Mona Onshore Development Area in this water body therefore no direct impact on sensitive habitats. Indirect imapcts are addressed under Water Quality*

Receptor	Potential risk to receptor?	Note the risk issue(s) for impact assessment
Biology: fish	No	*Fish migration in the marine or freshwater environment will not be at risk from the proposed activities*
Water quality	Yes	*A broad range of potential pollutants which may include chemicals from the EQSD list can accumulate on surfaces during construction. These can subsequently be washed off during high rainfall/storm events, polluting the receiving waterbodies and should therefore be assessed further.* *During the construction phase, there is a potential risk of accumulation of standing water on the Application Site and accidental discharges of untreated run-off whilst the temporary and the operational surface water drainage system is being constructed* *Potential risk of contamination form the operational and maintenance activities have been scoped out with agreement form the Planning Inspectorate*
Protected areas	Yes	*The following protected areas with water dependent qualifying features are all within 2 km of the Mona Onshore Development Area* *SPA – Liverpool Bay/Bae Lerpwl (Wales) – water pollution is a potnetila threat tot he conservation status of the qualifying features for this SPA.* *Bathing Waters – Abergele (Pensarn)*
Invasive non-native species	No	*The Onshore infrastructure is unlikely to result in the spread of INNS in the coastal water body and therefore it is not considered further in this assessment.*

If you haven't identified any receptors at risk during scoping, you don't need to continue to the impact assessment stage and your WFD assessment is complete.

If you've identified one or more receptors at risk during scoping, you should continue to the impact assessment stage.

Include your scoping results in the WFD assessment document you send to your activity's regulator as part of your application for permission to carry out the activity.

A.2. WFD scoping assessment – Clwyd transitional waterbody

A.2.1 Water Framework Directive assessment: scoping template for activities in estuarine and coastal waters

Use this template to record the findings of the scoping stage of your Water Framework Directive (WFD) assessment for an activity in an estuary or coastal water.

If your activity will:

- take place in or affect more than one water body, complete a template for each water body
- include several different activities or stages as part of a larger project, complete a template for each activity as part of your overall WFD assessment

The WFD assessment guidance for estuarine and coastal waters will help you complete the table.

Your activity	Description, notes or more information
Applicant name	*Mona Offshore Wind Ltd*
Application reference number (where applicable)	*N/A*
Name of activity	*Mona Onshore Development Area*
Brief description of activity	*The area in which the landfall, onshore cable corridor, onshore substation, mitigation areas, temporary construction facilities (such as access roads and construction compounds), and the connection to National Grid infrastructure will be located*
Location of activity (central point XY coordinates or national grid reference)	*British National Grid 464017, 5900320*
Footprint of activity (ha)	*Approximately 210 ha based on the maximum design scenario for the onshore cable corridor (permanant and temporary requirements), Grid connection cable corridor (permanant and temporary requirements) and the onshore substation footprint.*
Timings of activity (including start and finish dates)	*Construction programme of approximately 36 months for onshopre elements. Project to become operational by 2030*

Your activity	Description, notes or more information
Extent of activity (for example size, scale frequency, expected volumes of output or discharge)	*The capacity of the Mona Offshore Wind Project is over 350MW. The onshore infrastructure will consist of up to 12 onshore export cables buried in up to four trenches and an onshore High Voltage Alternating Current (HVAC) substation to allow the power to be transferred to the National Grid via the existing Bodelwyddan National Grid substation*
Use or release of chemicals (state which ones)	*Chemicals used on site will be mainly oils and diesel fuels during construction, however there will be no direct release of chemicals.*

[1] Water body information can be found in the Environment Agency's catchment data explorer and the water body summary table. Magic maps provide additional information on habitats and protected areas. Links to these information sources can be found in the WFD assessment guidance for estuarine and coastal waters.

