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MONA OFFSHORE WIND PROJECT

Preliminary Environmental Information Report

Volume 7, annex 17.4: Water Framework Directive surface water and groundwater assessment

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.
Discharge consents	Consent granted by the Environment Agency to discharge into watercourses, subject to conditions.
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.
Environmental 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.
HMWB	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.
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
Natura 2000 site	A Special Area of Conservation (SAC) or candidate SAC, a Special Protection Area (SPA) or potential SPA, a site listed as a site of community importance or a Ramsar site.
Non-statutory designated sites	Non-statutory designated sites are sites which have been designated due to their nature conservation interest, typically through the local planning process, which are usually protected by planning policies but not legally protected.
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).
Preliminary Scoping	Identifying links between the proposed activity and every quality element of the status classification 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.
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

Term	Meaning
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.
Sites of Special Scientific Interest (SSSI)	Sites designated by Natural England under the Wildlife and Countryside Act 1981 (as amended) as areas of land of special interest by reason of any of their flora, fauna, or geological or physiographical features.
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.
Sites of Special Scientific Interest (SSSI)	Sites designated by Natural England under the Wildlife and Countryside Act 1981 (as amended) as areas of land of special interest by reason of any of their flora, fauna, or geological or physiographical features.
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
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.
Water Quality	The physical, chemical and biological characteristics of water.
Works areas	The areas within which all works associated with the construction of the onshore HVDC converter/HVAC substation, or installation of the cable, and operation and decommissioning of onshore infrastructure for Project Two are undertaken, including access, drainage and landscaping.

Acronyms

Acronym	Description
BOD	Biochemical Oxygen Demand
CCW	Countryside Council for Wales
CEA	Cumulative Effect Assessment
CoCP	Code of Construction Practice
DIN	Dissolved Inorganic Nitrogen
DO	Dissolved Oxygen
DrWPA	Drinking Water Protected Area
EQR	Ecological quality ratio
EQS	Environmental Quality Standard
HDD	Horizontal Directional Drilling
HGV	Heavy Goods Vehicle
HMWB	Heavily Modified Water Body
INNS	Invasive Non-Native Species
LSO	Less Stringent Objective
MHWS	Mean High Water Springs
NEAS	National Environmental Assessment Service
NRW	Natural Resources Wales
PEIR	Preliminary Environmental Report
PRoW	Project Right of Way
RBMP	River Basin Management Plan
SAC	Special Area of Conservation
SIP	Site Improvement Plan
SPA	Special Protection Area
SPZ	Source Protection Zone
SSSI	Site of Special Scientific Interest
SWMI	Significant Water Management Issues
uPBT	ubiquitous, persistent, bioaccumulative and toxic
UWWTD	Urban Waste Water Treatment Directive
WFD	Water Framework Directive
ZOI	Zone of Influence

Units

Unit	Description
%	Percentage
km2	Square kilometres
m2	Square metres

Unit	Description
m	metre
km	kilometre
kV	Kilovolt

1 WATER FRAMEWORK DIRECTIVE ASSESSMENT

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 Mona Offshore Wind Project landward of Mean High Water Springs (MHWS) during the construction, operations and maintenance, and decommissioning phases.

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

- Volume 2, chapter 6: Physical processes of the PEIR
- Volume 3, chapter 16: Geology, hydrogeology and ground conditions of the PEIR
- Volume 3, chapter 17: Hydrology and flood risk of the PEIR
- Volume 3, chapter 18: Onshore ecology of the PEIR.

1.1.2 Purpose of this report

1.1.2.1 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 regulations require that the impacts of a project on biology, chemistry and hydromorphology are considered in relation to WFD status classes and reported under a specific WFD section in any Environmental Statement or in a separate WFD compliance report (Environment Agency, 2010).

1.1.2.2 This technical report comprises a WFD compliance assessment to demonstrate how any impact on WFD receptors caused by the different activities associated with the Mona Offshore Wind Project fits with the objectives of any affected WFD surface water and groundwater bodies within the Zone Of Influence (ZOI). The compliance assessment 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 Study Area

1.1.3.1 For the purposes of this WFD Assessment, water bodies that are within, intersect or which are hydrologically connected to the Mona Proposed 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).

1.1.3.2 There are sections of the Mona Proposed 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 impact of the Mona Proposed Onshore Development Area are considered in the impact to the downstream marine (transitional or coastal) water bodies.

1.1.3.3 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 6: Physical processes of the PEIR, 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 Proposed Onshore Development Area are North Wales Coastal Waterbody and Clywd Estuary Transitional Water body.

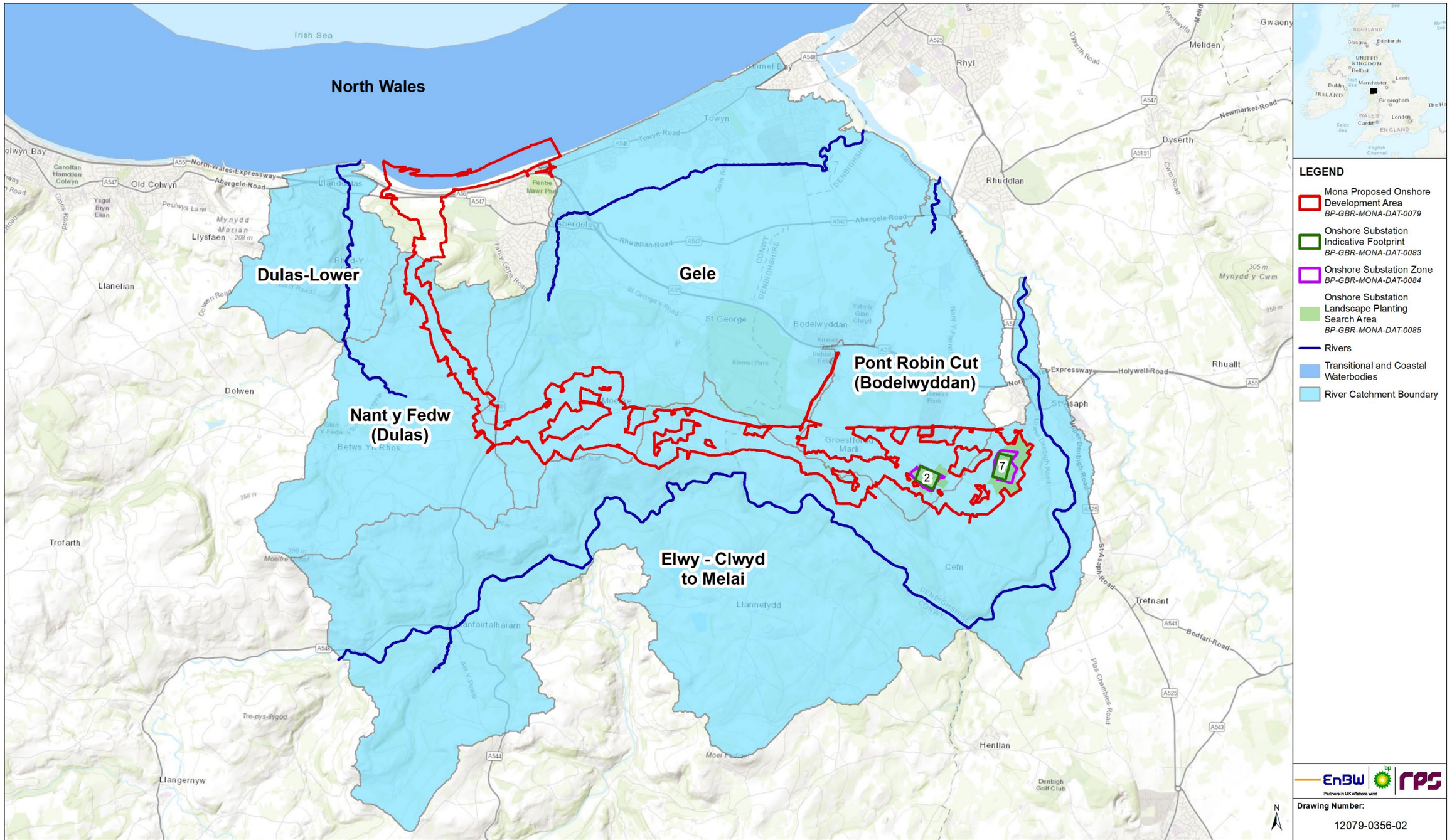
1.1.3.4 The surface water bodies that occur within the Mona Proposed Onshore Development Area are illustrated in Figure 1.1 with their contributing catchment areas. These water bodies fall within the ZOI of the Mona Offshore Wind Project for the purposes of the WFD Assessment. The impact of the different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

1.1.3.5 As outlined in Table 1.1 the scoping response from the Planning Inspectorate (June 2022) required an assessment of any potentially significant effects from the ports selected to service the construction, operations and maintenance of the Mona Offshore Wind Project. A single port or multiple ports in North Wales and/or northwest England could be used to support primary elements of operations and maintenance.

1.1.4 WFD Assessment scope

1.1.4.1 In order to achieve the aims outlined within section 1.1.2.2, a staged approach has been adopted in undertaking the WFD compliance assessment in accordance with NEAS Operational Instruction 488_10 SD01 (Environment Agency, 2010).

1.1.4.2 A preliminary screening assessment has been undertaken to review each onshore component of the proposed scheme in terms of potential impact to the water environment. The screening assessment summarises potential impact to the water environment for each component of each WFD quality element. This screening defines the scope of the detailed assessment, identifies potential issues and provides an opportunity to engage with NRW as the competent authority.



