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Wicklow Harbour Dredging and Arklow Disposal Assessment of Impact on the Maritime Usage (AIMU) Report

WICKLOW
ENDLESS OPPORTUNITIES

Client	**Wicklow County Council**
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DISCLAIMER

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AA	Appropriate Assessment
AIMU	Assessment of Impact on the Maritime Usage
AIS	Automatic Identification System
BIM	Bord Iascaigh Mhara
CO	Conservation Objective
DAFM	Department of Agriculture, Food, and the Marine
DAHG	Department of Arts, Heritage and the Gaeltacht
DCCAE	Department of Communications, Climate Action and Environment
DEHLG	Department of Environment, Heritage and Local Government
DHLGH	Department of Housing, Local Government and Heritage
DTTAS	Department of Transport, Tourism and Sport
EC	European Commission
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
EMODnet	The European Marine Observation and Data Network
EPA	Environmental Protection Agency
EPS	European Protected Species
EU	European Union
FCS	Favourable Conservation Status
FLO	Fisheries Liaison Officer
GDG	Gavin and Doherty Geosolutions Ltd
GSI	Geological Survey of Ireland
HABs	Harmful Algal Blooms
IBTSWG	International Bottom Trawl Survey Working Group
ICES	International Council for the Exploration of the Sea
IGS	International Groundfish Survey
IMO	International Maritime Organization
ISO	International Organization for Standardization
ITM	Irish Transverse Mercator
JNCC	Joint Nature Conservation Committee
LiDAR	Light Detection and Ranging
LSE	Likely Significant Effects
MAP	Maritime Area Planning Act 2021
MARA	Maritime Area Regulatory Authority
MARPOL	The International Convention for the Prevention of Pollution from Ships
MBES	Multibeam echosounder
MI	Marine Institute
MMO	Marine Mammal Observer
MUL	Maritime Usage Licence
NIGS	Northern Ireland Groundfish Survey
NIS	Natura Impact Statement
NM	Nautical Mile
NMS	National Monuments Database
NPWS	National Parks and Wildlife Service
OWF	Offshore Wind Farm

PTS	Permanent Threshold Shift
QI	Qualifying Interests
SAC	Special Areas of Conservation
SCI	Special Conservation Interest
SISAA	Supporting Information for Screening for Appropriate Assessment
SPA	Special Protection Areas
SPL	Sound Pressure Level
SSC	Suspended Sediment Concentration
SSS	Side Scan Sonar
SWCGS	Scottish West Coast Groundfish Survey
SWD	Shellfish Waters Directive
TTS	Temporary Threshold Shift
UK	United Kingdom
UXO	Unexploded Ordnance
VC	Vibrocore
VMS	Vessel Electronic Monitoring System
WFD	Water Framework Directive
WGS	World Geodetic System
WTG	Wind Turbine Generator

Glossary of Terms

Appropriate Assessment (AA)	An Appropriate Assessment (AA) is an assessment of the potential adverse effects of a plan or project (in combination with other plans or projects) on Special Areas of Conservation and Special Protection Areas. These Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) are protected by both National and European Law.
Aquaculture Sites	Aquaculture sites include shellfish, finfish and seaweed production areas as monitored for licensing purposes.
Dredging Area	Area where maintenance dredging activities will take place
Benthic Ecology	Benthic ecology is the study of organisms that make up bottom communities (sediments, seagrass communities and rock outcrops) in lakes, streams, estuaries and oceans, to determine environmental health and conduct environmental appraisals.
Disposal Site	The area where the dredged material will be disposed.
Exclusive Economic Zone	Marine area from the territorial seas boundary seaward to a distance of 200 miles or otherwise as agreed under international statute.
Designated Shellfish Waters	Designated Shellfish Waters under the European Union Shellfish Waters Directive are sites designed to protect the aquatic habitat of bivalve and gastropod molluscs, including oysters, mussels, cockles, scallops and clams.
Dredge Fishing	A fishing dredge, also known as a scallop dredge or oyster dredge, is type of fishing gear which is towed along the bottom of the sea by a fishing boat in order to collect a targeted bottom-dwelling species.
Ecology	Ecology is a branch of biology concerning the spatial and temporal patterns of the distribution and abundance of organisms, including the causes and consequences.
Exclusive Economic Zone	Marine area from the territorial seas boundary seaward to a distance of 200 miles or otherwise as agreed under international statute.
Estuaries	Estuaries are coastal inlets with a significant freshwater influence. They are diverse, dynamic habitats that help maintain the health of coastal ecosystems. They are a significant resource for bird and mammal species for feeding, breeding, and resting, and depending on their geomorphology and hydrology support a mosaic of other habitats, including Annex I habitats such as mudflats.
Fish Nursery Grounds	Nursery grounds are habitats that enhance the growth and survival of juvenile fish.
Fish Spawning Grounds	Spawning grounds are areas where fish congregate to lay and fertilise their eggs.
Foreshore	The foreshore of Ireland is classed as the land and seabed between the high water of ordinary or medium tides (shown HWM on Ordnance Survey maps) and the twelve-mile limit (12nm = 22.224km). The foreshore also covers the tidal reaches of rivers.
Foreshore Licence Area	Within this report: The area within the 12nm limit of the high-water mark of ordinary tides for which a Foreshore Licence Application is submitted to the Department of Housing, Local Government and Heritage for a licence under Section 3 of the Foreshore Act to undertake dredging activities.
Geophysical Surveys	Geophysical surveys are ground-based physical sensing techniques that produce a detail image or map of an area. Ground-based surveys may

