



Wicklow Harbour Maintenance & Disposal at Sea

Disposal Site Suitability Assessment Report

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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
IWDG	Irish Whale and Dolphin Group
Li	Lithium
MARA	Marine Area Regulatory Authority
MPA	Marine Protection Area
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
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 over a long-term period. The historical and pre-approved offshore licensed site is considered unsustainable in the long term.

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] Report Objectives

This report's objectives are to review all information and data regarding the establishment and use of the newly identified dredge disposal site located northeast of Wicklow Harbour (Image 1), and to assess whether it is suitable for use as a disposal site for material extracted from Wicklow Harbour during the proposed eight-year maintenance dredging campaign.



Image 1: Proposed Offshore Disposal Site Northeast of Wicklow Harbour

[1.2] Supporting Documentation

WCC and Ayesa (and their sub-consultants) have prepared a number of reports, all of which should be read in combination with this report:

- Ayesa (2024) Wicklow Harbour Dredging, Disposal at Sea Site Selection.
- Ayesa (2025a) Wicklow Harbour Maintenance Dredging & Offshore Disposal. Risk Assessment for Annex IV Species.
- Ayesa (2025b) Wicklow Harbour Maintenance Dredging & Offshore Disposal. Supporting information for Screening of Appropriate Assessment.
- Ayesa (2025c) Wicklow Harbour Maintenance Dredging Proposed Disposal at Sea Site. Assessment of Impact on the Maritime Usage 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.

[1.3] Legislative Background

[1.3.1] Environmental Protection Agency (EPA)

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).

The purpose of a DaS permit is to regulate the dumping of material at sea. Dump site selection is a fundamental element of any dumping at sea application, and EPA have produced (in coordination with AQUAFAC) the Dumping Site Selection Guidance Note in 2012 to inform how this process should be undertaken. This Report has been prepared cognisant of these Guidelines and has been prepared as per the sub-sections of Section 4 ‘Selection of Dump Site’.

Table 1: Selection of Dumpsite Subsections (AQUAFAC, 2012)

Sub-Sections under Section 4, AQUAFAC 2012	Relevant Section in this Report
4.1 Consultation	Section [5.3] ‘Stakeholder Consultation’
4.2 Alternatives to Marine Disposal	Section [4] ‘Alternatives Assessed’
4.3 Assessment of the Need for a New Dump Site	Section [3] ‘The Need for a New Disposal Site’
4.4 Identification of Suitable Areas for a Dump Site	Section [5] ‘Identification of Suitable Areas for Disposal’
4.5 Determination of Dredge Material Characteristics Following Dumping	Section [6.7] ‘Sediment Dispersion Characteristics’

4.6 Selection of Candidate Dump Site(s)	Section [5.2] ‘Candidate Sites Selection’ and Section [5.4] ‘Recommended Disposal Site’
4.7 Assessment of Potential Adverse Effects for Candidate Dumping Sites	Section [7] ‘Assessment of Potential Adverse Environmental Effects’

[1.3.2] The Maritime Regulatory Authority (MARA)

The Maritime Area Regulatory Authority, or MARA, is a state agency that was established in 2023 and whose functions are set out in the Maritime Area Planning Acts 2021 and 2022. MARA regulates and is responsible for regulating development and activity in Ireland’s maritime area, mainly achieved through Maritime Area Consents (MACs) and Maritime Usage Licences (MULs).

A MAC is a right to occupy a part of the maritime area for a specific maritime usage, conditional on securing any other necessary approvals and a MUL is a licence to carry out a specific activity in Ireland’s maritime area, conditional on securing any other necessary approvals.

Disposal at sea is regulated under the MUL regime. The primary regulatory basis for MULs is set out in Part 5 of the MAP Act, as amended. The MAP Act is complimented by the Maritime Area Usage (Licence Fees) Regulations 2023 (S.I. No. 402/2023) which sets out the applicable fees for MUL applications.

[2] Dredging Requirements

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.

[2.1] Dredging Methodology and Quantities

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. 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 compliance with relevant maritime safety, environmental and licensing requirements.

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 quantities and frequency of dredging are outlined in Table 2 and Table 3. These tables provide a conservative assumption of quantities to be dredged. Table 2 presents the quantity of material (in tonnes, wet weight) extracted from Wicklow Harbour via TSHD/mechanical dredging methods and proposed to be disposed of offshore in the eight-year application period. Table 3 presents all planned dredging to occur in Wicklow Harbour during this period. 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* m³, and wet tonnes.

Table 2: Offshore Disposal Quantities (via TSHD/Mechanical Dredging)

Year	Standard Quantity (tonnes, wet weight)
Year 1	11,250 - 157,500
Year 2	11,250 - 45,000
Year 3	11,250 - 45,000
Year 4	11,250 - 90,000
Year 5	11,250 - 45,000
Year 6	11,250 - 45,000
Year 7	11,250 - 90,000
Year 8	11,250 - 45,000
Total	90,000 - 562,500

Table 3: 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	288,750	415,800
	WID	26,950	0	0	26,950	0	0	26,950	0	80,850	
	Plough	5,775	5,775	5,775	5,775	5,775	5,775	5,775	5,775	46,200	
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 ³)									
Port Area	TSHD/Mechanical	105,000	30,000	30,000	60,000	30,000	30,000	60,000	30,000	375,000	540,000
	WID	35,000	0	0	35,000	0	0	35,000	0	105,000	
	Plough	7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500	60,000	
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	562,500	810,000
	WID	52,500	0	0	52,500	0	0	52,500	0	157,500	
	Plough	11,250	11,250	11,250	11,250	11,250	11,250	11,250	11,250	90,000	

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

[3] The Need for a New Disposal Site

The historical disposal at sea site is situated in close proximity to Wicklow Harbour, and WCC intended to apply to the EPA for a DaS Permit for this site in 2023/2024. However, on completion of a detailed benthic survey by MERC Consultants in 2023, the area was found to be of significant ecological importance, largely in relation to the presence of coarse/mixed substrate habitat akin to that of the Wicklow Reef Special Area of Conservation (SAC) located south-east of this site. The substrate type found here supports a diverse range of species, including most notably the *Sabellaria alveolata* (Honeycomb Worm) and may be the only known example of this habitat off the Irish and British Coast (NPWS, 2014). As a result of these findings, WCC were cognisant of their environmental responsibility, and decided not to proceed with the permit application for this site. An extensive study to identify a potential new site was undertaken and based on this process an alternative disposal site has been identified (northeast of Wicklow Harbour).

