

WFD Coastal Waters Assessment supporting information





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Acronyms

Acronym	Description
Cefas	Centre for Environment, Fisheries and Aquaculture Science
EA	Environment Agency
HRA	Habitats Regulations Assessment
ICES	International Council for the Exploration of the Sea
INNS	Invasive Non-native Species
MHWS	Mean High Water Springs
NRW(A)	Natural Resources Wales (Advisory)
ОСР	Organochlorine Pesticides
PAH	Polyaromatic Hydrocarbons
PEIR	Preliminary Environmental Information Report
PCB	Polychlorinated Biphenyl
SAC	Special Area of Conservation
SPA	Special Protection Area
SSC	Suspended Sediment Concentration
WFD	Water Framework Directive
Zol	Zone of Influence

Units

Unit	Description
%	Percentage
km	Kilometre
km ²	Square kilometres
m	Metre
nm	Nautical mile



1 Water Framework Directive Coastal Waters Assessment supporting information

1.1 Introduction

1.1.1 Background

- 1.1.1.1 This document presents supporting information related to two matters raised in the relevant representations (RR-011) and written representations (REP1-056) from Natural Resources Wales Advisory (NRW(A)) relating to Volume 6, Annex 2.2: Water Framework Directive (WFD) Coastal Waters Assessment (APP-088).
- 1.1.1.2 In the written representation from NRW(A) (REP1-056), NRW (A) expressed support for the conclusions of the WFD Coastal Waters Assessment (APP-088) and agreed that the Mona Offshore Wind Project will not cause deterioration to the water quality of either of the water bodies considered (REP1-056, paragraph 62). In their written representation (REP1-056) NRW (A) also agreed that adequate clarification has been provided for the screening decision to not include any other waterbodies in consideration of impacts (REP1-056, paragraph 63). Noting these areas of agreement, this document provides clarification on the two matters raised by NRW (A).
- 1.1.1.3 The first matter relates to the assessment of sediment-bound contaminants out to 12 nautical miles (nm) seaward of Mean High Water Springs (MHWS), and the second matter relates to the spatial extent of the Zone of Influence (ZoI). The relevant comments for each matter are presented, along with the Applicant's responses, in Table 1.1 and Table 1.6, and discussed in full in sections 1.2 and 1.3 below.

1.2 Supporting information requested by NRW(A) pertaining to the assessment of sediment-bound chemical contaminants out to 12 nm from MHWS

1.2.1 Overview

- 1.2.1.1 Comments received from NRW(A) pertaining to the assessment of sediment-bound chemical contaminants out to 12 nm from MHWS, alongside responses submitted by the Applicant, are presented in Table 1.1. These comments are duplicated from the Applicant's Response to Relevant Representations (PDA-008) (see row RR-011.68) and the Appendix to Response to WRs: NRW (REP2-080) (see row REP1-056.202).
- 1.2.1.2 The Water Framework Directive (WFD) Coastal Waters Assessment (APP-088) for the Mona Offshore Wind Project was undertaken in line with the 'Clearing the Waters for All' guidance (Environment Agency, 2023), as advised by NRW(A) in their Scoping Opinion (APP-194).
- 1.2.1.3 This guidance identifies six receptors against which the potential impact of the Mona Offshore Wind Project was considered:
 - Hydromorphology
 - Biology habitats
 - Biology fish
 - Water quality
 - Protected areas



- Invasive non-native species (INNS).
- 1.2.1.4 These receptors are based upon quality elements and supporting elements which are used to determine the status of a WFD water body. INNS do not contribute directly to the classification of water body status (i.e. they are neither a quality element nor a supporting element), but due to their potential impact on other receptors, the 'Clearing the Waters for All' guidance (Environment Agency, 2023) requires that these should be considered.
- 1.2.1.5 The 'Clearing the Waters for All' guidance is relevant "for activities in the marine environment up to 1 nautical mile [nm] out to sea". Activities associated with the Mona Offshore Wind Project within 1 nm of Mean High Water Springs (MHWS) are limited to the installation of the offshore export cables.
- 1.2.1.6 The WFD Coastal Waters Assessment (APP-088) therefore considered the potential impact upon the North Wales (coastal) and Clwyd (transitional) WFD water bodies from installation, operations and maintenance and decommissioning of the Mona Offshore Wind Project, out to 1 nm from MHWS. Only the North Wales WFD water body overlaps with the Mona Offshore Cable Corridor and Access Areas. The Clwyd WFD water body was included due to its proximity to the Mona Offshore Wind Project, following pre-application advice from NRW(A).
- 1.2.1.7 In the preparation of this supporting information note, the Applicant has also given regard to additional guidance provided by NRW(A) in response to a request from the Applicant for further clarification on comment 240 of NRW's written representation (REP1-056). The guidance "Complying with the WFD Regulations 2017" (GN078) (NRW, 2024) was provided to the Applicant by NRW (A) via email on 16 September 2024, and the Applicant notes that this guidance document is not currently publicly available on the NRW website. The Applicant would highlight that, whilst this guidance was not available at the time of application, it does not materially affect the outcome of the assessments or the conclusions presented in Volume 6, Annex 2.2 WFD Coastal Waters Assessment (APP-088).



Table 1.1: Summary of NRW(A) Relevant Representation (RR-011) and Written Representation (REP1-056) and Applicant's responses, for which supporting information is provided.

