



# Wicklow Harbour Maintenance & Disposal at Sea

Assessment of Impact on the Maritime Usage Report (AIMU)

Report No. C56/1228-CM-R002

15 December 2025

Revision 02

Wicklow County Council

# Document Control

## Document

Assessment of Impact on the Maritime Usage Report (AIMU)

## Client

Wicklow County Council

## Project

Wicklow Harbour Maintenance & Disposal at Sea

## Report Number:

C56/1228-CM-R002

## Document Checking:

Date	Rev	Details of Issue	Prepared by	Checked by	Approved by
15 Dec 2025	02	Draft, issued for Client Review	Jackelyn Wren	Barry Sheridan	Steve Gregan
5 Dec 2025	01	Draft, issued for Client Review	Jackelyn Wren	Barry Sheridan	Steve Gregan
16 Oct 2025	00	Draft, issued for Client Review	Jackelyn Wren	Barry Sheridan	Steve Gregan

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## Glossary of Terms and Abbreviations

AA	Appropriate Assessment
AIMU	Assessment of Impact of the Maritime Usage
Al	Aluminium
As	Arsenic
BIM	Bord Iascaigh Mhara
Cd	Cadmium
Cr	Chromium
Cu	Copper
CWE	Coastal Watch Europe
CZMD	Coastal Zone Management Division
DAFM	Department of Agriculture, Food and the Marine
DaS	Dumping at Sea (permit)
DBT	Dibutyltin
EPA	Environment Protection Authority
GIS	Geographical Information System
Hg	Mercury
IFI	Inland Fisheries Ireland
ITM	Irish Transverse Mercator
IWDG	Irish Whale and Dolphin Group
Li	Lithium
MARA	Marine Area Regulatory Authority
MBES	Multibeam Echosounder
MPA	Marine Protection Area
MPDM	Marine Protection Development Management Act
MSO	Marine Survey Office
NPWS	National Parks and Wildlife Service
OCP	Organochlorinated pesticides
OSPAR	Oslo and Paris Conventions
PAH	Polyaromatic Hydrocarbons
Pb	Lead
PCB	Polychlorinated Biphenyls
ROV	Remote Operated Vehicle
SAC	Special Area of Conservation
SFPA	Sea Fisheries Protection Authority
SPA	Special Protection Area
TBT	Tributyltin
THC	Total Hydrocarbons
TSHD	Trailer Suction Hopper Dredger
UAU	Underwater Archaeology Unity
WCC	Wicklow County Council
WFD	Water Framework Directive
WID	Water Injection Dredging
Zn	Zinc

## [1] Introduction

Wicklow County Council (WCC) proposes to undertake periodic maintenance dredging works within Wicklow Harbour, which is subject to natural accretion of sandy and silty material. As part of this, WCC is seeking a Dumping at Sea (DaS) Permit for a newly identified dredge disposal site, located northeast of Wicklow Harbour, to place this dredge material.

WCC have commissioned Ayesa to support in the preparation of the technical documentation required for the application of the DaS Permit, from the Environmental Protection Agency (EPA) and Maritime Usage License (MUL) permission from the Maritime Regulatory Authority (MARA).

### [1.1] Project Overview

The Project involves the periodic removal of accumulated sediments from the inner and outer basins of the Wicklow Harbour to maintain safe navigational depths for commercial, fishing, Royal National Lifeboat Institution (RNLI), leisure and visiting vessels. Progressive sedimentation within Wicklow Harbour has resulted in the infilling of berthing, manoeuvring and approach areas. The proposed works will remove these deposits using four potential methods of dredging, including Trailer Suction Hopper Dredger (TSHD), Mechanical Dredging, Water Injection Dredging (WID) and plough dredging. The material proposed to be dredged via the first two methods will require disposal at the two proposed offshore disposal sites.

All dredging activity confined to the established harbour footprint and dredged material (via TSHD or barge only) is proposed to be transported by sea for disposal at a newly identified potential disposal site located northeast of Wicklow Harbour.

### [1.2] Report Objectives

This Assessment of Impact on Maritime Usage (AIMU) Report aims to describe the current state of the environment in the vicinity of the proposed maintenance dredging and disposal activities, and comment upon the potential effects on human health and wellbeing and the receiving environment of the proposed maintenance dredging and disposal activities. Mitigation is proposed, where appropriate, to eliminate or minimise negative effects. This report has been prepared to provide the Competent Authority with the relevant information to allow them to make an informed decision of the potential impact of the proposed dredging and disposal activities upon the receiving environment.

### [1.3] Methodology

This report has been produced to describe the current state of the environment in the proposed dredge and disposal areas, to consider and quantify the potential effects on environmental aspects and to present mitigation. It has been prepared in accordance with the following guidance:

- Guidelines on the Information to be contained in Environmental Impact Assessment Reports, from the Environmental Protection Agency (EPA) (2022).
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment, from the Department of Housing, Planning, Community and Local Government (August 2018).

- OPR Practice Note PN02 Environmental Impact Assessment Screening, from the Office of the Planning Regulator (June 2021).
- Environmental Impact Assessment of Projects, Guidance on Screening (Directive 2011/92/EU as amended by 2014/52/EU), from the European Commission (2017).
- Applicant Technical Guidance Note for Obtaining a Licence to Carry Out Specified Maritime Usages in the Maritime Area under the Maritime Area Planning Act 2021, from MARA (2023).

### [1.3.1] Data Sources

In preparing this report, familiarity with the surrounding environment and potential sensitive receptors has been made possible via a desktop study through review of the following data/information sources:

- EPA database and interactive portal.
- The Water Framework Directive (WFD).
- National Parks and Wildlife Services (NPWS) database and interactive portal.
- National Biodiversity Data Centre (NBDC) database and interactive portal.
- National Monuments Service (NMS), Historic Environment Viewer.
- National Monuments Service (NMS), Records of Monuments and Places (RMP) and Register of Historic Monuments (RHM) and Wreck Viewer.
- Ireland's Marine Atlas.
- European Commission EMODnet Map Viewer

### [1.3.2] Supporting Documentation

WCC and Ayesa (and their sub-consultants) have prepared a number of reports, all of which have informed the assessment of impacts made in this report:

- Ayesa (2024) Wicklow Harbour Dredging, Disposal at Sea Site Selection.
- Ayesa (2025a) Wicklow Harbour Dredging & Offshore Disposal. Risk Assessment for Annex IV Species.
- Ayesa (2025b) Wicklow Harbour Dredging & Offshore Disposal. Supporting information for Screening of Appropriate Assessment.
- Ayesa (2025c) Wicklow Harbour Dredging Proposed Disposal at Sea Site. Disposal Site Suitability Report.
- Tetra Tech RPS (2025) Wicklow Disposal Site Dispersion Assessment.
- MERC Consultants (2025) Benthic Ecological Survey Report, Wicklow Harbour dredging campaign – proposed spoil disposal site.

Historic applications to MARA have been made for the Wicklow Harbour proposed maintenance dredging, supported by the following:

- MERC Consultants (2023) Benthic Survey of Wicklow Harbour Dredge Site.

- SOCOTEC (2021-2022) Wicklow Harbour Dredge Site. Sediment Sampling, Certificate of Analysis Reports.
- Archaeological Management Solutions (2024) Underwater Archaeology Impact Assessment for Maintenance Dredging in Wicklow Harbour.
- Gavin & Doherty Geosolutions (2024a) Wicklow Harbour Dredging and Arklow Disposal Risk Assessment for Annex IV Species.
- Gavin & Doherty Geosolutions (2024b) Assessment and Report on Dispersion Modelling due to Water Injection Dredging at Wicklow Harbour.
- Gavin & Doherty Geosolutions (2024c) Wicklow Harbour Dredging & Disposal Site Supporting Information for Screening of Appropriate Assessment.
- Gavin & Doherty Geosolutions (2024d) Wicklow Harbour Dredging and Arklow Disposal Assessment of Impact of the Maritime Usage (AIMU) Report.

#### [1.4] Structure of the Report

As is required of the Applicant Technical Guidance Note for Obtaining a Licence to Carry Out Specified Maritime Usages in the Maritime Area under the Maritime Area Planning Act 2021 (MARA, 2023), the Report is structured as follows:

- Section [1] Introduction
- Section [2] Description of Proposed Activities
- Section [3] Need and Alternatives
- Section [4] Planing and Development
- Section [5] Assessment of Impacts, considering the following environmental parameters:
  - [5.2] Land and Soils
  - [5.3] Water
  - [5.4] Biodiversity
  - [5.5] Commercial Fisheries and Aquaculture
  - [5.6] Air Quality
  - [5.7] Noise and Vibration
  - [5.8] Landscape and Seascape
  - [5.9] Traffic and Transport
  - [5.10] Cultural Heritage
  - [5.11] Population and Human Health
  - [5.12] Climate
  - [5.13] Waste
  - [5.14] Material Assets
  - [5.15] Major Accidents and Disasters
  - [5.16] Interactions
- Section [7] Mitigation Measures Proposed
- Section [8] Conclusion

## [2] Description of Proposed Activities

The Study Area covers a total area of 0.406 km<sup>2</sup> and is comprised of (Image 1):

- a) The proposed dredging area. The dredge area comprises an area of 0.056 km<sup>2</sup> within Wicklow Harbour, and
- b) The identified potential disposal site northeast of Wicklow Harbour. The site is located 2.5km off the shoreline at Five Mile Point and comprises of an area of 0.35 km<sup>2</sup>.

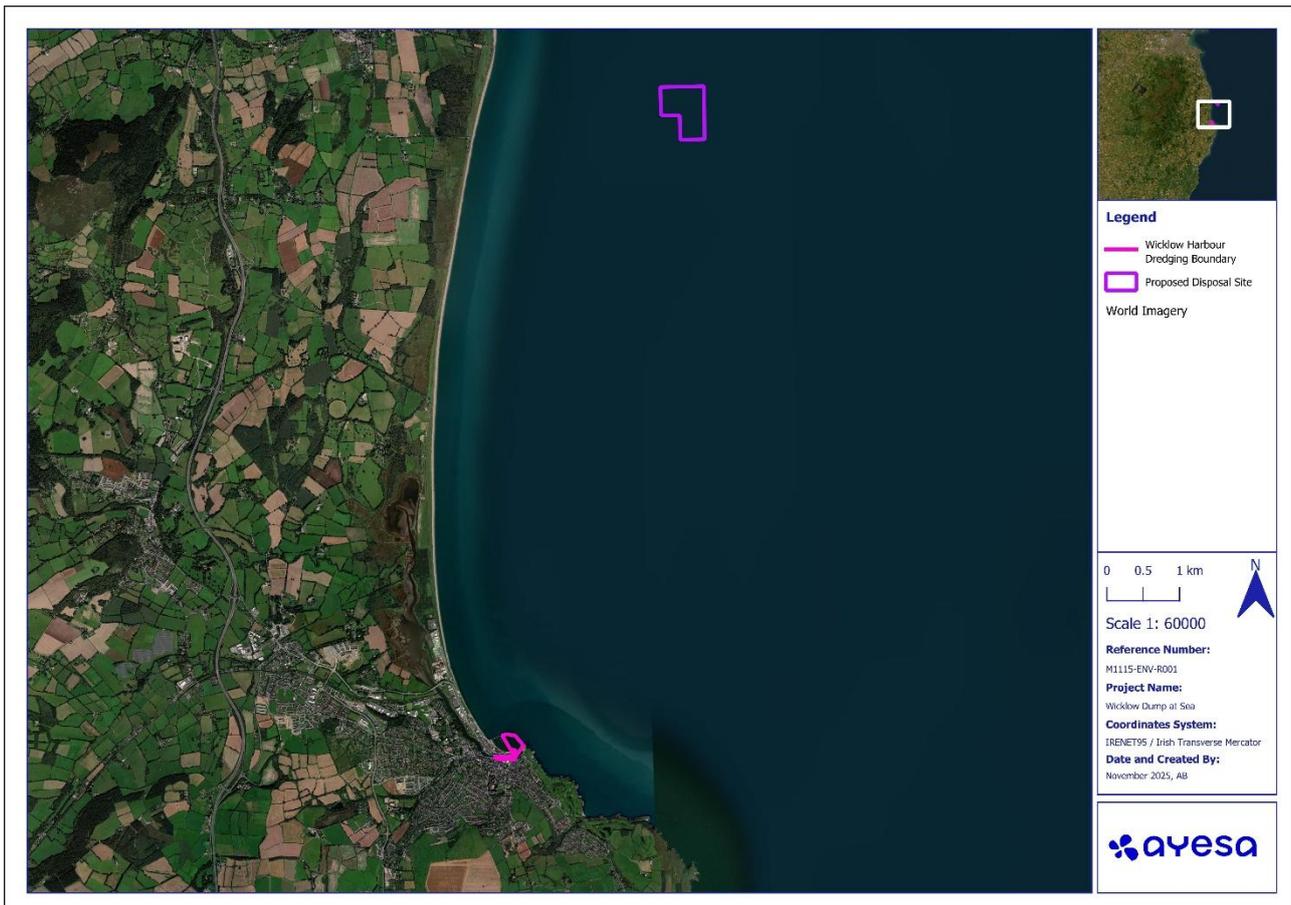


Image 1: Wicklow Dredge Area and Potential Disposal Site Northeast of Wicklow Harbour

### [2.1] Pre-and Post-Dredging Bathymetric Surveys

Bathymetric surveys have been undertaken in Wicklow harbour for decades to monitor and assess navigation levels. This is the case for every port, harbour and marina in Ireland and internationally. For monitoring annually Wicklow harbour generally undertaken one bathymetric survey a year currently, which takes approximately three hours to complete. However, additional surveys may be required sporadically should concerns be raised about minor isolated areas or to identify debris. When undertaking a dredging campaign, it is a requirement of the EPA that surveys are undertaken before and after dredging, both at the loading area and the disposal area. Period interim surveys during the dredging works to monitor progress, identify high spots and determine completion may also be required. Survey take place using a small vessel or an autonomous unmanned survey vessel. Generally, Wicklow Port uses a multi beam echosounder to attain complete coverage of the seabed levels within the harbour.

## [2.2] Required Maintenance Dredging

Wicklow Harbour is located on the east coast of Ireland within the administrative area of WCC, approximately 50 km south of Dublin and 30 km north of Arklow. The harbour lies at the mouth of the River Leitrim and is bounded by the R750 coastal road to the west and the Irish Sea to the east. The harbour comprises an inner basin, outer basin and entrance channel, enclosed by the North and South Piers which provide shelter from prevailing easterly swells. The surrounding coastline consists predominantly of mixed sand and cobble substrates, with occasional rocky outcrops and intertidal areas exposed at low tide.

Wicklow Harbour functions as a multi-use facility, accommodating commercial vessels, fishing craft, leisure boats and the adjacent RNLI station. It is a heavily modified, operational marine environment that experiences regular vessel traffic and tidal exchange with the Irish Sea.

WCC proposes to undertake periodic maintenance dredging works within the Harbour over an eight-year programme. The purpose is to remove accumulated sediments from the inner harbour basin, outer basin and entrance channel to maintain safe navigational depths for commercial, fishing, RNLI, leisure and visiting vessels operating from the harbour. Sediment deposition within the harbour occurs as a result of natural coastal processes and fluvial inputs, leading to progressive infilling of berths and approach channels. The proposed dredging works will restore operational depths to ensure the continued safe functioning of this active port facility.

The dredging footprint is confined to the existing dredged harbour area, extending across the inner and outer harbour basins and the approach channel. All dredging activities will be undertaken within the established navigation limits, and no encroachment into adjacent seabed areas is proposed.

Offshore disposal will be carried out under a DaS Permit issued by the EPA.

### [2.2.1] Dredging Methodology & Quantities

Four potential methods of dredging are proposed to be utilised across the eight years, including Trailer Suction Hopper Dredger (TSHD), Mechanical Dredging, Water Injection Dredging (WID) and plough dredging. The material proposed to be dredged via the first two methods will require disposal at the proposed offshore disposal site. However, whilst WID and ploughing won't require material transport to the proposed offshore disposal site, are still considered to result in 'disposal at sea' operations.

Where required, dredging may be undertaken on a 24-hour basis to optimise tidal windows and minimise disruption to harbour users, subject to adherence with marine mammal protection protocols. The overall programme will extend across multiple dredge events over eight years, with the duration of each campaign determined by plant availability, weather and the volume of material to be removed. An indicative 2-week programme is anticipated for each dredge and offshore disposal occasion however this period may be longer based on the volume to be dredged and the plant available.

All works will be supervised by WCC and undertaken in full compliance with relevant maritime safety, environmental and licensing requirements.

The quantities and frequency of dredging is outlined in Table 1 and Table 2. These tables provide a conservative assumption of quantities to be dredged. Table 1 presents the quantity of material (in tonnes, wet weight) extracted from Wicklow Harbour via TSHD/mechanical dredging methods, proposed to be disposed of offshore. Table 2 presents all planned dredging to occur in Wicklow

Harbour over the eight-year maintenance dredging programme. As mentioned, only the material dredged via TSHD/mechanical dredging is proposed to be disposed of offshore. The quantities have been presented in three datasets, as is required by the EPA, including dry tonnes, *insitu* m<sup>3</sup>, and wet tonnes.

**Table 1: Offshore Disposal Quantities (via TSHD/Mechanical Dredging)**

<b>Year</b>	<b>Standard Quantity (tonnes, wet weight)</b>
Year 1	157,500
Year 2	45,000
Year 3	45,000
Year 4	90,000
Year 5	45,000
Year 6	45,000
Year 7	90,000
Year 8	45,000
<b>Total</b>	<b>562,500</b>

**Table 2: Dredge Frequency and Quantities from Wicklow Harbour**

		Primary Year	Secondary Year	Secondary Year	Primary Year	Secondary Year	Secondary Year	Primary Year	Secondary Year		
Dredge Area Name	Method of Dredging	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Total	Total
		(dry tonnes)									
Port Area	TSHD/ Mechanical	80,850	23,100	23,100	46,200	23,100	23,100	46,200	23,100	<b>288,750</b>	<b>415,800</b>
	WID	26,950	0	0	26,950	0	0	26,950	0	<b>80,850</b>	
	Plough	5,775	5,775	5,775	5,775	5,775	5,775	5,775	5,775	<b>46,200</b>	
Dredge Area Name	Method of Dredging	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Total	Total
		(insitu m <sup>3</sup> )									
Port Area	TSHD/Mechanical	105,000	30,000	30,000	60,000	30,000	30,000	60,000	30,000	<b>375,000</b>	<b>540,000</b>
	WID	35,000	0	0	35,000	0	0	35,000	0	<b>105,000</b>	
	Plough	7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500	<b>60,000</b>	
Dredge Area Name	Method of Dredging	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Total	Total
		(wet tonnes)									
Port Area	TSHD/Mechanical	157,500	45,000	45,000	90,000	45,000	45,000	90,000	45,000	<b>562,500</b>	<b>810,000</b>
	WID	52,500	0	0	52,500	0	0	52,500	0	<b>157,500</b>	
	Plough	11,250	11,250	11,250	11,250	11,250	11,250	11,250	11,250	<b>90,000</b>	

**Note:** The material to be dredged via WID and plough dredging will not require offshore disposal, only the material dredged via TSHD/Mechanical dredging.

## [2.2.2] Dredge Material Characteristics

Sediment chemistry sampling and analysis, along with eco-toxicological testing, was undertaken in 2021 (following Marine Institute advice) to check the suitability of the dredged material to be deposited/disposed of at sea. Sampling with a Van Veen grab revealed silty sand, with fine sands in the harbour. The chemical analysis of the samples revealed the sediment is Class 1; where the contaminant concentrations are less than Level 1, uncontaminated and no biological effects are likely (Cronin *et al.*, 2006; Marine Institute, 2019). The samples are therefore considered acceptable for disposal at sea.

The following sections provide a summary of the sediment testing.