Water body[1]	Description, notes or more information
WFD water body name	*Clwyd*
Water body ID	*GB541006608000*
River basin district name	*Western Wales*
Water body type (estuarine or coastal)	*Transitional*
Water body total area (ha)	*180*
Overall water body status (2021)	*Moderate*
Ecological status	*Moderate*
Chemical status	*Passl*
Target water body status and deadline	*Moderate (2027) Less Stringent Objective (LSO)applies*
Hydromorphology status of water body	*Not high*
Heavily modified water body and for what use	*Yes- Flood Protection*
Higher sensitivity habitats present	*Mussel Beds and saltmarsh are present within the water body which could be indirectly impacted by the Mona Onshore Development Area*
Lower sensitivity habitats present	*Cobbles, gravel and shingle, Intertidal soft sediment and Rocky shore are all lower sensitivity habitats present within the Mona Onshore Development Area*

Water body[1]	Description, notes or more information
Phytoplankton status	*Not assessed*
History of harmful algae	*In 2020, a marine Blue Green algae was present in the Marine Lake at Rhyl which is adjacent to the Clywd Transitional water body*
WFD protected areas within 2 km	*Liverpool Ba/Bae Lerpwl (Wales) SPA;* *Marine Lake at Rhyl bathing water* *Glanfyddion Cut River – Nitrate Vulnerable Zone (NVZ)*

A.2.2 Specific risk information

Consider the potential risks of your activity to each of these receptors: hydromorphology, biology (habitats and fish), water quality and protected areas. Also consider Invasive Non-Native Species (INNS).

A.2.3 Section 1: Hydromorphology

Consider if hydromorphology is at risk from your activity.

Use the water body summary table to find out the hydromorphology status of the water body, if it is classed as heavily modified and for what use.

Consider if your activity:	Yes	No	Hydromorphology risk issue(s)
Could impact on the hydromorphology (for example morphology or tidal patterns) of a water body at high status		Impact assessment not required	*No. The onshore landfall, export cable, substation and grid connection cable will have no direct impact on this coastal water body and will not result in asny physical changes tot he water body*
Could significantly impact the hydromorphology of any water body		Impact assessment not required	*Whilst there may be temporary impacts for the river water bodies traversed by the cable corridors and the realignment of a minor water course for the onshore substation has the potential to impact on these water bdoies there will be no impact to other coastal or transitional water bodies*
Is in a water body that is heavily modified for the same use as your activity		Impact assessment not required	*Not modified for the same activity. Clywd transitional Water body is designated as a HMWB for flood protection and is currently moderate for the mitigation measures 'assessment meaning that at least one Mitigation Measure that is required in this water body hasn't yet been implemented – so the Mitigation Measure Assessment has not reached 'Good'. It is not possible for this water body to achieve GEP even if all the other relevant elements in the water body are 'Good'.* *The mitigation measures required as identified by NRW relate to dredging ativiites and alteration to flood defense structures. The potential impact from the onshore infrastructure will have no impact on the ability to implement these measures nor will it result in any changes to the supporting morphological condition in the transitional water body except potential changes to sediment volumes from run-off from the working area which will be controlled by measures with the code of construction practice*

Record the findings for hydromorphology and go to section 2: biology.

A.2.4 Section 2: Biology

A.2.4.1 Habitats

Consider if habitats are at risk from your activity.

Use the water body summary table and Magic maps, or other sources of information if available, to find the location and size of these habitats.

0 Higher sensitivity habitats have a low resistance to, and recovery rate, from human pressures.
0 Lower sensitivity habitats have a medium to high resistance to, and recovery rate from, human pressures.

Higher sensitivity habitats [2]	Lower sensitivity habitats [3]
Mussel beds, including blue and horse mussel	cobbles, gravel and shingle
Saltmarsh	intertidal soft sediments like sand and mud
	rocky shore

[4] *Note that a footprint may also be a temperature or sediment plume. For dredging activity, a footprint is 1.5 times the dredge area.*