Project Name: MONA OFFSHORE WIND PROJECT	**Drawing Title:** Mona WFD surface waters (river, transitional and coastal water bodies), and river waterbody sub-catchments	**Geodetic Information:** Datum: OSGB 1936 Projection: British National Grid Scale@379mmx231mm: 1:70,000	**Data Sources:** BP One Map, OS, BP-GBR-MONA-DAT-0079, Natural Resources Wales	**Service Layer Credits:** Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community	**Drawing Number:** 12079-0356-02

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Figure 1.1: WFD Surface Water bodies within the ZOI of the Mona Proposed Onshore Development Area

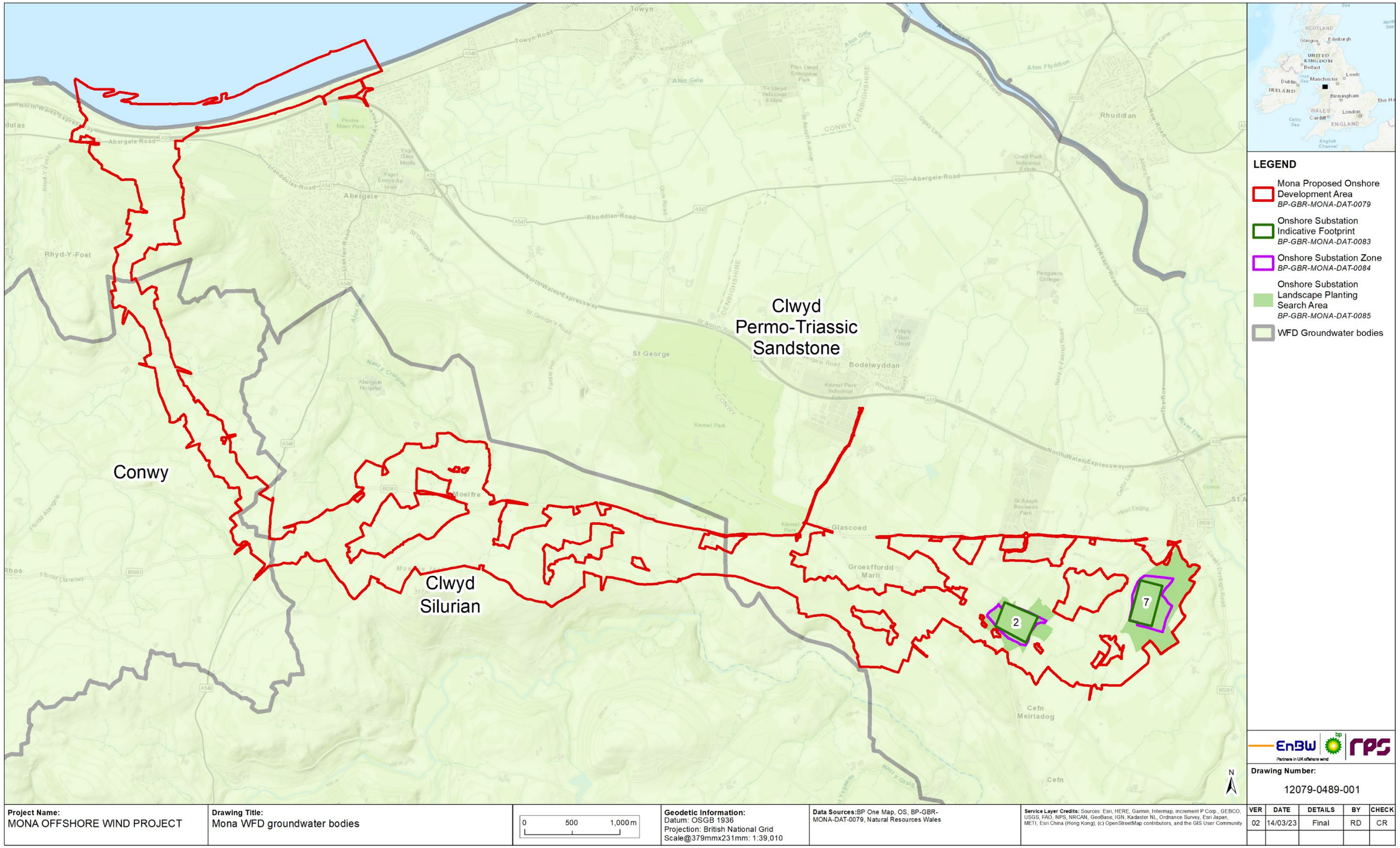

Figure 1.2: WFD Groundwater bodies within the ZOI of the Mona Proposed Onshore Development Area.

1.1.4.3 The detailed assessment examines the potential impact on water bodies (including cumulative impacts), suggesting mitigation measures and enhancements where appropriate. This also considers whether the scheme will contribute to the delivery of the relevant River Basin Management Plan (RBMP) (i.e. Western Wales RBMP).

1.1.5 Report structure

1.1.5.1 For the purposes of undertaking the WFD assessment for the Mona Proposed Onshore Development Area the steps outlined in Figure 1.3 have been undertaken. This technical report has the following structure:

- Chapter 2 sets out the baseline environment in the context of the water bodies impacted
- Chapter 3 provides a scoping assessment of Mona Proposed Onshore Development Area and concludes whether a more detailed assessment is required
- Chapter 4 provides a detailed assessment of the potential impact of Mona Proposed Onshore Development Area on the WFD objectives
- Chapter 5 provides the conclusions and summary of the assessment.

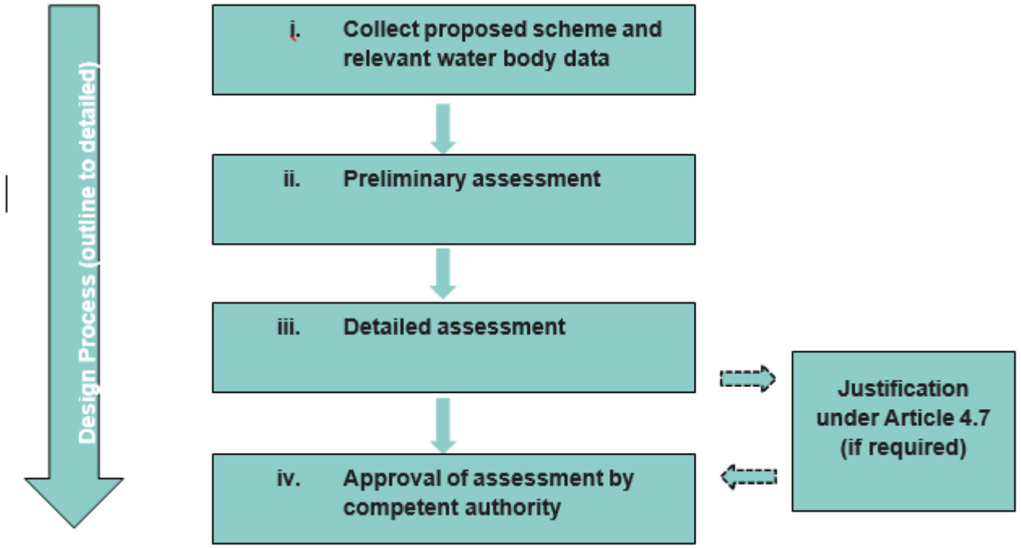

Figure 1.3: WFD Compliance Process.

1.2 Consultation

1.2.1.1 A summary of the key issues raised during consultation activities undertaken to date specific to the WFD compliance assessment of the Mona Proposed Onshore Development Area is presented in Table 1.1 below, together with how these issues have been considered in the production of this technical report.

1.3 Project Overview

1.3.1.1 Whilst the Mona Offshore Wind Project design has not been finalised, the components of the onshore transmission assets 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 PEIR.

- Landfall area - The offshore cables will be connected to the onshore cables at the Transition Joint Bays (TJBs). The techniques used to carry out the landfall works broadly fall into two categories: open cut installation and trenchless techniques (e.g., Horizontal Direction Drill (HDD)).
- 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 Proposed Onshore Development Area (this includes both the permanent installation area and temporary working area).
- Joint Bays and Link Boxes - These are concrete lined pits that provide a clean and dry environment for jointing the sections of cable together.
- 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 transmission assets can be screened out of the WFD compliance assessment in accordance with NRW Guidance on WFD compliance assessments (NRW, 2018).
- Access routes and temporary haul roads – These are particularly important if they cross watercourses and the method of construction to be used, e.g. clear span bridge verses temporary culverts.
- Construction compounds - Construction compounds will be required along the onshore cable corridor and 400kV grid connection cable corridor and at the onshore substation. The compounds will provider laydown and storage of materials, plant and staff, as well as space for small temporary offices, welfare facilities, security and parking. These will occur within the Mona Proposed Onshore Development Area.
- Onshore substation.