### [2.2.2.1] Sediment Composition

The depths of the dredge site (Wicklow Harbour) range from 0.1m to 7.8m according to a recently completed bathymetric survey (Hydromaster Ltd., 2023). The shallower depths are primarily focused along the margins of the harbour area (areas of lower river flow), leaving a typical scour channel through the centre.

Sediment sampling was completed at fourteen locations within the Wicklow Harbour in 2021 and 2022, thirteen of which were marine based and located in the planned dredge area (all apart from S10) (SOCOTEC, 2021). These results have been presented in Table 3 below. Overall, the physical characteristics of the sediments within the dredge area are consistent with estuarine sediments (silt / silty sand).

**Table 3: Physical Characteristics from Sediment Sampling at Dredge Site (SOCOTEC, 2021)**

Unit	%	%	Mg/m3	% M/M	% M/M	%	%	%	N/A
Sample Ref:	Total Moisture @ 120°C	Total Solids	Particle Density	TOC	Carbonate Equiv (%CO3)	Gravel (>2mm)	Sand (63-2000 µm)	Silt (<63 µm)	Visual Inspection
S1	34.3	65.7	2.76	0.36	6.48	8.7	42.4	48.9	Grey SILT
S1b	-	-	-	-	-	0.2	22.1	77.7	-
S2	36.1	63.9	2.75	0.57	7.20	0.0	56.6	43.4	Grey SILT
S2b	-	-	-	-	-	2.0	35.3	62.6	-
S3	53.5	46.5	2.74	1.04	10.20	0.0	36.8	63.2	Grey sandy SILT
S3b	-	-	-	-	-	0.9	58.2	41.0	-
S4	48.8	51.2	2.72	1.18	9.36	32.5	36.2	31.2	Grey SILT
S5	46.5	53.5	2.69	1.47	8.88	4.6	21.0	74.4	Grey SILT
S6	46.1	53.9	2.74	1.78	10.6	0.00	29.3	70.7	Grey SILT
S7	23.0	77.0	2.73	0.54	6.36	39.8	57.3	2.9	Grey silty SAND
S8	27.4	72.6	2.72	0.56	3.84	1.9	91.7	6.4	Grey silty SAND

S9	29.2	70.8	2.70	0.37	4.56	0.0	94.8	5.2	Grey SAND
S10	32.5	67.5	2.70	0.21	5.28	0.0	72.9	27.1	Grey SAND
S11	32.6	67.4	2.76	1.21	8.88	0.0	49.7	50.3	Grey silty SAND

### [2.2.2.2] Chemical Composition

Chemical testing was also completed in the Harbour, including analysis of:

- Heavy Metals, including Arsenic as As, Cadmium as Cd, Chromium as Cr, Copper as Cu, Lead as Pb, Nickel as Ni, Zinc as Zn, Mercury as Hg, Aluminium as Al and Lithium as Li,
- Dibutyltin (DBT),
- Tributyltin (TBT),
- Polychlorinated Biphenyls (PCB),
- Total Hydrocarbon Content (THC), and
- Polyaromatic Hydrocarbons (PAH).

The results are presented in Table 4 overleaf. Levels of zinc in sample ID S5 and S6 exceeded the Lower Action Thresholds (Marine Institute, 2006) and levels of copper in sample ID S6 exceeded the Upper Action Threshold (Marine Institute, 2006). Sample ID's S1b, S2b and S3b were retests of S6, and all show compliant levels. On this basis, the material proposed to be dredged from Wicklow Harbour is not considered to be contaminated.

**Table 4: Chemical Characteristics from Sediment Sampling at Dredge Site (SOCOTEC, 2021)**

Unit	mg/kg											µg/kg				
Sample ID:	As	Cd	Cr	Cu	Pb	Ni	Zn	Hg	Al	Li	DBT	(TBT)	∑ DBT & TBT	PAH (∑16)	THC	PCB (∑ ICES 7)
<b>S1</b>	5.8	<0.2	38.8	14.6	15.0	10.1	50	0.03	19400	21.3	<5	<5	<10	152	4300	<0.56
<b>S1b</b>	12.0	0.5	52.3	20.9	39.6	22.4	103.0	-	45200	46.1	-	-	-	-	-	-
<b>S2</b>	6.2	<0.2	41.2	15.4	20.1	11.4	48.7	0.02	22400	26.7	<5	<5	<10	145	71100	<0.56
<b>S2b</b>	11.6	0.2	57.1	15.6	34.7	23.4	115.0	-	43500	46.1	-	-	-	-	-	-
<b>S3</b>	12.0	<0.2	61.0	13.5	28.1	23.4	61.0	0.03	39800	39.2	<5	<5	<10	611	108000	<0.65
<b>S3b</b>	7.0	0.3	71.5	27.8	32.2	13.3	129.0	-	27600	35.0	-	-	-	-	-	-
<b>S4</b>	11.9	0.2	69.6	15.4	30.9	26.2	73.0	0.03	42200	42.5	<5	<5	<10	419	96900	<1.03
<b>S5</b>	11.9	<0.2	64.3	34.4	29.8	27.8	164.0	0.03	50700	49.6	<5	<5	<10	436	10100	<1.59
<b>S6</b>	12.9	0.2	72.3	165.0	40.6	25.4	250.0	0.05	42900	42.0	18.1	13.5	31.6	564	150000	6.97
<b>S7</b>	13.2	<0.2	70.9	30.3	14.7	29.3	62.1	0.01	42500	39.7	<5	<5	<10	1055	44000	<0.96
Lower Action Level <sup>1</sup>	20.0 <sup>2</sup>	0.7	120.0	40.0	60.0	40.0 <sup>2</sup>	160.0	0.2	NA	NA	-	-	100.0	4,000	100,000	7.0
Upper Action Level <sup>1</sup>	70.0	4.2	370.0	110.0	218.0	60.0	410.0	0.7	NA	NA	-	-	500.0	-	-	1,260

<sup>1</sup>Guidelines for the Assessment of Dredge Material for Disposal in Irish Waters (Marine Institute, 2006)

<sup>2</sup>Thresholds for Arsenic and Nickel were amended in Addendum to 2006 Guidelines for the Assessment of Dredged Material in Irish Waters (Marine Institute, 2019)

### [2.2.2.3] Macro-benthic Composition

Benthic surveys were conducted at four locations within the Harbour by MERC on 13<sup>th</sup> March 2023 (MERC, 2023). At each station, a 0.1m<sup>2</sup> day grab was used and three replicate samples for faunal analysis and an additional sample for granulometry were collected.

A drop-down video survey of the benthic sampling stations and their environs was carried out on 13<sup>th</sup> April 2023. A drop-down video was deployed over the same areas where benthic grab samples were taken.

The sediments within the dredge site are consistent with estuarine sediments including muds and sands as would be expected due to the influence of the Leirtrim River, which enters the harbour area from the northwest. Video imagery of this area indicated no surface hard substrata or epifauna at the stations sampled.

The sediments of stations 1, 2, 3 & 4 were comprised mainly of fine and very fine sands, the percentage of these fractions ranged from 50% at station 4 to 79% at station 2. Station 1 and 4 contained a significant proportion of silt/clays (<63µm) at 24% and 33% respectively. This fraction was present at stations 2 & 3 but in much smaller amounts (~5%). Coarser sands and gravels fraction were also present at these stations.

Faunal communities identified at these stations were typical of finer sediment, estuarine habitats and contained few taxa and individuals. Taxa common to all stations included the polychaetes *Nephtys hombergii*, *Tharyx robustus* and *Spio martinensis*. Animals from other phyla were less common but included the amphipod *Ampelisca brevicornis*, the bivalves *Macomangulus tenuis* and *Abra alba* and a few bryozoans (MERC, 2023).

No Annex I habitats or species of conservation importance were identified from available grab sampling or Remote Operated Vehicle (ROV) imagery data.

### [2.2.3] Sediment Dispersion Characteristics

Gavin and Doherty Geosolutions (2024c) assessed sediment dispersion due to Water Injection Dredging (WID) in connection with the proposed Eight-Year Maintenance Dredging Programme. A modelling scenario was established to assess the impact of sediment dispersion on the receiving environment, both within the immediate shoreline surrounding Wicklow harbour and in the vicinity of the nearest Natura 2000 sites. This scenario involved simulating the Water Injection Dredging operations for the primary year's sediment volume to be dredged.

Following a 13-day simulation of Water Injection Dredging (WID) operations, consisting of 23.3 dredging cycles during ebbing tides, to assess sediment dispersion both within and outside Wicklow Harbour, the simulation was extended for an additional 2 days to observe the evolution of dredged material dispersion and changes in deposition areas. The modelling results indicate that Suspended Sediment Concentration (SSC) reaches negligible levels after two days without dredging, measuring less than 0.00177 kg/m<sup>3</sup> (1.77 mg /L) at the entrance of Wicklow Harbour, where the maximum SSC values were observed.

### [2.2.4] Historic Dredging

Dredging campaigns at Wicklow Harbour have previously been conducted.

A full capital dredging campaign of Wicklow Harbour took place in 1998, where the Packet Pier was reconstructed with steel piling, which replaced the stone and concrete pier.

Limited dredging of Wicklow Harbour took place in 2005. This involved the removal of sediment build up alongside the Packet Pier using a tracked excavator which could be operated from the Packet Pier.

The most recent dredging took place in 2014 under DaS licence (Permit Number S0017-01) and Foreshore Licence (MS51/5/153). The dredging activities used an excavator on a barge with disposal by hopper barge to the Arklow Bank Disposal Site.

### **[2.3] Potential Disposal Site Northeast of Wicklow Harbour**

Material dredged by TSHD or backhoe dredger will be transported by sea and disposed of at a proposed disposal site located northeast of Wicklow Harbour.

The disposal site will operate under an EPA DaS Permit, issued in accordance with the Dumping at Sea Act 1996 (as amended). Disposal will be undertaken by controlled bottom-release from the hopper dredger or transport barge, strictly within the licensed boundary coordinates specified in the permit.

Disposal operations may be carried out on a 24-hour basis, subject to safe navigation, weather conditions, and implementation of required measures for marine mammals and other protected species. Disposal activities will be planned to minimise sediment plume dispersion and avoid sensitive periods for marine fauna, where practicable.

No capping, levelling, or seabed preparation is required at either disposal site.

#### **[2.3.1] Sediment Composition**

Water depths at the potential disposal site northeast of Wicklow Harbour range from 11m to 29m. The site is exposed to strong tidal flows, which in this area of the Irish sea are the dominant hydrographic feature. Peak tidal flows may reach up to 4.5 knots during spring tides. The seabed in the area is characterised by a range of mainly coarse sediments, with occasional fractions of gravel, cobble and larger stones. A review of seabed mapping imagery ([www.infomar.ie](http://www.infomar.ie)) indicates the seabed is strongly sedimentary and features a series of highly sorted sediments which form a series of seabed megawaves.

MERC Ecological Consultants were commissioned by WCC to carry out a subtidal benthic ecology survey of the proposed disposal site, completed through grab sampling. The objective of the grab survey, completed in February 2025, was to investigate the benthic infaunal community within the seabed sediments within the proposed disposal site. A total of 6 stations were sampled for the purposes of obtaining seabed sediment samples from within the proposed disposal site. At each of 6 stations, 3 no. replicate samples were collected for faunal analysis along, with a further sample for the purposes of subsampling for Particle Size Analysis (PSA) and Total Organic Carbon (TOC) analysis.

MERC Ecological Consultants (2025) made the following findings from the sediment sampling:

- Sediments sampled in the proposed disposal site were all classified as Slightly Gravelly Sands. They were very consistent in their composition and the majority of the sediment,

approximately 95% at all stations, were coarse (500-999 $\mu$ m) and medium (250-499 $\mu$ m) sand fractions. Gravels and silt/clays were present at all stations but recorded in insignificant amounts, 0.52-2.5% for particles over 2mm and <1% silt/clays (particles <63 $\mu$ m).

- Total organic carbon was low which was as expected for these sediment types. A maximum of 2.31% was recorded at station 5.
- The sediment sampling confirm the seabed as being classed as EUNIS habitat code A5.13 *Infralittoral Coarse Sediments* at all stations.
- The seabed sediment data are indicative of a site that is subject to high current flows with seabed sediments being well sorted and finer sediment fractions being absent or exceptionally low.

### [2.3.2] Macro-benthic Composition

At the same 6 stations, the 3 replicate grab samples were sieved to 1mm and faunal residues were analysed by an NMBAQC accredited facility. All samples were analysed for faunal taxa and identified to species level where possible. All taxa were enumerated. Further, a series of drop frame mounted camera surveys were conducted to collect high-quality seabed imagery. The objective of the imaging survey was to collect data that would support infaunal grab surveys in developing a fuller and more detailed ecological appraisal of the benthic environment at the proposed disposal site.

#### [2.3.2.1] Faunal Grab Sampling Results

Analysis results (MERC Ecological Consultants, 2025) from benthic infaunal studies at Stations 1, 2, 3, 5 & 6 confirm especially sparse faunal assemblages, with an average of 2 or fewer taxa recorded per 0.1m<sup>2</sup> and between 1 and 6 individuals per 0.1m<sup>2</sup>. This is exceptionally low both in terms of taxa present and numbers of individuals. Mobile coarse sands are generally also known to support interstitial polychaete communities; with taxa such as *Hesionura elongata*, *Microphthalmus* spp. and *Protodrilus* spp. being common components. As indicated previously, it is likely that these taxa were not recorded during this survey due to the 1mm sieve size used to separate fauna from bulk samples. The latter communities are commonly associated with mobile coarse sediments and are not of conservation concern.

Moderate to large numbers of the reef-building polychaete *Sabellaria alveolata* were recorded in 2 of the 3 grabs taken from station 4 (164 per 0.1m<sup>2</sup> and 808 per 0.1m<sup>2</sup> in grabs B and C). Apart from this species and some epifaunal taxa associated with the small reef mounds, taxa recorded were indicative of the mobile coarse sands. Where *Sabellaria* was recorded, the structures resembled small mounds rather than the extensive reef structures that can often be developed by this species, and which are a focus for the nearby Wicklow Reef SAC (located circa 8km southwest of the proposed disposal site at its closest point).

The grab survey data confirms the EUNIS habitat code A5.134 - *Hesionura elongata* and *Microphthalmus similis* with other interstitial polychaetes in infralittoral mobile coarse sand and a partial record for EUNIS habitat code A5.612 *Sabellaria alveolata* on variable salinity sublittoral mixed sediment from grab samples B and C at Station 4.

#### [2.3.2.2] Video and Still Imagery Results

In the context of epifaunal species assemblages, analysis of video and stills image sets confirms the following (MERC Ecological Consultants, 2025):

- There is a low number of epifaunal taxa recorded as well as low overall species abundance. In particular very few sessile taxa are recorded.
- Mobile epifaunal species abundances appear to be low, and species observed most frequently included opportunistic feeders such as starfish *Asterias rubens* and scour tolerant species such as hermit crab *Pagurus bernhardus*.
- Very low abundance of grazers was noted – only two urchins *Echinus esculentus* were recorded. The low numbers of grazers observed is most likely related to lack of suitable grazing habitat, while the effects of sand scour would likely reduce grazing opportunity where suitable habitat does occur. Other scour tolerant species present included several bryozoan species (sessile), most notably Sea chervil (*Alcyonidium diaphanum*) and several hydroids (species unconfirmed); as well as anemones *Urticina felina* and *Metridium senile*. No burrowing epifaunal species were recorded during the imagery analysis. All taxa were recorded in low numbers.
- It is apparent from the analysis of video that the presence of *Sabellaria* sp. appears to be confined to the southwestern quarter of the proposed disposal site, based on both video and grab sample data. As in the findings for the grab survey, *Sabellaria* is not seen to form reef structures and is present occasionally encrusting the surface of small rocks or stones and rarely as small mounds <10cm on the seabed. There is no significant presence of *Sabellaria* reef in any of the video analysis.
- The findings of the video and stills imaging survey indicate that the site has low species diversity and abundance. This is a direct consequence of the likely highly dynamic nature of the site whereby sediment fractions are resuspended and moved during periods of high tidal flows. This leads to scour and changes in seabed relief and features on a regular basis – limiting both infaunal and epifaunal taxa diversity and abundance.

### [2.3.2.3] Conclusions Drawn from the Surveys

The different surveys (MERC Ecological Consultants, 2025) confirm the EUNIS habitat throughout the site as being representative of, EUNIS habitat code A5.13 Infralittoral Coarse Sediment, whilst the grab survey data confirms the EUNIS habitat code to the higher level 4 EUNIS A5.134 - *Hesionura elongata* and *Microphthalmus similis* with other interstitial polychaetes in infralittoral mobile coarse sand. The grab survey also identifies a partial record for EUNIS habitat code A5.612 *Sabellaria alveolata* on variable salinity sublittoral mixed sediment.

As it is considered best practice to avoid disposal of dredge material where there may be short term risks to areas of seabed where *Sabellaria alveolata* is recorded, MERC recommended that a section of the proposed dump site western boundary be moved eastwards so as to exclude seabed areas where *S. alveolata* was recorded during benthic surveys. This recommendation was taken on board as a precautionary measure, and the boundaries of the potential disposal site amended so as to remove all potential impact to areas of seabed where *Sabellaria alveolata* was recorded (Image 1).

### [2.3.3] Sediment Dispersion Characteristics

Tetra Tech RPS (2025) completed material dispersion modelling at the newly proposed disposal site, to determine the fate of the suspended fractions of the disposed material. This was undertaken using numerical modelling techniques which provided information on tides and sediment dispersion. The modelling undertaken represents the highest possible volume of material to be disposed of during the eight-year Wicklow Harbour dredging project. Actual material volumes, and spill rates, may be

lower and will therefore have a reduced plume envelope and concentrations along the Wicklow coast, than those presented in this report.

The frequency of disposal events was set at 2.7 hrs. Each disposal event has “doors open” for 5 minutes and takes place at one location in cyclical order in three different areas of the disposal site. The spill rate was 3,020 kg/s for the 5 minutes duration which results in approximately nine disposal events over a one-day period.

The maximum total SSC plume envelope observed during the disposal operations did not generally exceed 2mg/l directly along the Wicklow coastline and near to the Special Areas of Conservation (SACs) (Image 2 and Image 4). The higher maximum total SSC observed inside and near the disposal site, are related to times when the vessel was active and therefore represented the sediment source before any dispersion had occurred.

The average total Suspended Sediment Concentration (SSC) within 3km north and south of the proposed disposal site does not generally exceed 4.5mg/l while the greater plume envelope has an average total SSC of less than 1 mg/l (Image 3 and Image 5).

An assessment of the dumping operations found that the average total suspended sediment concentration beyond the immediate vicinity of the disposal site did not generally exceed 3mg/l. The average suspended sediment concentration quickly dispersed to less than 0.5mg/l approximately 10km to the north of the disposal site, and within 22km to the south. Five days after the final disposal event, the sediment plumes have fully dispersed into the background concentrations.

This is unsurprising given that this proposed site is almost completely dispersive for fine material with slow fall velocities such as the silt material being disposed of from Wicklow Harbour. Instead, most of the silt material disposed of at this site disperses to the point that it becomes indistinguishable from background levels.

A change to bed thickness, which does not exceed 25cm, is observed only within the disposal site area. Outside the disposal site, little to no change is observed in the bed thickness.