	include: Seismic surveys - vibrations are recorded with geophones to provide information about the properties of rocks.
Grab Samples	A grab sample is a sample of sediment taken from the seabed.
Habitats Directive	Adopted in 1992, the Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora aims to promote the maintenance of biodiversity, taking account of economic, social, cultural and regional requirements. It forms the cornerstone of Europe's nature conservation policy with the Birds Directive and establishes the EU wide Natura 2000 ecological network of protected areas, safeguarded against potentially damaging developments.
Interim Campaign	Site Investigation surveys designed to build on the level of detail acquired during the preliminary campaign with the aim of developing a detailed ground model of the site that will feed into the overall design of the wind farm. For this Application it refers to the second geotechnical campaign.
Irish Transverse Mercator (ITM)	Irish Transverse Mercator (ITM) is the geographic coordinate system for Ireland. It was implemented jointly by the Ordnance Survey Ireland (OSi) and the Ordnance Survey of Northern Ireland (OSNI) in 2001. The name is derived from the Transverse Mercator projection it uses and the fact that it is optimised for the island of Ireland. ITM95 (EPSG:2157) is used to map the project area for the Foreshore Licence Map.
Maritime Area Planning Act	Legislation reforming consenting within Ireland's marine area, including introducing both an offshore specific consenting regime and extending the powers of the State to enable the State to operate a consenting regime across its entire EEZ and agreed continental shelf.
MARPOL	MARPOL is the main international convention aimed at the prevention of pollution from ships caused by operational or accidental causes. It was adopted at the International Maritime Organization (IMO) in 1973. The Protocol of 1978 was adopted in response to a number of tanker accidents in 1976–1977.
Metocean	Metocean conditions refer to the combined wind, wave, and climate conditions as found on a certain location. They are most often presented as statistics, including seasonal variations, scatter tables, wind roses and probability of exceedance.
Sediment Dispersion modelling	A mathematical tool that allows to assess the dispersion of spilled material during dredging works in the loading areas and the dispersion of dumped material at the proposed disposal site
Minister	In this report, Minister means the Minister for Housing, Local Government and Heritage
Mudflats	Tidal mudflat habitat is comprised of the intertidal section of the coastline where muds dominate.
Multibeam Echosounder	An echosounder uses sound waves to measure water depth. A transducer mounted under a vessel emits a pulse which travels through the water to the seafloor and bounces back to a receiver. The time it takes for the signal to return is measured, and because the speed of sound through water) is known, the water depth under the boat is measured. This is the basic principle of hydrography and seafloor mapping. A multibeam echosounder (MBES) measures multiple echoes at a time.
Maritime Usage Licence Area	Within this report: The areas within the outer limit of the State's continental shelf and high-water mark for which a Maritime Usage Licence