Table 1.1: Summary of key consultation topics raised during consultation activities undertaken for the Mona Offshore Wind Project relevant to the WFD Assessment of the Mona Proposed Onshore Development Area

Date	Consultee and type of response	Issues raised	Response to issue raised and/or were considered in this technical report
June 2022	The Planning Inspectorate - Scoping Opinion	The Applicant should make effort to identify the location of the port and Operations and Maintenance base, where possible, and assess any likely significant effects associated. In the event that the locations have not been confirmed, the ES should make effort to assess the likely significant effects associated with relevant assumptions and a worst-case scenario.	Three Potential locations have been identified for Port Locations to facilitate construction, operation and maintenance. These are already heavily modified water bodies for Port use are considered in the scoping stage of this WFD Assessment
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 ES 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 PEIR. The potential impacts of stockpiling of excavated materials are reported in the relevant chapters of the PEIR. With regards to the potential risks to the achieving of the WFD objectives, stockpiling of soils is considered as part 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 ES should confirm whether the study area proposed aligns with relevant policy and guidance and provide justification for any divergences. The ES 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 western 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 Proposed 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 6: Physical processes of the PEIR, 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 Proposed Onshore Development Area are North Wales Coastal Waterbody and Clywd Estuary Transitional Water body.
June 2022	The Planning Inspectorate - Scoping Opinion	Marine water quality - The ES 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 Proposed 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 EA guidance “Clearing our Waters” included in Appendix A and the detailed assessment section of this annex.
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 ZOI has been scoped out of the WFD Assessment of the Mona Proposed 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 ES should provide details of the proposed mitigation measures to be included in the Environment Management Plan. The ES 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 transmission assets has been scoped out and is therefore not considered in the WFD Assessment. The potential impact during construction is considered the detailed assessment.
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	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

Date	Consultee and type of response	Issues raised	Response to issue raised and/or were considered in this technical report
		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 ES should include an assessment of important ecological receptors/features, where likely significant effects could occur.	
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 16: geology, hydrogeology and ground conditions of the PEIR) 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 ZOI 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 Proposed Onshore Development Area.
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 Proposed 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 has been used in the assessment of the potential effects from the Mona Proposed Onshore Development Area on the hydrologically connected TraC 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
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 southern 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).
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	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

Date	Consultee and type of response	Issues raised	Response to issue raised and/or were considered in this technical report
		deterioration at the water body level. Please also note that compensation is not a requirement in WFD terms.	prevention of the water body from achieving its environmental objectives by the recommended deadline in the 3rd Cycle River Basin management Plan.
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 1.1.4
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 Proposed 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 6: Physical processes of the PEIR, 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 Proposed Onshore Development Area are North Wales Coastal Waterbody and Clywd Estuary Transitional Water body.

1.3.1.2 From the key components of onshore elements of the Mona Offshore Wind Project outlined above, the activities which have the potential to impact the achievement of the WFD objectives will be identified for consideration within the WFD Compliance Assessment. An initial review of the Mona Offshore Wind Project description has identified the following activities that may potentially pose a detrimental risk to the water environment in the absence of mitigation:

- Topsoil stripping, excavation, and stockpiled earth (including reinstatement) for the cable corridors, crossings, substations and landfall.
- Use of oils, chemicals, and cement.
- Construction and operation of temporary bridges and culverts to facilitate crossing of watercourses by machinery should this be required resulting in temporary impacts to the morphology of the channel and banks.
- Morphological impacts resulting from watercourse service crossings.
- De-watering of trenches.
- Temporary abstractions from surface water/groundwater.
- Offshore cable installation and maintenance, methods including pre-lay ploughing, trenching or jetting.
- Landfall cable installation and maintenance, trenchless or trenching methods are currently under consideration.
- Installation and maintenance of cable protection in the nearshore subtidal environment.
- Seabed clearance in the nearshore subtidal environment.
- Use of jack-up vessels for cable installation and maintenance in the nearshore subtidal or intertidal environment.
- Unexploded ordnance detonation in the nearshore subtidal or intertidal environment.

1.4 Methodology

1.4.1 Introduction

1.4.1.1 The WFD requires the prevention of deterioration and to protect, enhance, and restore all bodies of water. This means that new development should not adversely impact upon on the ability of a water body to achieve its environmental objectives.

1.4.1.2 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.

1.4.1.3 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 Proposed Onshore Development Area.

1.4.2 Water body classification

1.4.2.1 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.

1.4.2.2 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).

1.4.2.3 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 species 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.

1.4.2.4 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).

1.4.2.5 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.

1.4.2.6 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.

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). 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.

1.4.3 Water body objectives

1.4.3.1 The completion of a WFD compliance assessment is a staged process where data on the 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 River Basin Management Plan, 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:

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

1.4.4 WFD compliance assessment

1.4.4.1 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 will include hydrology and water quality, terrestrial and aquatic ecology, Habitat Regulations Assessment and hydrogeology.

1.4.4.2 To achieve the aims outlined within section 1.1.2, a staged approach will be adopted in undertaking the WFD compliance assessment in accordance with NRW's guidance document OGN 72, Guidance for assessing activities and projects for compliance with the Water Framework Directive and the Planning Inspectorate (2018) Advice Note Eighteen: Water Framework Directive.

1.4.4.3 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.

1.4.4.4 A flow chart, taken form the Planning Inspectorate Advice Note 18 for assessing activities and projects for compliance with the WFD has been included below in Figure 1.4. This provides an overview of the recommended process to address the WFD during the pre-application process.

1.4.4.5 An initial screening has been undertaken during the scoping of the PEIR to review each component of the grid connection within the Mona Onshore Transmission Infrastructure Scoping Search 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 informs the scoping of the detailed assessment required for the PEIR, 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.

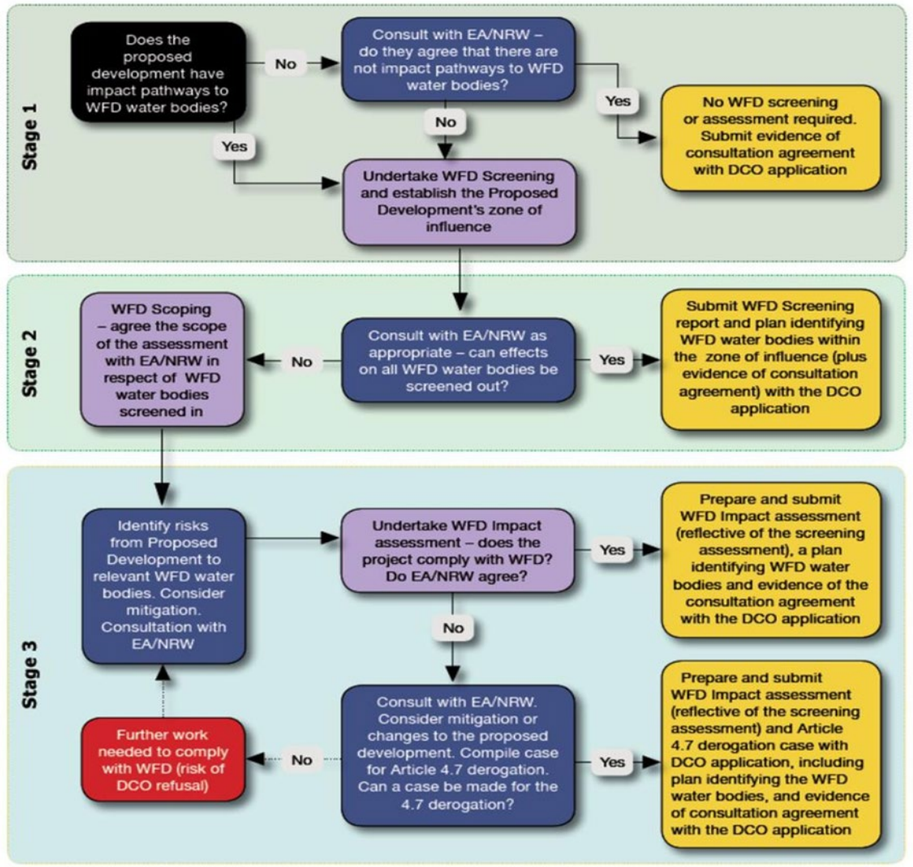

Figure 1.4: Flow chart illustrating the WFD compliance assessment process

1.5 Baseline Environment

1.5.1 Desktop study

1.5.1.1 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 1.2 below.

Table 1.2: 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
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

Title	Source	Year	Author
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 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%20WES32%20plan.pdf	2012	Countryside Council for Wales (CCW)

1.5.2 WFD Water Body Status Classification

Surface Water bodies

1.5.2.1 The WFD Classification of the surface water bodies within the WFD Assessment study area is outlined in Table 1.3 for surface water bodies. 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)

1.5.2.2 *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.

1.5.2.3 *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.

1.5.2.4 *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.

1.5.2.5 *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.

1.5.2.6 Overall water body status - Poor

Nant y Fedw (Dulas)

1.5.2.7 *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.

1.5.2.8 *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.

1.5.2.9 *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.

1.5.2.10 *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.

1.5.2.11 *Overall water body status* - Moderate

Pont Robin Cut (Bodelwyddan)

1.5.2.12 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.

1.5.2.13 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.

1.5.2.14 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.

1.5.2.15 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.

1.5.2.16 Overall water body status - Poor

Gele

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

1.5.2.18 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.

1.5.2.19 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 1.5.4.2).

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

1.5.2.21 *Overall water body status* – Moderate

Elwy – Clwyd to Melai

1.5.2.22 *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.

1.5.2.23 *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.

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

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

1.5.2.26 *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.

1.5.2.27 *Overall water body status* - Good

North Wales

1.5.2.28 *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.

1.5.2.29 *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.

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

1.5.2.31 *Hydromorphology* – North Wales is a Heavily Modified Water Body 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.

1.5.2.32 *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.

1.5.2.33 Overall water body status – Moderate.

Clwyd

1.5.2.34 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.

1.5.2.35 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.

1.5.2.36 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).

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

1.5.2.38 Overall water body status – Moderate.

Groundwater bodies

1.5.2.39 The WFD Classification of the groundwater bodies within the study area is outlined in 1.4.2. 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

1.5.2.40 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.

1.5.2.41 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.

1.5.2.42 Overall groundwater status - Good

Clwyd Silurian

1.5.2.43 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.

1.5.2.44 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.

1.5.2.45 Overall groundwater status - Good

Conwy

1.5.2.46 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.

1.5.2.47 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 Proposed Onshore Development Area and will not be further impacted by the proposed development.