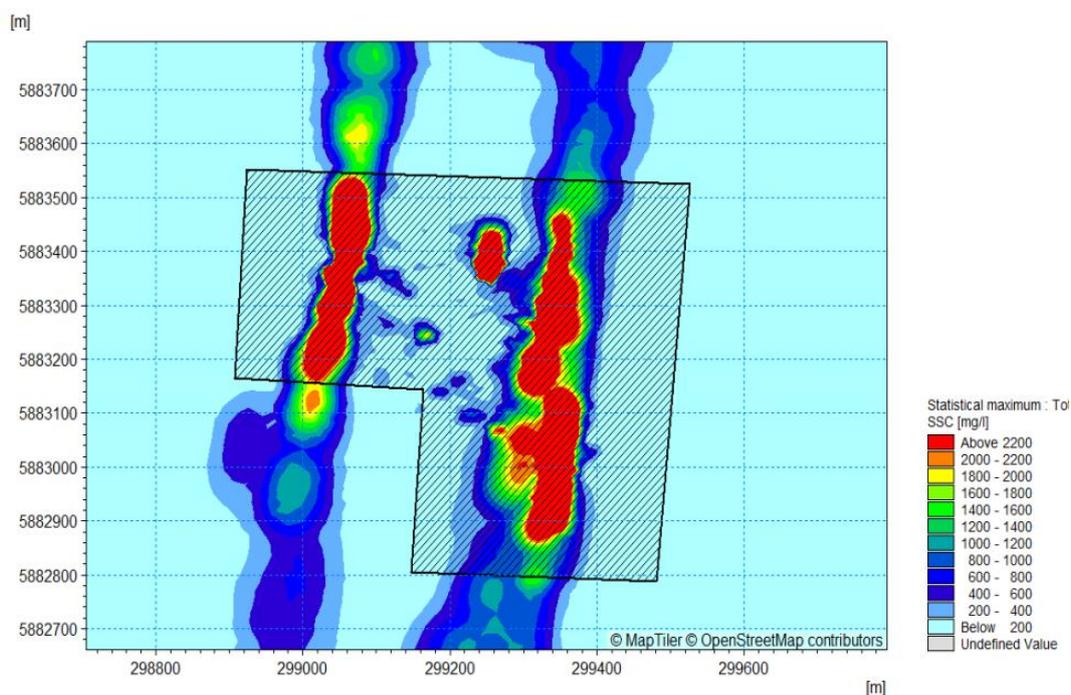


Image 2: Maximum Total SSC At the Proposed Disposal Site (Tetra Tech RPS, 2025)

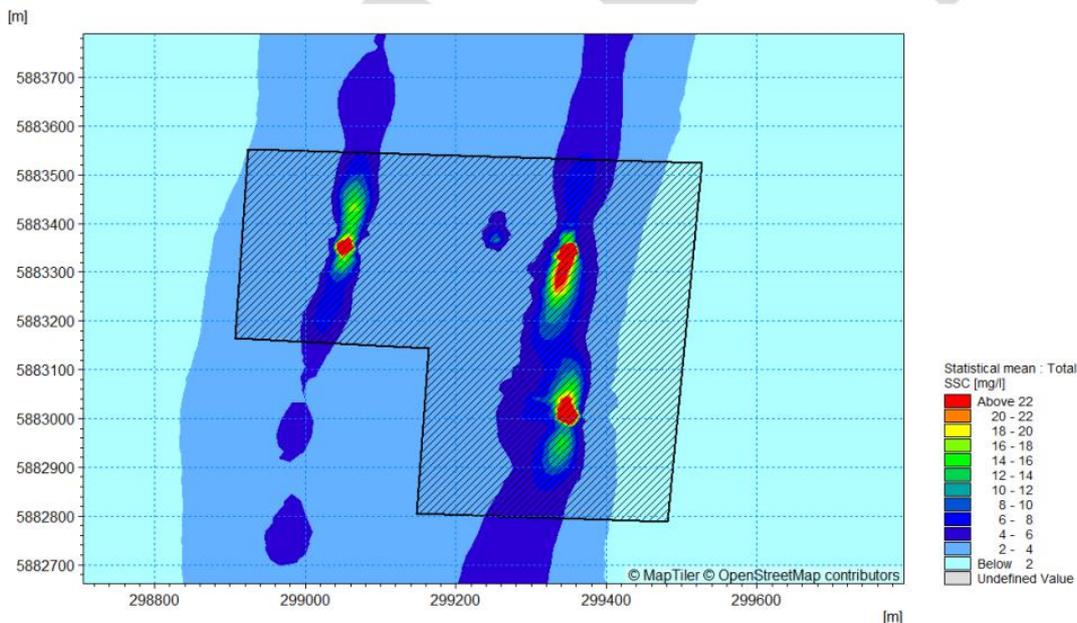


Image 3: Mean Total SSC At the Proposed Disposal Site (Tetra Tech RPS, 2025)

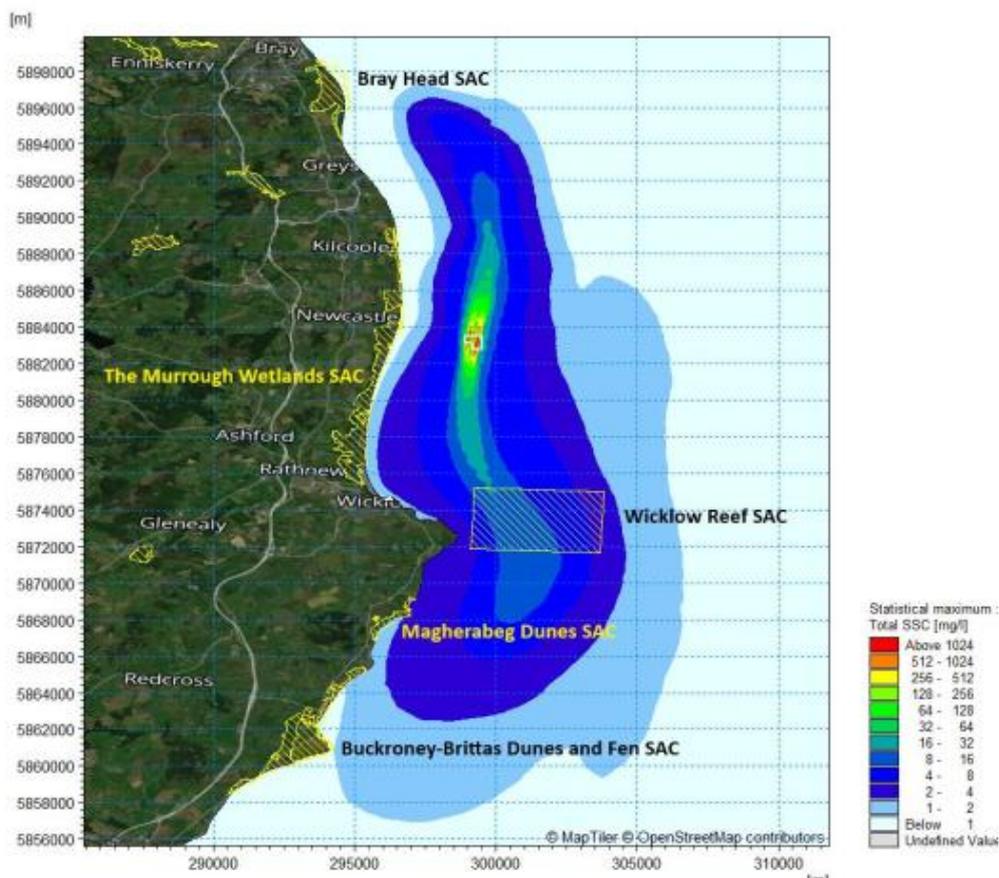


Image 4: Maximum Total SSC Along the Coastline (Tetra Tech RPS, 2025)

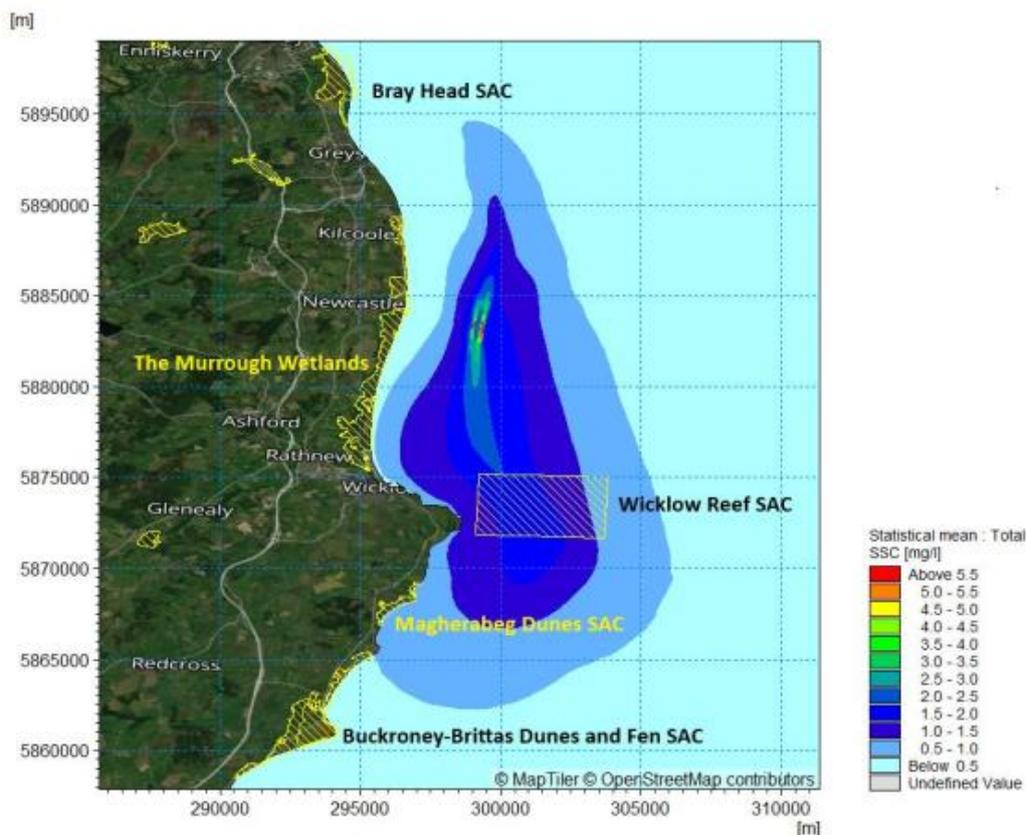


Image 5: Mean Total SSC Along the Coastline (Tetra Tech RPS, 2025)

SSC results were monitored at several SACs which lie along the Wicklow coast, including the Bray Head SAC, The Murrough Wetlands SAC, Wicklow Reef SAC, Magherabeg Dunes SAC and Buckronev-Brittis Dunes and Fen SAC. The following conclusions were drawn in respect of the sediment dispersion at these sites:

- The northernmost Bray Head SAC experiences a consistently low total SSC of c.0.1mg/l.
- The Murrough Wetlands is the closest SAC to the proposed disposal site, yet the highest total SSC reached at the northern monitoring point is 0.65mg/l.
- At the south end of The Murrough Wetlands, the total SSC rises above 1mg/l only towards the end of the disposal period on Day 11 and falls below this value again on Day 15.
- At Wicklow Reef SAC, which is in the direct tidal current path, the total SSC can reach up to 6mg/l during the disposal period.
- The Magherabeg Dunes SAC sees the total SAC rise to just over 2mg/l at the end of the disposal period, reducing quickly again after Day 15.
- A peak total SSC of c.1.7mg/l is observed at the Buckronev-Brittis Dunes and Fen SAC.

## [2.4] Embedded Environmental Controls

The following environmental controls are incorporated into the project design and form part of standard working practice. These measures are embedded, not “additional mitigation”:

- Dredging is restricted to the existing harbour footprint – no capital dredging, seabed deepening, or expansion outside historic limits.
- Only Class 1 (uncontaminated) sediment is proposed for offshore disposal, in accordance with Marine Institute and EPA guidance.
- Offshore disposal will only occur within the licensed boundaries of the offshore disposal site(s).
- No surface discharge, side-casting, or overspill dumping – disposal is by controlled bottom release only.
- Use of appropriate dredging plant (TSHD, backhoe) to minimise seabed disturbance.
- All dredging and disposal vessels will operate under AIS tracking and maintain VHF contact with the Wicklow Harbour Master.
- Refuelling and waste handling carried out in accordance with MARPOL Annex I & V – no fuelling in open water unless fully controlled.
- Spill prevention measures and certified bunkering procedures in place for all vessels.
- Onboard containment available for all operational oils, lubricants, and waste materials.
- No interaction with intertidal or coastal habitats – all works occur subtidally and offshore.
- Project design avoids overlap with designated SAC reef habitats.
- No dredging of contaminated sediments and no land-based handling or reprocessing proposed.
- Navigation safety maintained through Harbour Master coordination and Notices to Mariners.

These embedded measures are inherent to the works and apply irrespective of any additional mitigation for Annex IV species, Natura 2000 compliance, or licence conditions. All environmental controls will be implemented under the supervision of the appointed Dredge Supervisor and Harbour Master, with reporting in accordance with EPA DaS Permit requirements.

### [3] Need and Alternatives

The need for the proposed maintenance dredging and disposal activities as described in Section [2] is to regularly dredge the navigation channel, turning basin and berthing pockets for Wicklow Port to remain as an operational port and open to vessels. WCC is proposing an eight-year maintenance dredging programme to achieve and maintain the desired navigational water level depths needed for the safe navigation of vessels to and from Wicklow Port within the Licence Area. At Packet Quay, East Pier, and Southern Quay a 3.6m below Chart Datum (CD) is proposed, a 3.0m DC is proposed to be maintained at North Quay, and a 2.0m below CD at Leitrim River is proposed for maintenance.

As a port conservancy function, maintenance dredging of the entrance and navigational channel is a requirement, as such, there are no alternatives for the proposed dredging activities of Wicklow Port. The Port will cease to function as a commercial entity if the Port is not dredged, while also raising significant safety concerns including the capacity for RNLI to operate safely from Wicklow Port.

A number of alternatives to disposal at sea were considered for this Project, but subsequently ruled out, as detailed in the below table.

**Table 5: Alternative to Marine Disposal Considered**

Alternatives to Marine Disposal	Reasons for Infeasibility
Prevention	Dredging is only undertaken when absolutely necessary to allow trade to safely navigate the approach channels and berths. To minimise the volume of dredging undertaken, the Wicklow Port already operates a limited access procedure in their navigation channels for trade vessels. This restricts the size of trade vessels that can reach suitable berths at times other than high water. Further feasible methods to minimise the volumes dredged have not been identified. Due to the high cost of dredging, excessive or unnecessary dredging is avoided.
Beneficial Use Land Reclamation/Improvement	Wicklow Port is situated within Wicklow Town and is therefore confined by the surrounding facilities. Areas are present that could be reclaimed to provide further port facilities but these include a popular recreational beach and moorings for leisure craft. Furthermore, the council believe that the current land available is adequate for the port's current trade. Finally, the target dredge material contains a high proportion of silt, which does not have appropriate engineering characteristics for new port lands that require high bearing capacity and minimal long-term settlement. On this basis, there is no demand for land reclamation in the area and the majority of the material present would not be suitable without significant treatment. As treatment is required, to remove the fine-grained sediments, the material would not be permitted to be used for land reclamation under By-products Regulation 27.
Beneficial Use Beach Nourishment	The composition of the sediments to be dredged does not correspond with the material present at beaches along the coastline (coarse beaches). No notable erosion is present at the local beaches. In cases where no erosion is present on a beach when sediment of a similar particle distribution to that insitu is placed it is likely to be eroded as the equilibrium has been altered. Therefore, the placement of fine-grained material would only be short-term, with dispersion almost certain over the medium to long term. On this basis, there is no demand for beach nourishment in the area and the material present is not suitable.

Wetland Habitat/Enhancement	<p>There is no significant wetland located within 30kms of Wicklow Port and Wicklow County Council are not aware of any wetlands that are degrading within their jurisdiction generally. On this basis, the use of the dredged material in wetlands is not deemed a viable option.</p>	
Landfill Cover/Liner	<p>Demand for cover/liner is not expected to increase as no new landfill sites are planned locally. Other existing licensed sites are either too small in relation to quantities to be disposed or are too remote from the site. While the dredged material from the Harbour is fine in nature it does not contain sufficient clay material and therefore would be unsuitable to be used as a landfill liner.</p> <p>A local landfill was approached but they declined the material as either a waste or as a beneficial use material. If an arrangement could be made with the landfill operators to accept dredged material, it would be necessary to land the material either in the Port, dewater and transport to the site by road. It is planned to use hydraulic or hydrodynamic dredgers primarily. Therefore, to facilitate landing ashore site, pipeline and dewatering lagoon will be required. Alternative plant could be utilised but would reduce efficiency and increase dredging duration. The costs of establishing such a logistical process are significantly greater than the current management process. Furthermore, the environmental impact of substantially increased heavy vehicular traffic through the local community may be unacceptable to the local planning authority.</p> <p>For the above reasons landing dredged sediment ashore for treatment and transport to a landfill site is unfeasible at this time.</p>	
Aggregate Industry	<p>The use of Wicklow Port maintenance dredge material for aggregates was considered however a number of current issues were identified:</p> <ul style="list-style-type: none"> <li>• Lack of regulation of marine aggregates industry and guidance on its implementation;</li> <li>• Fine nature of sediment present with the presence of organics;</li> <li>• Elevated saline and pH levels;</li> <li>• Mechanical dredging not undertaken by the Port;</li> <li>• Hydraulic dredgers used cannot be unloaded at quays.</li> </ul> <p>The local council's roads department was approached to determine if the material could be utilised in any of the local road projects but they concluded that the fine-grained nature of the material would not be suitable.</p> <p>For the above reasons landing dredged sediment ashore at a suitable location for use as aggregates is not deemed feasible.</p>	
<b>Recycling</b>	Sediment Cell Maintenance	<p>Wicklow Port has included both water injection dredging and ploughing dredging within their maintenance dredging strategy to minimise the volume of sediment being removed from the harbour sediment cell and disposed of at sea. Therefore, beneficial use through sediment cell maintenance will be undertaken when these campaigns are undertaken.</p>
<b>Processing/Recovery</b>	<p>The sediment dredged annually by Wicklow Port is clean uncontaminated material. Therefore, there is no benefit from processing the material, excluding dewatering and desalination, for the specific beneficial uses outlined above.</p>	

After consideration of the above assessment, it was deemed that disposal at sea is considered the Best Practical Environmental Option for the management of dredged material from Wicklow Harbour.

## [4] Planning and Development

### [4.1] Dumping at Sea Acts

Dumping at Sea is regulated under the Dumping at Sea Acts 1996 to 2010. The Coastal Zone Management Division (CZMD) of the Department of Agriculture, Food and the Marine had the responsibility of implementing the provisions of these Acts, i.e. permitting and enforcement of dumping at sea operations, up until 2010. The Foreshore and Dumping at Sea (Amendment) Act, 2009 transferred the responsibilities for controlling dumping at sea from CZMD to the EPA. The Dumping at Sea Acts 1996 to 2010 provide for a system of regulating the dumping of prescribed material at sea and provides for the implementation of the requirements of International Conventions regulating the disposal of materials, including dredge material, at sea (EPA, 2012).

#### [4.1.1] Information Required for a DaS Permit Application

In order for the EPA to assess a Dumping at Sea Permit application, applicants must provide information on the predicted impacts of the loading and dumping operations with reference to the following criteria, which are taken from the First Schedule to the Dumping at Sea Act 1996 (Updated to 1 August 2025):

- Characteristics and composition of the substance or material:
  - Amount and composition.
  - Form, e.g. solid, liquid, sludge.
  - Properties: Physical (especially solubility, specific gravity and density), chemical and biochemical (e.g. oxygen demand, nutrients) and biological (e.g. presence of viruses, bacteria, yeasts, parasites, etc.).
  - Toxicity.
  - Persistence: physical, chemical and biological.
  - Accumulation and biotransformation in biological materials or sediments.
  - Chemical and physical changes of waste after release, including possible formation of new compounds.
  - Probability of production of taints or other changes reducing marketability of resources (fish, shellfish, etc.).
- Characteristics of dumping site and method of deposit:
  - Location (e.g. co-ordinates of the dumping area, depth and distance from the coast), location in relation to other areas (e.g. amenity areas, spawning, nursery and fishing areas and exploitable resources).
  - Rate of disposal per specific period (e.g. quantity per day, per week, per month).
  - Methods of packaging and containment, if any,
  - Initial dilution achieved by proposed method of release.
  - Dispersal, horizontal transport and vertical mixing characteristics.
  - Water characteristics (e.g., temperature, pH, salinity, oxygen indices of pollution-dissolved oxygen (DO), nitrate, nitrite, ammonia, phosphate and suspended matter),

- Sea bottom characteristics (e.g. topography, geochemical and geological characteristics and benthic macro-fauna,
- Existence and effects of current and previous discharges and dumping in the area (including accumulative effects).
- Interference with shipping, fishing, recreation, mineral extraction, desalination, fish spawning and nursery habitats, fish and shellfish culture, areas of special scientific importance, areas of natural or archaeological heritage importance, biological diversity (including diversity within species, between species, and of ecosystems) and other legitimate use of the sea.