Reference	Document	Written Submission Comment	Applicant's response
RR-011.68	Applicant's Response to Relevant Representations (PDA-008)	2.7.2.2. Paragraph 1.3.2.6 in APP-088, acknowledges the advice previously provided by NRW (A) which advised the assessment of deterioration should extend further than 1nmi (modelling suggests 10km either side of the corridor). However, we note at 1.3.2.8 [APP-088] that this advice is subsequently discounted in asserting that the zone of influence (ZoI) of the activities associated with the proposed works will be limited to 2 km (approximately 1.1nmi). We further note that section 6 of the Scoping Opinion (APP-194) states that: "the waterbodies to be included in the assessment should be derived through numerical modelling and other assessment methods to determine the ZoI". We continue to advise the Applicant should provide further details of the numerical modelling used and/or further details of the other assessment methods used to determine the ZoI with respect to the risk of mobilisation of chemical contaminants and their impacts in assessing WFD compliance.	Paragraph 1.3.2.10 of Volume 6, Annex 2.2: Water Framework Directive Coastal Waters Assessment (APP-088) describes the numerical modelling in question as being that presented in Volume 6, Annex 1.1: Physical processes technical report (APP-068). This numerical modelling indicated a maximum potential sediment suspension plume envelope from sandwave clearance of approximately 10 km in either direction from the source. However, the seabed preparation activities from which sediment suspension and any associated remobilised chemical contaminants are expected to arise will occur in offshore waters at distances greater than 10 km from any WFD water body. Therefore, no effect pathway for WFD receptors from seabed preparation activities is predicted. Paragraph 1.3.2.11 of Volume 6, Annex 2.2: Water Framework Directive Coastal Waters Assessment (APP-088) then states that activities occurring within 1 nm of Mean High Water Springs (MHWS) (i.e. the distance stipulated by the 'Clearing the Waters for All' guidance (Environment Agency, 2023)) including the installation of offshore export cables within the Mona Offshore Cable Corridor and Access Areas are expected to be substantially less disruptive to sediments than activities offshore. Furthermore, the shallower water here would further reduce the distance over which suspended sediment can travel. Therefore, a 2 km Zol was considered appropriate for activities occurring within 1 nm of MHWS. Site-specific analysis of sediment-bound contaminants indicated no chemical contamination exceeding Cefas Action Level 1 and thus, there is considered to be no risk of any chemical contaminants impacting the WFD water bodies.



Reference	Document	Written Submission Comment	Applicant's response
REP1-056.202	Appendix to Response to WRs: NRW (REP2-080)	239. In response to the Applicant's comments within PDA-008 at RR-011.68, NRW (A) continue to advise that for the purposes of chemical contaminants, the assessment should extend to 12 nm from MHWS for compliance with the WFD Regulations. These regulations state that for all characteristics other than chemical contaminants, assessments can be made to 1nm, however for chemical contaminants assessments shall extend to 12nm.	The Applicant acknowledges NRW's advice that assessment of chemical contaminants for compliance with the WFD Regulations should extend to 12 nm from MHWS. The WFD assessment presented in Volume 6, Annex 2.2: Water Framework Directive Coastal Waters Assessment (APP-088) was undertaken in line with Environment Agency (EA) guidance "Clearing the Waters for All", as advised by NRW(A) in their Scoping Opinion (APP-194). This guidance stipulates that a WFD assessment is undertaken by considering the potential impact of an activity "up to 1 nautical mile out to sea" upon the ability for relevant water bodies to achieve or maintain 'Good' status, and that the activity should not jeopardise existing 'Good' status. The Applicant notes that NRW's advice that the assessment should extend to 12 nm from MHWS has not been specified in previous consultation. As the boundaries of WFD water bodies do not extend to 12 nm from MHWS, and based on the EA guidance, the Applicant did not consider that there was a requirement to ascertain the status of WFD water bodies out to this distance. The Applicant will engage with NRW(A) through the Statement of Common Ground process to agree the best approach to address their concern on this matter.



1.2.2 Site-specific sediment sampling

- 1.2.2.1 NRW(A)'s request for the chemical contaminants assessment to extend beyond the 2 km distance assessed in Volume 6, Annex 2.2: Water Framework Directive Coastal Waters Assessment (APP-088) (see RR-011.68 in Table 1.1), and the clarification that this distance should extend to 12 nm from MHWS (as specified in REP1-056.202, Table 1.1) has been addressed in this document by consideration of chemical analysis results from benthic sediments sampled during site-specific surveys undertaken at 18 sites in 2022 within the Mona Offshore Cable Corridor and Access Areas (Figure 1.1).
- 1.2.2.2 The Mona Array Area and the section of the Mona benthic subtidal and intertidal ecology study area which surrounds the Mona Array Area are located at a distance greater than 12 nm from MHWS, so the results of sediment contamination analysis within these areas (22 sampling sites) have not been considered further.
- 1.2.2.3 Of the 18 sampling sites within the Mona Offshore Cable Corridor and Access Areas, three sampling locations (OCC53, OCC54 and OCC56) are located beyond 12 nm from MHWS. However, the results of chemical contaminants analysis at these locations have been included to provide a more comprehensive view of the potential impacts from installation of the offshore export cables, which is the focus of Volume 6, Annex 2.2 WFD Coastal Waters Assessment (APP-088).
- 1.2.2.4 Full details of site-specific sediment sampling for the Mona Offshore Wind Project are presented in Volume 6, Annex 2 1: Benthic subtidal and intertidal ecology technical report (APP-054).
- 1.2.2.5 The 'water quality' receptor requires assessment for compliance with the WFD if the activity (i.e. cable installation) disturbs sediment with contaminants above Cefas Action Level 1 (MMO, 2023). The Cefas Action Levels are summarised in Table 1.2, and presented in full in Tables 1.6 to 1.8 of Volume 6, Annex 2 1: Benthic subtidal and intertidal ecology technical report (APP-087).

Table 1.2: Cefas Action Level 1 and 2 concentrations of sediment contaminants subject to consideration in WFD coastal waters assessments.

Contaminant	or compound	Action Level 1 (mg/kg dry weight (ppm))	Action Level 2 (mg/kg dry weight (ppm))	
Metals	Arsenic	20	100	
	Mercury	0.3	3	
	Cadmium	0.4	5	
	Chromium	40	400	
	Copper	40	400	
	Nickel	20	200	
	Lead	50	500	
	Zinc	130	800	
Polychlorinated	Sum of ICES 7	0.01	None	
biphenyls (PCBs)	Sum of 25 congeners	0.02	0.2	
Organochlorine pesticides (OCPs)	DDT	0.001	None	
	Dieldrin	0.005	None	



Contaminant or compound	Action Level 1 (mg/kg dry weight (ppm))	Action Level 2 (mg/kg dry weight (ppm))
Organotins	0.1	1
Polycyclic Aromatic Hydrocarbons (PAHs)	0.1	None