	Application is submitted to MARA for a licence under the Maritime Area Planning Act 2021 to undertake offshore activities.
Natura Impact Statement	A Natura Impact Statement (NIS) is the statement prepared following Appropriate Assessment (AA) of Natura 2000 sites as required under the EU Habitats Directive which presents information on the assessment and the process of collating data on a project and its potential significant impacts on Natura 2000 site(s).
Offshore Wind Farm Area	Area where site investigations will take place to determine the suitability of that area for the installation of Wind Turbine Generators and inter-array cabling.
Pollution Event	A 'pollution incident' includes a leak, spill or escape of a substance, or circumstances in which this is likely to occur.
Pot Fishing	Pots and traps are used in commercial fishing to catch crustaceans such as lobster, crab, and shrimp.
Preliminary Campaign	Site Investigation surveys early in the project development programme designed to give an overview of the receiving environment with the aim of developing a first stage ground model. For this Application it refers to the first geotechnical campaign.
Receiving Environment	The receiving environment is the environment upon which a proposed activity might have effects.
Reefs	Reefs are marine features with hard substrate available for colonisation by plants and animals. In Irish waters they range from the intertidal to depths of 4,500m and more than 400km from the coast.
Side Scan Sonar	Side-scan uses a sonar device that emits conical or fan-shaped pulses down toward the seafloor across a wide-angle perpendicular to the path of the sensor through the water, which may be towed from a surface vessel or submarine or mounted on the ship's hull.
Special Areas of Conservation	These are prime wildlife conservation areas considered to be important on a European as well as national level. The EU Habitats Directive lists certain habitats and species that must be protected within SACs.
Special Protection Areas	Ireland is required under the terms of the EU Birds Directive (2009/147/EC) to designate Special Protection Areas (SPAs) for the protection of: Listed rare and vulnerable species; regularly occurring migratory species and wetlands, especially those of international importance.
Sub-Bottom Profiler	A sub-bottom profiler is a type of sonar system that produces a 2-dimensional stratigraphic cross section by using acoustic energy to image sub-surface features in an aquatic environment.
Sea Cliffs	A sea cliff is a steep or vertical slope located on the coast, the base of which is in either the intertidal or subtidal zone. Hard cliffs, composed of hard rock such as basalt, are at least 5m high, while soft cliffs, composed of softer substrates such as shale or boulder clay, are at least 3m high.
Universal Transverse Mercator	The UTM (Universal Transverse Mercator) coordinate system divides the world into sixty north-south zones, each 6 degrees of longitude wide. UTM zones are numbered consecutively beginning with Zone 1 and progress eastward to Zone 19. UTM 29N (EPSG:32629) is used to map the project area.
Vibrocore	Vibrocoring is a sediment sampling methodology for retrieving continuous, undisturbed cores. Vibrocorers can work in a variety of water

	depths and can retrieve core samples at different lengths depending on sediment lithology and project objectives.
Water Courses	Natural or artificial channels through which water flows.
Wave Buoy	Wave buoys are used to measure the movement of the water surface as a wave train. The wave train is analysed to determine wave characteristics such as the significant wave height and period, and wave direction.
World Geodetic System	The World Geodetic System (WGS) is a standard for use in cartography, geodesy, and satellite navigation including GPS. WGS84 is a geocentric reference ellipsoid and a geodetic datum, in that it defines the centre of mass of the earth as its origin, and the direction of the earth's axis as the minor axis of the reference ellipsoid. WGS84 (EPSG:4326) is used to map the project area.

1 INTRODUCTION

Wicklow County Council proposes to undertake maintenance dredging works in Wicklow Harbour, which is subject to continued accretion of material. The dredged material will be deposited at a disposal site (Arklow Bank Disposal Site), approximately 0.4 km from Arklow (closest point) and approximately 20 km south-west of Wicklow Harbour (Figure 1-1).

Wicklow County Council have commissioned Gavin and Doherty Geosolutions Ltd. to prepare this report in support of an application for a Maritime Usage Licences under the Maritime Area Planning Act (2021) required to undertake the dredging and disposal at sea activities. All historical documentation regarding the establishment and use of the Arklow Disposal Site have been reviewed, including all environmental monitoring reports, to inform the assessment of the suitability of the Arklow disposal site for disposal of material dredged from Wicklow Harbour.

The dredge area comprises an irregular-shaped polygon which has an area of 0.056 km^2 within Wicklow Harbour and a rectangular-shaped disposal site approximately 20 km southwest of Wicklow harbour which has an area of 0.587 km^2 (Figure 1-1). Where the dredge area adjoins or abuts the land the High-Water Mark as defined on the OSI 25 Inch Mapping is the boundary of the licence area. The disposal area does not adjoin or abut the land.