How and where these requirements have been provided is outlined in the table below.

**Table 6: Information Requirements for a Dump at Sea Permit**

Information Requirement (as per Dumping at Sea Act 1996, updated to 2025)	How/Where this is Provided
Characteristics and composition of the substance or material	<p>Detail of the quantities and frequency of material to be dredged from Wicklow Harbour is outlined in Section [2][2.1] of this Report.</p> <p>Details of the physical, chemical and macro-benthic composition of the dredge material is outlined in Section [2] of this Report.</p>
Characteristics of dumping site and method of deposit.	<p>Details of the location, sea bottom characteristics and macro-benthic composition of the disposal sites is outlined in Section [2] of this Report.</p> <p>Details of the rate of disposal per specific period is outlined in Section [2] of this Report.</p> <p>Details of dilution, dispersion, horizontal transport and vertical mixing is assessed within the Sediment Dispersion Modelling Study completed for the proposed disposal site northeast of Wicklow Harbour (RPS, 2025). The results have been summarised in Section [2.3.3].</p>
Interference with shipping, fishing, recreation, mineral extraction, desalination, fish spawning and nursery habitats, areas of special scientific importance, areas of natural or archaeological heritage importance, biological diversity (including diversity within species, between species, and of ecosystems) and other legitimate use of the sea.	<p>With regards to the proposed disposal site northeast of Wicklow Harbour, a desktop assessment was completed as part of the site selection process, where all potential ecological, infrastructure and industrial constraints were identified and considered. Further detail is included in the Disposal Site Suitability Report prepared for this Site (Ayesa, 2025).</p> <p>A detailed review of the potential impacts of the proposed disposal upon environmental, infrastructure and industrial sensitivities is presented within Section [5] of this report.</p>

## [4.2] The National Marine Planning Framework

The Maritime Spatial Planning Directive (2014/89/EU), sets down European countries' common approach to the planning of maritime areas, allowing each country to plan its own maritime activities to a set of common requirements.

As part of the Irish Government's comprehensive approach to marine planning across three main areas of forward planning, development management, and marine planning enforcement, the National Marine Planning Framework (NMPF) sets the framework for the forward-planning component of the country's marine-planning system.

The NMPF is a national plan for Ireland's seas, setting out, over a 20-year horizon, how the sea is planned to be used, protected and enjoyed. It was published on 30<sup>th</sup> June 2021 and applies to the maritime area around Ireland and provides objectives, policies and visions for all marine-based activities and how these activities interact with one another. All applications for activity or development in Ireland's maritime area are considered in terms of their consistency with the objectives of the Plan.

The NMPF has been prepared with an ecosystem-based approach and informed by best available knowledge. It sets out Overarching Marine Planning Policies (OMPPs) that will apply to all marine activities or development, including policies in relation to ocean health and environment, infrastructure, heritage, communities, seascape and access, among others.

The objectives of the NMPF outlined in Section 18 are specifically for 'Ports, Harbours, and Shipping' and are therefore most relevant for the proposed works. They are as follows:

- *'Safeguard the operation of ports as key actors in the economic wellbeing of the State through the provision of safe and sustainable maritime transport.'*
- *Facilitate a competitive and effective market for maritime transport services.*
- *Sustainable development of the ports sector and full realisation of the National Ports Policy with a view to providing adequate capacity to meet present and future demand, and to adapt to the consequences of climate change.*
- *Ensure that the strategic development requirements of Tier 1 and Tier 2 Ports, ports of regional significance, and smaller harbours are appropriately addressed in regional and local marine planning policy.'*

A total of ten planning policies are set out to achieve the above objectives, and they cover issues including the protection of current port activity (i.e., dredging). They also commit to supporting future opportunities for expansion of port and harbour activities.

Policy 7 of Section 18 'Ports, Harbours and Shipping' relates to specifically to maintenance dredging activities:

- *'Proposals for maintenance dredging activity will be supported where:*
- *relevant decisions by competent authorities incorporate the outcome of statutory environmental assessment processes, as well as necessary compliance assessments associated with authorisations, including in relation to the planning process,*
- *there will be no significant adverse impact on marine activities or uses or the maritime area. Any potential adverse impact will be, in order of preference, avoided, minimised or mitigated,*

- dredged waste is managed in accordance with internationally agreed hierarchy of waste management options for sea disposal,
- if disposing of dredged material at sea, existing registered disposal sites are used, in preference to new disposal sites, and
- where they contribute to the policies and objectives of this NMPF’.

With regards to compliance against the policies set out in Section 18 ‘Ports, Harbours and Shipping’ of the NMPF, the following is noted:

**Table 7: Proposed Works Compliance with the Section 18 Policies**

Policies	Response
<p><b>Ports, Harbours and Shipping Policy 1</b>  <i>To provide for shipping activity and freedom of navigation, the following factors will be taken into account when reaching decisions regarding development and use:</i>  <i>The extent to which the locational decision interferes with existing or planned routes used by shipping, access to ports and harbours and navigational safety. This includes commercial anchorages and approaches to ports as well as key littoral and offshore routes;</i>  <i>A mandatory Navigation Risk Assessment;</i>  <i>Where interference is likely: whether reasonable alternatives can be identified; and</i>  <i>Where there are no reasonable alternatives: whether mitigation through measures adopted following the principles and procedures established by the International Maritime Organisation can be achieved at no significant cost to the shipping or ports sector.</i></p>	<p>Marine activity related to the Harbour will remain operational during dredging.</p> <p>The dredging works will ensure the continued operation of the harbour and safe navigation within it.</p> <p>There are no navigational safety implications arising from the proposed work.</p> <p>The Contractor and the Harbour Master will coordinate the scheduling of the Works accordingly.</p> <p>The Contractor will abide by the Harbour Master's instructions.</p>
<p><b>Ports, Harbours and Shipping Policy 2</b>  <i>Proposals that may have a significant impact on current activity and future opportunities for expansion of port and harbour activities should demonstrate that they will, in order of preference:</i>  <i>a) avoid,</i>  <i>b) minimise, or</i>  <i>c) mitigate</i>  <i>significant adverse impacts and</i>  <i>d) if it is impossible to mitigate significant adverse impacts on current activity and future opportunities for expansion of port and harbour activities, proposals should set out the reasons for proceeding.</i></p>	<p>The proposed work will not significantly impact current activity and future opportunities to expand the Harbour activities.</p>
<p><b>Ports, Harbours and Shipping Policy 3</b>  <i>Proposals that may have a significant impact upon current activity and future opportunities for expansion of port and harbour activities must demonstrate consideration of the National Ports Policy, the National Planning Framework, and relevant provisions related to the TEN-T network.</i></p>	<p>The proposed activities will not significantly impact current and future opportunities to expand operations.</p>
<p><b>Ports, Harbours and Shipping Policy 4</b>  <i>Proposals within ports limits, beside or in the vicinity of ports, and/or that impact upon the main</i></p>	<p>The proposed maintenance dredging and disposing activities are consistent and compliant with NMPF Ports, Harbours and Shipping Policy</p>

routes of significance to a port, must demonstrate within applications that they have:  
 been informed by consultation at a pre-application stage or earlier with the relevant port authority;  
 have carried out a navigational risk assessment, including an analysis of maritime traffic in the area; and  
 have consulted the Department of Transport, MSO and Commissioners of Irish Lights.  
 Applicants must continue to engage parties identified in pre-application processes as appropriate during the decision-making process.

4, which indicates that the application should be supported.

The applicant is coincident with the port authority and therefore has considered all navigational considerations in its submission. Furthermore, the application from the Port is to maintain the historical main routes of significance to the port within the confines of the harbour, with no development of any kind proposed.

**Ports, Harbours and Shipping Policy 5**

Proposals for capital dredging will be supported where it is necessary to safeguard national port capacity and Ireland's international connectivity and where required compliance assessments associated with authorisations have been carried out and incorporated into subsequent competent authority decision(s).

No capital dredging is involved with these proposed works (maintenance dredging only).

**Ports, Harbours and Shipping Policy 6**

In areas of authorised dredging activity, including those subjects to navigational dredging, proposals for other activities will not be supported unless they are compatible with the dredging activity.

This application is for maintenance dredging and disposing activities and are therefore consistent and compliant with NMPF Ports, Harbours and Shipping Policy 6, which indicates that the application should be supported.

**Ports, Harbours and Shipping Policy 7**

Proposals for maintenance dredging activity will be supported where:  
 Relevant decisions by competent authorities incorporate the outcome of statutory environmental assessment processes, as well as necessary compliance assessments associated with authorisations, including in relation to the planning process;  
 There will be no significant adverse impact on marine activities or uses or the maritime area. Any potential adverse impact will be, in order of preference, avoided, minimised or mitigated;  
 dredged waste is managed in accordance with an internationally agreed hierarchy of waste management options for sea disposal;  
 if disposing of dredged material at sea, existing registered disposal sites are used, in preference to new disposal sites; and  
 where they contribute to the policies and objectives of this NMPF.

In coordination with Wicklow County Council (WCC), a Supporting information for Screening of Appropriate Assessment (AA) was undertaken for the proposed works (Ayesa, 2025). Following comprehensive evaluation of Source-Pathway-Receptors (S-P-R) and based on the objective scientific information provided by the dispersion model (Tetra Tech, 2025), it is concluded that no viable S-P-R linkages exist that could give rise to significant effects on any qualifying interests or special conservation interests of nearby SACs or SPAs. All European sites screened were found to be not at risk, and each qualifying interest was screened out at Stage 1.

Further, an Annex IV Risk Assessment has been undertaken where it was determined that considering the nature, scale, and location of the proposed maintenance dredging and offshore disposal operations, and based on the findings of this Annex IV Species Risk Assessment, it is concluded that the works are not expected to result in any injury, mortality, or significant disturbance to Annex IV species.

The dredge waste is proposed to be disposed of at a proposed site that is deemed suitable for offshore disposal.

**Ports, Harbours and Shipping Policy 8**

*Proposals that cause significant adverse impacts on licensed disposal areas should not be supported. Proposals that cannot avoid such impact must, in order of preference,"*

- a) minimise,*
- b) mitigate, or*
- c) if it is not possible to mitigate the significant adverse impacts, proposals must set out the reasons for proceeding.*

The proposed maintenance dredging and disposal activities will not conflict with any licenced disposal area.

Refer to comments upon Policy 7 regarding significant environmental impacts.

**Ports, Harbours and Shipping Policy 9**

*Proposals for the management of dredged material must demonstrate that they have been assessed against the waste hierarchy.*

The proposal for the management of dredged material and assessment against the waste hierarchy has been completed. Appropriate chemical testing has been undertaken on the dredge material, and it is deemed appropriate for offshore disposal (Class 1 classified).

**Ports, Harbours and Shipping Policy 10**

*Proposals identifying new dredge disposal sites which are subject to best practice and guidance from previous studies should be supported where:*

*competent authority decisions incorporate necessary compliance assessments associated with authorisations and they contribute to the policies and objectives of this NMPF.*

*Proposals must include an adequate characterisation study, be assessed against the waste hierarchy and must be informed by consultation with all relevant stakeholders.*

The disposal site located northeast of Wicklow Harbour is a newly identified dredge disposal site. The necessary compliance assessments have been completed in seeking a DaS permit, including Screening for AA, a Risk Assessment for Annex IV Species, reporting upon the Site Suitability, and reporting upon the maritime usage impacts (this report).

The dredge material to be disposed of at this site has undergone necessary chemical testing and is deemed appropriate for offshore disposal.

A stakeholder engagement campaign was undertaken when identifying the proposed disposal site northeast of Wicklow Harbour. The outcomes of this are detailed in the Disposal Site Suitability Report (Ayesa 2025c).

It is considered that the maintenance dredging works proposed at Wicklow Harbour are fully consistent with the objectives of the NMPF and contributes towards the policies and objectives of the framework.

**[4.3] Water Framework Directive (WFD)**

The Water Framework Directive (WFD) (Directive 2000/60/EC) was established to create a comprehensive framework for the protection of waterbodies in the European Union. The key objective is the general protection of aquatic ecology, specific protection of unique and valuable habitats, the protection of drinking water resources, and the protection of bathing water through a system of river basin management planning and extensive monitoring. The idea is to maintain or achieve ‘Good Status’, which means both ‘Good Ecological Status’ (GES) and ‘Good Chemical Status’ (GCS).

The proposed maintenance dredging will be occurring within the transitional waterbody Broad Lough (IE\_EA\_130\_0100) which has been assigned a WFD status of moderate for the reporting periods of 2013-2018 and 2016-2021. It’s currently assigned as ‘at risk’ of meeting its ecological status requirements.

The coastal waterbody Southwestern Irish Sea – Killiney Bay (Code IE\_EA\_100\_0000) meets at the mouth of the Wicklow Harbour and will also be indirectly impacted by the dredging. It has been assigned a WFD status of ‘High’ or ‘Good’ for all reporting years (2007-2024) and is currently assigned as ‘not at risk’ from meeting its ecological status requirements. The waterbody, is associated to several Natura 2000 Sites, including the Wicklow Reef SAC, The Murrrough Wetlands SAC, Megherabeg Dunes SAC, the Murrrough SPA and the Wicklow Head SAC, to name a few.

The harbour area overlaps with transitional and coastal water bodies. The potential effects on transitional and coastal water bodies from the proposed activities are discussed in Section [5.3].

#### [4.4] Marine Strategy Framework Directive (MSFD)

The Marine Strategy Framework Directive (MSFD) is European legislation which aims to achieve Good Environment Status (GES) for all marine waters in Europe and protect the resource base for marine related economic and social activities. The determination of GES is based on eleven qualitative descriptors that cover a range of pressures on, and the state of, the marine environment, as outlined in Table 8.

Taking account of the small scale of the proposed works, the temporary nature of any effects and proposed dredge methodology (largely in low tide conditions), it is considered that the MSFD objectives will not be adversely affected.

Section [6] ‘Assessment of Impacts’ describes the marine environment and undertakes an analysis of the likely effects of the proposed maintenance dredging and dumping at sea activities on GES. These are shown below, with reference to sections where they are assessed in this report.

**Table 8: Descriptors under the MSFD**

Descriptor	Description	Where this has been considered
<b>D1 Biodiversity</b>	Biological diversity is maintained. The quality and occurrence of habitats and the distribution and abundance of species are in line with prevailing physiographic, geographic and climatic conditions	Section [5.4].
<b>D2 Non-indigenous species</b>	Non-indigenous species introduced by human activities are at levels that do not adversely alter the ecosystems	Exposure to and spread of invasive species is not applicable in this Project (marine maintenance dredging).
<b>D3 Commercial Fish and Shellfish</b>	Populations of all commercially exploited fish and shellfish are within safe biological limits, exhibiting a population age and size distribution that is indicative of a healthy stock	Section [5.5].
<b>D4 Food Webs</b>	All elements of the marine food webs, to the extent that they are known, occur at normal abundance and diversity and levels capable of ensuring the long-term abundance of the species and the retention of their full reproductive capacity	Section [5.4] and [5.5].

Descriptor	Description	Where this has been considered
<b>D5 Eutrophication</b>	Human-induced eutrophication is minimised, especially adverse effects thereof, such as losses in biodiversity, ecosystem degradation, harmful algae blooms and oxygen deficiency in bottom waters	Eutrophication is not applicable in the context of this Project.
<b>D6 Seabed Integrity</b>	Sea-floor integrity is at a level that ensures that the structure and functions of the ecosystems are safeguarded and benthic ecosystems, in particular, are not adversely affected	Section [5.2] and [5.4].
<b>D7 Hydrographical Conditions</b>	Permanent alteration of hydrographical conditions does not adversely affect marine ecosystems	Section [5.2], [5.3] and [5.4]
<b>D8 Contaminants</b>	Concentrations of contaminants are at levels not giving rise to pollution effects	Section [5.3], [5.4], [5.13] and [5.15].
<b>D9 Contaminants in Seafood</b>	Contaminants in fish and other seafood for human consumption do not exceed levels established by Union legislation or other relevant standards	Section [5.3] and [5.5].
<b>D10 Marine Litter</b>	Properties and quantities of marine litter do not cause harm to the coastal and marine environment	Section [5.13]
<b>D11 Energy, including underwater noise</b>	Introduction of energy, including underwater noise, is at levels that do not adversely affect the marine environment	Section [5.4] and [5.7]

The overall conclusion is that the proposed works in isolation does not cause any concern for the achievement of GES in Irish sea waters and is not anticipated to have significant impacts on the various MSFD biological, hydro-morphological and physico-chemical descriptors.

#### [4.5] EIA Directive

Since the adoption of the first EIA Directive in 1985 (Directive 85/337/EEC), both the law and EIA practices have evolved. The EIA Directive was amended by Directives 97/11/EC, 2003/35/EC, and 2009/31/EC. The Directive and its three amendments were codified in 2011 by Directive 2011/92/EU. The codified Directive was subsequently amended by Directive 2014/52/EU. The 2014 Directive relates to the assessment of the effects of certain public and private projects on the environment and is applicable to a wide range of projects listed in Annex I and II of the Directive.

The 2014 Directive defines the EIA as a process, the responsibility for which lies with the developer, to prepare an Environmental Impact Assessment Report (EIAR) for examination by the Competent Authority to allow reasonable conclusions to be drawn on the proposed development. Article 4(2) and Annex II of the EIA Directive address projects that do not reach the thresholds established in Annex I and states that “Member States shall determine whether the project shall be made subject

to an assessment”. This is determined on a case-by-case examination or by thresholds or criteria set by the Member State.

These requirements are transposed into Irish Law and included in the Planning and Development Regulations 2001(as amended). The Planning and Development Regulations 2001 (as amended) also identify certain types and scales of development, generally based on thresholds of scale, for which an EIA is mandatory. In addition, there can be a requirement to undertake an EIA for ‘sub-threshold’ developments.

In this respect, it is necessary to undertake a screening exercise to assess whether the proposed development requires an EIA (either mandatory or sub-threshold).

## [4.6] Approach to EIA Screening

### [4.6.1] Screening for Mandatory EIA

Screening for Mandatory EIA requires a developer to provide the information listed in Annex IIA and to determine the need for an EIA against the Criteria in Annex III to the 2014 Directive. The Planning and Development Regulations 2001 (as amended) also apply and must be considered as the legislation specifies projects in Schedule 5 of the Regulations that must undergo mandatory EIA.

The Annex I projects have been transposed into Section 5 (Part 1) of the Planning and Development Regulations 2001, as amended.

### [4.6.2] Screening for Sub-Threshold EIA

Screening for a Sub-Threshold EIA addresses the possible need for EIA below the Annex II national thresholds. There is a requirement to carry out EIA where significant effects may arise due to the nature of the proposed development, its scale or extent and its location in relation to the characteristics of the receiving area, particularly sensitive environments.

Annex III of Council Directive 2014/52/EU sets out the criteria for assessing whether a project will have “likely” and “significant” effects on the environment, in which case an EIA is also required.

The Annex II projects have been transposed into Section 5 (Part 2) of the Planning and Development Regulations 2001, as amended.