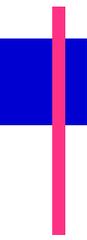
For maintenance dredging conducted in 2014, WCC utilised the Arklow Bank Disposal Site, previously approved for offshore disposal at sea activities in 2011 for dredging works at Arklow Harbour (EPA Dumping at Sea Permit S0002-01, dated April 2011). The exposed dynamic coastline and distance to be travelled from Wicklow Harbour (25.5km each way) renders this site unsustainable in the long-term and therefore, the permitting of the potential disposal site northeast of Wicklow Harbour provides a suitable alternative within a more reasonable distance to Wicklow Harbour.

[4] Alternatives Assessed

EPA Dumping Site Selection Guidance Note (Aquafact, 2012) requires developers to explore other options for the disposal of dredge material, as an alternative to the disposal at sea method. As such, an Alternatives to Dumping at Sea Report was prepared by The Bates Partnership on behalf of Wicklow County Council (2024) within which a number of alternatives were considered but subsequently ruled out, as detailed in the table below.

Table 4: 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.
	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 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.
	Landfill Cover/Liner 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. 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.

For the above reasons landing dredged sediment ashore for treatment and transport to a landfill site is unfeasible at this time.

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"> • Lack of regulation of marine aggregates industry and guidance on its implementation; • Fine nature of sediment present with the presence of organics; • Elevated saline and pH levels; • Mechanical dredging not undertaken by the Port; • Hydraulic dredgers used cannot be unloaded at quays. <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>	
Recycling	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>
Processing/Recovery	<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.

[5] Identification of Suitable Areas for Disposal

The first step in the investigation of potential alternative offshore disposal sites was the conduct of an initial desk-based data review and exclusion mapping exercise within a defined study area. This determined zones of exclusion/restriction on account of their ecological, industrial, or commercial sensitivity. The result was the identification of three potential candidate sites within a 21km radius from Wicklow Harbour. Where possible, and whilst keeping in mind the practicalities of distance and the long-term sustainable use of the dump at sea site, the selected candidate sites avoided areas considered sensitive for the above key considerations.

This initial investigation was carried out by Ayesa in 2024, culminating in the production of a Final Report with supporting mapping, and a stakeholder engagement campaign. The following sections present a summary of the findings.

[5.1] Desktop Constraints Study

A desktop study on the regional maritime area off the coast of Wicklow was completed, to determine areas of restriction/exclusion whereby the disposal activities may be incompatible with. This included:

- Areas previously studied and excluded for dump at sea activities.
- Areas of importance for ecological conservation, including:
 - Marine Protected Areas (MPAs)
 - Natura 2000 Protected Sites (Special Areas of Conservation and Special Protection Areas).
 - Natural Heritage Areas (NHAs) and Proposed Natural Heritage Areas (pNHAs).
- Areas designated under the Water Framework Directive (2000/60/EC), the Shellfish Waters Directive (79/923/EEC) and the Bathing Waters Directive (76/160/EEC).
- Areas of commercial and recreational fishing.
- Spawning, feeding and nursery grounds and migration routes of commercially important fisheries.
- Migration routes of marine mammals.
- Aquaculture sites.
- Areas of commercial, industrial and/or infrastructural importance, including:
 - Renewable energy sites such as offshore wind farms and wave and tidal stream devices.
 - Engineering uses of the seafloor such as undersea cables and pipelines.
 - Seabed extraction areas.
 - Oil and gas Lease/Licence areas.
 - Shipping lanes.
 - Intake sites for industrial uses such as cooling, desalination and aquaculture.
- Military exclusion zones.
- Marine archaeological interests such as shipwrecks.

- Beaches and other areas used for recreational purposes.

The above data was sourced from online resources and through consultation with key stakeholders, as outlined in the table below.

Table 5: Datasets Utilised & Sources

Dataset	Source
Previous and current Dump at Sea sites	Environmental Protection Agency (EPA). www.data.gov.ie.
Protected Sites (SAC, SPA, NHA, pNHA)	National Parks and Wildlife Service (NPWS). www.data.gov.ie.
Protected Sites (OSPAR)	OSPAR Commission.
Water Framework Directive	Environmental Protection Agency (EPA), www.data.gov.ie
Fisheries Spawning and Nursery Grounds	Ireland's Marine Atlas. www.data.gov.ie. Consultation with the Sea Fisheries Protection Agency (SFPA).
Aquaculture and Fishery sites	Ireland's Marine Atlas
Outfalls, Discharge Points and Licensed Waste Facilities	Environmental Protection Agency (EPA). www.data.gov.ie.
Sediment Classification, Benthic Habitats	Ireland's Marine Atlas. INFOMAR
Shipwrecks	Ireland's Marine Atlas. INFOMAR.
Mussel Seed Beds	Consultation with Bord Iascaigh Mhara (BIM) and the Marine Institute (MI).
Fisheries interests/efforts (both offshore and inshore) for vessels >12m	Consultation with the Marine Institute (MI).
Renewable Energy Sites	Ireland's Marine Atlas. www.data.gov.ie.
Marine Landforms/Lineworks	Ireland's Marine Atlas.
Seascapes Character	Ireland's Marine Atlas.
Shipping and Navigation	Ireland's Marine Atlas.
Article 17 Data	National Parks and Wildlife Service (NPWS) www.data.gov.ie.
Supplementary biotope/substrate data	Data from previous ecological surveys conducted by AQUAFAC for a renewable farm development.