1.5.2.48 Overall groundwater status - Poor

Table 1.3: 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	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	Moderate (DO, Phosphorus)	High	Moderate	Not Assessed	Not Assessed	High	Moderate	DO Phosphorus Mitigation Measures for HMWB
Elwy	Elwy - Clwyd to Melai, GB110066060020	River	No	Less than High	-	High	Good (Phosphorus)	High	Good	High	High	High	Good	Phosphorus
Western Wales	Clywd, GB541006608000	Transitional	Heavily Modified	Less than High	-	Not Assessed	Moderate	Good	Moderate	Not Assessed	Not Assessed	High	Moderate	DIN Mitigation Measures for HMWB
Western Wales	North Wales, GB641011650000	Coastal	Heavily Modified	-=	-	High	Good	Moderate (Phytoplankton)	Moderate	High	Moderate	Moderate (Mercury)	Moderate	Mercury Phytoplankton

Table 1.4: 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

1.5.3 River Basin Management Plan Objectives

1.5.3.1 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

1.5.3.2 The environmental objectives for the water bodies within the ZOI of the Mona Proposed Onshore Development Area are outlined in Table 1.5.

Table 1.5: 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

1.5.3.3 As can be seen from Table 1.5 there are four water bodies that have been assigned a LSO than 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 will be 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.

1.5.3.4 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 RRBMP (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 EQS in the next river basin management planning periods.

1.5.3.5 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 on this water body; it is a downstream water body that has a hydrological connection to the Mona Proposed 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 Proposed 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.

1.5.4 Heavily Modified Water Bodies

1.5.4.1 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 1.3.

1.5.4.2 As can be seen from Table 1.3, three water bodies within the ZOI of the Mona Proposed 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.

1.5.4.3 Table 1.6 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 1.6: HMWBs in the Mona Proposed Onshore Development Area, specified use and mitigation measures to achieve good ecological potential

Water body name	Type	HMWB specified use	Mitigation Tier 1	Measure status	Mitigation measures assessment
Gele, GB110066059980	River	Flood Protection	Education	1 measure – in place	Moderate
			Operations and maintenance	6 measures – 1 in place	
			Structural modification	4 measures – none in place	
			Water management	1 measure – in place	
			Working with physical form and function	6 measures – 1 in place	
Clywd, GB541006608000	Transitional	Flood Protection	Operations and maintenance	6 measures – none place	Moderate
			Structural modification	1 measure – not in place	
			Working with physical form and function	2 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

1.5.4.4 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.

1.5.5 Register of Protected Areas

1.5.5.1 A number of waters in the Mona Proposed 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
- Economically Significant Waters (Shellfish Waters)
- Recreational Waters (Bathing Waters)
- Nutrient Sensitive Areas
- Special Protection Areas (SPAs)
- Special Areas of Conservation (SACs).

1.5.5.2 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.

1.5.5.3 Table 1.7 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

1.5.5.4 There are three Drinking Water Protected Areas (DrWPA) associated with the groundwater bodies within the Mona Proposed 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.

Table 1.7: Protected areas connected to the water bodies within the Mona Proposed 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)	×	×	×	×	×

Recreational waters (Bathing waters)

1.5.5.5 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 2km from the Mona Proposed Onshore Development Area. Only Abergele (Pensarn) is located within 2km of the Mona Proposed Onshore Development Area. Marine Lake (Rhyl) bathing water is located adjacent to the Clywd transitional water body but is more that 2km from the Mona Proposed Onshore Development Area.

Economically significant waters (Shellfish waters)

1.5.5.6 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 6: Physical processes of the PEIR) as one Spring Tidal Excursion. On this basis it will not be impacted by the Mona Proposed Onshore Development Area.

Nutrient Sensitive Areas

1.5.5.7 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 ZOI of the Mona Proposed Onshore Development Area.

1.5.5.8 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)

1.5.5.9 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.

1.5.5.10 SACs associated with the water bodies that have the potential to be affected by the Mona Proposed 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, 2010) recommends that protected areas that are greater than 2km 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.

1.5.5.11 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 Proposed 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.

1.5.5.12 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 Proposed Onshore Development Area, therefore, need to be considered in the WFD Assessment.

1.5.6 Invasive and Non-native Species (INNS)

1.5.6.1 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, can increase flood risk. Others like American signal crayfish 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 on development sites and managing species such as zebra mussels, which can block pipes, water intakes and other structures.

1.5.6.2 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 1.8. The North Wales coastal water body is the only water body that is not at risk from INNS within the ZOI of the Mona Proposed Onshore Development Area.

1.6 Scoping assessment

1.6.1 Maximum Design Scenario

1.6.1.1 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.

1.6.1.2 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.

1.6.1.3 1.6.1.3 The scoping assessment has been applied for each activity type based on the maximum design scenario (MDS) outlined in Table 1.9. The potential impacts for each activity is provided below which has informed the selection of the activities which will be scoped into the assessment. The outcome of this initial assessment is summarised in Table 1.10.

1.6.1.4 1.6.1.4 The MDSs identified in Table 1.9 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 PEIR. 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.

1.6.1.5 Table 1.10 summarises the different contributing elements to WFD status that have been scoped in on the basis of the key activities outlined in Table 1.9 and their potential impacts.

1.6.1.6 Note that 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. Table 1.11 provides a summary of the outcome of the scoping assessment and concludes that water quality (physico chemical supporting conditions and chemical status) in these transitional and coastal water bodies required further detailed assessment.

Table 1.8: 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**	**Curley Waterweed**	**Himalayan Balsam**	**Topmouth Gudgeon**	**Signal Crayfish**	**Redswamp Crayfish**	**Floating Pennywort**	**Chinese Mitten Crab**
Nant y Fedw (Dulas), GB110066059830	✓	✓	✓	✓	✓	✓		
Dulas - lower, GB110066059860	✓	✓	✓	✓	✓	✓		
Gele, GB110066059980	✓	✓	✓	✓	✓	✓		
Elwy - Clwyd to Melai, GB110066060020			✓			✓	✓	
CLYWD, GB541006608000								✓

Table 1.9: Maximum design scenario considered for the assessment of potential impacts for WFD Assessment.

a a C=construction, O=operational and maintenance, D=decommissioning

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 Proposed 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 540,000m^2 based on a corridor measuring 30m wide and 18km in length. The temporary working corridor requires an additional 70m wide corridor (making the total width of the Onshore Cable Corridor (temporary and permanent requirements) 100m wide representing an area of up to 1,800,000m^2. • There are up to four cable trenches within the permanent Onshore Cable Corridor, each trench measures up to 2.5m wide at the top, 1.5m at the base and the depth is1.8m. • There is one haul road within the Onshore Cable Corridor along the length of the corridor; it is 6m wide excluding passing places. It will be constructed using imported engineered granular fill with geotextile style layers with a nominal thickness of 400mm and a maximum thickness of up to 1,000mm. • 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 48,000m^2 based on a corridor measuring 16m wide and 3km in length. The temporary working corridor req • uires an additional 44m wide corridor (making the total width of the route to grid connection (temporary and permanent requirements) 60m wide representing an area of up to 180,000m^2. • There are up to two cable trenches within the permanent 400kV Grid Connection Cable Corridor, each trench measures up to 2.5m wide at the top, 1.5m at the base and the depth is 1.8m. • There is one haul road within the Onshore Cable Corridor along the length of the corridor; it is 6m wide excluding passing places. It will be constructed using imported engineered granular fill with geotextile style layers with a nominal thickness of 400mm and a maximum thickness of up to 1,000mm. • Works are expected to take 33-months to complete. <u>Trenchless techniques</u> • The maximum number of HDD locations along the Onshore Cable Corridor is 72 and 12 on the 400kV Grid Connection Cable Corridor. Primary HDD operations will require a compound, these will measure up to 150m x 100m. Secondary HDDs will require a smaller compound (measuring up to 30m x 20m) and will be located within the 100m temporary construction corridor. <u>Construction compounds</u> • Up to two primary construction compounds (each measuring 150m x 150m) and up to 10 secondary construction compounds (each measuring 150m x 100m) will be located along the Onshore Cable Corridor. The compounds will be located within the Mona Proposed 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 195,000m² that will temporarily contain construction compounds. • These will be in place for the duration of the works (33 months). **Onshore Substation:** • The maximum footprint of the Onshore Substation will measure up to 125,000m^2 and will be located within the Onshore Substation zone. This area will include the substation buildings and the earthworks to create the platform. The Onshore Substation will comprise up to four buildings. The maximum dimensions of the main building are 20m high, 40m wide and 90m long Access to the substation will be via a new permanent access road measuring up to 8m wide and 1.2km in length, or 9,600m².	The highest risk of impact from the Onshore Cable Corridor on the water environment will occur at river 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. HDD methods 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 tunnel 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 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 (6-8m length), coupled with the likelihood of rapid recolonization, predominantly from upstream habitats. The realignment of the minor water course in the Elwy - Clwyd to Melai water body could impact on the habitat and hydromorphological supporting conditions for this reach of the minor tributary of the Elwy - Clwyd to Melai river water body. Onshore Substation option 7 in the north-south orientation is the maximum design scenario as this will require the maximum length of channel to be diverted around the substation. 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.