### [4.6.3] OPR Practise Note PN02 Environmental Impact Assessment Screening (2021)

The Office of the Planning Regulator (OPR) has issued guidance on EIA screening in the form of the Environmental Impact Assessment Screening- Practice Note, 2021 which aids planning authorities. It outlines a three-step approach to the process of screening for EIA, bringing together the specific legislative requirements and statutory provisions from the EIA Directive, the 2000 Planning and Development and the 2001 Planning and Development Regulations. The steps include the following:

**Step 1:** Understanding the Proposal

**Step 2:** Preliminary examination

**Step 3:** Screening determination

## [4.7] Project EIA Screening

### [4.7.1] Step 1: Understanding the Proposal

Step 1 is undertaken as per the methodology outlined in the below image, extracted from the OPR Practice Note PN02 Environmental Impact Assessment Screening (2021), and is the first step in determining whether the project falls within a mandatory EIA requirement, or is considered a sub-threshold development requiring further examination. In doing so, it requires a review of the proposed project activities against the projects and thresholds listed under Annex I and II of the EIA Directive (2014/52/EU) or Schedule 5 (Parts 1 and 2) of the Planning and Development Regulations 2001, as amended.

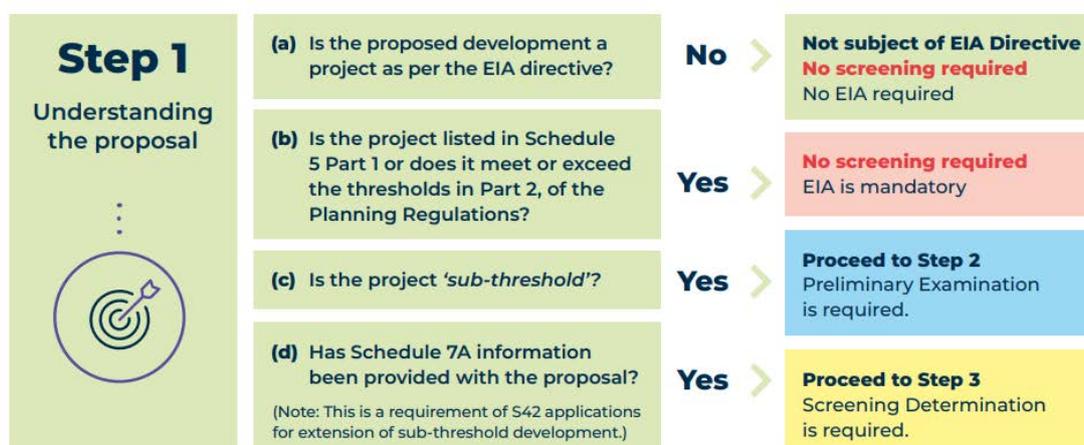


Table 9 presents a review of the proposed activities against the projects and thresholds outlined in both Annex I and II of the 2014 EIA Directive and Schedule 5 (Part 1 and 2) of the Planning & Development Regulations.

**Table 9: Review for Mandatory EIA Requirement**

Schedule Reference	Threshold Description	Notes
Annex I / Schedule 5, Part 1	No relevant project or thresholds listed.	No relevant project listed for either the maintenance dredging or disposal activities, therefore proposed works do not fall under the requirement for mandatory EIA.
Annex II / Schedule 5, Part 2	Extraction of stone, gravel, sand or clay by <b>marine dredging (other than maintenance dredging)</b> , where the area involved would be greater than 5 hectares or, in the case of fluvial dredging (other than maintenance dredging), where the length of river involved would be greater than 500 hectares.	Maintenance dredging is excluded from consideration within the project type listed under Annex II/Schedule 5 Part 2. There is no relevant project listed for disposal at sea activities.

The proposed Project does not fall under any of the thresholds in Schedule 5 Part 1 for mandatory EIA and is not relevant to any thresholds listed under in Schedule 5 Part 2. Therefore, it is not subject to the provisions of the EIA Directive.

## [5] Assessment of Impacts

### [5.1] Assessment of Impact Methodology

As is required of the Applicant Technical Guidance Note for Obtaining a Licence to Carry Out Specified Maritime Usages in the Maritime Area under the Maritime Area Planning Act 2021, from MARA (2023), this AIMU has considered impacts to the following environmental aspects:

- Land and Soils
- Water
- Biodiversity
- Commercial Fisheries and Aquaculture
- Air Quality
- Noise and Vibration
- Landscape/Seascape
- Traffic and Transport
- Cultural Heritage
- Population and Human Health
- Climate
- Waste
- Material Assets
- Major Accidents and Disasters
- Interactions

The classification and description of effects in this AIMU follows the terms provided in Table 3.4 of the EPA Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (2022), modified in Table 10 below. The guideline has six key processes of describing environmental effect (or impact).

The environmental effects for each relevant topic have been predicted by determining the baseline environmental conditions which is the situation without the proposed activities taking place. This is then compared to the conditions that would prevail if the proposed activities were to go ahead.

**Table 10: Description of Effects Terminology (modified from EPA, 2022)**

Significance Level	Criteria
<b>Quality of Effects</b>	
Positive Effects	A change which improves the quality of the environment (for example, by increasing species diversity; or the improving reproductive capacity of an ecosystem, or by removing nuisances or improving amenities).
Neutral Effects	No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error.
Negative/adverse Effects	A change which reduces the quality of the environment (for example, lessening species diversity or diminishing the reproductive capacity of an ecosystem; or damaging health or property or by causing nuisance).
<b>Describing the Significance of Effect</b>	
Imperceptible	An effect capable of measurement but without significant consequences.
Not significant	An effect which causes noticeable changes in the character of the environment but without significant consequences.

Slight Effects	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
Moderate Effects	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
Significant Effects	An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment.
Very Significant	An effect which, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment.
Profound Effects	An effect which obliterates sensitive characteristics
<b>Describing the Extent and Context of Effects</b>	
Extent	Describe the size of the area, the number of sites and the proportion of a population affected by an effect.
Context	Describe whether the extent, duration or frequency will confirm or contrast with established (baseline) conditions (if it the biggest, longest effect ever?).
<b>Describing the Probability of Effect</b>	
Likely Effects	The effects that can reasonably be expected to occur because of the planned project if all mitigation measures are properly implemented.
Unlikely Effects	The effects that can reasonably be expected not to occur because of the planned project if all mitigation measures are properly implemented.
<b>Describing the Duration of Effects</b>	
Momentary Effects	Effects lasting from seconds to minutes
Brief Effects	Effects lasting less than a day
Temporary Effects	Effects lasting less than a year
Short-term Effects	Effects lasting one to seven years.
Medium-term Effects	Effects lasting seven to fifteen years
Long-term Effects	Effects lasting fifteen to sixty years.
Permanent Effects	Effects lasting over sixty years
Reversible Effects	Effects that can be undone, for example through remediation or restoration
Frequency of Effects	Describe how often the effect will occur (once, rarely, occasionally, frequently, constantly – or hourly, daily, weekly, monthly, annually).
<b>Describing the Types of Effects</b>	
Indirect Effects (a.k.a. secondary or off-site effects)	Effects on the environment, which are not a direct result of the project, often produced away from the project site or because of a complex pathway.
Cumulative Effects	The addition of many minor or insignificant effects, including effects of other projects, to create larger, more significant effects.
Do-nothing Effects	The environment as it would be in the future should the subject project not be carried out.
Worst-Case Effects	The effects arising from a project in the case where mitigation measures substantially fail.
Indeterminable Effects	When the full consequences of a change in the environment cannot be described.
Irreversible Effects	When the character, distinctiveness, diversity or reproductive capacity of an environment is permanently lost.
Residual Effects	The degree of environmental change that will occur after the proposed mitigation measures have taken effect.

Synergistic Effects	Where the resultant effect is of greater significance than the sum of its constituents (e.g. combination of SO <sub>x</sub> and NO <sub>x</sub> to produce smog).
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Mitigation measures have been recommended where the potential for impact is present, consistent with statutory requirements and good industry practice in their respective field.

The assessment of impacts to biodiversity and water have been supported by the Information for the Screening for Appropriate Assessment Report (SISSA) (Ayesa, 2025b) and Annex IV Risk Assessment Report (Ayesa, 2025a) and informed largely by the sediment dispersion modelling undertaken for the project (Tetra Tech RPS, 2025).

## [5.2] Land and Soils

The proposed maintenance dredging and dumping at sea activities (and related bathymetric surveying) are all within the marine environment and therefore, there is no potential impact on land. The following sections present a review of potential impacts to marine sediments.

### [5.2.1] Baseline Conditions

With regards to marine sediments, the proposed maintenance dredging is intended to remove accumulated sediments and maintain a safe seabed level within and in the approaches to the Harbour. The site is currently subject to an accretion of material (largely silts and silty sands). The river inflow results in softer sediment being deposited along the margins of the harbour area, leaving a typical scour channel through the centre. The depths of the dredge site (Wicklow Harbour) range from 0.1m to 7.8m according to a recently completed bathymetric survey (Hydromaster Ltd., 2023).

Sediment sampling revealed that the physical characteristics of the sediments within the dredge area are consistent with estuarine sediments (silt / silty sand). Further, as outlined in Section [2.2.2], sediment chemistry sampling and analysis, along with eco-toxicological testing, was undertaken in 2021 and revealed that the sediment is Class 1 (where the contaminant concentrations are less than Level 1) and therefore uncontaminated.

At the proposed disposal site northeast of Wicklow Harbour, sediments sampled in the proposed disposal site were all classified as 'slightly gravelly sands', and the majority of the sediment, approximately 95% at all stations, were coarse (500-999µm) and medium (250-499µm) sand fractions. The seabed sediment data is indicative of a site that is subject to high current flows with seabed sediments being well sorted and finer sediment fractions being absent or exceptionally low.

### [5.2.2] Assessment of Impacts

As outlined in Section [2.2.3], sediment dispersion modelling was undertaken by GDG (2024b) to assess the impact of sediment dispersion within the immediate shoreline surrounding Wicklow harbour and in the vicinity of the nearest Natura 2000 sites.

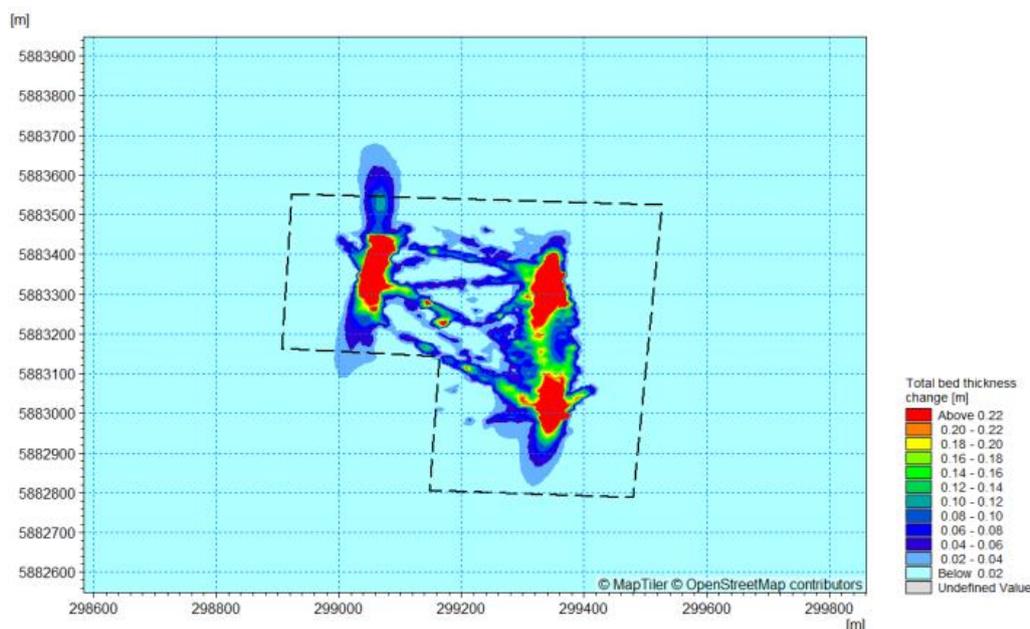
The simulation results indicate that, during proposed dredging events coinciding with ebbing tide, the sediment plume does not extend upstream of the dredging areas along River Varty. In terms of Suspended Sediment Concentration (SSC), gravel and sand fractions settle within close range of Wicklow Harbour, remaining near the Harbour boundary throughout the simulation period. In contrast, the silt fraction disperses downstream, exiting Wicklow Harbour and spreading in nearshore areas both northwards and southwards, defining the overall extent of total SSC within a 5 km radius.

Therefore, it was concluded that proposed maintenance dredging will result in minor temporary changes to the surrounding seabed characteristics outside of the harbour area, but with no-long term effects. The spread of contaminants is considered imperceptible, given the nature of the sediment chemical composition (Class 1, uncontaminated).

Tetra Tech RPS (2025) completed material dispersion modelling at the newly proposed disposal site, to determine the fate of the suspended fractions of the disposed material. As part of this, the change in bed level thickness was reviewed over the three-week simulation period. It can be seen from Image 6 that at the end of the dumping operations, there is very little change in bed level. Within the disposal site, the maximum total bed thickness change is approximately 0.25m at the three dump locations while elsewhere within the proposed site, bed thickness changes do not exceed c.0.1m. Beyond the vicinity of the disposal site, there was no discernible increase to bed level change as a result of the proposed dumping at sea operations.

Therefore, it was concluded that proposed offshore disposal will result in minor temporary changes to the seabed characteristics within the disposal site itself, but with no-long term ill effects. No to very minimal change to the seabed characteristics surrounding the disposal site are anticipated. There is no risk of spreading contaminants, given the nature of the sediment chemical composition (Class 1, uncontaminated).

The related pre-and-post dredging bathymetric surveys are not anticipated to impact upon marine soils.



**Image 6: Total Bed Thickness Change After Three Week Simulation (Tetra Tech RPS, 2025)**

### [5.3] Water

#### [5.3.1] Baseline Conditions

The Water Framework Directive (WFD) was agreed by all individual European Union (EU) member states in 2000 and provides a comprehensive framework for water quality management across the EU. The directive requires that all member states adopt a comprehensive integrated basin-based approach to water management. The key objectives of the directive are to maintain a 'high' status of

waters where it exists, prevent any deterioration in the existing status of waters and achieve at least ‘good’ in relation to all waters by 2015, latest by 2027. Those rivers classed as being ‘at risk’ relates to the potential of that watercourse meeting the ‘good’ Ecological Status.

The waterbodies relevant to the study area are outlined in Table 11 below, and illustrated in Image 7 and Image 8 overleaf.

**Table 11: WFD Waterbodies Relevant to Study Area**

Waterbody	Interaction with the proposed activities	Reporting Period	Ecological Status or Potential	At Risk Status	Associated Natura 2000 Sites (within 15km radius)
Broad Lough (IE_EA_130_0100)	Maintenance dredging works will be occurring directly within this waterbody.	2016-2021	Moderate	At Risk	The Murrough Wetlands SAC
		2013-2018	Moderate		The Murrough SPA
Southwestern Irish Sea – Killiney Bay (IE_EA_100_0000)	This waterbody meets at the mouth of Wicklow Harbour.	2007-2009	High	Not at Risk	Wicklow Reef SAC
		2010-2012	Good		The Murrough Wetlands SAC
	2010-2015	High	The Megherabeg Dunes SAC		
	2013-2018	High	The Buckroney-Brittas Dunes and Fen SAC		
	2016-2021	High	The Wicklow Head SAC		
	The proposed disposal site is situated <500m from this waterbody.	2019-2024	Good	The Murrough SPA	

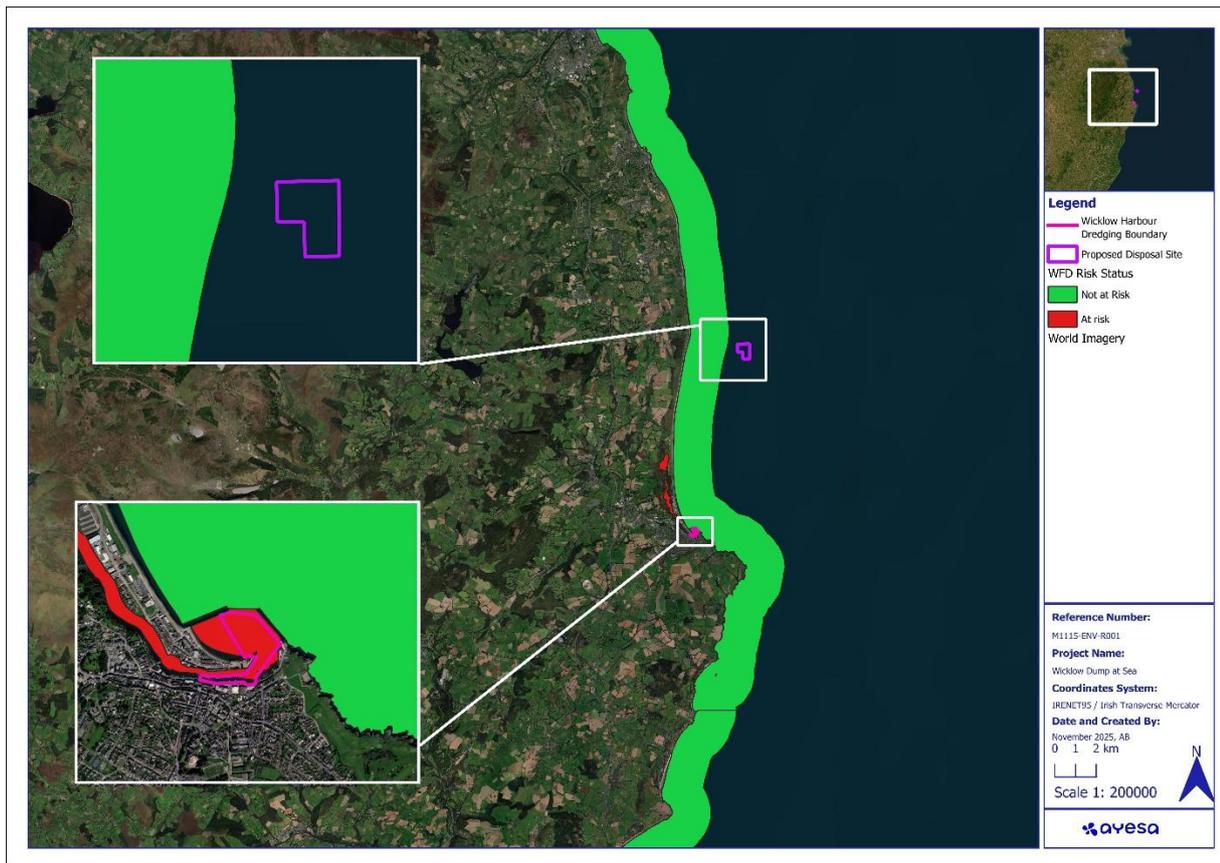


Image 7: WFD Risk Status for Waterbodies in Study Area



Image 8: WFD Ecological Status for Waterbodies in Study Area

### [5.3.2] Assessment of Potential Impacts

#### General:

There will be no planned release of potentially harmful substances from the vessels. Strict maritime regulations, normal vessel operating standards and precautions, compliant with all International Maritime Law and National Maritime Legislation, will ensure the risk of a release is low and no significant effects are predicted.

In addition, all vessels used shall, as required by law, be MARPOL compliant and fully certified by the Maritime Safety Office which means that the vessels for dredging operate under the MARPOL 73/75 Convention where Shipboard Marine Pollution Emergency Plan is required.

Therefore, it is considered unlikely that there would be any occurrence of a pollution event, accidental or otherwise, that could directly or indirectly affect the environment.

The dredge material is of Class 1, therefore uncontaminated and suitable for disposal at sea. Therefore the introduction of pollutants into the water column during dredging or disposal is not a concern.