Once sourced, available data was downloaded and imported into QGIS, a Geographical Information System (GIS). This allowed data to be overlain into a master QGIS Project file, identifying zones of exclusion/restriction, and highlighting areas of suitability for dump at sea activities.

Four key areas of consideration with regards to exclusion/restriction areas were:

1. **Ecological considerations**, including Protected Sites, areas designated under the WFD, areas of key commercial fishing efforts, spawning/nursery grounds and sensitive substrate/habitat types.

2. **Commercial and Infrastructure considerations**, including the presence of renewable energy sites along the east coast of Ireland, shipping/navigation concerns, and engineering uses of the seabed (i.e., cables, pipelines).
3. **Industrial considerations**, including intake and outfall systems.
4. **Social & cultural considerations**, including recorded shipwrecks, and areas of recreational use (i.e., beaches, swimming zones etc.).

[5.2] Candidate Sites Selection

On completion of the desktop review and exclusion mapping exercise, three key constraints/restrictions were identified that provided the greatest influence into the locations of the potential dump at sea candidate sites. These included:

1. Sensitive substrate / habitat type: Presence of *Sabellaria alveolata* (honeycomb worm) reef, the reef-forming polychaete present in coarse/mixed sediment substrate. The Wicklow Reef may be the only known example of this substrate off the Irish and British coast. It is considered to support significant ecological biodiversity. Additionally, *Sabellaria spinulosa* (Ross Worm) reef is also known from the area.
2. Mussel seed dredging: SFPA note the importance of the coastline for seed mussel recruitment, with beds fished since 1970. The majority of beds are focused south and north of Wicklow Head (the centre of this investigations Study Area).
3. The association between whelk and brown crab fisheries in the Irish Sea is multi-faceted. Ecologically, both species are part of the benthic community, living at the bottom of the sea. Their habitats often overlap, and the pots used in their fisheries can affect the same areas and species, making the management of these fisheries interdependent.

Taking the above into consideration, three potential candidate sites were identified within a 21km radius from Wicklow Harbour and presented to stakeholders for their view. Appendix 1 presents the evaluation of the three potential candidate sites against the four key areas of consideration, as outlined in Section [5.1] above.

[5.3] Stakeholder Consultation

As outlined in Section 4.1 of the EPA Guidelines (2012), consultation regarding the selection of a new dump site is considered vital. A stakeholder engagement exercise was undertaken in 2024 as part of the initial investigation of potential candidate sites, with the intention of understanding views and potential concerns regarding the three candidate dump sites presented in the section above and obtain any further data/information requiring consideration.

Letters were issued to the following stakeholders, a list informed by the EPA's Dumping Site Selection Guidance Note (2012) and the context of the Project:

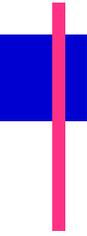
- The Environment Protection Agency (EPA).
- The Department of Agriculture, Food and the Marine (DAFM).
- The Department of the Environment, Community and Local Government.

- The Department of Arts, Heritage and the Gaeltacht (inclusive of the National Parks and Wildlife Service (NPWS) and the Underwater Archaeology Unit (UAU)).
- The Marine Survey Office (MSO).
- Marine Area Regulatory Authority (MARA).
- Bord Íascaigh Mhara (BIM).
- Marine Institute (MI).
- The Irish Whale & Dolphin Group (IWDG).
- The Sea Fisheries Protection Authority (SFPA).
- Inland Fisheries Ireland (IFI).
- An Taisce (The National Trust for Ireland).
- Birdwatch Ireland.
- Coast Watch Europe (CWE).
- The Arklow Bank Wind Farm.
- The Codling Wind Farm.
- Dublin Array Wind Farm.
- Wicklow Harbour Master.
- Wicklow Boat Charters.
- Wicklow Bay Sea Angling Club.
- Leinster Provincial Council (LPC) Boat Committee.

[5.3.1] Recommended Site

Based on the outcomes of the desk-top assessment review, and response from the stakeholder engagement exercise, Candidate Site 1 was recommended to be progressed to further study and investigation as a potential disposal at sea location. Key reasons being:

1. Whilst concerns from local angling groups was received regarding the importance of Candidate Site 1 for angling and presence of important species (Smooth Hound and Irish Specimen Tote particularly), the frequency of disposal at sea operations does not give rise to significant concern for the sustainability of these fisheries. Further, whilst at this time a site-specific hydrodynamic modelling exercise was yet to be completed, the area is characterised by strong currents throughout the tidal cycles and therefore bed shear under tidal flows are considered sufficient to mobilise and erode medium and coarse sand from the bed. Significant settlement or 'smothering' is therefore not anticipated in this area.
2. Candidate Site 1 was located a sufficient distance from the Wicklow Reef SAC, which supports the *Sabellaria alveolata* (honeycomb worm) and *Sabellaria spinulosa* (Ross Worm) reef systems. This reef habitat evidently further supports a variety of fisheries, as advised by the local angling groups. Seemingly, a significant abundance of species rare in Irish waters (Black Bream, Red Mullet and Smooth Hound) have been noted here, some of which are not commonly found elsewhere along the East Coast. Responses received from An Taisce, IFI, and local angling groups confirmed preference of Candidate Site 1 (or 3) in this regard.

- 
3. Candidate Site 1 would not intersect with any planned windfarm developments or associated infrastructure, where safety and operational risks might arise. A response received from the Arklow Bank Windfarm confirmed preference of Candidate Site 1 (or 2) in this regard.
 4. Candidate Site 1 was located a sufficient distance from key fisheries, in particular mussel seed habitat. A response received from BIM confirmed preference of Candidate Site 1 (or 2) in this regard.