Potential impact	Phase			Maximum Design Scenario	Justification
	C	O	D		
				• The maximum search area for landscape planting around the Onshore Substation is 469,733m^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 250,000m^2. • To accommodate the Onshore Substation a minor watercourse will be realigned. This watercourse is already significantly straightened and sectioned and downstream barrier to fish migration mean that it is of low sensitivity. • 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 but the link boxes will be removed. • The maximum number of link boxes along the Onshore Cable Corridor is 96 and 10 on the 400kV Grid Connection Cable Corridor . • The area of each link box is up to 6m². Therefore, 636m² of land will need to be disturbed. • The onshore substation and permanent access road will be removed. This will equate to an area of 134,600m^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 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 Proposed Onshore Development Area	✓	×	✓	**Construction phase** <u>Open cut trenching at the Landfall:</u> • The area required for the trenches is up to 18,000m^2 based on four trenches each measuring up to 3m wide, 3m deep and 1.5km long. and it will run between MHWS and MLWS. In addition, the working areas will extend to 25m at either side. • The maximum total area that will be disturbed for the construction of the trenches (including the working areas) will be 318,000m^2. • Cable laying and trenching equipment and vessels will be used to install the cable, and vehicles used for transportation and access. These may involve the use of petrol, diesel, hydraulic oil, etc. <u>Trenchless techniques at the Landfall:</u> • Four Horizontal Directional Drilling cable ducts will need to be installed running 1,800m between MHWS and MLWS. The total working area needed for these installations at the TJB location is 200 x 150m. <u>Open cut trenching along the Onshore Cable Corridor:</u> • The area of the permanent Onshore Cable Corridor is up to 540,000m^2 based on a corridor measuring 30m wide and 18km in length. The temporary working corridor requires an additional 70m wide corridor (making the total width of the Onshore Cable Corridor (temporary and permanent requirements) 100m wide representing a total area of habitats that will be subject to temporary loss of 1,800,000m^2. • There are up to four cable trenches within the permanent Onshore Cable Corridor, each trench measures up to 2.5m wide at the top, 1.5m at the base and the depth is 1.8m. • There is one haul road within the Onshore Cable Corridor along the length of the corridor; it is 6m wide excluding passing places. It will be constructed using imported engineered granular fill with geotextile style layers with a nominal thickness of 400mm and a maximum thickness of up to 1,000mm. • Cable laying and trenching equipment will be used to install the cable, and vehicles used for transportation and access. These may involve the use of petrol, diesel, hydraulic oil, etc. <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 48,000m^2 based on a corridor measuring 16m wide and 3km in length. The temporary working corridor requires an additional 44m wide corridor (making the total width of the route to grid connection (temporary and permanent requirements) 60m wide representing a total area of habitats that will be subject to temporary loss of up to 180,000m^2.	Activities required for the construction and decommissioning of the Mona Proposed Onshore Development Area may result in accidental spills/contaminant release which could adversely affect protected or notable habitats and species. The use of open cut trenching at the landfall 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 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 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 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

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 2.5m wide at the top, 1.5m at the base and the depth is 1.8m. • There is one haul road within the Onshore Cable Corridor along the length of the corridor; it is 6m wide excluding passing places. It will be constructed using imported engineered granular fill with geotextile style layers with a nominal thickness of 400mm and a maximum thickness of up to 1,000mm. • Cable laying and trenching equipment will be used to install the cable, and vehicles used for transportation and access. These may involve the use of petrol, diesel, hydraulic oil, etc. **Trenchless techniques:** • The maximum number of HDD locations along the Onshore Cable Corridor is 72 and 12 on the 400kV Grid Connection Cable Corridor. Primary HDD operations will require a compound, these will measure up to 150m x 100m. Secondary HDDs will require a smaller compound (measuring up to 30m x 20m) and will be located within the 100m temporary construction corridor. • HDD equipment will be used to install the cable, and vehicles used for transportation and access. These may involve the use of petrol, diesel, hydraulic oil, etc **Construction compounds:** • Up to two primary construction compounds (each measuring 150m x 150m) and up to 10 secondary construction compounds (each measuring 150m x 100m) will be located along the Onshore Cable Corridor. The compounds will be located within the Mona Proposed Onshore Development Area. Soil will be removed, and crushed stone or other suitable materials or other suitable materials will be used across the entire area to create hardstanding. • Contaminants and pollutants may be stored at the compounds. **Onshore Substation:** • The maximum footprint of the Onshore Substation will measure up to 125,000m^2 and will be located within the Onshore Substation zone: this area will include the substation buildings and the earthworks to create the platform. The Onshore Substation will comprise up to four buildings. The maximum dimensions of the main building are 20m high, 40m wide and 90m long • Access to the substation will be via a new permanent access road measuring up to 8m wide and 1.2km in length, or 9,600m². • Equipment and vehicles used during construction may involve the use of petrol, diesel, hydraulic oil, etc. • Works are expected to take 33 months to complete. **Decommissioning phase** • The onshore cable and 400kV Grid Connection Cable will remain in situ but the link boxes will be removed. • The maximum number of link boxes along the Onshore Cable Corridor is 96 and 10 for the 400kV Grid Connection Cable Corridor. • The area of each link box is up to 6m². Therefore, 636m² of land will need to be disturbed • The Onshore Substation and permanent access road will be removed. This will equate to an area of 134,600m^2 that will be subject to temporary works.	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 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 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** **Open cut trenching at the Landfall:** • The area required for the trenches is up to 18,000m^2 based on four trenches each measuring up to 3m wide, 3m deep and 1.5km long. and it will run between MHWS and MLWS. In addition, the working areas will extend to 25m at either side. The maximum total area that will be disturbed for the construction of the trenches (including the working areas) will be 318,000m^2. **Trenchless techniques at the landfall:** • Four Horizontal Directional Drilling cable ducts will need to be installed running 1,800m between MHWS and MLWS. The total working area needed for these installations at the TJB location is 200 x 150m. **Open cut trenching along the Onshore Cable Corridor:**	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		
				• The area of the permanent Onshore Cable Corridor is up to 540,000m² based on a corridor measuring 30m wide and 18km in length. The temporary working corridor requires an additional 70m wide corridor (making the total width of the Onshore Cable Corridor (temporary and permanent requirements) 100m wide representing a total area of habitats that will be subject to temporary loss of 1,800,000m². • There are up to four cable trenches within the permanent Onshore Cable Corridor, each trench measures up to 2.5m wide at the top, 1.5m at the base and the depth is 1.8m. • There is one haul road within the Onshore Cable Corridor along the length of the corridor; it is 6m wide excluding passing places. It will be constructed using imported engineered granular fill with geotextile style layers with a nominal thickness of 400mm and a maximum thickness of up to 1,000mm. **Open cut trenching along the 400kV Grid Connection Cable Corridor:** • The area of the permanent 400kV Grid Connection Cable Corridor is up to 48,000m² based on a corridor measuring 16m wide and 3km in length. The temporary working corridor requires an additional 44m wide corridor (making the total width of the route to grid connection (temporary and permanent requirements) 60m wide representing a total area of habitats that will be subject to temporary loss of up to 180,000m². • There are up to two cable trenches within the permanent 400kV Grid Connection Cable Corridor, each trench measures up to 2.5m wide at the top, 1.5m at the base and the depth is 1.8m. • There is one haul road within the Onshore Cable Corridor along the length of the corridor; it is 6m wide excluding passing places. It will be constructed using imported engineered granular fill with geotextile style layers with a nominal thickness of 400mm and a maximum thickness of up to 1,000mm. This equates to a total area of habitats that will be subject to temporary loss of 96,000m². **Trenchless techniques:** • The maximum number of HDD locations along the Onshore Cable Corridor is 72 and 12 on the 400kV Grid Connection Cable Corridor. Primary HDD operations will require a compound, these will measure up to 150m x 100m. Secondary HDDs will require a smaller compound (measuring up to 30m x 20m) and will be located within the 100m temporary construction corridor. • HDD equipment will be used to install the cable, and vehicles used for transportation and access. These may involve the use of petrol, diesel, hydraulic oil, etc **Construction compounds:** • Up to two primary construction compounds (each measuring 150m x 150m) and up to 10 secondary construction compounds (each measuring 150m x 100m) will be located along the Onshore Cable Corridor. The compounds will be located within the Mona Proposed Onshore Development Area. Soil will be removed, and crushed stone or other suitable materials or other suitable materials will be used across the entire area to create hardstanding. • Contaminants and pollutants may be stored at the compounds. **Onshore Substation:** • The maximum footprint of the Onshore Substation will measure up to 125,000m² and will be located within the Onshore Substation zone. This area will include the substation buildings and the earthworks to create the platform. The Onshore Substation will comprise up to four buildings. The maximum dimensions of the main building are 20m high, 40m wide and 90m long • Access to the substation will be via a new permanent access road measuring up to 8m wide and 1.2km in length, or 9,600m². • Equipment and vehicles used during construction may involve the use of petrol, diesel, hydraulic oil, etc. • Works are expected to take 33-months to complete. **Decommissioning phase** • The onshore cable and 400kV Grid Connection Cable will remain in situ but the link boxes will be removed. • The maximum number of link boxes along the Onshore Cable Corridor is 96 and 10 for the 400kV Grid Connection Cable Corridor. . • The area of each link box is up to 6m². Therefore, 636m² of land will need to be disturbed.	• 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 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 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