#### Dredging Operations:

As outlined in Section [2.2.3], whilst the gravel and sand fractions settle within close range of Wicklow Harbour, remaining near the Harbour boundary throughout the simulation period, the silt fraction disperse downstream, exiting Wicklow Harbour and spreading in nearshore areas both northwards and southwards, defining the overall extent of total SSC within a 5 km radius. During dredging operations, near the north coast, values can reach 0.037 kg/m<sup>3</sup> (37 mg/L) at 3.5 km from the Harbour, while on the southern coast at the same distance, the SSC value is 0.0034 kg/m<sup>3</sup> (3.4 mg/L). However, SSC reaches negligible levels after two days without dredging, measuring less than 0.00177 kg/m<sup>3</sup> (1.77 mg /L) at the entrance of Wicklow Harbour. In summary, these values signify a temporary peak that rapidly diminishes as a result of the dispersal of sediment plumes. They become negligible after two days of simulation without dredging activities.

Therefore, whilst the proposed dredging will result in temporary spikes in local turbidity levels, it is not anticipated to result in a long-term deterioration in The Broad Lough and Southwestern Irish Sea – Killiney Bay (and associated Natura 2000 Sites) and will not jeopardise the attainment of good status or the potential to achieve good ecological and chemical status.

#### Disposal Operations:

As outlined in Section [2.3.3], material dispersion modelling completed by Tetra Tech RPS (2025) for the proposed disposal site show that the maximum total SSC plume envelope observed during the disposal operations did not generally exceed 2mg/l directly along the Wicklow coastline. An assessment of the dumping operations found that the average total suspended sediment concentration beyond the immediate vicinity of the disposal site did not generally exceed 3mg/l. The average suspended sediment concentration quickly dispersed to less than 0.5mg/l approximately 10km to the north of the disposal site, and within 22km to the south. Five days after the final disposal event, the sediment plumes have fully dispersed into the background concentrations.

Within the boundaries of the disposal site, the maximum total SSC of c.2200mg/l is observed within the site itself with lower concentrations observed immediately outside the site perimeter. The average total SSC at the three dumping points is approximately 22mg/l which reduces to 8mg/l at the northern and southern edges of the site boundary.

Therefore, whilst the disposal operations will result in temporary spikes in local turbidity levels, it is not anticipated to result in a long-term deterioration in The Broad Lough and Southwestern Irish Sea – Killiney Bay (and associated Natura 2000 Sites) and will not jeopardise the attainment of good status or the potential to achieve good ecological and chemical status.

### **Bathymetric Surveys:**

The related pre-and-post dredging bathymetric surveys are not anticipated to impact upon marine water.

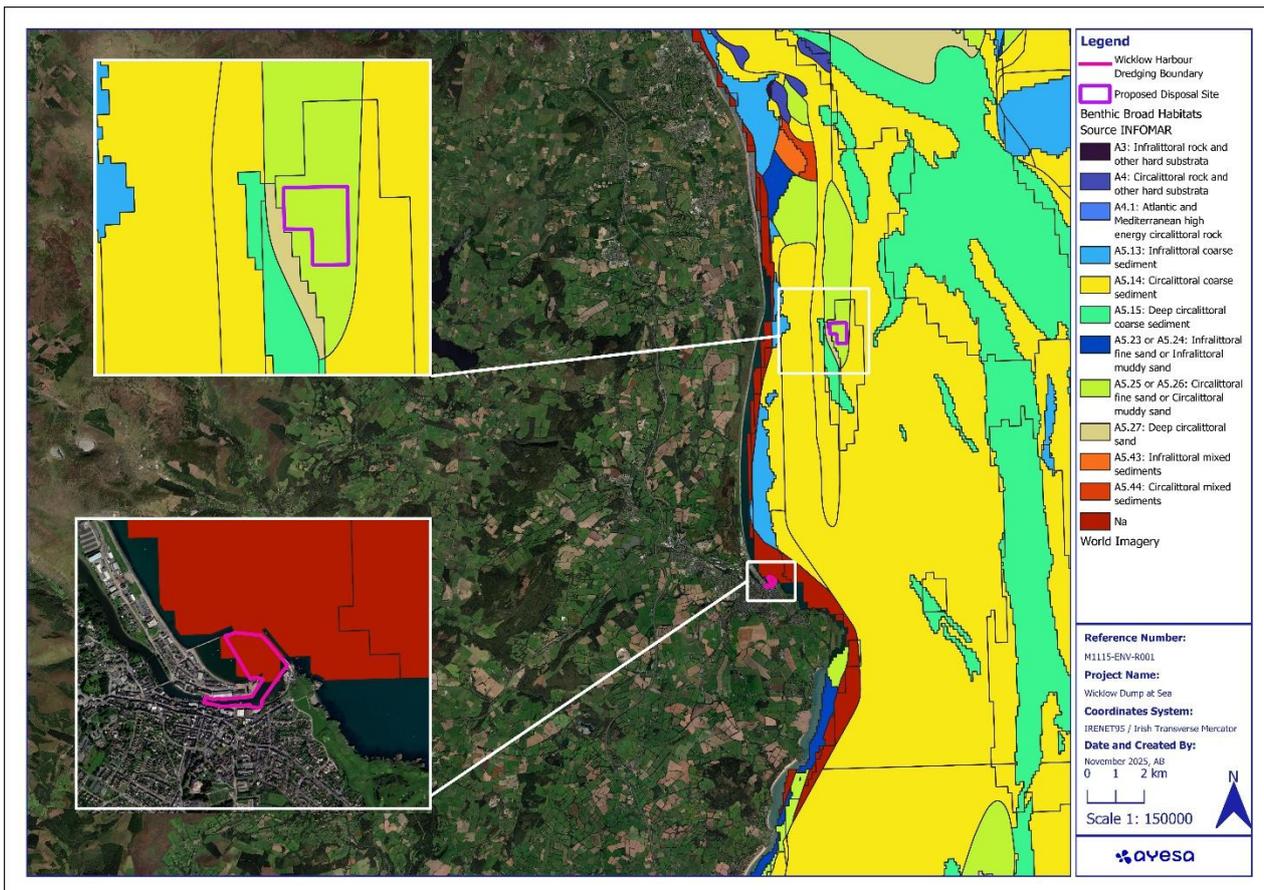
## **[5.4] Biodiversity**

### **[5.4.1] Benthic Habitats and Associated Macrofaunal Invertebrates**

Benthic and epibenthic macrofaunal invertebrates are a useful group to study in marine species assemblage mapping and environmental monitoring studies. Many macrofaunal species are sedentary, and their natural distributions typically show good relationships with habitat type and depth. Their responses to environmental change can therefore be more easily measured than more mobile species (e.g. pelagic fish). They are an integral part of marine food webs and can be an important source of food for certain commercially exploited fish and invertebrates. More practically, benthic macrofaunal invertebrates are well described taxonomically (e.g. by WoRMS - World Register of Marine Species) and can be readily sampled by grabs, corers and underwater imagery systems.

#### **[5.4.1.1] Baseline Conditions**

Image 9 below illustrates the habitat types predicted by EUSeaMap to be present in the dredge and disposal areas, classified down to EUNIS Level 4 habitat types where possible.



**Image 9: Benthic Habitat Types within Study Area**

The disposal site northeast of Wicklow Harbour falls entirely within the benthic habitat type A5.25/26: Circalittoral fine sand or Circalittoral muddy sand. No information is available for the dredge site.

As outlined in Section [2.2.2.3], benthic surveys were conducted at four locations within the Harbour in 2023 (MERC, 2023). Faunal communities identified were typical of finer sediment, estuarine habitats and contained few taxa and individuals. Taxa common to all stations included the polychaetes *Nephtys hombergii*, *Tharyx robustus* and *Spio martinensis*. Animals from other phyla were less common but included the amphipod *Ampelisca brevicornis*, the bivalves *Macomangulus tenuis* and *Abra alba* and a few bryozoans. 479 individuals were recorded across 39 taxa. No Annex I habitats or species of conservation importance were identified.

As outlined in Section [2.3.2] MERC Ecological Consultants carries out a subtidal benthic ecology survey of the proposed disposal site northeast of Wicklow Harbour in February 2025. The EUNIS habitat throughout the site is representative of EUNIS habitat code A5.13 *Infralittoral Coarse Sediment*. A low number of epifaunal taxa was recorded, as well as low overall species abundance. A presence of *Sabellaria* sp. was noted, but it was clear that this is confined to the southwestern quarter of the proposed disposal site, which has subsequently been removed and the disposal site altered in shape to avoid this area. Generally, the findings of the video and stills imaging survey indicate that the site has low species diversity and abundance. This is a direct consequence of the likely highly dynamic nature of the site whereby sediment fractions are resuspended and moved during periods of high tidal flows.

### [5.4.1.2] Assessment of Potential Impacts

Benthic habitats and associated macrofaunal invertebrate communities may be subject to the following impacts due to the proposed dredging and disposal activities:

- Habitat loss
- Disturbance and smothering
- Increased suspension of solids in the water column

Habitat loss is anticipated at the dredge site (Wicklow Harbour) via direct removal, and local smothering is anticipated at the disposal sites upon release of the dredge sediments and settlement of the coarser fractions. However all three sites are considered faunally poor, with an overall low number of epifaunal taxa recorded as well as low species abundance.

The potential presence of *Sabellaria* sp. in the southwestern quarter of the proposed disposal site northeast of Wicklow Harbour has been acknowledged and managed via the alteration of the disposal site extent as a precaution, avoiding this area completely.

The disposal area is subject to strong wave and tidal currents and is a highly geomorphologically dynamic, with mobile bedforms changing with the tide. Sediment dispersion modelling study conducted by Tetra Tech RPS (2025) has predicted that the effect of the disposal activities on the seabed will be localised in nature, confined largely to the boundaries of the disposal site. The assessment found that the average total suspended sediment concentration beyond the immediate vicinity of the disposal site did not generally exceed 3mg/l

To summarise, the localised nature of the proposed works, existing benthic conditions, and modelled plume dispersion suggests that significant effects upon surrounding benthic habitats are anticipated to be slight.

The related pre-and-post dredging bathymetric surveys are not anticipated to impact upon biodiversity interests due to the scale and nature of the activity.

### [5.4.2] Natura 2000 Site Qualifying Interests

The Natura 2000 Sites located in proximity of the dredge and disposal sites are illustrated in Image 10.

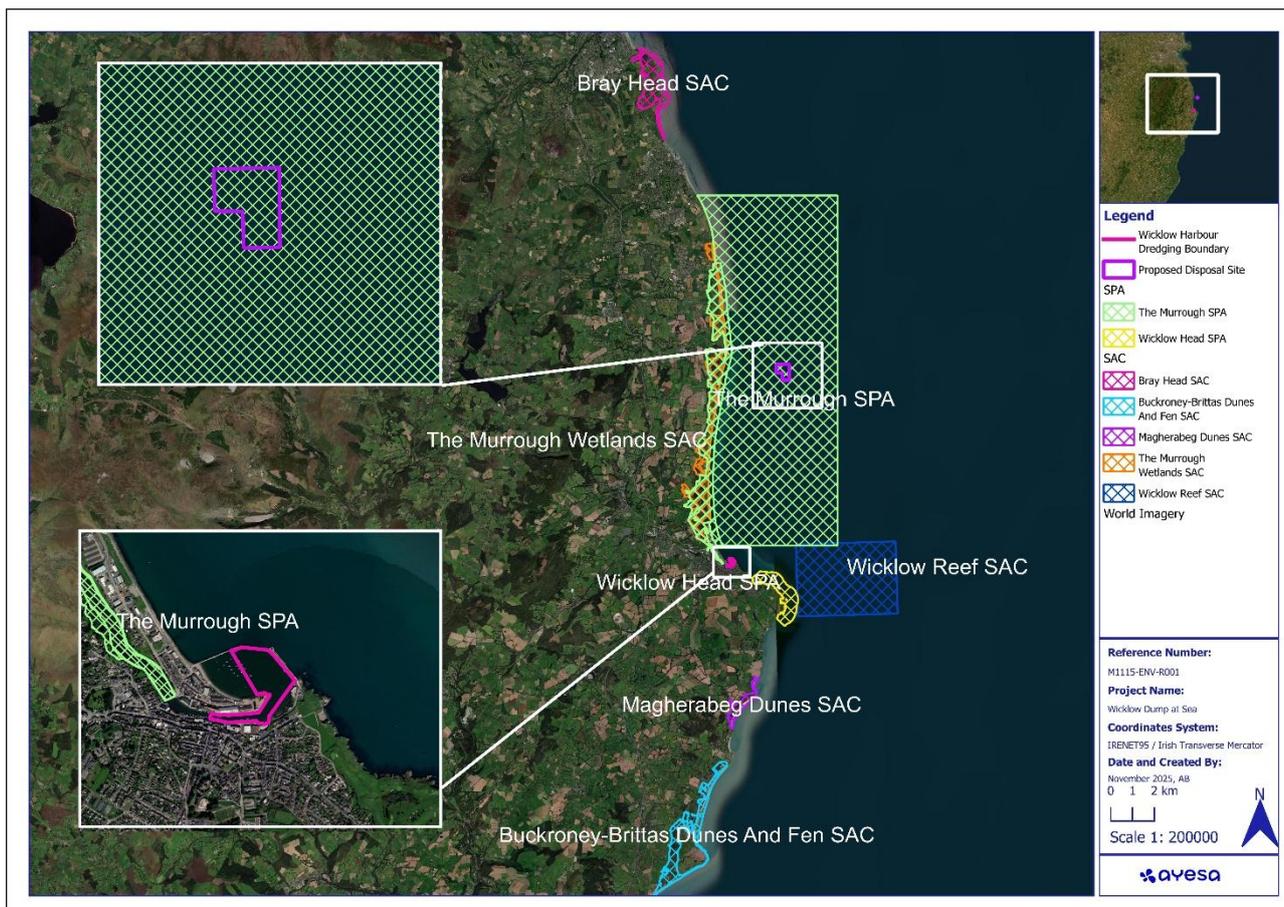


Image 10: Natura 2000 Sites in Study Area (Source: EPA)

Impacts on designated benthic habitat features of SACs have been assessed in the SISAA report (Ayesa, 2025b). A detailed Source–Pathway–Receptor (S–P–R) analysis was undertaken to examine the potential for interaction with European sites within the marine Zone of Influence. Pathways were considered through hydrodynamic, acoustic, and disturbance mechanisms, with particular reference to updated sediment dispersion modelling undertaken for the offshore disposal site (Tetra Tech, 2025).

Following comprehensive evaluation of these pathways and based on the objective scientific information provided by the dispersion model, it is concluded that no viable S–P–R linkages exist that could give rise to significant effects on any qualifying interests or special conservation interests of nearby SACs or SPAs. All European sites screened were found to be not at risk, and each qualifying interest has been screened out at Stage 1.

Key Considerations in reaching this conclusion are:

- **Hydrodynamic pathway:** The disposal of Class 1 (uncontaminated) material at licensed offshore sites occurs under high-energy marine conditions. Numerical modelling shows that suspended sediment concentrations attenuate rapidly, remain at or near background levels (~1 mg/l) at the coastline, and do not reach designated sites at concentrations capable of altering habitat structure, function, or species behaviour. No measurable deposition occurs at any European Site receptor.
- **Marine mammals:** Implementation of NPWS (2014) Marine Mammal Observer (MMO) protocols ensures no injury or significant disturbance to Annex II species. Vessel activity is comparable to routine marine traffic, and no adverse effects are predicted.

- **Noise and disturbance:** Vessel and equipment noise is continuous and non-impulsive, typical of normal marine operations. Works occur predominantly during daylight hours with no percussive piling or elevated noise sources. No disturbance mechanism affecting European sites exists.
- **Pollution prevention:** Embedded environmental controls, including spill response, turbidity monitoring, and vessel refuelling procedures, eliminate potential contamination pathways to marine waters.
- **In-combination effects:** No other planned or permitted marine works within the Zone of Influence were identified that could contribute to cumulative or interactive effects on European sites.

### [5.4.3] Annex IV Species

Potential risks of the dredging and disposal operations to Annex IV species have been assessed in the Annex IX Risk Assessment (Ayesa, 2025a).

A review of existing datasets, including the Wicklow Harbour Annex IV Risk Assessment (GDG, 2024) and records from the Irish Whale and Dolphin Group (IWDG, 2025) and National Biodiversity Data Centre (NBDC, 2025), confirms the presence or potential occurrence of Annex IV marine species within and surrounding the Wicklow Harbour dredging footprint and the associated offshore disposal site. The following were considered as part of the assessment:

- Cetaceans (Harbour porpoise, common dolphin, bottlenose dolphin, minke whale);
- Pinnipeds (grey seal, harbour seal); and
- Otter.

The primary sources of potential impacts reviewed included:

- Sediment disturbance and increased turbidity during dredging operations.
- Underwater noise and vibration generated by dredging plant, hoppers, and support vessels.
- Vessel movements and associated collision or disturbance risk during dredging and transport to the offshore disposal sites; and
- Potential accidental release of pollutants, such as hydrocarbons or suspended sediments.

Dredging will be confined to the existing harbour basin and entrance channel, which are already subject to regular vessel traffic, tidal flushing, and elevated background noise. Offshore disposal will occur at licensed sites located in open coastal waters already exposed to commercial shipping and fishing activity.

Potential effects from the works, including short-term increases in suspended sediment, low-level underwater noise, and temporary vessel movements, will be intermittent, localised, and of low intensity. No breeding, resting, or haul-out sites for cetaceans, pinnipeds, or otter occur within, or immediately adjacent to, the dredging footprint or either offshore disposal site.

Embedded environmental controls and standard marine operational procedures will further minimise the risk of accidental pollution, sediment release, or vessel strike.

Accordingly, the Project is not expected to cause the deliberate capture, killing, injury, or significant disturbance of any Annex IV species, nor to result in the deterioration or destruction of any breeding or resting site protected under Article 12 of the Habitats Directive.

On this basis, the project is assessed as being fully compliant with Article 12 of the Habitats Directive (92/43/EEC), with the overall residual risk to Annex IV species considered negligible.

## [5.5] Commercial Fisheries and Aquaculture

### [5.5.1] Spawning and Nursery Grounds

#### [5.5.1.1] Baseline Conditions

The dredge and disposal areas overlap with the nursery grounds of some commercially important species of fish (Ireland Marine Atlas, 2021), namely the Atlantic cod (*Gadus morhua*), mackerel (*Scomber scombrus*) and horse mackerel (*Trachurus trachurus*) (Image 11 and Image 12).

The Irish Sea Atlantic cod population spawns at two main sites in the western and eastern Irish Sea between February and April. This stock has historically been vital for commercial fisheries, but recent decades have seen a decline in spawning stock biomass and productivity, leading to decreased fish landings. Spawning occurs from December to June, during which a female cod can produce many batches of eggs, releasing 3 to 6 million eggs per batch. These eggs, which become part of the plankton, hatch after about two weeks. The larval cod remain in the plankton for up to two months before transitioning to juveniles, also known as 'codling', and moving to the seabed to form schools. Juveniles favour complex sublittoral habitats, such as seagrass beds and rocky areas, which offer protection from predators (North Western Inshore Fisheries and Conservation Authority).

Mackerel are pelagic, which means that they are free swimming and live their lives in the open ocean. Adult mackerel spend winter in deeper water offshore, but as the water warms in spring and summer they move inshore. Mackerel spawning takes place in the open ocean, and eggs are released into the water. Each egg contains a small globule of oil that gives it buoyancy and keeps it near the surface. Like many commercial marine fish species mackerel populations are under intense fishing pressure throughout their range.