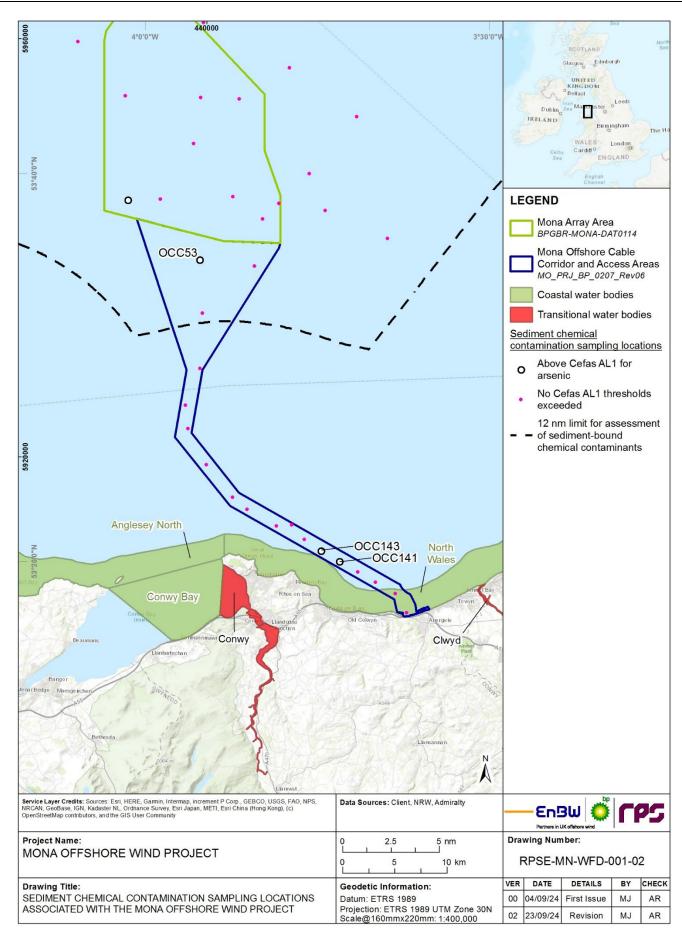


Figure 1.1: Sediment chemical contamination sampling locations associated with the Mona Offshore Wind Project.



- 1.2.2.6 The results of sediment sampling for the chemical contaminants described in Table 1.2 are summarised in Table 1.3, Table 1.4 and Table 1.5, and are presented in full in Volume 2, Annex 2.1: Benthic subtidal and intertidal ecology technical report (APP-087).
- 1.2.2.7 Cells shaded grey indicate locations at which specific contaminant concentrations exceeded the respective Cefas Action Level 1.
- 1.2.2.8 Cells containing entries of 'less than' a given value indicate samples that were below the limit of detection for the respective contaminant.
- 1.2.2.9 Cells containing an entry of 'NQ' (namely for PCBs in Table 1.4) indicate that the sum of concentrations was not quantifiable, since some compounds occurred at concentrations below the limit of detection.

Table 1.3: Concentrations of metal contaminants (mg/kg) recorded in sediments within the Mona Offshore Cable Corridor and Access Areas.

_	g Metal Contaminant									
location	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc		
OCC53	20.70	0.15	14.60	7.20	14.70	0.04	12.90	43.60		
OCC54	18.00	0.10	11.50	7.70	15.00	0.05	9.90	38.20		
OCC56	11.80	0.17	8.60	7.20	11.20	0.04	8.50	39.50		
OCC58	17.90	0.11	10.80	7.40	15.00	0.04	10.80	60.20		
OCC60	14.70	0.10	10.60	7.10	11.40	0.05	9.50	41.70		
OCC61	17.90	0.19	5.60	6.30	14.20	0.04	6.80	33.40		
OCC63	10.80	0.05	5.40	5.80	5.40	0.04	5.00	33.50		
OCC65	16.90	0.13	10.60	7.00	5.70	0.03	9.70	34.00		
OCC133	4.60	0.09	8.40	6.80	6.80	0.01	7.50	31.20		
OCC135	7.40	0.04	6.80	5.30	6.40	<0.01	6.30	30.40		
OCC137	9.30	0.06	8.30	5.60	6.10	<0.01	6.60	30.40		
OCC139	17.10	0.05	6.60	5.80	10.50	<0.01	6.60	41.10		
OCC141	38.90	0.12	17.30	8.80	12.50	<0.01	18.40	58.70		
OCC143	21.30	0.07	10.50	7.30	10.40	0.02	11.40	45.00		
OCC145	10.30	<0.04	5.30	5.60	8.60	<0.01	5.30	28.50		
OCC147	13.80	0.05	10.20	6.30	6.80	<0.01	10.30	29.60		
OCC149	14.70	<0.04	6.60	6.50	21.70	0.01	6.40	23.30		
OCC151	14.00	0.08	10.60	7.70	6.70	0.03	10.90	33.40		

1.2.2.10 Metal concentration in the Mona Offshore Cable Corridor and Access Areas occurred largely in concentrations below Cefas Action Level 1 (Table 1.3), with sediments at three sampling locations (OCC53, OCC141 and OCC143) returning results above Cefas Action Level 1 for arsenic.



1.2.2.11 Sediment samples at OCC53 (located more than 12 nm seaward of MHWS) returned an arsenic concentration of 20.70 mg/kg (marginally exceeding the Cefas Action Level 1 of 20 mg/kg). At the two sampling sites within 12 nm seaward of MHWS OCC141 returned a concentration of arsenic of 38.90 mg/kg and OCC143 returned a concentration of arsenic of 21.30 mg/kg. Whilst concentrations of arsenic at these stations exceeded Cefas Action Level 1 (20 mg/kg), and only marginally at two stations, concentrations at all stations were well below Cefas Action Level 2 (100 mg/kg).

Table 1.4: Total concentrations of PCBs and organotins (mg/kg) recorded in sediments within the Mona Offshore Cable Corridor and Access Areas.

Sampling	PCBs	Organotins			
location	Sum of ICES 7	Sum of 25 congeners	Dieldrin	DDT	
OCC53	NQ	NQ	<0.0001	0.0002	<0.001
OCC54	NQ	NQ	<0.0001	0.0002	<0.001
OCC56	NQ	0.0062	<0.0001	0.0001	<0.001
OCC58	NQ	NQ	<0.0001	<0.0001	<0.001
OCC60	NQ	NQ	<0.0001	<0.0001	<0.001
OCC61	NQ	NQ	<0.0001	<0.0001	<0.001
OCC63	NQ	NQ	<0.0001	<0.0001	<0.001
OCC65	NQ	NQ	<0.0001	<0.0001	<0.001
OCC133	NQ	NQ	<0.0001	<0.0001	<0.001
OCC135	NQ	NQ	<0.0001	<0.0001	<0.001
OCC137	NQ	NQ	<0.0001	<0.0001	<0.001
OCC139	NQ	NQ	<0.0001	<0.0001	<0.001
OCC141	NQ	NQ	<0.0001	<0.0001	<0.001
OCC143	0.0011	0.0044	0.0007	0.0004	<0.001
OCC145	NQ	NQ	<0.0001	<0.0001	<0.001
OCC147	NQ	NQ	<0.0001	<0.0001	<0.001
OCC149	NQ	NQ	<0.0001	<0.0001	<0.001
OCC151	NQ	NQ	<0.0001	<0.0001	<0.001

1.2.2.12 Concentrations of total PCBs and the International Council for the Exploration of the Sea (ICES)-7 PCBs were below the relevant Cefas Action Level 1. Concentrations of organotins were below the limit of detection at all; stations and levels of organochlorines were below, or near to, the limit of detection at all stations within the Mona Offshore Cable Corridor and Access Areas (Table 1.4), with the majority of locations returning results that were either non quantifiable or below the limit of detection.