[6] Disposal Site Characteristics

[6.1] Location Details

The potential disposal site is located 2.5km off the shoreline at Five Mile Point, and 9km northeast of Wicklow Harbour, County Wicklow (see Image 1).

It is situated >2km from the closest Special Area of Conservation (SAC) (The Murrough Wetlands SAC) and is within the Murrough Special Protection Area (SPA), protected for its importance for a number of wintering waterbirds. It is situated 470m from the eastern boundary of the Coastal Waterbody Southwestern Irish Sea – Killiney Bay (Code IE_EA_100_0000), which has a ‘high’ ecological status, and is not considered to be at risk of not meeting the objectives of the Water Framework Directive (WFD).

In terms of its location in proximity to mapped commercial fishing interests (as identified by BIM and SFPA), the potential disposal site is located within a 21km zone along the east coast of Ireland identified for whelk pot fishing, and >950m from a historical mussel seed harvesting site (not currently active). From responses obtained during the stakeholder engagement exercise (Section [5.3]), it is understood that the area is important for angling and the presence of the Smooth Hound and Irish Specimen Tope in particular.

In terms of archaeological sensitivity, the potential disposal site is located >2km from a known shipwreck site (Wreck No. W02367).

From an infrastructure perspective, the potential disposal site does not intersect with any existing or planned offshore wind farms or known shipping routes. There is currently no known publicly available data for subsea cables and pipelines off the east coast of Ireland.

The available information (www.infomar.ie) indicates the seabed in this area is dynamic and is very likely subject to the effects of high levels of sediment scour due to tidal flows resuspending sediments.

The closest historical disposal operations have been off the coast of Greystones Harbour, Arklow Harbour and more recently within the Arklow Bank Disposal Site. The Greystones site has been inactive since 1994. However, these sites are situated >25km from the potential disposal site (>25km).

[6.2] Sediment Composition

Water depths in the potential disposal site 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) 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 (Image 2) 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.

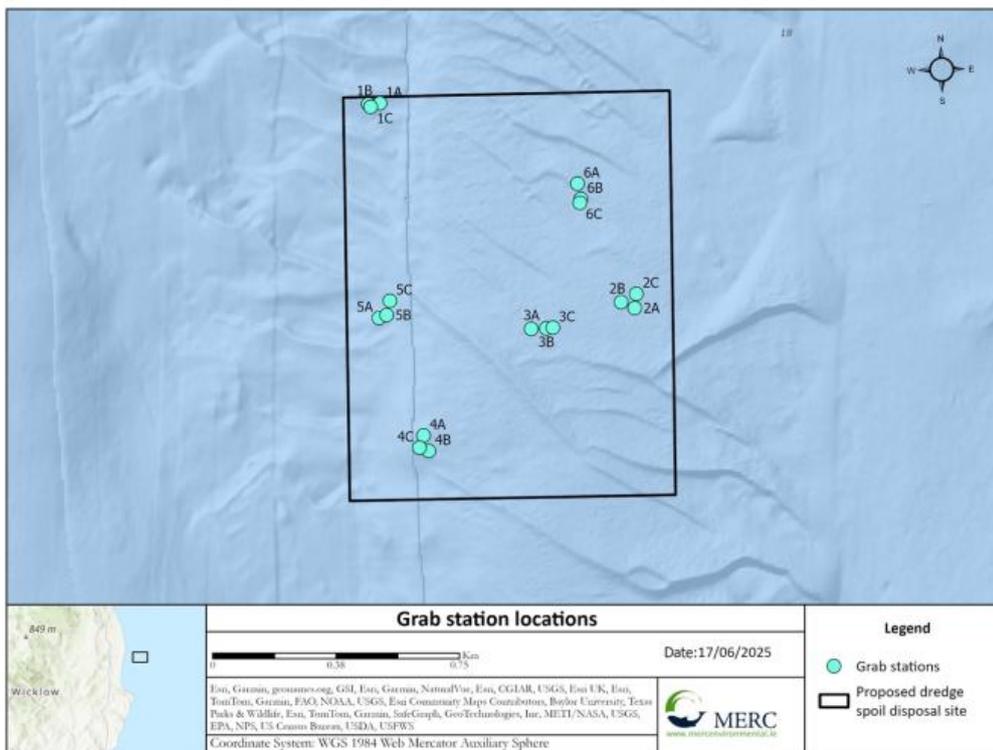


Image 2: Grab Sample Locations (MERC Ecological Consultants, 2025)

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 μ m) and medium (250-499 μ 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 μ 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.

[6.3] 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 (Image 3). 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.