Image 11: Cod Spawning and Nursery Grounds (Source: Department of Climate, Energy and Environment)

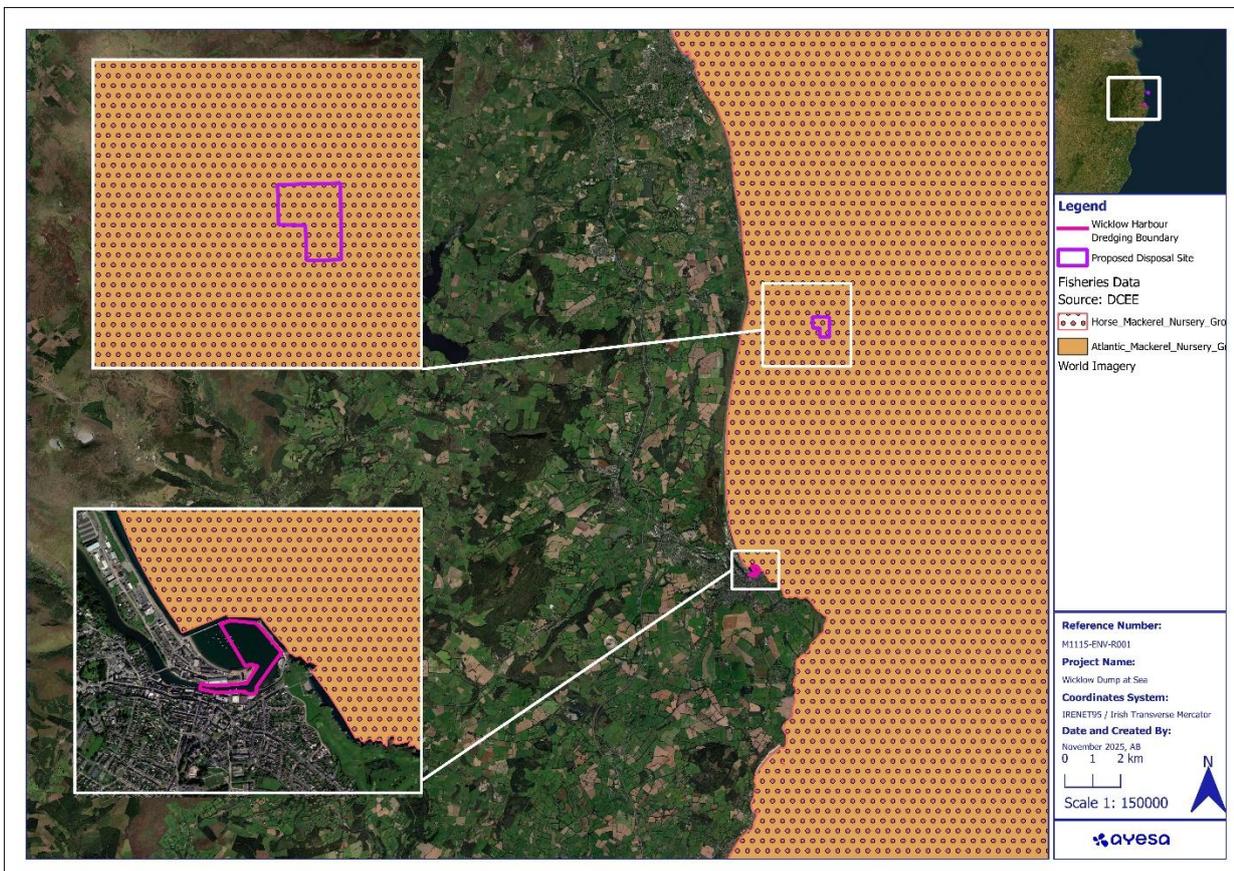


Image 12: Mackerel Spawning and Nursery Grounds (Source: Department of Climate, Energy and Environment)

### [5.5.1.2] Assessment of Impacts

The proposed dredging area is in a working harbour area and therefore it is expected that the area is not heavily utilised by commercially important adult fish. It is expected that any adult mobile fish would leave the harbour area during dredging works.

The proposed disposal will be carried out within an area recognised as nursery grounds for cod, horse mackerel and mackerel, all of which are commercially important fish species. However as this area is in open waters and adult fish can move to other areas should any disturbance occur related to disposal activities. Spawning and nursery grounds which host fish eggs and larval fish developments may be exposed to increased levels of suspended solids in water column during dredging and disposal activities however, cod and mackerel eggs float within the water column and lie suspended at the halocline, therefore impacts are considered minimal. Further, the dredging area and disposal area are relatively small in comparison to the overall size of nursery and spawning grounds exposed to likely effects from the proposed works.

Therefore, given the localised nature of the proposed works likely significant effects are not considered likely on nursery and/or spawning grounds.

The related pre-and-post dredging bathymetric surveys are not anticipated to impact upon spawning and nursery grounds due to the scale and nature of the activity.

### [5.5.2] Migratory Fish

#### [5.5.2.1] Baseline Conditions

Wicklow Harbour is located at the mouth of River Vartry and the proposed disposal site northeast of Wicklow Harbour >8km from it. The River Vartry supports populations of migratory fish species including Atlantic salmon (*Salmo salar*), Twaite shad, lamprey (*Lampetra* spp.), brown trout (ecotype: sea trout (*Salmo trutta trutta*)) and eel (*Anguilla anguilla*) (IFI, 2016).

#### [5.5.2.2] Assessment of Impacts

Potential impacts on migratory fish include exposure to underwater noise, sediment disturbance and substratum loss, smothering and increased levels of suspended solids in water column which may create a barrier to migration.

Wicklow Harbour is the entry point for significant salmonid populations migrating into the River Vartry and Avoca River catchment. The main runs for both Salmon and Sea Trout occur between the April to September which is the critical migratory period, and it is important that there is minimum disturbance or impediment to the passage of fish during this time. While the estuarine sections of Wicklow Harbour are sufficiently wide and deep to accommodate dredging activities and fish migration, the proposed dredging activities within the narrower, upstream areas of Wicklow Harbour (i.e. lower reaches of the River Vartry) may cause a temporary barrier of migration for salmon and trout here. However dredging works are to be infrequent in occurrence (once yearly), temporary and will be programmed to minimise disturbance during the April to September migratory period (see mitigation measures in Table 12). Therefore impacts are considered imperceptible. Disposal activities will take place >8km from the mouth of the River Vartry (proposed disposal site northeast of Wicklow Harbour), so no impact to fish migration is anticipated.

The related pre-and-post dredging bathymetric surveys are not anticipated to impact upon migratory fish, due to the scale and nature of the activity.

### [5.5.3] Commercial Fisheries & Aquaculture

#### [5.5.3.1] Baseline Conditions

Whelk, crab, and lobster potting are the predominant fishing activities around Wicklow throughout the season. The area sees activity from approximately 40 vessels originating from Dun Laoghaire, Greystones, Wicklow, and Arklow, with the number varying throughout the year. When conditions for mussel seed recruitment are favourable, mussel seed vessels also operate in this region (Personal communication, SFPA).

- Mussel Seed (*Mytilus edulis*):
  - In Ireland, mussel farming uses two main methods: rope-grown and bottom (seabed) culture. The rope-grown method, found along the West Coast, involves suspending mussel seed in "stockings" from longlines in the water. The bottom culture method involves transplanting wild mussel seed from natural settlement beds to culture sites to grow to commercial size (J. A., Knights *et al*, 2007).
  - Seawater currents, primarily driven by tides and wind, influence the movement of mussel larvae. Environmental factors such as temperature, food concentration, and predation also affect larval growth and mortality rates. Due to environmental conditions, mussels may delay settlement and can undergo several settlement phases (J. A., Knights *et al*, 2007).
  - Bord lascaigh Mhara (BIM) provided a full set of shapefiles for seed mussel bed surveys from 1970 to 2022. These locations were closely reviewed via GIS in relation to the dredge and disposal sites (Image 13). None are located in proximity of the sites.
- Whelk Fisheries (*Buccinum undatum*)
  - Whelks, a cold-water species found at depths ranging from 15 to 1,200 meters, are primarily distributed on soft substrata, but mature individuals move to hard ground near the shore to spawn during winter. Most whelk landings are from the southern Irish Sea, though the fishery is expanding northwards and offshore. The highest densities of whelks are observed on the Codling and Rusk Banks in tidal solid currents at depths of less than 20 m. Whelks show variable growth and maturation rates across different local populations (Edward, F. *et al*, 1995 & 2000).
  - In terms of geographic distribution, whelks are found on mud, sand, and gravel banks aligned north-south in strong tidal currents, mostly within 5 nautical miles from the shore. The Irish fishery is segmented into four sectors, with significant activity near the ports where the catch is landed. The Dublin Sector to the north has relatively low densities and accounts for about 16% of landings. The sector around Wicklow and Arklow, known as the Arklow sector, is where approximately 40% of the catch is landed and includes the densely populated Codling Bank (Edward, F. *et al*, 1995 & 2000).
  - Overall, while the whelk fishery is concentrated near the coastline and specific banks, it varies significantly in density and catch size across different sectors, with ongoing research and proposals to manage the fishery sustainably. Whelk is fished extensively in a 21 km coastal zone stretching along the east coast of Ireland.
- Brown Crab (*Cancer pagurus*)

- While the Irish Sea does have brown crab populations, they're more commonly fished and found along the entire Irish coast, not just the Irish Sea. The western coasts of the North Atlantic are prime fishing grounds for brown crabs. Places like Wexford, Galway, and Donegal are known landing ports for crab. Brown crabs can be found over a wide range of substrates, such as sand, gravel and rock. They are found in depths between 6 m and 200 m, but more usually between 6 and 80 m, with the larger crab occurring offshore. Brown crabs are predominately caught using baited soft-eye, side-entry pots. While traditionally an inshore fishery, a significant portion of the catch comes from offshore vessels that can keep the crabs alive in holding tanks until they reach port (O'Dwyer, F. *et al*, n.d.).

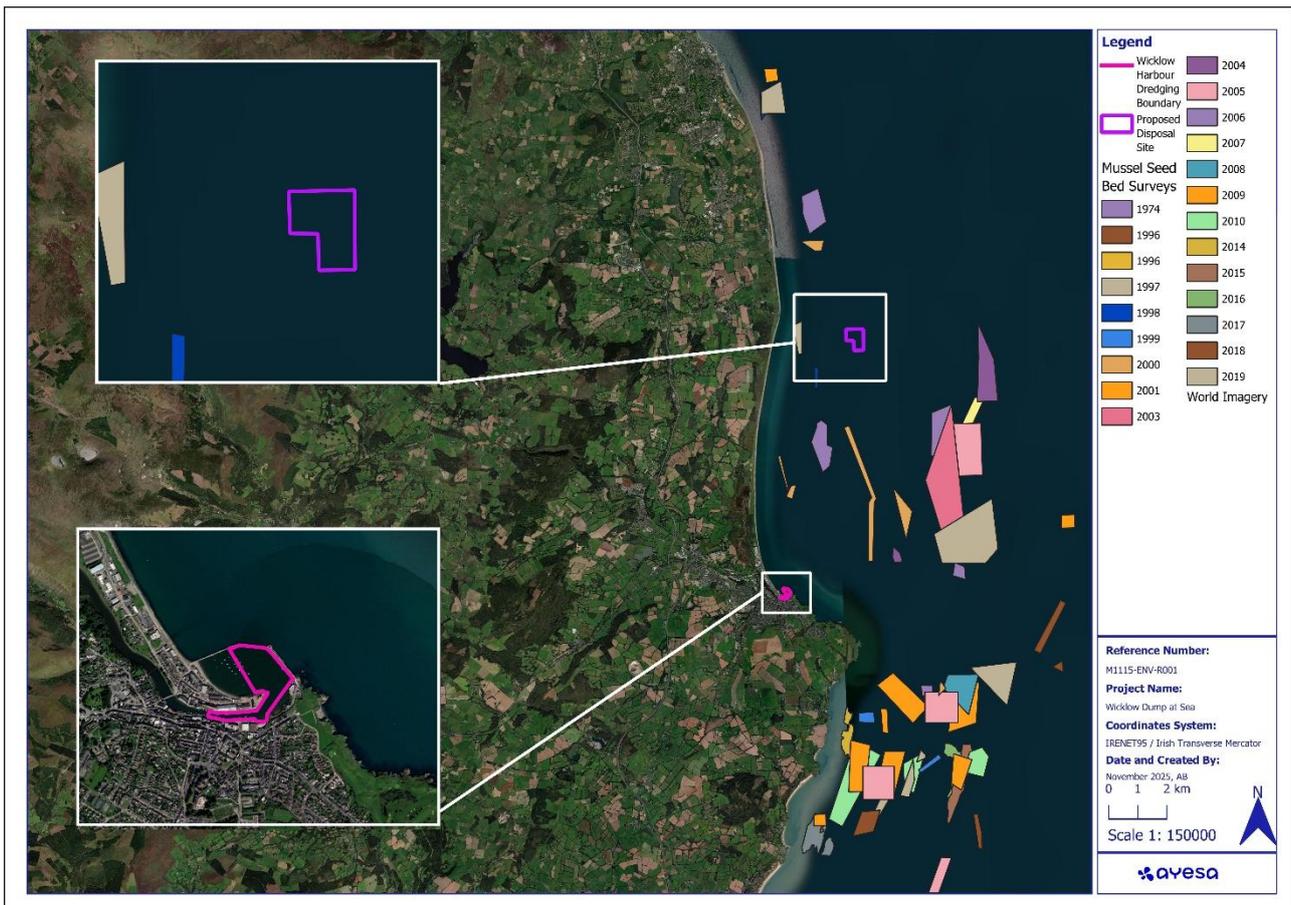


Image 13: Mussel Seed Beds in Study Area (BIM)

The Irish Sea supports a variety of commercially important fish and shellfish species. Below are some of the prominent species that might be found in association with sandy/ muddy substrates, with a specific consideration of the Wicklow area:

- Shellfish:
  - Dublin Bay Prawn (*Nephrops norvegicus*): A burrowing prawn commercially fished throughout the Irish Sea. While data specific to Wicklow is limited, landings are reported across the eastern Irish Sea.
  - Scallops (*Pecten maximus*): Scallop dredging is a well-established industry in the Irish Sea. A suitable sandy seabed is present off the Wicklow coast, but dredging effort is likely to concentrate on more commercially productive areas elsewhere.

- Brown crab (*Cancer pagurus*): Although not exclusive to sandy substrates, brown crab are sometimes found in sandy areas. There is some potting in the Wicklow area.
- Whelk (*Buccinum undatum*): Whelk are scavengers found on various seabed types, including sand. They are commercially harvested, but landings data by region are limited.
- Razor Clams (*Ensis* species): Razor clams burrow in sandy sediments and are commercially fished in some areas.
- Finfish:
  - Plaice (*Pleuronectes platessa*): This flatfish thrives on sandy bottoms and is commercially fished throughout the Irish Sea.
  - Sole (*Solea sole*): Sole is another commercially fished flatfish that prefers sandy substrates.
  - Cod (*Gadus morhua*): While cod prefer rocky reefs for spawning, they can be found foraging in sandy areas.

Data provided by the Ireland's Marine Atlas is outdated (2011-2018), but indicates that fishing activity takes place in the dredge and disposal areas. Note while some recorded activity overlapped with the disposal areas (i.e. for dredges, potting and beam and pelagic trawling), the effort recorded is low with both activities showing less than 1 hour/km<sup>2</sup>/year effort.

Responses from stakeholder consultation undertaken for the proposed disposal site northeast of Wicklow Harbour also indicate to the importance of the area for recreational angling, with smooth hound (*mustelus mustelus*) and tope (*galeorhinus galeus*) being seasonally found in the area. Further detail regarding these stakeholder responses is presented in the Disposal Site Suitability Report (Ayesa 2025c).

There are no licenced aquaculture sites within or adjacent to, or in the vicinity of the dredge or disposal areas. The closest aquaculture facility is a Blue Mussel site in Clogga Bay, 28.35 km to the south of the dredge area in Wicklow Harbour.

### [5.5.3.2] Assessment of Impacts

Proposed dredging and disposal activities may require temporary removal of the fishing gear from the transit and disposal area. Accessibility to Wicklow Harbour for fishing boats may also be disturbed temporarily during dredging activities which may decrease or displace local fishing activities.

For the duration of the dredge material disposal, any fishermen with static gear such as whelk/lobster/crab pots within the disposal site area will be requested to temporarily remove them. The impact upon the commercial fishing sector will be minimised by planning of the works to minimise the spatial extent and duration of gear removal necessary.

The resulting effect on static gear fisheries will be very small and of short duration. The Harbourmaster will perform the Fisheries Liaison Officer (FLO) function and will engage with local fishing community to determine the full extent of fishing effort in the adjacent of dredge and disposal area.

A slight negative, but temporary impact is therefore assigned to activities associated with commercial fisheries.

No significant effects on aquaculture operations are expected given the substantial distance to the aquaculture sites, small footprint area coverage from the dredging and disposal activities and the short duration of activities.

The related pre-and-post dredging bathymetric surveys are not anticipated to impact upon commercial fisheries and aquaculture, due to the scale and nature of the activity.

## [5.6] Air Quality

The Wicklow Harbour and proposed disposal area are located within and adjacent to the Air Zone 'Rural Ireland' (Zone D). The nearest air monitoring station to the Site is Station 101 (Greystones). The air quality recorded at this air monitoring station on 30th August 2023 is reported as being of 'good' status (Index 1). Offshore air quality is not routinely reported upon.

Emissions to air from the vessel exhausts (largely comprising NO<sub>x</sub>, SO<sub>x</sub>, CO) will occur whilst the dredger(s) are in operation. As outlined in Section [2.1], four potential methods of dredging are proposed to be utilised, including Trailer Suction Hopper Dredger (TSHD), Mechanical Dredging, Water Injection Dredging (WID) and plough dredging, however only material obtained through TSHD/mechanical dredging will be disposed of offshore.

Only one method of dredging and therefore one dredging vessel will be operating at any one time. Further, the works are temporary and expected to last for one period of 2 weeks each year (with secondary years being of a lesser timeframe). Therefore, any emissions generated will be imperceptible and not likely to result in any significant impacts on background levels and will not have the potential to lead to air quality standards being exceeded.

There is a relatively low potential for odour generation and nuisance to occur during the disposal operations. The potential exists where decayed organic material has the potential to release sulphurous compounds (such as H<sub>2</sub>S) or where solvent contamination is uncovered. There is a low chance that the potential sources will be released under water during the disposal operations. Low levels of organic solvents are predicted in the uncontaminated dredged material and any vapour released will quickly condense into the liquid phase and either dissolve in the water (such as water-soluble solvents i.e. alcohols) or form a residue on the water surface where not water soluble (such as aromatics). In both cases the impact on air quality is not expected to be significant, especially when considering that the disposal sites are located >400m and 2.5km from the closest point of land.

The related pre-and-post dredging bathymetric surveys are not anticipated to impact upon air quality.

## [5.7] Noise and Vibration

The primary ambient noise environment present in the study area consists of port operations (from vessels/loading/unloading etc.), and road traffic.

With regards to human receptors, no impacts of noise and vibration are anticipated for the disposal at sea operations, given the distance of these from mainland areas. However, the dredging operations within Wicklow Harbour will likely generate localised noise emissions. The largest type of dredger that will be used in Wicklow Port is a TSHD, but one that is suitable for the tidally restrictive

nature of the harbour area (<2,000m<sup>3</sup> in size). Operations are likely to be 24hrs a day. The immediate surrounding land use is a mixture of industrial, residential and commercial, with dwellings and commercial properties present in very close proximity, many of which overlook the planned dredge area. These receptors will already be exposed to normal day-to-day operating levels of noise from the Port via the movement of vessels, and therefore the increase is unlikely to result in significant impacts. Further, works are temporary and expected to last for one period of indicative 2 weeks each year, for eight years, with the secondary years likely having a reduced duration. Slight but temporary impacts are assigned with regards to the dredging operations, given the condensed land use present.

Potential effects of noise and vibration to marine species and birds are discussed in the SISAA report (Ayesa, 2025b) and Annex IX Risk Assessment (Ayesa, 2025a). Taking into account the low intensity, intermittent nature, and short duration of noise emissions (limited only to when dredging and disposal activities are ongoing), together with the embedded environmental controls outlined in Section [2.4], the potential risk of disturbance to marine species and birds is considered to be low to negligible.

The related pre-and-post dredging bathymetric surveys are not anticipated to impact upon air noise and vibration.