Table 1.5: Concentrations of PAHs (mg/kg) in sediments within the Mona Offshore Cable Corridor and Access Areas.

Sampling location	Acenaphthene	Acenaphthylene	Anthracene	Benzo[a]anthracene	Benzo[a]pyrene	Chrysene	Dibenzo[ah]anthracene	Fluoranthene	Fluorene	Naphthalene	Phenanthrene	Pyrene
	Ace	Ace	Ant	Ber	Ber	Chr	Dib	FIU	Flu	Na	Phe	Pyr
OCC53	<0.001	<0.001	<0.001	0.003	0.004	0.005	0.001	0.005	0.001	0.004	0.008	0.005
OCC54	<0.001	<0.001	0.001	0.004	0.005	0.005	0.002	0.006	0.002	0.004	0.007	0.005
OCC56	<0.001	<0.001	<0.001	0.002	0.003	0.003	<0.001	0.003	<0.001	0.002	0.004	0.003
OCC58	<0.001	<0.001	<0.001	0.003	0.003	0.003	<0.001	0.004	0.001	0.003	0.005	0.004
OCC60	<0.001	<0.001	<0.001	0.002	0.003	0.003	<0.001	0.003	<0.001	0.002	0.004	0.003
OCC61	<0.001	<0.001	<0.001	0.001	0.001	0.002	<0.001	0.002	<0.001	0.001	0.003	0.002
OCC63	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	0.002	<0.001	<0.001	0.002	0.001
OCC65	<0.001	<0.001	<0.001	0.001	0.001	0.003	<0.001	0.002	0.001	0.002	0.008	0.003
OCC133	<0.001	<0.001	0.001	0.003	0.004	0.004	<0.001	0.008	<0.001	<0.001	0.006	0.007
OCC135	<0.001	<0.001	<0.001	<0.001	0.001	0.002	<0.001	0.002	<0.001	<0.001	0.002	0.002
OCC137	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
OCC139	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
OCC141	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	0.001	<0.001	<0.001	0.001	0.002
OCC143	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
OCC145	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
OCC147	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
OCC149	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
OCC151	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

1.2.2.13 Concentrations of PAHs were well below Cefas Action Level 1 at all sampling locations within the Mona Offshore Cable Corridor and Access Areas (Table 1.5), with 65% of samples (total = 216) returning results that were either non quantifiable or below the limit of detection.

1.2.3 Disturbance of sediment with contaminants above Cefas Action Level 1

1.2.3.1 Concentrations of PCBs, OCPs, Organotins and PAHs were below relevant Cefas Action Level 1 at all sediment sampling locations within the Mona Offshore Cable Corridor and Access Areas.



- 1.2.3.2 Concentrations of arsenic were below Cefas Action Level 1 at all but three locations within the Mona Offshore Cable Corridor and Access Areas. Concentrations of all other metals were below Cefas Action Level 1 at all sampling locations within the Mona Offshore Cable Corridor and Access Areas.
- 1.2.3.3 Following disturbance as a result of seabed preparation and export cable installation activities, the majority of re-suspended sediments are expected to be deposited in the immediate vicinity of the works. Outputs of site-specific modelling of offshore seabed preparation predicted average suspended sediment concentration (SSC) of <300 mg/l along the Mona Offshore Cable Corridor and Access Areas, dropping to background levels on the slack tide (Volume 2, Chapter 2: Benthic subtidal and intertidal ecology (APP-054)). Whilst tidal patterns indicate released material can migrate both east and west by settling and being re-suspended on successive tides, the sedimentation level is typically <0.5 mm, and the greatest levels of deposition occur along the trenching route as coarser material settles.
- 1.2.3.4 As noted in section 2.9.4 of Volume 2, Chapter 2: Benthic subtidal and intertidal ecology of the Environmental Statement (APP-054), the release of contaminants from the small proportion of fine sediments which could reach the North Wales WFD water body is likely to be rapidly dispersed with the tide and/or currents. Increased bioavailability resulting in adverse eco-toxicological effects is not expected, and there is, therefore, a very low risk of chemical contamination at a level that would lead to deleterious effects to marine organisms, either within or outside any WFD water body. The distance to the Clwyd WFD water body (13.6 km) is such that there would be no impact pathway.
- 1.2.3.5 Mobilisation of any contaminated sediments during installation of the offshore export cables for the Mona Offshore Wind Project is therefore not expected to lead to deterioration in the status of the North Wales or Clwyd WFD water bodies (or of any receptors therein) or to prevent these WFD water bodies from achieving 'good' status.

1.2.4 Summary of supporting information pertaining to the assessment of sediment-bound chemical contaminants out to 12 nm from MHWS

- 1.2.4.1 This supporting information is related to NRW's request for the chemical contaminant assessment to extend to 12 nm from MHWS and has considered the chemical analysis results from benthic sediments sampled across the whole Mona Offshore Cable Corridor and Access Areas. This includes three sediment sampling stations located beyond 12 nm from MHWS, which fall within the Mona Offshore Cable Corridor and Access Areas.
- 1.2.4.2 Concentrations of PCBs, OCPs, Organotins, PAHs and most metals were below Cefas Action Level 1 at all sampling locations within the Mona Offshore Cable Corridor and Access Areas. At three sampling locations (one of which is located beyond 12 nm from MHWS), concentrations of arsenic were above Cefas Action Level 1 but well below Cefas Action Level 2.
- 1.2.4.3 Sediment-bound contaminants at these three sampling sites, if disturbed during installation of offshore export cables, occur at discrete locations and low concentrations. Remobilisation of sediment-bound contaminants would therefore be restricted to a small area and would not be expected to jeopardise the ability of the North Wales WFD water body to achieve 'good' status.