Consider if the footprint[4] of your activity is:	Yes	No	Biology habitats risk issue(s)
0.5 km^2 or larger		✓	*No: Whilst the Mona Onshore Development Area does not have any direct imapct on the Clwyd Transitional Water Body therefore the footprint of the activity associated with the onshore infrastructure in this water body is zero, i.e. <0.5 km^2*
1% or more of the water body's area		✓	*The Mona Onshore Development Area does not have any direct imapct on the Clwyd Transitional Water Body therefore the footprint of the activity associated with the onshore infrastructure in this water body is not more than 1% of the water body*
Within 500 m of any higher sensitivity habitat		✓	*Yes: footprint is not within 500 m of Mussel beds or saltmarsh*
1% or more of any lower sensitivity habitat		✓	*No: Footprint not 1% or more of any lower sensitivity habitat*

A.2.4.2 Fish

Consider if fish are at risk from your activity, but only if your activity is in an estuary or could affect fish in or entering an estuary.

Consider if your activity:	Yes	No	Biology fish risk issue(s)
Is in an estuary and could affect fish in the estuary, outside the estuary but could delay or prevent fish entering it or could affect fish migrating through the estuary		Go to next section	*No: The works do not have the potential to delay or prevent fish entering the Clywd Estuary. Construction works for the onshore elements of the proposal will take place within river water body catchments and not the estuary.* *The potential for EMF to impact fish species has been studied extensively, particularly the interference with species such as Atlantic Salmon and the imparment of migration and navigation. The operation of offshore wind energy projects is not expected to negatively affect commercial and recreational fishes. A study by the U.S. Department of the Interior, Bureau of Ocean Energy Management within the south New England area found Negligible effects, if any, on bottom-dwelling species and no negative effects on pelagic species are expected due to their distance from the power cables buried in the seafloor (CSA Ocean Sciences Inc., 2019)*
Could impact on normal fish behaviour like movement, migration or spawning (for example creating a physical barrier, noise, chemical change or a change in depth or flow)			
Could cause entrainment or impingement of fish			

Record the findings for biology habitats and fish and go to section 3: water quality.

A.2.5 Section 3: Water quality

Consider if water quality is at risk from your activity.

Use the water body summary table to find information on phytoplankton status and harmful algae.

Consider if your activity:	Yes	No	Water quality risk issue(s)
Could affect water clarity, temperature, salinity, oxygen levels, nutrients or microbial patterns continuously for longer than a spring neap tidal cycle (about 14 days)	Requires impact assessment		*A broad range of potential pollutants, such as hydrocarbons i.e. fuels can accumulate on surfacesof the working area. These can subsequently be washed off during high rainfall/storm events, polluting the receiving waterbodies and should therefore be assessed further.* *During the construction phase, there is a potential risk of accumulation of standing water on the application site and accidental discharges of untreated run-off whilst the temporary and the operational surface water drainage system is being constructed. Given that the estimated construction phase for the proposed development is estimated to be 32 months, the impacts associated with the construction phase must be assessed further.* *The Dissolved Inorganic Nitrogen (DIN) and dissolved oxygen (DO) levels for this water body are good. Particulate bound nutirents could find a pathway to the this coastal water body through Hydrological links.* *Pathogens are unlikely to be a source of contamination as the working area will be fenced off in advance of construction and the land application of slurry and manures in the working area will not occur in advance of construction. The location of septic tanks and there percolation area is not considered as a significant risk to bathing waters based on the Abergele (Pensarn) bathing water profile. Any potential for spetic tanks and their percolation area will be noted in pre-construction site investigation surveys and protective measures taken to ensure that they are not impacted.* *On this basis there will be no pathogen source within the working area during the construction period and therefore no potential to impact on the downstream coastal water body and associated bathing waters at Abergele (Pensarn), Colwyn Bay (Porth Eirias) and Colwyn Bay.* *The operations and maintenance activities are unlikely to generate contaminated runoff and thus there will be low potential for likely significant effects with regards to pollution. The Planning Inspectorate agreed that impact of contaminated runoff on the chemical and biological status of surface water receptors arising from the operations and maintenance of the onshore transmission assets can be scoped out of further assessment*
Is in a water body with a phytoplankton status of moderate, poor or bad	Yes		*Phytoplankton classification is moderate.* *However the construction, operational and decommissioning phases of the development are unlikely to present significant sources of nutrients that would result in further impact to this status element.*
Is in a water body with a history of harmful algae		No	*The bathing water profiles for Colwyn Bay Porth Eirias and Colwyn Bay (https://environment.data.gov.uk/wales/bathing-waters/profiles/) note that blooms of the algae*