Potential impact	Phase			Maximum Design Scenario	Justification
	C	O	D		
				The onshore substation and permanent access road will be removed. This will equate to an area of 134,600m^2 that will be subject to temporary works.	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 Proposed Onshore Development Area	✓	×	✓	**Construction Phase** **Open cut trenching along the Onshore Cable Corridor:** • The area of the permanent Onshore Cable Corridor is up to 540,000m^2 based on a corridor measuring 30m wide and 18km in length. The temporary working corridor requires an additional 70m wide corridor (making the total width of the Onshore Cable Corridor (temporary and permanent requirements) 100m wide representing a total area of habitats that will be subject to temporary works of 1,800,000m^2. This corridor will contain four trenches. • There is one haul road within the Onshore Cable Corridor along the length of the corridor; it is 6m wide excluding passing places. It will be constructed using imported engineered granular fill with geotextile style layers with a nominal thickness of 400mm and a maximum thickness of up to 1000mm. . **Open cut trenching along the 400kV Grid Connection Cable Corridor:** • The area of the permanent 400kV Grid Connection Cable Corridor is up to 48,000m^2 based on a corridor measuring 16m wide and 3km in length. The temporary working corridor requires an additional 44m wide corridor (making the total width of the route to grid connection (temporary and permanent requirements) 60m wide representing a total area that will be subject to temporary works of up to 180,000m^2. This corridor will contain two trenches. • There is one haul road within the 400kV Grid Connection Cable Corridor along the length of the corridor; it is 6m wide excluding passing places. It will be constructed using imported engineered granular fill with geotextile style layers with a nominal thickness of 400mm and a maximum thickness of up to 1000mm. **Trenchless techniques:** • The maximum number of HDD locations along the Onshore Cable Corridor is 72 and 12 on the 400kV Grid Connection Cable Corridor. Primary HDD operations will require a compound, these will measure up to 150m x 100m. Secondary HDDs will require a smaller compound (measuring up to 30m x 20m) and will be located within the 100m temporary construction corridor. **Construction Compounds:** • Up to two primary construction compounds (each measuring 150m x 150m) and up to 10 secondary construction compounds (each measuring 150m x 100m) will be located along the Onshore Cable Corridor. The compounds will be located within the Mona Proposed Onshore Development Area. Soil will be removed and crushed stone or other suitable materials will be used across the entire area to create hardstanding. **Onshore Substation** • The maximum footprint of the Onshore Substation will measure up to 125,000m^2 and will be located within the Onshore Substation zone. This area will include the substation buildings and the earthworks to create the platform. • Access to the substation will be via a new permanent access road measuring up to 8m wide and 1.2km in length, or 9,600m². • The maximum search area for landscape planting around the Onshore Substation is 469,732.83m^2. This area includes the footprint of the Onshore Substation, landscape planting and the attenuation pond. The area that will be subject to temporary works will be 250,000m^2. **Decommissioning phase** • The onshore cable and 400kV Grid Connection Cable will remain in situ but the link boxes will be removed. • The maximum number of link boxes along the Onshore Cable Corridor is 96 and 10 on the 400kV Grid Connection Cable Corridor. • The area of each link box is up to 6m². Therefore, 636m² of land will need to be disturbed. The onshore substation and permanent access road will be removed. This will equate to an area of 134,600m^2 that will be subject to temporary works.	Construction and decommissioning of the Mona Proposed 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 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 with only the link boxes needing removal. The maximum area of these plus the area of the haul road (assumed for access) represents the maximum area that INNS can be spread.

Potential impact	Phase			Maximum Design Scenario	Justification
	C	O	D		
Electromagnetic Fields (EMFs) from cabling during the operational phase	×	✓	×	**Operational Phase** **Onshore Cable Corridor:** • There are up to four cable trenches within the permanent Onshore Cable Corridor, each trench measures up to 2.5m wide at the top, 1.5m at the base and the depth is 1.8m over a 18km distance. **400kV Grid Connection Cable Corridor:** There are up to two cable trenches within the permanent 400kV Grid Connection Cable Corridor, each trench measures up to 2.5m wide at the top, 1.5m at the base and the depth is 1.8m over a 3km 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 corridor. The maximum design scenario presents the greatest extent to which the EMF may impact on the biological elements of ecological status.

Table 1.10: Potential impacts associated with Mona Proposed Onshore Development Area and outcome of scoping assessment for the WFD compliance assessment for onshore surface water bodies

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 Proposed 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 Proposed 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 Proposed Onshore Development Area	Scoped in				Scoped in		Scoped in	Scoped out INNS will not result in an increase in priority or priority hazardous substances	
Electromagnetic Fields (EMFs) from cabling during the operation of the Mona Proposed 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 southern 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).				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 1.11: Summary of scoping exercise undertaken in accordance with the EA Guidance, WFD Assessment: Estuarine and Coastal Waters

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 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
	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 Proposed 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. During the construction phase, there is a potential risk of accumulation of standing water on the Mona Proposed 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
	Clwyd	Yes	
Protected areas	North Wales	Yes	The following protected areas with water dependent qualifying features are all within 2km of the Mona Proposed 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 2km of the Mona Proposed 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 Proposed 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 Proposed Onshore Development Area.

Table 1.12: Potential impacts associated with Mona Proposed Onshore Development Area and outcome of scoping assessment for the WFD compliance assessment for onshore surface water bodies

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 Proposed 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 16: Geology, hydrogeology and ground conditions) 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 16: Geology, hydrogeology and ground conditions) Small surface watercourses present within study area and crossed by the Mona 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 volume 3, chapter 16: Geology, hydrogeology and ground conditions)	Scoped out Scoped in (see Volume 3, chapter 16: Geology, hydrogeology and ground conditions)	Scoped out (see Volume 3, chapter 16: Geology, hydrogeology and ground conditions) 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 Source Protection Zone (SPZ) - Located over 8km from the Mona Proposed 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 Proposed 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 transmission assets	Scoped in (see volume 3, chapter 16: Geology, hydrogeology and ground conditions)	Scoped out (see volume 3, chapter 16: Geology, hydrogeology and ground conditions) 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 16: Geology, hydrogeology and ground conditions) 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 volume 3, chapter 16: Geology, hydrogeology and ground conditions)	Scoped out Construction, operation and decommissioning of the Onshore assets should not impact on the long term trends in the ground water given the assessment undertaken in volume 3, chapter 16: Geology, hydrogeology and ground conditions

1.7 Detailed Assessment

1.7.1 Introduction

1.7.1.1 Based on the outcomes of the scoping assessment, this detailed assessment establishes whether the activities associated with Mona Proposed 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 1.5.5 of this annex
- Prevent the achievement of WFD status objectives.

1.7.1.2 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.

1.7.1.3 The assessment looks at each individual water body traversed by Mona Proposed 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.

1.7.2 Measures adopted as part of the Mona Offshore Wind Project

1.7.2.1 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):

1. 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).
2. 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).

1.6.1.5 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 Proposed Onshore Development Area. These are outlined in Table 1.13. 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 1.7.3 and 1.7.4 below (i.e. the determination of potential impact on a water body's objective, including protected area objectives, assumes implementation of these measures).

Table 1.13: 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 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.	These measures would be secured as a requirement of the DCO and through the implementation of the CoCP.
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 .	To control flood risk and reduce run-off	These measures would be secured as a requirement of the DCO and through the implementation of the CoCP.
The diversion of the ordinary watercourse at Onshore Substation option 7 will be appropriately sized and designed to ensure opportunities in the biodiversity net gain are achieved.	To improve the physical condition of the channel, bed and riparian zone	These measures would be secured as a requirement of the DCO and through the implementation of the CoCP, particularly the Surface and Groundwater Management Plan, in addition to the Hydrological, Ecological and Landscape Management Plan and specific method statements.
Pre-construction drainage will be installed either side of the Mona Onshore Cable Corridor as required to ensure existing land drainage flow is maintained. Interceptor drains will be installed where the haul road crosses water courses or public highways.	To ensure that the water quality and flow rates are unaffected	These measures would be secured as a requirement of the DCO and through the implementation of the CoCP, particularly the Surface and Groundwater Management Plan and the Field Drainage Strategy which will be developed in consultation with landowners.
Tertiary measures: Measures required to meet legislative requirements, or adopted standard industry practice		
The design of the Onshore Substation will provide an 8m easement between the banks of the watercourse and any proposed development	To control flood risk and provide a buffer between the development and the water course	These measures would be secured as a requirement of the DCO and through the implementation of the CoCP, particularly the Surface and Groundwater Management Plan, in addition to the Hydrological, Ecological and Landscape Management Plan.
The final proposed levels of the Onshore Substations sites will be engineered to ensure the flow pathway regime is maintained to convey surface water towards the watercourses and offsite	To control flood risk and pollution	These measures would be secured through a requirement of the DCO.
Where the Onshore Cable Corridor and 400kV Grid Connection Cable Corridor cross areas with Secondary A or Principal aquifers, best practice measures will be included in the detailed design to that groundwater does not use the trenches as a conduit to convey groundwater elsewhere.	To prevent chemical pollution of secondary aquifers. To ensure that the construction of the cable does not adversely affect regional groundwater flows and any local changes in flow direction are minimal.	These measures would be secured through the detailed design process.
Method statement for drilling under the Llanddulas Beach landfill Site	To avoid the deterioration of groundwater quality from mobilisation of contaminants	These measures would be secured as a condition of the DCO with a specific Landfall Construction Method Statement to be prepared.
Historical mining activity assessment in areas potentially affected by deep historical mining.	To minimise ground stability issues	These measures would be secured through the detailed design process.
A surface water drainage scheme will be designed for the Onshore Substation to ensure the existing runoff rates to the surrounding water environment are maintained at pre-development rates. The surface water drainage scheme will be based on a series of infiltration/soakaway tests carried out on site and the attenuation volumes). The tests will be undertaken prior to construction and in accordance with current guidelines. The rate of surface water runoff discharging into local watercourses will be no greater than existing rates for all events up to the 1% AEP (1 in 100 annual	To address the requirements of NPS EN-1, the TAN-15, NRW	These measures would be secured as a requirement of the DCO and incorporated within the Hydrological, Ecological and Landscape Management Plan.