- 1.2.4.4 Similarly, the distance to the Clwyd WFD water body (13.6 km) is such that there would be no impact pathway, and the Clwyd WFD water body would not be prevented from achieving 'good' status.
- 1.2.4.5 This supporting information note has therefore demonstrated that extending the chemical contaminant assessment to 12 nm from MHWS does not alter the outcome of the Mona WFD Coastal Waters Assessment (APP-088), which concluded that activities associated with the Mona Offshore Wind Project (i.e. installation of offshore export cables) would not prevent any waterbodies scoped into the assessment from achieving 'good' status. Therefore, there can be confidence in the assessment presented in the application.

1.3 Supporting information requested by NRW(A) pertaining to the spatial extent of the Zone of Influence

1.3.1 Overview

- 1.3.1.1 Comments received from NRW(A) in Applicant's Response to Relevant Representations (PDA-008)) and in Appendix to Response to WRs: NRW (REP2-080) pertaining to the spatial extent of the Zone of Influence (ZoI), alongside responses submitted by the Applicant, are presented in Table 1.6. These comments are duplicated from row RR-011.69 in Applicant's Response to Relevant Representations (PDA-008) and row REP-056.203 in Appendix to Response to WRs: NRW (REP2-080).
- 1.3.1.2 The ZoI that formed the basis for scoping in Volume 6, Annex 2.2 WFD Coastal Waters Assessment (APP-088) was selected based upon the 'Clearing the Waters for All' guidance for protected areas (see paragraph 1.3.1.4), which stipulates that any protected area located within 2 km of an activity (i.e. installation of offshore export cables) should be scoped in for assessment. Since the Mona Offshore Cable Corridor and Access Areas (within which installation of offshore export cables is planned) overlap only with the North Wales water body, this area of overlap was considered the origin of the 2 km buffer.
- 1.3.1.3 It was considered that since the protected areas specified in the 'Clearing the Waters for All' guidance are designated for specific features under European Union legislation, these sites and their features represented suitably sensitive receptors on which to base the overall ZoI for the WFD Coastal Waters Assessment. The 2 km buffer for protected areas was subsequently applied as the ZoI for the scoping stage of the WFD Coastal Waters Assessment for all other receptors listed in paragraph 1.2.1.3 (i.e. hydromorphology, biology habitats, biology fish, water quality, protected areas and INNS)..
- 1.3.1.4 As described in paragraph 1.2.1.5, the only aspects of the Mona Offshore Wind Project that would occur out to 1 nm from MHWS are the construction activities associated with the installation of the offshore export cables within the Mona Offshore Cable Corridor and Access Areas. The ZoI was therefore applied as a 2 km buffer around the Mona Offshore Cable Corridor and Access Areas, out to 1 nm from MHWS, which aligns with the 2 km buffer for scoping in protected areas for detailed assessment (see paragraph 1.3.2.15 of Volume 6, Annex 2.2: WFD Coastal Waters Assessment (APP-088)).



1.3.1.5 To provide the supporting information requested by NRW(A) in relation to the spatial extent of the ZoI for the WFD Coastal Waters Assessment, and in line with further written feedback provided by NRW(A) (email dated 20 September 2024) this document considers a ZoI based on the spatial extent of numerical modelling presented in Volume 6, Annex 1.1 Physical processes technical report (APP-086), which encompasses the study area considered in Volume 2, Chapter 2 Physical processes (APP-053).



Table 1.6: Summary of NRW(A) Relevant Representation (RR-011) and Written Representation (REP1-056) and Applicant's responses, for which supporting information is provided.

Reference	Document	Written Submission Comment	Applicant's response
RR-011.69	Applicant's Response to Relevant Representations (PDA-008)	2.7.2.3. We further advise that the justification given (in para. 1.3.2.8 [APP-088]) for the ZoI considered in the WFD compliance assessment is inconsistent with the justification for the HRA screening decision not to take forward to consideration of LSE any features or impacts outside of the 12km precautionary buffer, and that referred to in the scoping section of this document (1.4.1.1 [APP-088]). We advise that this is corrected within the WFD compliance assessment.	The Applicant notes your response. It appears that the 12 km buffer referred to in paragraph 1.4.1.1 of Volume 6, Annex 2.2: Water Framework Directive Coastal Waters Assessment (APP-088) is a typographical error; it should be 2 km. The assessment used a distance of 2 km; therefore, the conclusions are unaffected by this discrepancy in the text.
REP1- 056.203	Appendix to Response to WRs: NRW (REP2-080)	240. We do not consider that a satisfactory explanation has been provided to explain the rationale for the limited spatial extent of the Zone of Influence (ZoI) between 1 nm of MHWS and the offshore waters. We remain unsatisfied with the response of the Applicant (RR-011.69, PDA-008) in their establishment of impacts within the ZoI over the route of the transmission cable. We consider that the Applicant has been inconsistent in its approach between legislative regimes in assessing environmental impact and preventing and/or mitigating adverse effects on the environment. The ZoI assessed for consideration under the Conservation of Habitats and Species Regulations (Habitats Regulations) is substantially larger than that assessed for consideration under the WFD Regulations. Although this will not alter the conclusions of the assessment, had the Applicant included this it would have made the assessment more robust and would give the ExA confidence that the Applicant is acting diligently in its endeavours to identify and mitigate all potential adverse impacts on the environment. We continue to advise that the justification for the inconsistency is made clear, or that the Applicant is consistent in their approach of consideration of the spatial extent of the impacts of their proposed activities regardless of the legislation they are attempting to comply with.	The Applicant notes NRW's agreement that the conclusions of the assessment presented in Volume 6, Annex 2.2: Water Framework Directive Coastal Waters Assessment (APP-088) would not be altered by the application of a Zol that aligns with the Zol assessed for consideration under the Habitats Regulations. In order to undertake a suitable and proportionate assessment of the Mona Offshore Wind Project for compliance with the WFD, a Zol was determined that was relevant to the specific requirements of this assessment, and which aligned with the recommended EA guidance, 'Clearing the Waters for All'. At all stages of the WFD assessment process, the Applicant has acted diligently to identify and mitigate all potential adverse impacts from the Mona Offshore Wind Project. In all instances of uncertainty pertaining to information about supporting elements, required to undertake the assessment, or where information has been unavailable, a precautionary approach has been taken, and these elements have been scoped in for assessment in Volume 6, Annex 2.2: Water Framework Directive Coastal Waters Assessment (APP-088). The Applicant will engage with NRW(A) through the Statement of Common Ground process to agree the best approach to address their concern on this matter.