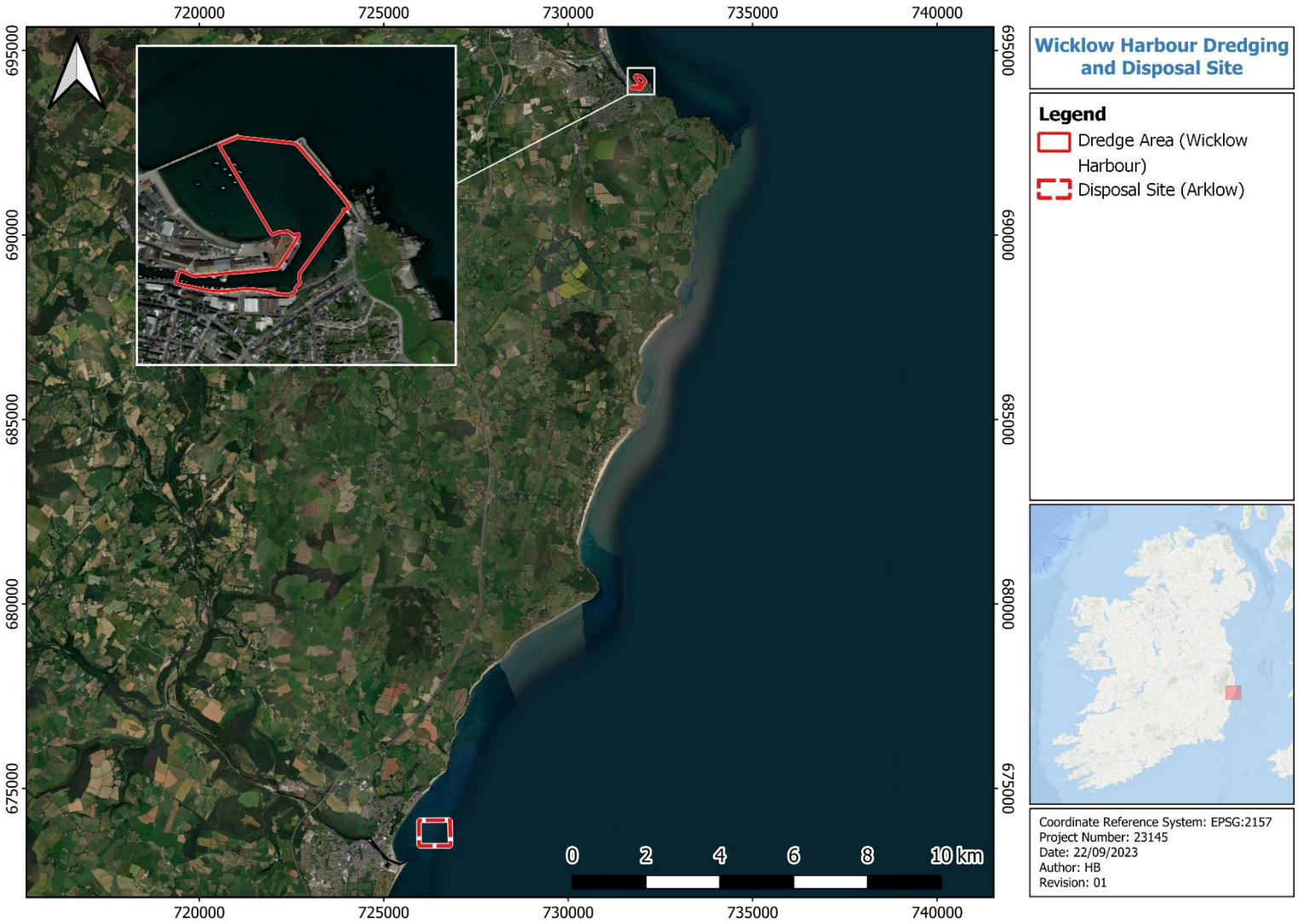

Figure 1-1 Wicklow Harbour Dredging Licence Area (Dredge Area - Red Outline; Dredge Disposal Area – Red dashed outline).

1.1 AIM OF THIS REPORT

This report is part of the Maritime Usage Licence (MUL) application to the Maritime Area Regulatory Authority (MARA) and aims to determine whether any of the proposed activities fall within a class of project listed in Part 2 of Schedule 5 of the Planning Regulations Section 13A, as amended. This report also aims to describe the current state of the environment in the vicinity of the proposed maintenance dredging and disposal activities, and on the potential effects on human health and wellbeing and the receiving environment of the proposed maintenance dredging and disposal activities.