Measures adopted as part of the Mona Offshore Wind Project	Justification	How the measure will be secured
chance) plus 40% allowance for climate change. Where practicable the volume of runoff should not increase following development. The surface water drainage scheme will be developed in consultation with DCO and included as part of the Hydrological, Ecological and Landscape Management Plan submitted with the DCO application		
Where the Mona Onshore Cable Corridor and 400kV Grid Connection Corridor crosses smaller watercourses and land drainage ditches measures would be discussed with the relevant stakeholders (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). An outline method statement for open cut and HDD crossing techniques of watercourses will be included within the CoCP for DCO application.	To control flood risk and pollution	These measures would be secured as a requirement of the DCO of the CoCP and associated plans including Watercourse Crossing Method Statements.
Code of Construction Practice (CoCP) to ensure effective management of environmental risk during the construction phase of onshore transmission assets and supporting infrastructure. The CoCP shall include regulatory guidance and industry best practice guidance including: A surface water and groundwater protection plan that outline the methods for managing surface water runoff e.g. surface water from the cable trenches during the construction period will be pumped via settling tanks or ponds to remove sediment and potential contaminants, before being discharged into local ditches subject to permits being issued. The CoCP shall ensure that routine pollution prevention measures shall be adhered to during the construction phase e.g. Refuelling of machinery will be undertaken within designated areas, areas above MHWS or areas at low risk of flooding and not located within the beach area. Any tanks and associated pipe work containing oils and fuels will be double skinned and be provided with intermediate leak detection equipment. All refuelling will be undertaken using pumps. The CoCP shall provide emergency response plan for accidents and spillages. The CoCP will include measures to prevent surface water flooding during construction. The CoCP will apply the principles of good practice guidance including, but not limited to: 1. Control of Water Pollution from Construction Sites – Guidance for Consultants and Contractors CIRIA (C650) 2. CIRIA – SuDS Manual (CIRIA, 2015) 3. No discharge to surface watercourses will occur without permission from the NRW (SuDS Manual) 4. Wheel washers and dust suppression measures to be used as appropriate to prevent the migration of pollutants (SuDS Manual) 5.Regular cleaning of roads of any construction waste and dirt to be carried out (SuDS Manual).	To control flood risk and pollution and to accord with guidance and best practice for construction works	These measures would be secured as a requirement of the DCO and through the implementation of the CoCP and associated plans.
A field drainage strategy will be developed in consultation with landowners. Any field drainage intercepted during the cable installation will either be reinstated following the installation of the cable or diverted to a secondary channel. Any works undertaken will be in agreement with the appropriate stakeholders	To ensure field drainage is maintained during construction and reinstated on the completion of construction	These measures would be secured as a requirement of the DCO and implemented through the CoCP.

Measures adopted as part of the Mona Offshore Wind Project	Justification	How the measure will be secured
Preparation of a contamination discovery strategy that defines the approach for the management of unforeseen areas of soil or groundwater contamination should they be identified during the construction of Mona Onshore Cable Corridor, Mona Onshore Substation and 400kV Grid Connection Corridor and supporting infrastructure.	To help to deal with potentially contaminated land or groundwater and reduce the risk of creating additional/preferential pathways.	This measure would be secured as a requirement of the DCO and through the CoCP including a Written Scheme to deal with any Contamination Land.
Site investigations will be undertaken at each primary HDD location during the detailed design stage to confirm local geological conditions, The NRW will be consulted on the methodology of the site investigations.	To confirm suitability of geology for HDD techniques. To determine the absence of localised impacted soils and groundwater.	These measures would be secured as a requirement of the DCO and will take place in advance of construction.
Hydrological, Ecological and Landscape Management Plan to include operational measures to prevent pollution and increased flood risk, to include emergency spill response procedures, clean up and remediation of contaminated water runoff.	To reduce the risk of surface water pollution during the operational stage of the development	These measures would be secured as a requirement of the DCO and incorporated within the Hydrological, Ecological and Landscape Management Plan.
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	These measures would be secured as requirements and conditions of the DCO and through the implementation of the Decommissioning Plan.

1.7.3 Deterioration in water body status

1.7.3.1 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 Proposed 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 a CoCP.

1.7.3.2 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 Proposed Onshore Development Area on the no deterioration of water body status objective.

1.7.3.3 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 16 Geology, hydrogeology and ground conditions, chapter 17: Hydrology and Flood Risk and chapter 18: Onshore ecology as well as a series of supporting management plans such as the Pollution Prevention and Emergency Incident Response Plan and Ecological Management Plan (with biosecurity measures) will ensure that there will be no deterioration in the individual elements of ecological and chemical status and therefore no deterioration in the overall status WFD status classification outlined in Table 1.13 of this annex.

1.7.3.4 Table 1.14 and Table 1.15 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 Proposed Onshore Development Area.

1.7.4 Protected area objectives

1.7.4.1 A number of protected areas, listed on the register are located within the ZOI of the Mona Proposed 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 Proposed Onshore Development Area that contain protected areas listed in the register of protected areas are detailed in Table 1.7.

1.7.4.2 As outlined in section 1.5.5 and Table 1.7 the protected areas linked to the water bodies within the Mona Proposed Onshore Development Area include drinking waters in the groundwaters that Mona Proposed Onshore Development Area traverses, 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)

1.7.4.3 As outlined in Volume 3, chapter 16 Geology, hydrogeology and ground conditions there will be no direct impact on licensed abstractions or existing Source Protection Zones (SPZ) given that they are remote from the Mona Proposed Onshore Development Area. Trofarth Farm SPZ is located over 8km from the Mona Proposed 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.

1.7.4.4 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, the quality of the drinking water sources will not be compromised by the Mona Proposed Onshore Development.

Table 1.14: Summary of mitigation measures to ensure the surface water body status does not deteriorate

Activity	Biological supporting elements				Hydro-morphological supporting elements		Phsico-chemical supporting elements	Chemicals	
	Fish	Invertebrate	Macrophytes	Macrophytes and Phytobentos combines	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 Proposed Onshore Development Area	The preparation of the temporary working corridor is the potential for suspended sediment and the impacts that this can have on the above biological quality elements. The potential for the spread of invasive non-native species 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. See the Outline CoCP in this PEIRe CoCP and mitigation measures outlined in volume 3, chapter 16. As well as a series of supporting management plans such as the Pollution Prevention and Emergency Incident Response Plan and Hydrology, Ecology and Landscape Management Plan (HELMP) (with biosecurity measures) 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. Surface water flowing into the cable trenches during the construction period will be pumped via settling tanks or ponds to remove sediment and potential contaminants, before being discharged into local ditches or drains via temporary interceptor drains.				HDD techniques will be employed on the main water course crossed by the 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. For open cut crossings of small or less sensitive water courses the outline method statement 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. Once the cable is laid and the trench reinstated, the base of the watercourse bed will be consolidated. The cofferdam (or equivalent method) will be removed in a reverse procedure to that used for construction. Any works to ensure the integrity of the banks on either side of the watercourse will be undertaken. This may include geotextiles, reseeding/reinstatement of vegetation and placing of locally sourced stones. Any field drainage intercepted during the cable installation will either be reinstated following the installation of the cable or diverted to a secondary channel through the installation of post construction drainage. Any works undertaken will be in agreement with the appropriate stakeholders. Disturbance to areas close to watercourses will be reduced to the minimum necessary for the work and will be reinstated to the original condition.	A soil management strategy will be prepared that will ensure recognised soil handling good practice is effectively implemented on site to minimise soil loss and damage/compaction. Surface water flowing into the cable trenches during the construction period will be pumped via settling tanks or ponds to remove sediment and potential contaminants, before being discharged into local ditches or drains via temporary interceptor drains.	Scoped out	

Activity	Biological supporting elements				Hydro-morphological supporting elements		Phsico-chemical supporting elements	Chemicals	
	Fish	Invertebrate	Macrophytes	Macrophytes and Phytobentos combines	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 Proposed Onshore Development Area	**Temporary Bridges and flumes** At sites where good quality substrate has been compacted (and after species rescue) due to flume placement and embedding, it is recommended that new clean sediment-free material of a similar grade be placed in the affected area after flume removal. A series of supporting management plans will be included with the CoCP, those relevant to this WFD Assessment include • Emergency response plan • Site Waste Management Plan • Field drainage plan • Surface water and groundwater management plan • PRoW management plan Method statement for watercourse crossing 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 main rivers and some of the minor rivers will be traversed by HDD methods thereby avoiding direct impact. As outlined in the CoCP, method statements will be prepared for all main river crossings and an outlined method statement with the control measures to avoid significant impact of both open cut and trenchless crossings will be prepared and included as part of the DCO application. The CoCP includes measures to minimise risks associated with HDD including a protocol for dealing with bentonite breakout, which reduces risks to acceptable levels. 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.				Bridging will involve the construction of temporary bridge structures and the installation of bridge sections – these procedures will avoid any instream or immediate bank works to avoid any direct physical modification. The flume/culvert sections will be placed on the riverbed and adequately bedded down by pushing into the substrate to ensure that a suitable depth of water and flow velocity is maintained within the pipes to facilitate the upstream passage of fish. The length of each flumed section will be 6-8m to allow an adequate running track for the movement of plant. The onshore substation station will result in the construction of low permeability surfacing, increasing the rate of surface water run-off from the site. A surface water drainage scheme will be included in the HELMP to ensure the existing run-off rates to the surrounding water environment are maintained at pre-development rates.				

Activity	Biological supporting elements				Hydro-morphological supporting elements		Phsico-chemical supporting elements	Chemicals	
	Fish	Invertebrate	Macrophytes	Macrophytes and Phytobentos combines	Hydrological Regime	Morphology		Priority hazardous substances	Priority Substances
The impact of pollution caused by accidental spills/contaminant release during construction and decommissioning of the Mona Proposed 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. Refuelling of machinery will be undertaken within designated areas where any spillages can be easily contained. Machinery will be routinely checked to ensure it is in good working condition (to reduce the risk of fuel/oil leaks) and should only be active when required. Any tanks and associated pipe work containing oils and fuels will be double skinned and be provided with intermediate leak detection equipment. Areas at risk of spillage, such as vehicle maintenance areas and hazardous substance stores (including fuel, oils and chemicals) to be bunded and carefully sited to minimise the risk of hazardous substances entering the drainage system or the local watercourses (e.g. no storage of oil within 50m of a spring, well or borehole or within 10m of a watercourse, or within areas at risk of flooding). Additionally, the bunded areas will have impermeable bases to limit the potential for migration of contaminants into groundwater following any leakage/spillage. Bunds used to store fuel, oil etc. to have a 110% capacity. Operational practices incorporating measures to prevent pollution and increased flood risk, to include emergency spill response procedures, clean up and remediation of contaminated water run-off will be implemented through a HELMP .				Scoped out.		As per biological supporting elements.	Refuelling of machinery used in the preparation of the temporary working areas will be undertaken within designated areas where any spillages can be easily contained. Machinery will be routinely checked to ensure it is in good working condition (to reduce the risk of fuel/oil leaks) and should only be active when required. Any tanks and associated pipe work containing oils and fuels will be double skinned and be provided with intermediate leak detection equipment.	