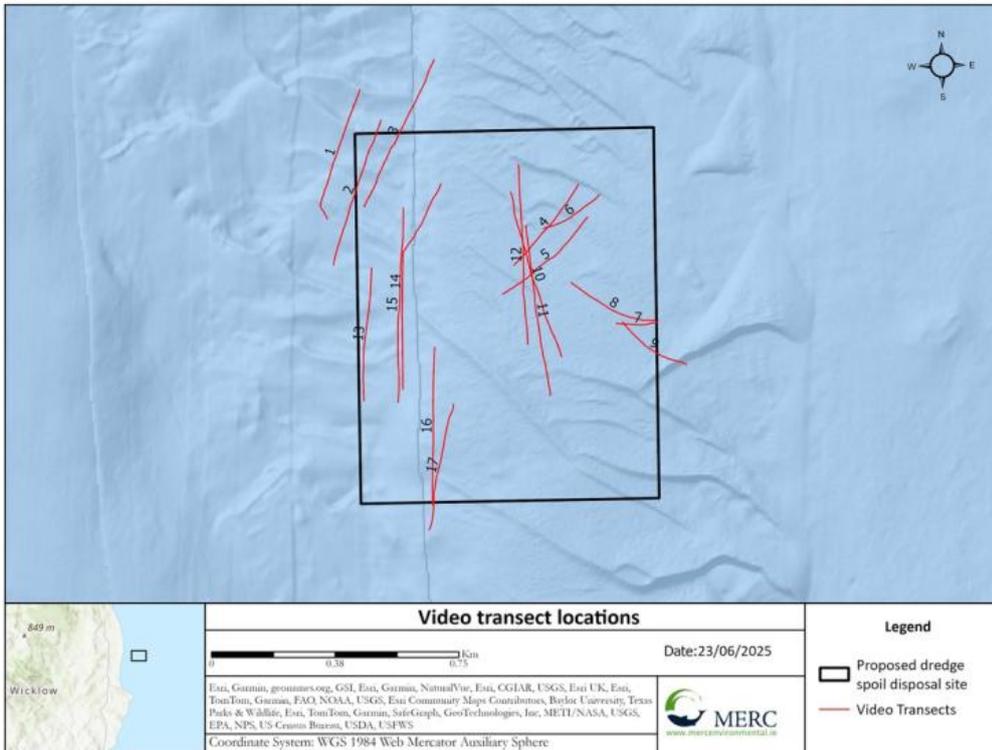


Image 3: Video Transect Locations (MERC Ecological Consultants, 2025)

[6.4] 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 0.1m² and between 1 and 6 individuals per 0.1m². 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 0.1m² and 808 per 0.1m² 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.

[6.5] 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.

[6.6] 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 precautionary recommendation was taken on board as a precautionary measure, and the boundaries of the potential disposal site were amended so as to remove all potential impact to areas of the seabed where *Sabellaria alveolata* was recorded (Image 1).

[6.7] 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 4 and Image 6). 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 5 and Image 7).

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.

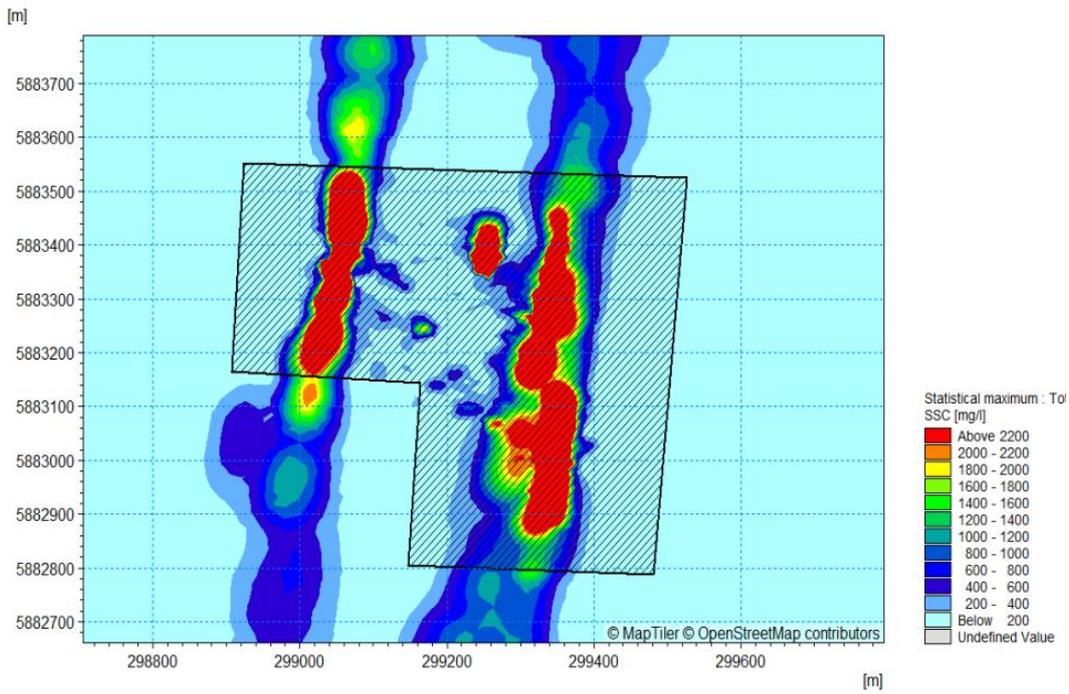


Image 4: Maximum Total SSC At the Proposed Disposal Site (Tetra Tech RPS, 2025)

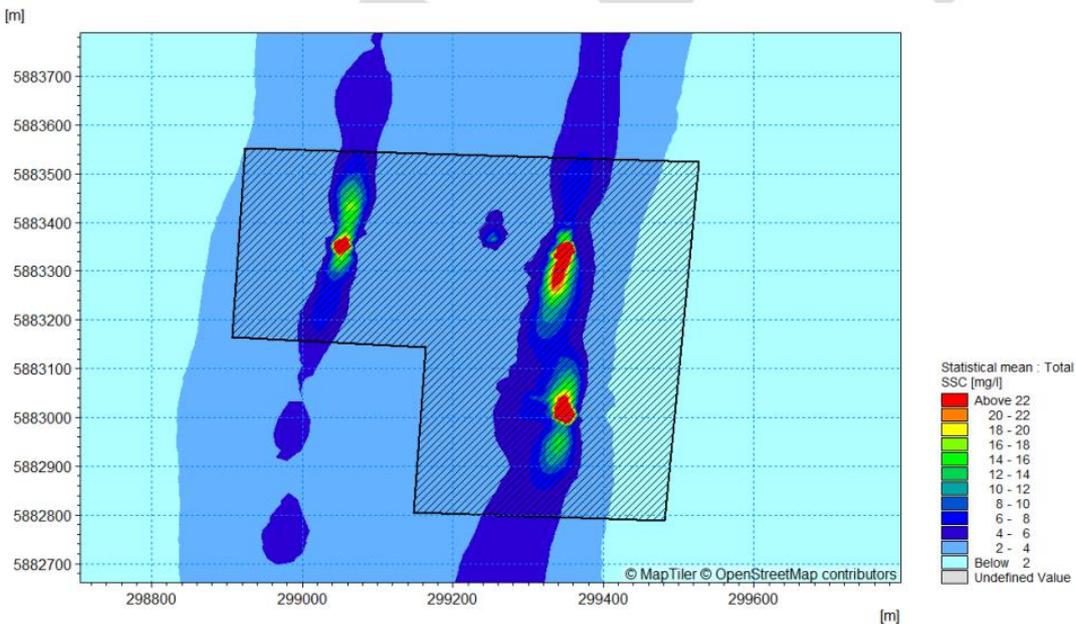


Image 5: Mean Total SSC At the Proposed Disposal Site (Tetra Tech RPS, 2025)