1.2 METHODOLOGY

This report summarises (Section 2) and details (Programme of Works, Section 2.2) the proposed maintenance dredging and disposal activities. The report considers the Environmental Impact Assessment (EIA) Directive, Water Framework Directive (WFD) and Marine Strategy Framework Directive (MSFD) (Section 4). The EIA Screening exercise undertaken highlights how the dredging and disposal method and proposed mitigation measures will be implemented to prevent or minimise impacts on the environment. Planning and development considerations and a statement of consistency with the National Marine Planning Framework (NMPF) are included in Section 5. The current state of the environment in the vicinity of the proposed maintenance dredging and disposal activities is described to help identify the effects, if any, on the environment (Section 6).

While the undertaking of this evaluation of effects is not a statutory requirement, the report has been produced to describe the current state of the environment in the vicinity of the proposed maintenance dredging and disposal to consider and quantify the potential effects on environmental aspects such as population and human health, biodiversity (marine benthos, marine mammals, birds, fish and Natura 2000 sites), water, air & climate, socio-economic activities (commercial fisheries, aquaculture, marine traffic, tourism & recreation, material assets and other proposed developments), archaeology and cultural heritage, landscape and seascape and major accidents and disasters.

This report has been prepared in accordance with the following guidance:

1. Guidelines on the Information to be contained in Environmental Impact Assessment Reports, from the Environmental Protection Agency (EPA) (Draft, August 2017)
2. 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)
3. OPR Practice Note PN02 Environmental Impact Assessment Screening, from the Office of the Planning Regulator (June 2021)
4. Environmental Impact Assessment of Projects, Guidance on Screening (Directive 2011/92/EU as amended by 2014/52/EU), from the European Commission (2017)
5. 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 report has been prepared by Maggie Starr (BSc. Hons Marine Sciences, MMO) and checked by Charlotte Manwaring (BSc. Hons Geological Science, MSc. Geochemistry). Maggie is a Marine Ecologist with experience in marine, terrestrial and freshwater ecology, and is a trained MMO and marine ornithologist. Her current work includes ecological/environmental consulting, marine licence application preparation, report writing and environmental mapping. Charlotte is a Senior Environmental Scientist with extensive experience as an environmental consultant, undertaking various multi-disciplinary projects within consulting engineering. This report has been reviewed by Barbara Maciejewska. Barbara is a Senior Marine Environmental Scientist with extensive experience in marine environmental consultancy. Her main area of expertise is related to marine ecological survey provision, an assessment and mitigation of impacts on marine ecosystem integrity and protected features. The report was approved by Joey O'Connor. Joey is a Marine Ecologist with coastal engineering expertise and extensive experience of offshore benthic survey and Marine Protected Area monitoring. Joey has undertaken multiple environmental assessments under the Habitats and EIA Directives within consulting engineering and as a statutory adviser to the UK government and its devolved administrations with the Joint Nature Conservation Committee.

1.3 STRUCTURE OF THE REPORT

This report is structured into the following chapters, which include a description of the known receiving environment for the project area as well as an identification of the potential environmental impacts of the proposed harbour maintenance dredging and disposal activities and assessment of these impacts on the receiving environment. Specifically, the chapters describe or comprise the following elements:

- Chapter 1 (this chapter): Introduction to the report.
- Chapter 2: Describes the proposed harbour maintenance dredging and disposal activities.
- Chapter 3: Need and Alternative.
- Chapter 4: Consideration of Directives that includes the Environmental Impact Assessment Screening exercise and reports on its conclusions.
- Chapter 5: Planning and development.
- Chapter 6: Assessment of Impacts.
- Chapter 7: Summarises the proposed mitigation measures.
- Chapter 8: Presents the conclusions from this report.

1.4 RECEIVING ENVIRONMENT

The receiving environment encompasses Wicklow Harbour and in Wicklow Town, the capital town of Co. Wicklow. Wicklow Harbour includes Wicklow Port, which is managed by the Wicklow County Council and is situated at the mouth of the Leitrim River. Wicklow Port is a fishing and cargo port with hard stand areas, warehouses and associated machinery.

The receiving environment of the disposal site encompasses Arklow Bay off the coastline of Arklow town, Co. Wicklow.

1.4.1 EXISTING HYDROGRAPHIC AND SEDIMENT DATA

Existing hydrographic data for the dredge area is available from the INFOMAR 20126 survey. The Geological Survey Ireland vessel R.V. Geo conducted a multibeam sonar survey in and around Wicklow Harbour. Bathymetry and backscatter data are available for the area and presented in SISAA report in Section 1.3.1. In addition, the port has also undertaken annual multibeam surveys of the harbour from 2018 to 2021.