- 1.3.1.6 Numerical modelling presented in Volume 6, Annex 1.1 Physical processes technical report (APP-086) considered an area of approximately one spring tidal excursion from the Mona Offshore Wind Project. This is the distance over which suspended sediment would be transported prior to being carried back on the returning tide and corresponds to a distance of approximately 10 km.
- 1.3.1.7 Potential impacts of the Mona Offshore Wind Project within 12 nm of MHWS are all located within the Mona Offshore Cable Corridor and Access Areas, with the exception of those associated with the transport of suspended sediments, which could extend up to 10 km from the boundary of the Mona Offshore Cable Corridor and Access Areas.
- 1.3.1.8 The ZoI for the WFD Coastal Waters Assessment information considered in this document is, therefore, defined as the area with the potential to be impacted by the transport of suspended sediments. This ZoI aligns with the spatial extent of the numerical modelling presented in Volume 6, Annex 1.1 Physical processes technical report (APP-086), seaward to 12 nm from MHWS, as illustrated in Figure 1.2.



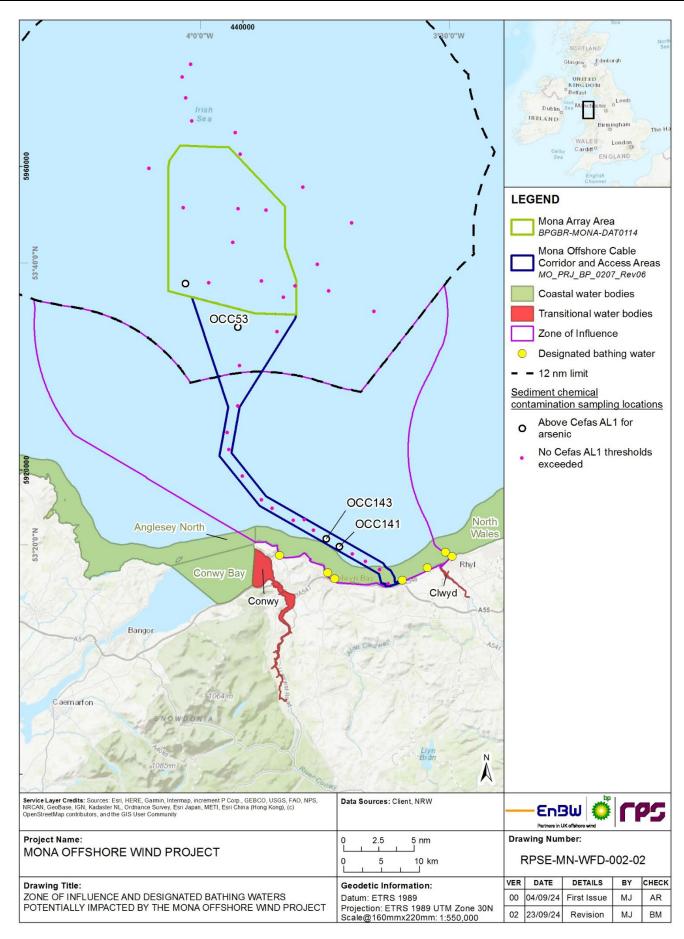


Figure 1.2: Extended Zone of Influence and designated bathing waters potentially impacted by the Mona Offshore Cable Corridor and Access Areas.



1.3.2 WFD Scoping based on extended Zol to align with spatial extent of numerical modelling

- 1.3.2.1 The scoping stage of the WFD Coastal Waters Assessment considers the potential impact of the Mona Offshore Wind Project against a number of criteria (e.g. habitat disturbance, distance from protected areas, effects on water quality), which are specific to each receptor (as outlined in paragraph 1.2.1.3).
- 1.3.2.2 To avoid duplication with the WFD assessment presented in Volume 6, Annex 2.2: WFD Coastal Waters Assessment (APP-088), the full process is not presented here, but the criteria are based upon the scoping template (Environment Agency, 2016) recommended in the 'Clearing the Waters for All' guidance. The full scoping process is presented in sections 1.4.2 and 1.4.3 of the WFD Coastal Waters Assessment (APP-088).
- 1.3.2.3 The Zol described in paragraph 1.3.1.8 overlaps with the North Anglesey water body (GB641010620000) by approximately 2.25 km² (Figure 1.2). However, given the distance of the North Anglesey water body from the Mona Offshore Cable Corridor and Access Areas (approximately 2.6 km), the results of numerical modelling presented in Volume 6, Annex 1.1 Physical processes technical report (APP-086) indicate that sediment is unlikely to reach the North Anglesey water body in high concentrations.
- 1.3.2.4 Modelled average suspended sediment concentration during the course of dredging for cable installation is presented in Figure 1.101 of Volume 6, Annex 1.1 Physical processes technical report (APP-086). This illustrates that, if dredging were to occur within the Mona Offshore Cable Corridor and Access Areas, any sediment that may be remobilised and transported in the vicinity of the North Anglesey water body would occur in low concentrations, and would therefore not pose a risk to the status of the North Anglesey water body.
- 1.3.2.5 The potential impact of the Mona Offshore Wind Project upon the North Anglesey water body was therefore considered to be minimal. Finally, in line with the agreement indicated at paragraph 238 of the NRW(A) Written Representations (see page 60 of REP1-056: Deadline 1 Submission Written Representation) requiring only the North Wales and Clwyd water bodies to be considered, the North Anglesey water body will not be discussed further.
- 1.3.2.6 Table 1.6 shows that two receptors (water quality and protected areas), which were scoped in based on the 2 km ZoI would also have been scoped in for detailed assessment in Volume 6, Annex 2.2: WFD Coastal Waters Assessment (APP-088) based on an extended ZoI. There would be no change in the receptors already scoped in, and no additional receptors would have been scoped in. Supporting information on these is provided in the following sub sections.
- 1.3.2.7 Cells shaded grey in Table 1.7 indicate cases for which the revisited scoping has resulted in a change in the receptors taken forward to the impact assessment stage.



Table 1.7: Summary of scoping for WFD receptors in the North Wales and Clwyd WFD water bodies, for original 2 km Zol (Volume 6, Annex 2.2: Water Framework Directive Coastal Waters Assessment (APP-088)) and extended Zol.