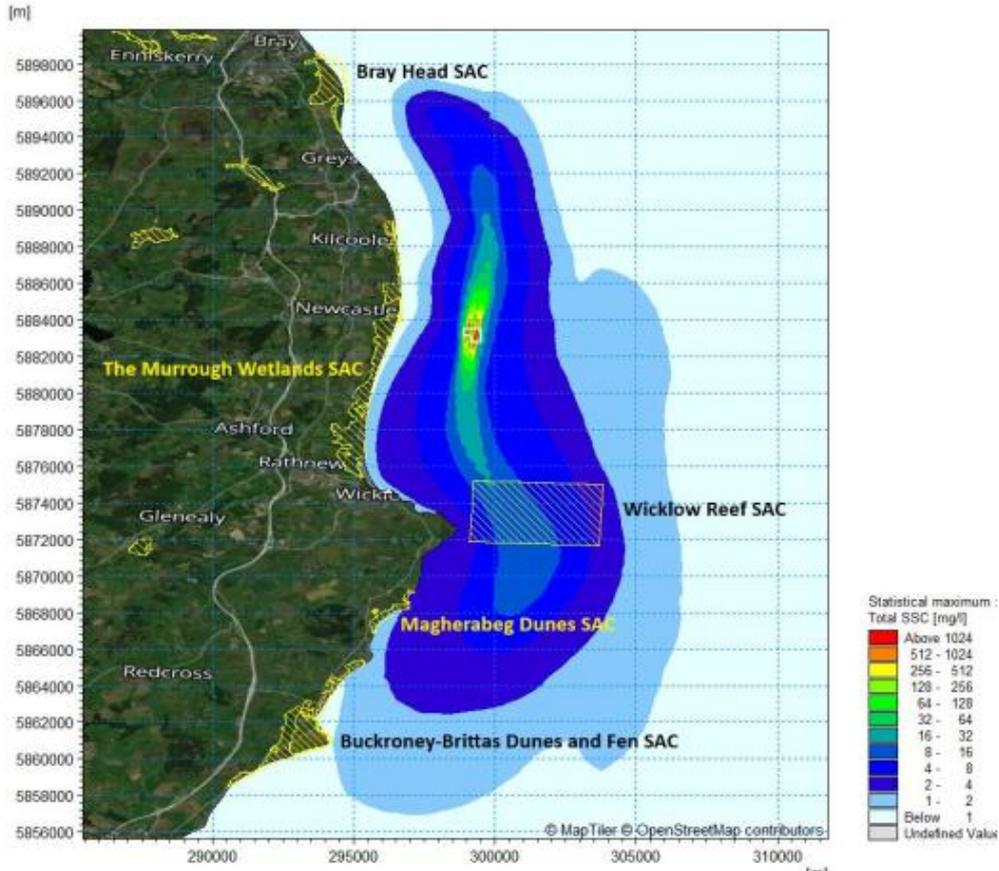


Image 6: Maximum Total SSC Along the Coastline (Tetra Tech RPS, 2025)

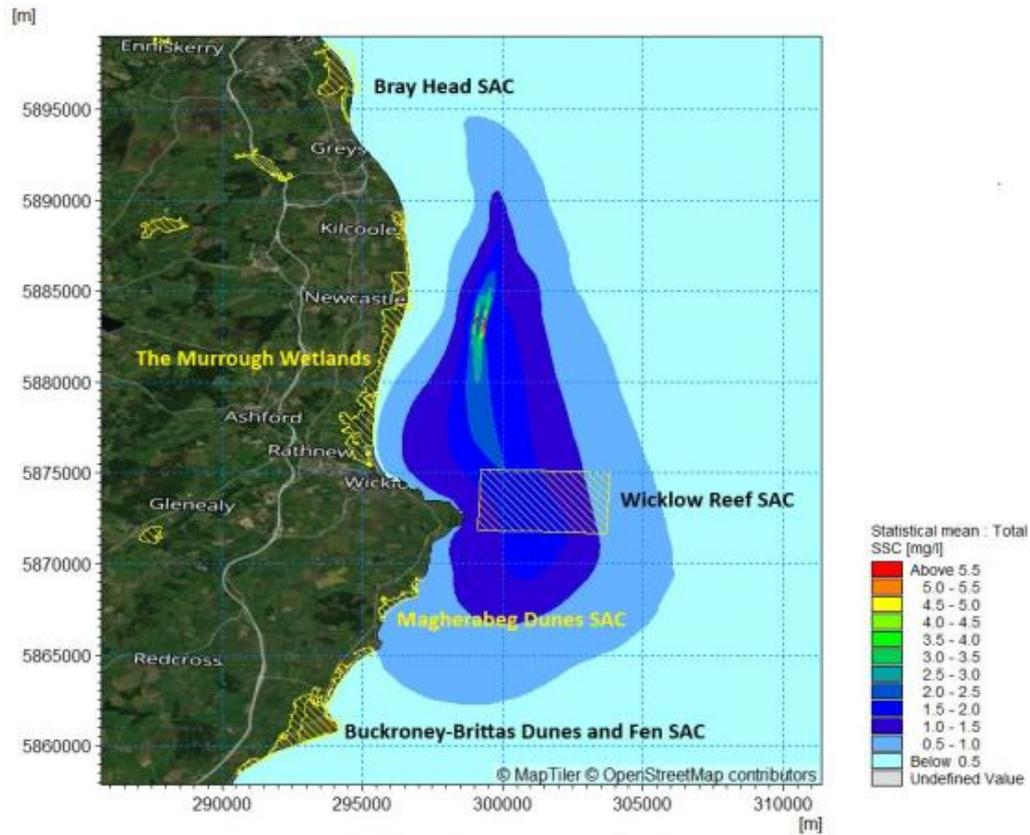
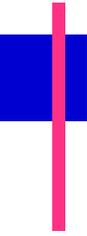