Consider if your activity:	Yes	No	Water quality risk issue(s)
			Phaeocystis do occur along this coastline during warm and calm weather in May and June. This typically produces a cream or brown coloured scum along the water's edge, but is otherwise harmless. *Abergele (Pensarn) - Algal Blooms can occur at any beach during the bathing season and are usually noticeable by a surface scum. This beach has no history of such blooms.* *It is assumed for the purpose of this assessment that harmful algal blooms are therefore not a common occurrence in this coastal water body.*

Consider if water quality is at risk from your activity through the use, release or disturbance of chemicals.

[5] Carry out your impact assessment using the Environment Agency's surface water pollution risk assessment guidance, part of Environmental Permitting Regulations guidance.

If your activity uses or releases chemicals (for example through sediment disturbance or building works) consider if:	Yes	No	Water quality risk issue(s)
The chemicals are on the Environmental Quality Standards Directive (EQSD) list	Requires impact assessment		*During the construction phase, there is a potential risk of accumulation of standing water on the application site and accidental discharges of untreated run-off whilst the temporary and the operational surface water drainage system is being constructed.* *During construction a broad range of potential pollutants which may include chemicals from the EQSD list can accumulate on surfaces. These can subsequently be washed off during high rainfall/storm events, polluting the receiving waterbodies and should therefore be assessed further.* *The operations and maintenance activities are unlikely to generate contaminated runoff and thus there will be low potential for likely significant effects with regards to pollution. The Planning Inspectorate agreed that impact of contaminated runoff on the chemical and biological status of surface water receptors arising from the operations and maintenance of the onshore transmission assets can be scoped out of further assessment*
It disturbs sediment with contaminants above Cefas Action Level 1		Impact assessment not required	*There will be no disturbance of sediment within the Marine environment as part of the Onshore infrastructure.*

If your activity has a mixing zone (like a discharge pipeline or outfall) consider if:	Yes	No	Water quality risk issue(s)
The chemicals released are on the Environmental Quality Standards Directive (EQSD) list		Impact assessment not required	*There will be no direct discharges of chemicals into the coastal water body and no associated mixing zone.*

Record the findings for water quality go on to section 4: WFD protected areas.

A.2.6 Section 4: WFD protected areas

Consider if WFD protected areas are at risk from your activity. These include:

- Special areas of conservation (SAC)
- Special protection areas (SPA)
- Shellfish waters
- Bathing waters
- Nutrient sensitive areas

Use Magic maps to find information on the location of protected areas in your water body (and adjacent water bodies) within 2 km of your activity.

[6] Note that a regulator can extend the 2 km boundary if your activity has an especially high environmental risk.

Consider if your activity is:	Yes	No	Protected areas risk issue(s)
Within 2 km of any WFD protected area[6]	Requires impact assessment		***SAC - Coedwigoedd Dyffryn Elwy/Elwy Valley Woods*** *The Mona Onshore Development Area will not directly impact on this protected area. A review of the Conservation objectives have established that the qualifying fetures are not water dependent.* ***SPA - Liverpool Bay/Bae Lerpwl (Wales)*** *The SIP for this SPA notes that water pollution from Shipping and Industry, particularly oil spills, represents a potential threat to the conservation status of the waterbird assemblage. Water quality impacts from the Mona Onshore Development Area therefore need to be considered.* ***Bathing Waters - Marine Lake at Rhyl bathing water*** *Pathogens are unlikely to be a source of contamination as the working area will be fenced off in advance of construction and the land application of slurry and manures in the working area will not occur in advance of construction. The location of septic tanks and there percolation area is not considered as a significant risk to bathing waters based on the Abergele (Pensarn) bathing water profile. Any potential for spetic tanks and their percolation area will be noted in pre-construction site investigation surveys and protective measures taken to ensure that they are not impacted.* *On this basis there will be no pathogen source within the working area during the construction period and therefore no potential to impact on the downstream Tranistional water body and associated bathing waters at Marine Lake at Rhyl*

Record the findings for WFD protected areas and go to section 5: invasive non-native species.