### [5.8] Landscape and Seascape

The dredge and disposal areas are not subject to any designation intended to protect landscape quality. The coastline along which the dredging and disposal activities are proposed is classed as the Regional Seascape character type 'Broad estuarine Bays & complex low and cliff coastline' and 'Low lying & estuarine coastal plain with long, narrow sandy beaches' (Marine Institute, 2025).

The visual disturbance caused by the proposed site dredging and disposal activities (and associated bathymetric surveying) will be limited to the presence of 1-2 survey vessels on site and leaving/entering the Harbour. The general study area is already characterised by a number of medium density vessel routes, which are mainly associated with transiting into and out of local ports and harbours including Dublin Port and Rosslare Europort. Therefore, no significant effects to landscape and seascape receptors are predicted.

### [5.9] Traffic and Transport

The main navigation routes within the proposed dredging area and the disposal site northeast of Wicklow Harbour are associated with the harbour traffic in and out of Wicklow Harbour with tanker and passenger vessels transiting to and from Dublin Port passing to the east of the proposed dredge area. Fishing and cargo vessels make up most of the marine traffic density in Wicklow Harbour and the surrounding area where the proposed disposal site is situated.

The potential effects on marine traffic include an increased risk of collision with the vessels undertaking dredge and disposal activities. These vessels will typically move at slow speeds and will also be stationary for a large portion of the time.

The Harbour Master has jurisdiction over the dredging area and will manage traffic accordingly. No specific exclusion zone will be sought; however, vessels will be asked to maintain a safe distance, in keeping with accepted maritime safety practices. During the dredging and disposal operations the vessels will display lights, shapes and other internationally recognised identification or warning signals.

Mitigation measures will be in place to ensure compliance with the International Regulations for Preventing Collisions at Sea and Standards, including a formal notice to mariners in advance of any activity, appropriate navigation lights and liaison with both Ports authorities to agree the timing of works and to agree a communication protocol.

There will be no significant impact on the traffic and transport in the area due to the dredge and disposal operations (and associated bathymetric surveying).

**[5.10] Cultural Heritage**

Shipwreck data available through both the EMODnew Map Viewer and National Monuments Database is shown in Image 14. Note many of the wrecks from the Historic Environment Viewer are unconfirmed and do not have recent survey data associated with their records.

The EMODnew Map Viewer shipwreck data shows no confirmed shipwrecks within the dredge or disposal areas. The Historic Environment Viewer show three wrecks in proximity to the proposed disposal site, one approximately 2km to the north, one approximately 4km southwest and one approximately 4.5km to the south.

The dredge area was subject to an Underwater Archaeology Impact Assessment (UAIA) (AMS, 2024). This confirmed the presence of two wrecks in proximity to the proposed dredging area. Wreck No. W11326 is located within the area to be dredged for Packet Quay, although, according to local sources, this is likely to relate the remains of the Schooner Sarah purported to be located under a boulder breakwater, and W10651 is located approximately 70m from the proposed dredging area for East Quay.



Image 14: Shipwreck Records (INFOMAR & National Monuments Database)

The UAIA (AMS, 2024) assigned a direct and medium magnitude of impact to W11326, and imperceptible impacts to all other known/recorded submerged prehistory and maritime and aviation archaeology within the dredge area. A medium potential was identified for unknown maritime archaeology assets, and mitigation presented to minimise impact as much as possible. All dredging operations will be undertaken cognisant of these recommendations.

With regards to the disposal operations, potential smothering impacts to known wrecks are considered imperceptible, given the distance of wrecks from the disposal operations, and principal direction of sediment dispersion and maximum SSC, as informed by the sediment dispersion modelling studies (Tetra Tech RPS, 2025).

The related pre-and-post dredging bathymetric surveys are not anticipated to impact upon cultural heritage interests.

### **[5.11]Population and Human Health**

As outlined in Sections [5.6] and [5.7], the generation of localised noise and emissions are anticipated and are likely to cause nuisance, but given the infrequency and temporary nature of the proposed works, are anticipated to have an imperceptible effect on human health.

The transit and operation of the dredger to and within the licensed offshore disposal sites could potentially affect third parties (i.e. marine users) however, as mentioned in Section [5.9], this potential traffic risk is imperceptible and can effectively be managed by the Harbour Master as part of their normal marine traffic management responsibilities. A local communication plan will be established to ensure that any issues that arise will be managed promptly.

Further, all proposed dredging and disposal at sea activities will be conducted in accordance with all relevant Health and Safety Legislation and Regulations, and in adherence to all major international shipping conventions, adopted by the International Maritime Organization (and the International Labour Organization) concerning maritime safety and pollution prevention.

This will ensure there will be no impact nor any significant negative effects on human health and/or on health and safety during the proposed maintenance dredging and disposal at sea activities (and associated bathymetric surveying).

### **[5.12]Climate**

Ireland's Greenhouse Gas Emissions Projections (2023-2050) sets out the GHG emission projections for Ireland, with a particular focus on the Effort Sharing Regulation (ESR) period from 2021 to 2030. 2021 to 2030 emissions projections are given for two key scenarios, including 'with existing measures' (WEM) and 'with additional measures' (WAM). Projections indicate that Ireland will cumulatively exceed its ESR 2021-2030 emission allocation of 369.4 Mt CO<sub>2</sub>e by 80.3 Mt CO<sub>2</sub>e under the WEM scenario, and by 50.1 Mt CO<sub>2</sub>e under the WAM scenario.

The WCC Climate Action Plan (2024-202) states that GHG emissions within the Wicklow County Council area are estimated to have been 1,101 ktonnes CO<sub>2</sub>eq in 2018. The agriculture sector accounts for 40% of total GHG emissions, with the residential sector contributing 25%. The transport sector is responsible for 24%, while Waste, Municipal, Commercial and the Public Sector accounts for the remaining 11%

Carbon emissions can be expected by the dredging vessels. However, the carbon emissions of these vessels in comparison to the normal port operational emissions can be considered negligible. The dredging operations are minor in duration and scale. Works are expected to last for one period of 2 weeks each year, for eight years, with secondary years anticipated to have a reduced timeframe. The proposed activities would therefore result in imperceptible increases in CO<sub>2</sub>e and would not materially affect the Republic of Ireland's ability to meet its climate obligations.

Further, disposing of the uncontaminated dredged material at sea would mean that no land-based transport is needed, reducing the carbon emissions of the transport

As such, considering the project in isolation, impacts upon climate are considered not significant.

### [5.13] Waste

The total amount of material to be dredged in the Wicklow Harbour is 562,500 tonnes (wet weight) over an eight year maintenance dredging programme (see further in Table 1 and Table 2).

Material analysis was conducted to determine the characteristics and composition of the material for disposal. It was found that the material to be disposed of was clean, uncontaminated and that there was no evidence of any substance which would negatively impact the local environment. This was covered in Section [2.2.2] and [5.2].

Other waste produced by the dredging operations are expected to be small (i.e., domestic cabin waste/garbage, spent engine oil) and appropriate waste segregation and management measures will be applied to minimise the impact. This waste will be disposed of off-site by a licensed waste contractor.

With the appropriate mitigation measures, the effect of waste generated is considered as acceptable, with no significant impacts predicted.

### [5.14] Material Assets

Under the guidance issued by the EPA (2022), material assets are taken to mean built services and infrastructure. As the Harbour basin itself is a piece of critical built infrastructure, the impacts of dredging in the Harbour must be considered. The dredging operations seeks to improve the navigational access and safety, resulting in a positive contribution to the existing and planned material assets in the Harbour.

The Irish Marine Atlas and EMPDnet Map Viewer were reviewed to determine potential infrastructure underlying the Licence Area. This review process confirmed that the Licence Area does not overlap with subsea cables, pipelines or other material assets.

There are a number of stormwater outfalls, primary and secondary discharge points near the towns of Arklow, Wicklow and Greystones in the Study Area. These discharge points are 1.5km or less from the coastline and thus will not be impacted by the disposal operations.

There is currently one operating windfarm near to the Study Area, the Arklow Bank Wind Farm (Phase 1) consisting of seven turbines approximately 10km off the coast of Arklow. There are a number of other windfarms at various stages of the planning and development process in the general study area. This includes Codling Wind Park, Arklow Bank Wind Farm Phase 2, Latitude 52 Offshore Wind Farm, and Banba Offshore Wind Farm. However, the location of the proposed disposal site is

such that no impact to the operation of the wind farms are anticipated. Further, the dredging results in a positive impact for the operation and maintenance of the wind farms, optimising the berth space, operations and safe navigation of the Wicklow Harbour.

No negative or significant environmental impacts are predicted to material assets.

### [5.15] Major Accidents and Disasters

The potential for major accidents or disasters associated with the dredging and disposal operations (and associated bathymetric surveying) is considered to be low. There is a risk involved with any vessel activity in the marine environment that a pollution incident might arise and result in spills or leaks of polluting substances into the water. There is potential for pollution events to occur from discharges from vessels using the port (ballast water, wastewater, oil spillages, fuel bunkering). Several safeguards and preventative measures will be in place to minimise risks, including:

- Risk Assessment and Mitigation (RAMS): Prior to the commencement of works, the Contractor will develop detailed Risk Assessment and Mitigation Strategies (RAMS) addressing potential hazards. These RAMS will be subject to review and approval by the Client's Representative. Potential risks that will be considered include collisions, equipment failure, or accidental release of pollutants.
- A documented Accident Prevention Procedure will be put in place prior to commencement.
- A documented Emergency Response Procedure will be put in place prior to commencement.

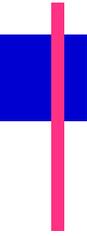
Given the implementation of these preventative measures, the selection of a competent Contractor, and the oversight of relevant authorities, the risk of major accidents and disasters due to the disposal operations is deemed imperceptible.

### [5.16] Interactions

The EIA Directive (2014/52/EU) requires a description of 'the interaction between any of the foregoing aspects.' Interactions can occur when a predicted impact causes interaction or dependency with other environmental aspects. The main interactions identified were between:

- Land and Soils (Section 5.2), Water (Section 5.3), Biodiversity (Section 5.4), and Commercial Fisheries and Aquaculture (Section 5.5). The interactions between these aspects arise due to the impact of the sedimentation and subsequent dispersion, which serves as a key component of the impact assessment for each of these aspects. Significant impacts to one aspect, would consequently also impact upon the others.
- Air Quality (Section 5.6), Noise (Section 5.7) and Population and Human Health (Section 5.11). Interactions arising as significant effects of pollutant emissions and noise generation have a direct interaction with the population and human health.

In terms of interaction with other projects/developments, this is presented in detail in the SISAA report (Ayesa, 2025b). The nearest comparable marine activities include routine harbour maintenance and navigation safety works undertaken by Wicklow County Council, which occur periodically and under separate environmental consents. There are no other current or pending applications for capital dredging, reclamation, or coastal construction within 1 km of either the harbour or the licensed offshore disposal site. In light of the nature, extent and location of the

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approved planning permission, it is therefore determined that the potential for in-combination effects is negligible.

## [6] Mitigation Measures Proposed

No significant impacts have been identified for the Project, as outlined in Section 5. However, a series of mitigation recommendations are included in Table 12 overleaf to provide best practise environmental control and to provide protection to fisheries interests.

**Table 12: Proposed Best Practise Mitigation Measures**

Environmental Aspect	Proposed Mitigation Measures
Land and Soils	<ul style="list-style-type: none"> <li>• Pre-dredge and post-dredge bathymetric surveys of the dredge and dump sites.</li> <li>• Chemical and granulometric analysis of sediment samples from the dredge sites at three-year intervals.</li> </ul>
Water	<ul style="list-style-type: none"> <li>• Dredging and disposal activities will be conducted in accordance with all relevant Health and Safety Legislation and Regulations, and in adherence to all major international shipping conventions, adopted by the International Maritime Organization (and the International Labour Organization) concerning maritime safety and pollution prevention.</li> <li>• Best practice measures will be implemented to minimise the release of suspended solids into the receiving environment.</li> <li>• A full record of loading and disposal tracks and a record of the material being deposited will be maintained for each trip.</li> <li>• Disposal at the disposal site will be carried out through the vessel's hull whilst moving at slow speed.</li> <li>• The disposal sites will be divided into subsections with each used sequentially to ensure there is a uniform spread of the dredged sediments.</li> <li>• All loading operations will be managed to be as efficient as possible and minimise the duration of the dredging activities.</li> <li>• The dredging works will be carried out in full accordance with the conditions stipulated in the DaS permit.</li> </ul>
Biodiversity	<p>Mitigation measures presented above for 'Water' are similarly applicable here. In addition:</p> <ul style="list-style-type: none"> <li>• Project vessels will move at a maximum speed of 13 knots during transit to allow for marine mammals to move away from the vessel.</li> </ul>
Commercial Fisheries and Aquaculture	<ul style="list-style-type: none"> <li>• To avoid disturbance or impediment to the passage of fish during the critical migratory period, the following restrictions will be observed in the dredge area (Wicklow Harbour):             <ul style="list-style-type: none"> <li>- Ploughing operations will not occur between April to September.</li> <li>- WID operations will not occur between April to September.</li> <li>- TSHD operations will be restricted between April to September to a maximum of 12 hours per day in the upper harbour, to ensure there is only temporary disturbance with large breaks in operations to avoid disturbance or impediment to passage of fish.</li> </ul> </li> <li>• WCC will engage with the local fishing community in advance of any works commencing in to minimise any disruption due to the dredging and dumping activities on site.</li> </ul>

- During the proposed dredging and disposal activities, other vessels will be requested to maintain a safe distance from the survey vessels due to their restricted manoeuvrability. Fishermen will also be requested to avoid the static survey equipment once it is deployed, which will have a very small footprint.
- For the duration of the dredge disposal fishermen with static gear such as whelk/lobster/crab pots within the dredge disposal area will be requested to temporarily remove them. The impact upon the commercial fishing sector will be minimised by planning of the works to minimise the spatial extent and duration of the necessary gear removal. If the gear is not removed or cannot be removed for any reason, the contractor will make best endeavours to avoid dumping directly on to visible gear.

Air Quality	As no likely impacts are expected on air quality in relation to the proposed project, no mitigation measures are proposed.
Noise and Vibration	<ul style="list-style-type: none"> <li>• A local communication plan will be established to ensure that the issues will be managed promptly.</li> <li>• All equipment to be maintained in good working order, including maintenance related to noise emissions.</li> <li>• Vessels will be shut down between work periods or throttled down to a minimum.</li> <li>• Where night time dredging is required, residents will be informed prior to dredging.</li> </ul>
Landscape/Seascape	As no likely impacts are expected on landscape/seascape in relation to the proposed project, no mitigation measures are proposed.
Traffic and Transport	<ul style="list-style-type: none"> <li>• During the proposed work, the vessels will issue internationally recognized identification or warning signs.</li> <li>• Navigational risks during the works will be addressed through engagement with the relevant stakeholders, including the Irish Coast Guard, the Department of Transport, Tourism and Sport, local ports and harbours at appropriate times.</li> <li>• Formal notice will be issued to mariners and the port authorities in advance of the dredging and dumping activities.</li> <li>• Measures will be in place to ensure compliance with the International Regulations for Preventing Collisions at Sea and standards, including a formal notice to mariners in advance of any activity, appropriate navigation lights and liaison with Port authorities to agree the timing of works and to agree a communication protocol.</li> </ul>
Cultural Heritage	Recommended measures presented in the UAIA (AMS, 2024) prepared for the dredge area (Wicklow Harbour) will be adhered to.
Population and Human Health	<ul style="list-style-type: none"> <li>• Dredging and disposal activities will be conducted in accordance with all relevant Health and Safety Legislation and Regulations, and in adherence to all major international shipping conventions, adopted by the International Maritime Organization (and the International Labour Organization) concerning maritime safety and pollution prevention.</li> <li>• A local communication plan will be established to ensure that the issues will be managed promptly.</li> </ul>
Climate	As no likely impacts are expected on climate in relation to the proposed project, no mitigation measures are proposed.

Waste

- Appropriate waste segregation and receptacles will be provided on the vessels.
- The waste will be carried off the vessel(s) by the licensed waste contractor routinely.
- Littering at sea will not be permitted.

Material Assets

As no likely impacts are expected on material assets in relation to the proposed project, no mitigation measures are proposed.

Major Accidents and Disasters

- A documented Accident Prevention Procedure will be put in place prior to commencement.
- A documented Emergency Response Procedure will be put in place prior to commencement.
- All vessels used shall, as required by law, be MARPOL compliant and fully certified by the Maritime Safety Office.

## [7] Conclusion

The EIA Screening exercise described in Section [4.7] above has concluded that the proposed Project does not fall under any of the thresholds in Schedule 5 Part 1 for mandatory EIA and is not relevant to any thresholds listed under in Schedule 5 Part 2. Therefore, it is not subject to the provisions of the EIA Directive.

The AIMU in this report has been undertaken and prepared in accordance with The Applicant Technical Guidance Note for Obtaining a Licence to Carry Out Specified Maritime Usages in the Maritime Area under the Maritime Area Planning Act 2021 (MARA, 2023), and is supported by the environmental and ecological assessments made within the following:

- Ayesa (2025a) Wicklow Harbour Dredging & Offshore Disposal. Risk Assessment for Annex IV Species.
- Ayesa (2025b) Wicklow Harbour Dredging & Offshore Disposal. Supporting information for Screening of Appropriate Assessment.
- Tetra Tech RPS (2025) Wicklow Disposal Site Dispersion Assessment.
- Gavin & Doherty Geosolutions (2024b) Assessment and Report on Dispersion Modelling due to Water Injection Dredging at Wicklow Harbour. Document Ref. 23145-REP-005-02.

This AIMU concludes that due to the nature, scale and location of the proposed maintenance dredging and disposal activities, and implementation of embedded and proposed best practise mitigation measures, significant effects on the environment are unlikely to arise.

## References

Aquafact (2012) on behalf of The Environmental Protection Agency (EPA) Dumping At Sea, Dumping Site Selection Guidance Note.

Ayesa (2024) Wicklow Harbour Dredging, Disposal at Sea Site Selection.

Ayesa (2025a) Wicklow Harbour Dredging & Offshore Disposal. Risk Assessment for Annex IV Species.

Ayesa (2025b) Wicklow Harbour Dredging & Offshore Disposal. Supporting information for Screening of Appropriate Assessment.

Ayesa (2025c) Wicklow Harbour Dredging Proposed Disposal at Sea Site. Disposal Site Suitability Report.

Archaeological Management Solutions (2024) Underwater Archaeology Impact Assessment for Maintenance Dredging in Wicklow Harbour.

Gavin & Doherty Geosolutions (2024a) Wicklow Harbour Dredging and Arklow Disposal Risk Assessment for Annex IV Species. Document Ref. 23145-REP-004-04.

Gavin & Doherty Geosolutions (2024b) Assessment and Report on Dispersion Modelling due to Water Injection Dredging at Wicklow Harbour. Document Ref. 23145-REP-005-02.

Gavin & Doherty Geosolutions (2024c) Wicklow Harbour Dredging & Disposal Site Supporting Information for Screening of Appropriate Assessment. Document Ref. 23145-REP-002-04.

Gavin & Doherty Geosolutions (2024d) Wicklow Harbour Dredging and Arklow Disposal Assessment of Impact of the Maritime Usage (AIMU) Report. Document Ref. 23145-REP-005-02.

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Marine Institute (2006) Guidelines for the Assessment of Dredge Material for Disposal in Irish Waters.

Marine Institute (2019) Addendum to 2006 Guidelines for the Assessment of Dredged Material in Irish Waters.

MERC Consultants (2023) Benthic Survey of Wicklow Harbour Dredge Site.

MERC Consultants (2025) Benthic Ecological Survey Report, Wicklow Harbour dredging campaign – proposed spoil disposal site.

SOCOTEC (2021-2022) Wicklow Harbour Dredge Site. Sediment Sampling, Certificate of Analysis Reports.

Tetra Tech RPS (2025) Wicklow Disposal Site Dispersion Assessment.