WFD receptor	2 km Zol		Risk issues for impact assessment	Extended Zol			Change to
	Potential risk?	Reason/features affected		Potential risk?	Reason/features affected	Risk issues for impact assessment	scoping?
North Wales W	/FD water	body					
Hydromorphology	No	n/a	n/a	No	n/a	n/a	No change
Biology Habitats	Yes	Footprint of activity up to 0.055 km² (i.e. <0.5 km²) but retained for assessment as it was included in the PEIR.	0.5 km ² or greater.	Yes	Footprint of activity up to 0.055 km² (i.e. <0.5 km²) but retained for assessment as it was included in the PEIR.	0.5 km ² or greater.	No change
		Polychaete reef (specifically Sabellaria reef) and Mussel beds (specifically blue mussel) located in intertidal area in vicinity of Mona Offshore Cable Corridor and Access Areas.	Within 500 m of any higher sensitivity habitat.		Polychaete reef (specifically Sabellaria reef) and Mussel beds (specifically blue mussel) located in intertidal area in vicinity of Mona Offshore Cable Corridor and Access Areas.	Within 500 m of any higher sensitivity habitat.	
		Where the Mona Offshore Cable Corridor and Access Areas crosses lower sensitivity habitat, this may constitute greater than 1% of that habitat in the WFD water body.	1% or more of any lower sensitivity habitat.		Where the Mona Offshore Cable Corridor and Access Areas crosses lower sensitivity habitat, this may constitute greater than 1% of that habitat in the WFD water body.	1% or more of any lower sensitivity habitat.	
Biology Fish	No	n/a	n/a	No	n/a	n/a	No change



WFD receptor	2 km Zol			Extended	Change to		
	Potential risk?	Reason/features affected	Risk issues for impact assessment	Potential risk?	Reason/features affected	Risk issues for impact assessment	scoping?
Water quality	Yes	The North Wales water body was assigned a phytoplankton status of moderate in Classification Cycle 3, 2021.	Is in a waterbody with a phytoplankton status of moderate, poor or bad.	Yes	The North Wales water body was assigned a phytoplankton status of moderate in Classification Cycle 3, 2021.	Is in a waterbody with a phytoplankton status of moderate, poor or bad.	No change
		On the advice of NRW a potential temperature increase from the offshore export cables during the operations and maintenance phase will be considered further.	Could affect water clarity, temperature, salinity, oxygen levels nutrients or microbial patterns for longer than a spring-neap tidal cycle.		On the advice of NRW a potential temperature increase from the offshore export cables during the operations and maintenance phase will be considered further.	Could affect water clarity, temperature, salinity, oxygen levels nutrients or microbial patterns for longer than a spring-neap tidal cycle.	No change
		Sediment contamination analysis has been conducted within the water body, and no contaminants were observed to exceed Cefas Action Level 1.	Retained for assessment as it was included in the PEIR		Sediment contamination analysis has been conducted within the water body, and no contaminants were observed to exceed Cefas Action Level 1.	Retained for assessment as it was included in the PEIR	



WFD receptor	2 km Zol			Extended Zol			Change to
	Potential risk?	Reason/features affected	Risk issues for impact assessment	Potential risk?	Reason/features affected	Risk issues for impact assessment	scoping?
					Sediment contamination analysis conducted across the Mona Offshore Cable Corridor and Access Areas out to 12 nm indicated that two sampling locations just beyond the 1 nm limit exceeded Cefas Action Level 1 for arsenic. Additionally, a third sampling location beyond 12 nm also exceeded Cefas Action Level 1 for arsenic .	Disturbance of sediment with contaminants above Cefas Action Level 1	Yes: extended sampling exceeded Cefas Action Level 1.
Protected areas	Yes	Liverpool Bay/Bae Lerpŵl SPA Y Fenai a Bae Conwy/Menai Strait and Conwy Bay SAC. Abergele (Pensarn) designated bathing water.	Within 2 km of any WFD protected area.	Yes	Liverpool Bay/Bae Lerpŵl SPA Y Fenai a Bae Conwy/Menai Strait and Conwy Bay SAC. Seven designated bathing waters: • Abergele (Pensarn) • Llandudno North Shore • Colwyn Bay • Colwyn Bay Porth Eirias • Kinmel Bay • Rhyl • Rhyl East.	Protected areas located within extended Zol.	Yes: six additional bathing waters scoped in for assessment
INNS	No	n/a	n/a	No	n/a	n/a	No change
Clwyd WFD wa	ater body						
Hydromorphology	No	n/a	n/a	No	n/a	n/a	No change
Biology Habitats	No	n/a	n/a	No	n/a	n/a	No change



WFD receptor	2 km Zol			Extended Zol			Change to
	Potential risk?	Reason/features affected	Risk issues for impact assessment	Potential risk?	Reason/features affected	Risk issues for impact assessment	scoping?
Biology Fish	No	n/a	n/a	No	n/a	n/a	No change
Water quality	No	n/a	n/a	No	n/a	n/a	No change
Protected areas	No	n/a	n/a	No	n/a	n/a	No change
INNS	No	n/a	n/a	No	n/a	n/a	No change



Water quality

- 1.3.2.8 As described in section 1.2.2 sediment sampling for analysis of chemical contaminants was undertaken at a total of 18 sites across the Mona Offshore Cable Corridor and Access Areas.
- 1.3.2.9 Concentrations of PCBs, OCPs, Organotins, PAHs and most metals were below Cefas Action Level 1 at all sampling locations within the Mona Offshore Cable Corridor and Access Areas. At three sampling locations (OCC53, OCC141 and OCC143), concentrations of arsenic (a metal) were above Cefas Action Level 1.
- 1.3.2.10 Two of these sampling locations are inside the extended ZoI (see Figure 1.2), and as per the request made by NRW(A) pertaining to assessment of chemical contaminants out to 12 nm in REP1-056.202 (see Appendix to WRs: NRW (REP2-080)), these would have already been included in an impact assessment (section 1.2).
- 1.3.2.11 Sediment-bound contaminants at the three sampling locations above Cefas Action Level 1, if disturbed, occur at low levels, and over a limited area. It should be noted that all three sampling locations which were above Cefas Action Level 1, are located beyond the 1 nm limit. However, it is recognised that re-mobilised sediment could transport contaminants to within the 1 nm limit (i.e. within the extended ZoI as presented in Figure 1.2).
- 1.3.2.12 As noted in paragraph 1.2.3.4, the release of contaminants from the small proportion of fine sediments is likely to be rapidly dispersed with the tide and/or currents and therefore deleterious effects to marine organisms are not expected.
- 1.3.2.13 As such the potential remobilisation of sediment-bound contaminants is not expected to jeopardise the ability of the North Wales WFD water body to achieve 'good' status. Similarly, remobilised sediment is not expected to travel into neighbouring WFD water bodies. The distance of sampling sites from the Clwyd WFD water body (approximately 13.6 km) is such that there would be no impact pathway, and the ability of the Clwyd WFD water body would not be prevented from achieving 'good' status.