Activity	Biological supporting elements				Hydro-morphological supporting elements		Phsico-chemical supporting elements	Chemicals	
	Fish	Invertebrate	Macrophytes	Macrophytes and Phytobentos combines	Hydrological Regime	Morphology		Priority hazardous substances	Priority Substances
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 is the potential for suspended sediment and the impacts that this can have on the above biological quality elements. The potential for the spread of invasive non-native species 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 CoCP and mitigation measures outlined in volume 3, chapter 16 Geology, hydrogeology and ground conditions, chapter 17: Hydrology and Flood Risk and chapter 18: Onshore Ecology. As well as a series of supporting management plans such as the Pollution Prevention and Emergency Incident Response Plan and HELMP (with biosecurity measures) 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. Surface water flowing into the cable trenches during the construction period will be pumped via settling tanks or ponds to remove sediment and potential contaminants, before being discharged into local ditches or drains via temporary interceptor drains.				In addition to the pollution prevention measures laid out in the Outline CoCP, preconstruction drainage will be installed either side of the Mona Onshore cable corridor and grid connection corridor to ensure existing land drainage flow is maintained. This will ensure that drainage from the surrounding lands 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.	
The impact of spreading Invasive and Non-native Species (INNS) during construction and decommissioning of the Mona Proposed 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. An invasive species protocol will be included in the Code of Construction Practice which will minimise the risk posed by INNS generally through improved biosecurity to prevent the spread of existing invasive species or new introductions.				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.		INNS can alter the physico chemical supporting conditions particularly resulting in changes to dissolved oxygen levels	Scoped out	

Table 1.15: 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 Proposed Onshore Development Area	Scoped out (see volume 3, chapter 16: Geology, hydrogeology and ground conditions)	Scoped out (see volume 3, chapter 16: Geology, hydrogeology and ground conditions)	Scoped out (see volume 3, chapter 16: Geology, hydrogeology and ground conditions)	Scoped out (see volume 3, chapter 16: Geology, hydrogeology and ground conditions)	Scoped out (see volume 3, chapter 16: Geology, hydrogeology and ground conditions)	The impact significance as assessed in volume 3, chapter 16: Geology, hydrogeology and ground conditions assuming the mitigation measures outlined in Table 1.13 is negligible and therefore no further mitigation is required to ensure groundwater quality is protected. The measures in the CoCP 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 16: Geology, hydrogeology and ground conditions)	Scoped out (see volume 3, chapter 16: Geology, hydrogeology and ground conditions)	Scoped out (see volume 3, chapter 16: Geology, hydrogeology and ground conditions)	Scoped out
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 16: Geology, hydrogeology and ground conditions assuming the mitigation measures outlined in Table 1.13 is minor and therefore no further mitigation is required to ensure groundwater quality is protected. Mitigation measures include - Micro-siting of Onshore Cable Corridor and 400kV Grid Connection Corridor, piling risk assessment for deep foundations, contamination discovery strategy and Method statement for the trenchless cross technique 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).				The impact significance, as assessed in volume 3, chapter 16: Geology, hydrogeology and ground conditions, assuming the mitigation measures outlined in Table 1.13 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 16: Geology, hydrogeology and ground conditions, assuming the mitigation measures outlined in Table 1.13 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)

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

1.7.4.6 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 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.

1.7.4.7 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 UWWTD sensitive areas within the River Wensum and River Yare.

Economically Significant Waters (Shellfish Waters)

1.7.4.8 The Dee (West) Shellfish Designated water is located within the North Wales coastal water body. As outlined in section 1.5.5 this designated shellfish water will not be impacted by the Mona Proposed Onshore Development Area.

Nutrient Sensitive Areas

1.7.4.9 There are no water bodies within the ZOI of the Mona Proposed Onshore Development Area that have been designated as nutrient sensitive in the context of urban wastewater treatment.

1.7.4.10 Nitrate Vulnerable Areas (NVAs) in Wales previously included on the Protected Area Register have been removed for the final RBMP.

European Sites (SACs/SPAs)

1.7.4.11 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.

1.7.4.12 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 Proposed 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.

1.7.4.13 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. Potential impacts from the Mona Proposed Onshore Development Area on surface water and groundwater status have been assessed in Table 1.14 and Table 1.15. The mitigation measures proposed will not compromise the achievement of the conservation objectives of this European Site.

1.7.4.14 On this basis the Mona Proposed 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.

1.7.5 Achievement of the WFD objectives

1.7.5.1 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.

1.7.5.2 Table 1.16 outlines the objectives for each water body within the ZOI of the Mona Proposed 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 1.16, 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 1.16 assesses the potential impact on the achievement of the WFD objectives and concludes for all water bodies that Mona Proposed Onshore Development Area will not prevent the achievement of the WFD objectives.

Table 1.16: 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 proposed.
				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 proposed.
				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 proposed.
Gele GB110066059980	River	Moderate	DO Phosphorus	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.

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	Flood Protection	Physical Modification	HMWB Mitigation Measures as outlined in Table 1.6				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 proposed. 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 should 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).
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 proposed.
Clywd GB541006608000	Transitional	Moderate	DIN Mitigation Measures for HMWB	Diffuse sources from agriculture (Dairy/beef)	Agriculture and rural land management	There is some information that points to a possible reason for not achieving good status. Further investigations are required before site	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 sewage. Measures have been recommended
				Point Source from water industry	Sewage discharge (continuous)					

Water Body Name	Type	Overall Status	Driving Element	Significant Water Management Issue	Source Activity	RBMP Measures	Objective	Derogation Type	Reason	Impact on WFD Objectives
				Point source from Domestic/General public	Unsewered domestic sewage	specific measures can be identified.				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 proposed. 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 should 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.
North Wales GB641011650000	Coastal	Moderate	Mercury Phytoplankton	Diffuse Source	Atmospheric deposition	Mercury is a chemical which is ubiquitous, persistent, bioaccumulative and toxic (uPBTs). 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 EQS 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					

Water Body Name	Type	Overall Status	Driving Element	Significant Water Management Issue	Source Activity	RBMP Measures	Objective	Derogation Type	Reason	Impact on WFD Objectives
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 proposed.
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 proposed.
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) minewater 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 proposed Mona Proposed 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.

1.7.6 Assessment summary and conclusion

1.7.6.1 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 NRW 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.

1.7.6.2 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 based on the 2021 baseline as reported in the Western Wales RBMP 2022-2027 and also to ensure that the project does not compromise the achievement of the WFD objectives for the improvement in the overall status of the water bodies which could be affected. The assessment also considers the protected areas linked to the water bodies in question and ensures that the protected area objectives are also unaffected.

1.7.6.3 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.

1.7.6.4 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.

1.8 References

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NRW (2022a) *Western Wales Western Wales River Basin Management Plan 2021 – 2027 – Summary.* https://cdn.cyfoethnaturiol.cymru/media/695227/western-wales-rbmp-2021_2027- summary.pdf

NRW (2022b) River Basin Management Plan Overview Annex, Wales December 2022. https://cdn.cyfoethnaturiol.cymru/media/695980/wales-rbmp-overview-annex-2021-2027.pdf

Planning Inspectorate (2018) *Advice Note Eighteen: The Water Framework Directive*. (https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/advice- note-18/)

Appendix A: WFD Scoping Assessment

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	*bp EnBW JV*
Application reference number (where applicable)	*N/A*
Name of activity	*Mona Proposed 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.*

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*

Water body[1]	Description, notes or more information
Chemical status	*Fail*

Water body[1]	Description, notes or more information
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 which could be indirectly impacted by the Mona Proposed 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 Proposed Onshore Development Area*
Phytoplankton status	*Moderate*
History of harmful algae	*No (based on information from bathing water profiles)*
WFD protected areas within 2km	*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 invasive non-native species (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 coatal 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)
0.5km^2 or larger		✓	*No: Whilst the Mona Proposed 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. <0.5km^2*
1% or more of the water body's area		✓	*No: Whilst the Mona Proposed 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 500m of any higher sensitivity habitat		✓	*No footprint of the Mona Proposed 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.1.1.1 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 southern 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 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 2km of your activity.

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

Consider if your activity is:	Yes	No	Protected areas risk issue(s)
Within 2km of any WFD protected area[6]	✓		**SAC - Coedwigoedd *Dyffryn* Elwy/Elwy Valley Woods** *The Mona Proposed 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 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 Proposed 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 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.1.7.1 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 Proposed 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*
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 2km of the Mona Proposed 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)*

Receptor	Potential risk to receptor?	Note the risk issue(s) for impact assessment
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 Proposed 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	*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*

Water body[1]	Description, notes or more information
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 Proposed 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 Proposed Onshore Development Area*
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 2km	*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.

[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
Saltmarsh	intertidal soft sediments like sand and mud
	rocky shore

Consider if the footprint[4] of your activity is:	Yes	No	Biology habitats risk issue(s)
0.5km^2 or larger		✓	*No: Whilst the Mona Proposed 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. <0.5km^2*
1% or more of the water body's area		✓	*The Mona Proposed 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 500m of any higher sensitivity habitat		✓	*Yes: footprint is not within 500m 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.1.1.2 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 southern 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.1.2 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 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 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.1.3 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 2km of your activity.

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

Consider if your activity is:	Yes	No	Protected areas risk issue(s)
Within 2km of any WFD protected area[6]	Requires impact assessment		***SAC - Coedwigoedd Dyffryn Elwy/Elwy Valley Woods*** *The Mona Proposed 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 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 Proposed 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 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.1.4 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 Proposed 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.1.4.1 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 Proposed 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*
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 2km of the Mona Proposed 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.