A.2.7 Section 5: Invasive Non-Native Species (INNS)

Consider if there is a risk your activity could introduce or spread INNS.

Risks of introducing or spreading INNS include:

- Materials or equipment that have come from, had use in or travelled through other water bodies
- Activities that help spread existing inns, either within the immediate water body or other water bodies.

Consider if your activity could:	Yes	No	INNS risk issue(s)
Introduce or spread INNS		Impact assessment not required	*The negative effects of invasive non- native species has been risk assessed as part of the Western Wales River Basin Managemetn Plan. The latest risk assessment was completed in 2014 and determined that INNS were probably placing the Clwyd transitional Water bodywater body at risk of failing to acheive its Environmental Objectives. Chinese Mitten crab is the INNS of primary conecern in this transitional water body.* *The Onshore infrastructure is unlikely to result in the spread of INNS in this transitional water body. However the introduction of new INNS due to hydrological connectivity to the Clwyd water body cannot be ruled out during the construction of the Mona Onshore Development Area.* *The risk to river water bodies is assessment in the main WFD Technical Annex.*

Record the findings for INNS and go to the summary section.

A.2.8 Summary

Summarise the results of scoping here.

Receptor	Potential risk to receptor?	Note the risk issue(s) for impact assessment
Hydromorphology	No	*The Clwyd transitional Water body is a heavily modified water body with the specified use being Flood Protection Use. The mitigation measures assessment is moderate - which means that NRW have yet to implemented all the relevant and required mitigation measures in the water body. Until the water body mitigation measures are implemented the water body will not achevive good ecological potential irrespective of the status of the other contributing elements.* *The mitigation measures required as identified by NRW relate to dredging ativiites and alteration to flood defense structures. The potential impact from the onshore infrastructure will have no impact on the ability to implement these measures nor will it result in any changes to the supporting morphological condition in the transitional water body*
Biology: habitats	No	*No footprint of the Mona Onshore Development Area in this water body therefore no direct impact on sensitive habitats. Indirect imapcts are addressed under Water Quality*
Biology: fish	No	*Fish migration in the marine or freshwater environment will not be at risk from the proposed activities*

Receptor	Potential risk to receptor?	Note the risk issue(s) for impact assessment
Water quality	Yes	*A broad range of potential pollutants which may include chemicals from the EQSD list can accumulate on surfaces during construction. These can subsequently be washed off during high rainfallstorm events, polluting the receiving waterbodies and should therefore be assessed further.* *During the construction phase, there is a potential risk of accumulation of standing water on the Application Site and accidental discharges of untreated run-off whilst the temporary and the operational surface water drainage system is being constructed* *Potential reisk of contamination form the operational and maintenance activities have been scoped out with agreement form the Planning Inspectorate*
Protected areas	Yes	*The following protected areas are all within 2 km of the Mona Onshore Development Area* *SAC - Coedwigoedd Dyffryn Elwy/Elwy Valley Woods* *SPA - Liverpool Bay/Bae Lerpwl (Wales) – water pollution is a potnetila threat tot he conservation status of the qualifying features for this SPA.* *Bathing Waters – Marine Lake (Rhyl)*
Invasive non-native species	No	*The Onshore infrastructure is unlikely to result in the spread of INNS in the coastal water body and therefore it is not considered further in this assessment.*

If you haven't identified any receptors at risk during scoping, you don't need to continue to the impact assessment stage and your WFD assessment is complete.

If you've identified one or more receptors at risk during scoping, you should continue to the impact assessment stage.

Include your scoping results in the WFD assessment document you send to your activity's regulator as part of your application for permission to carry out the activity.