Protected areas

1.3.2.14 In addition to the protected areas assessed in Volume 6, Annex 2.2 WFD Coastal Waters Assessment (APP-088) (Liverpool Bay/Bae Lerpŵl SPA, Y Fenai a Bae Conwy/Menai Strait and Conwy Bay SAC and Abergele (Pensarn) bathing water), consideration of protected areas within the extended Zol would scope in an additional six designated bathing waters:

-EnBW

MONA OFFSHORE WIND PROJECT

- Llandudno North Shore
- Colwyn Bay
- Colwyn Bay Porth Eirias
- Kinmel Bay
- Rhyl
- Rhyl East
- 1.3.2.15 Water quality at designated bathing waters is determined by visual inspection, and by analysis for the presence of *Escherichia coli* and intestinal enterococci between the months of May and September. Annual assessments then inform an overall status for bathing waters of 'excellent', 'good', 'sufficient' or 'poor'.
- 1.3.2.16 Works associated with the installation of offshore export cables for the Mona Offshore Wind Project will not increase *E. coli* and intestinal enterococci levels in the marine environment, therefore there is no impact pathway to affect the status of designated bathing waters.
- 1.3.2.17 The assessment of the Abergele (Pensarn) bathing water presented within Volume 6, Annex 2.2 Water Framework Directive Coastal Waters Assessment (APP-088) therefore concluded that the cable installation works would not be expected to reduce the status of the Abergele (Pensarn) bathing water. In light of agreement from NRW(A) that there is no pathogen source from the offshore works and so no potential to impact the WFD waterbodies and associated bathing waters sites assessed in the Volume 6, Annex 2.2 WFD Coastal Waters Assessment (APP-088) (i.e. Abergele (Pensarn) bathing water) (as per paragraph 2.7.4.1 in NRW(A)'s Relevant Representations RR-011), it, therefore, follows that there would be no impact pathway to affect the status of any of the additional six bathing waters on the basis that they are located at an increased distance from the Mona Offshore Wind Project.

1.3.3 Summary of supporting information pertaining to the spatial extent of the Zone of Influence

- 1.3.3.1 This supporting information is related to applying a ZoI for the WFD Coastal Waters Assessment presented in Volume 6, Annex 2.2: WFD Coastal Waters Assessment (APP-088) to align with the spatial extent of the numerical modelling presented in Volume 6, Annex 1.1 Physical process technical report (APP-086).
- 1.3.3.2 Table 1.6 indicates that the water quality receptor would be scoped in for further assessment and require an impact assessment. This would be based on the requirement to assess chemical contaminants out to 12 nm (as per REP1-056.202 in Appendix to WRs: NRW (REP2-080)). Table 1.6 also identifies six additional protected areas (bathing waters), which would be scoped into further assessment.
- 1.3.3.3 In relation to water quality, the inclusion of three sampling locations above Cefas Action Level 1 (including OCC53, located beyond 12 nm from MHWS) would not change the conclusions of Volume 6, Annex 2.2: WFD Coastal Waters Assessment (APP-088). Any release of contaminants from the small proportion of fine sediments is likely to be rapidly dispersed with the tide and/or currents, and therefore, increased bioavailability resulting in adverse eco-toxicological effects is not expected.



- 1.3.3.4 The potential remobilisation of sediment-bound contaminants is therefore not expected to prevent the North Wales WFD water body or the Clwyd WFD water body from achieving 'good' status.
- 1.3.3.5 In relation to protected sites, the assessment for the six additional bathing waters would be similar to the assessment for the Abergele (Pensarn) bathing water assessed in Volume 6, Annex 2.2: WFD Coastal Waters Assessment (APP-088). As for the Abergele (Pensarn) bathing water, installation of the offshore export cables would not cause an increase in the concentration of *E. coli* or intestinal enterococci at the additional six bathing waters (which are located at an increased distance). The Mona Offshore Wind Project would therefore not contribute to a deterioration in the results of annual water quality assessments (and statuses) at any bathing waters.
- 1.3.3.6 This supporting information note has therefore demonstrated that extending the ZoI to align with the spatial extent of numerical modelling does not alter the outcome of the Mona WFD Coastal Waters Assessment (APP-088), which concluded that activities associated with the Mona Offshore Wind Project (i.e. installation of offshore export cables) would not prevent any waterbodies scoped into the assessment from achieving 'good' status.

1.4 Overall summary

- 1.4.1.1 This document has presented supporting information related to two matters raised in relevant representations and written representations from NRW(A) relating to Volume 6, Annex 2.2: WFD Coastal Waters Assessment (APP-088). These include:
 - The assessment of sediment-bound chemical contaminants out to 12 nm from MHWS - RR-011.68 in the Applicant's Response to Relevant Representations (PDA-008) REP1-056.202 in Appendix to Response to WRs: NRW (REP2-080) (as addressed in section 1.2); and
 - Spatial extent of the ZoI considered in the WFD Compliance Assessment RR-011.69 in Applicant's Response to Relevant Representations (PDA-008) and REP1-056.203 in Appendix to Response to WRs: NRW (REP2-080) (as addressed in section 1.3).
- 1.4.1.2 The supporting information presented for both cases has shown that the conclusions of the assessment presented in Volume 6, Annex 2.2: WFD Coastal Waters Assessment (APP-088) would not be affected by consideration of chemical contamination analysis results out to 12 nm (section 1.2), or by consideration of a larger ZoI to align with the spatial extent of numerical modelling presented in Volume 6, Annex 1.1 Physical processes technical report (APP-086) (section 1.3).
- 1.4.1.3 The Mona Offshore Wind Project is, therefore, considered to be compliant with the requirements of the WFD.

1.5 References

MMO (2023) Marine Licensing: sediment analysis and sample plans. Available: https://www.gov.uk/guidance/marine-licensing-sediment-analysis-and-sample-plans#suitability-of-material. Accessed August 2024.