Image 7: Mean Total SSC Along the Coastline (Tetra Tech RPS, 2025)



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 Buckroney-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 Buckroney-Brittis Dunes and Fen SAC.

[7] Assessment of Potential Adverse Effects

Disposal at sea activities give rise to a series of potential ecological concerns.

While non-toxic sediment composed primarily of sand, mud, fine silt, and some gravel might not be directly lethal from an ecological perspective, it can still impact fish and shellfish species in the Irish Sea through various mechanisms. Even with strong currents, licensed dumping of dredged sediment can have negative consequences, including:

- Increased suspended sediment: Generation of suspended sediment plumes from the disposal action which generates turbid conditions within the water column. The distance that the plume may travel and time with which sediment is suspended in the water column depends on the hydrodynamic conditions at the time.
- Localised smothering: Some sediment can settle and smother benthic (bottom-dwelling) communities near the dumping site despite the currents.
- Habitat alteration: The dumped material can alter the natural composition of the seabed, impacting the habitat suitability for certain species.
- Food web disruption: Reduced prey availability due to filter feeder decline and habitat alteration can disrupt the food web, affecting predator populations.

It is important to note that the specific impacts of sediment dumping depend on various factors, such as:

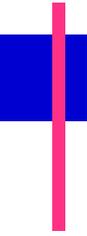
- Quantity and composition of the sediment: The amount and type of sediment being placed offshore plays a crucial role in the severity of the impact.
- Dumping location and frequency: The proximity of the disposal site to sensitive habitats and the frequency of disposal events influences the overall effect.
- Hydrodynamic conditions: While strong currents can help disperse the sediment, local water flow and bottom topography variations can affect the spread and impact.

Whilst less significant in their magnitude of impact, other concerns of disposal at sea activities include:

- Physical disturbance to marine seabed infrastructure (i.e., pipelines, cables).
- Interference with navigation/shipping lanes.
- Sedimentation impacts upon industrial intake systems.
- Disturbance of archaeological features (i.e., shipwrecks).
- Access restriction into zones designated for renewable energy sites.

All of the above is considered within a series of environmental/ecological impact/risk assessment reporting to accompany the DaS permit application, including:

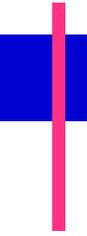
- Ayesa (2025a) Wicklow Harbour Disposal at Sea Site, Annex IV Species Risk Assessment.
- Ayesa (2025b) Wicklow Harbour Disposal at Sea Site, Supporting information for Screening of Appropriate Assessment.

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- Ayesa (2025c) Wicklow Harbour Disposal at Sea Site, Maritime Area Usage Impact Assessment.
 - Tetra Tech RPS (2025) Wicklow Disposal Site Dispersion Assessment.

[8] Site Suitability Conclusion

This disposal site suitability assessment has been undertaken to determine whether the proposed disposal site northeast of Wicklow Harbour is suitable for disposal of material dredged from Wicklow Harbour. On the basis of the following, this report has concluded that the site is suitable for disposal at sea operations:

- Available grab sample and seabed imagery information identifies that the site is classed as EUNIS habitat code A5.13 *Infralittoral Coarse Sediments* at all stations. Across approximately 95% of all the stations, sediments were recorded as coarse and medium sand fractions.
- There is a low number of epifaunal taxa recorded as well as low overall species abundance. In particular very few sessile taxa are recorded.
- 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. *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. The southwestern corner has been removed as precaution of this observation.
- 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. This leads to scour and changes in seabed relief and features on a regular basis – limiting both infaunal and epifaunal taxa diversity and abundance.
- No Annex I habitats or species of conservation importance have been observed in any of the sampling events.
- 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. An assessment of the dumping operations found that the average total suspended sediment concentration (SSC) 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.
- The site is >5km from the Wicklow Reef SAC, sensitive to effects of sedimentation based upon presence of subtidal reef structures constructed by the honeycomb worm (*Sabellaria alveolate*). Sediment dispersion modelling (Tetra Tech RPS, 2025) shows that whilst the SAC lies in the direct tidal current path, and that the total SSC can reach up to 6mg/l during the disposal period. However, five days after the final disposal event, the sediment plumes have fully dispersed into the background concentrations.
- The site is situated within The Murrough SPA, protected on account of the presence of waterbirds specific to wetland habitat. However, the location of the proposed disposal 2.5km offshore from the wetlands associated to this SPA lessens potential impact to birds. Further, the nature of the disposal operations is such that birds aren't anticipated to be impacted negatively.
- In support of the points above, the Supporting information for Screening of Appropriate Assessment (Ayesa, 2025) included a detailed Source–Pathway–Receptor (S–P–R) analysis 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 2025 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 was screened out at Stage 1.

[9] References

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

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

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

Ayesa (2025c) Wicklow Harbour Maintenance Dredging Proposed Disposal at Sea Site. Assessment of Impact on the Maritime Usage Report.

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

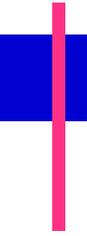
Government of Ireland, Dumping at Sea Acts 1996 to 2025.

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

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



[10] Appendix 1 – Candidate Site Selection Evaluation

Considerations	Candidate Site 1 (Proposed Disposal Site)	Site 2	Site 3
	Located ca. 2.2 km from the closest SAC (The Murrough Wetlands SAC). Within the Murrough SPA however disposal does not give rise to significant impact to birds.	Located ca. 1.7 km from the closest SAC and SPA (The Murrough Wetlands SAC and The Murrough SPA).	Located ca. 7.0 km from the closest SACs (The Wicklow Reef SAC and Magherabeg Dunes SAC).
Protected Sites	With respect to the hydrodynamics of this part of the Irish Sea, both proposed Candidate Sites 1 and 3 are likely to have strong currents. Site 2 will have relatively weaker currents and as a result will have longer period of time for deposition. The sediment plume throughout the study area is likely to extend southward, so it is unlikely that the plume from Site 3 will reach the Wicklow Reef SAC site, or the reef areas located to the north of this SAC. Similarly, the plume from Candidate Site 1 is unlikely reach the SAC or reef areas, considering the distances involved. The plume from Candidate Site 2 may partially pass through the Wicklow Reef SAC and reef areas, however considering that the current speed at the reef site and SAC will be relatively strong, heavy deposition at the SAC site will be unlikely.		
Ecologically Significant Sites	All of the abovementioned match boundaries with the corresponding SACs or SPAs and therefore the same conclusions apply.		
Water Framework Directive (WFD) Status and Risk	Located 470m from the eastern boundary of the Coastal Waterbody Southwestern Irish Sea – Killiney Bay (Code IE_EA_100_0000). Therefore, the disposal operations pose some risk to its ability to meet the required ecological thresholds.	Located 20m from the eastern boundary of the Coastal Waterbody Southwestern Irish Sea – Killiney Bay (Code IE_EA_100_0000). Therefore, the disposal operations pose some risk to its ability to meet the required ecological thresholds.	Located ca. 5.3 km from the eastern boundary of the Coastal Waterbody Southwestern Irish Sea – Killiney Bay (Code IE_EA_100_0000). Therefore, the disposal provides minimal risk to its ability to meet the required ecological thresholds.
	Depositional conditions are anticipated to only occur for a very limited period over the tidal cycle given the strong tidal currents at Candidate Site 1 and 3. With regards to Candidate Site 2, weaker currents exist and therefore the plume will have a longer period for deposition. However, plumes from each of the candidate sites are anticipated to extend southward and therefore cause minimal effect to the WFD zone.		
Sensitive Substrate/Habitat Types	Consideration was given to the priority habitat for <i>Sabellaria</i> reef (SS.SBR.PoR.SspiMx - <i>Sabellaria spinulosa</i> on stable circalittoral mixed sediment. As this biotope is typically found in areas with strong currents and high-water movement, they tend to occur in areas with mixed and coarse sediment. As such they are not typically found in locations where fine sand is deposited. This aided in the selection of sites where it is unlikely to be disposing of dredged material over <i>Sabellaria</i> reef, and Candidate Sites 1 and 3 are in these broad substrate types. Candidate Site 2 is located in an area where the biotope SS.SCS.CCS.SpiB – <i>Spirobranchus triqueter</i> with barnacles and bryozoans on unstable circalittoral cobbles and pebbles has been recorded. However, as it is a location with coarse or mixed sediment substrate, it		

is potentially suitable for *Sabellaria* reef and therefore drop-down video surveys would be required prior to any benthic grabbing surveys to confirm presence or absence.

Candidate Sites 1 and 3 are sufficient distance from the areas of *Sabellaria* reef for any sedimentation to be classified as heavy siltation over the reef habitat. Candidate Site 2 is located to the north of the *Sabellaria spinulosa* reef area of the original dredge disposal site which may experience light siltation from the sediment plume. Benthic surveys would be required to determine the extent of this reef area and its proximity to or presence in Candidate Site 2 before it became the final selection.

Mussel Seed	Site does not occur in proximity to any mussel seed fishery.	Mussel seed harvesting sites (dated 1972 and 2000) are located within 450m from this Site.	Site does not occur in proximity to any mussel seed fishery.
Whelk Fisheries	Whelk is fished extensively in a 21 km zone along the east coast of Ireland, and all sites fall within this zone.		
Pot Fishing (Brown Crab)	None of the candidate sites appear to occur within areas of offshore pot fishing efforts.		
Inshore and Offshore Fishing	In depth review provided in the disposal at sea site selection report (Ayesa 2024).		
Renewable Energy	Not located within an area designated for renewable energy development.	Not located within an area designated for renewable energy development.	Proposed on the edge of the sandy bank designated for the Arklow Wind Farm. Whilst the proposed dump at sea operations are not anticipated to cause any impact to the operation of the Farm, determining any access and/or constraints that the Farm may have is important. The Arklow Bank Wind Farm have therefore been included in the list of stakeholders to be consulted with.
Shipping	Not considered a constraint for the candidate site selection.		
Engineering Uses of Seabed (i.e., Cables / Pipelines)	Not considered a constraint for the candidate site selection.		

Intakes and Outfalls	Not considered a constraint for the candidate site selection.		
Recorded Shipwrecks	Located >2 km from closest shipwreck site.	Located within 890m of the aforementioned record. It is not anticipated that the dumping operations will cause any ill effect to the integrity of this shipwreck site given the anticipated direction of plume flow southwards.	Located >6 km from shipwreck sites.
Recreational Zones	Located approx. 2.5 km from the beach spanning from Greystones to Wicklow.	Located approx. 2.0km from the beach spanning from Greystones to Wicklow.	Located approx. 7.0 km from the Magherabeg Beach.
No impact from the dump at sea operations are predicted to these locations, or the recreational activities associated to them (i.e., swimming, marine sports).			