The most recently collected sediment chemistry data regarding sediment composition within Wicklow Harbour was gathered in 2021 and 2022, where Wicklow County Council commissioned the collection of sediment samples for particle size and geochemical analysis. Sediment chemistry sampling and analysis, along with eco-toxicological testing had taken place in 2021 (for the Marine Institute) to check the suitability of the dredged material to be deposited/disposed of at sea.

Wicklow County Council commissioned a benthic survey of Wicklow Harbour in March 2023, where sediment and macrofaunal samples and seabed imagery data were collected and analysed.

Relevant information from these surveys is presented in the SISAA report in Section 1.3.2.

Dumping at Sea Permit S0002-01 was granted by the EPA in April 2011 for dredging works at Arklow Harbour and subsequent disposal at sea of dredged material in a site located 0.4 km offshore from Arklow, which were undertaken in 2014.

A summary report by Ocean Ecology (2023) compared seabed monitoring at the Arklow disposal site between 2016 and 2022. Five sediment samples were collected across the dumping site for the analysis of sediment chemistry, particle size distribution and macroinvertebrates communities. The relevant information is presented in SISAA report in Section 1.3.2.

2 DESCRIPTION OF THE PROPOSED HARBOUR MAINTENANCE DREDGING AND DISPOSAL ACTIVITIES

This document has been produced in support of a MUL Application, which seeks consent to conduct maintenance dredging of the navigational channel, turning basin and berthing pockets from Wicklow Port, and disposal at sea of the dredged material at an offshore location 0.4km from Arklow (at closest point).

2.1 LICENCE AREA

The Licence Area covers a total area of 0.643 km^2 and is comprised of the proposed dredging area and disposal site (see Figure 1-1). The dredge area comprises an area of 0.056 km^2 within Wicklow Harbour and the disposal site offshore from Arklow Harbour comprises of an area of 0.587 km^2. Where the dredge area adjoins or abuts the land, the High-Water Mark is the boundary of the licence area.

2.2 MAINTENANCE DREDGING AND DISPOSAL ACTIVITIES

Wicklow County Council needs to regularly dredge the navigation channel, turning basin and berthing pockets in order to maintain the depths needed for the safe navigation of vessels to and from Wicklow Port. The desired navigational levels to be maintained include 3.6m below Chart Datum (CD) at Packet Quay, East Pier, and Southern Quay. The levels to be maintained at North Quay are 3.0 m below DC and 2.0 m below CD at Leitrim River.

WCC is therefore proposing an Eight Year Maintenance Dredging programme between 2025 and 2032. 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.

A site, located approximately 20km to the southwest of Wicklow Harbour and 0.4 km northeast offshore from Arklow, has been identified for disposal at sea of the dredged material. The Dumping at Sea Permit S0002-01 was granted by the EPA in April 2011 for the use of this site for disposal of material dredged from Arklow Harbour. For this project, WCC has proposed to use the same disposal location for the dredged material, which will be composed of mainly silt and sand, with small amounts of gravel present.

Wicklow County Council may dredge using a Trailing Suction Hopper Dredger, Backhoe Dredger, Plough Dredging and Water Injection Dredging. The proposed programme of maintenance dredging and disposal to be undertaken within the Licence Area is summarised in Table 2-1 below. Please refer to SISAA report, Chapter 2 (report number 23145_REP_002) for more detailed information on the exact technical specifications of methods and equipment to be used.

Gavin and Doherty Geosolutions Ltd have assessed sediment dispersion due to Water Injection Dredging 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/m3 (1.77 mg /L) at the entrance of Wicklow Harbour, where the maximum SSC values were observed. Please refer to Wicklow Water Injection Dispersion Modelling Assessment and Report (report number 23145_REP_005) for a full description of the assessment undertaken.

Table 2-1 Proposed programme of maintenance dredging and disposal activities.

Activity	Methods	Purpose	Dredging/Disposal Effort
Dredging	Trailing Suction Hopper Dredger (TSHD)	This type of dredger is self-propelled using pumps to gather material. The dredger has drag arms that are used to reach the seabed. Once at designated area the dredger uses the trailer and drag head to slowly collect the material. The material is collected and stored in the hopper where the heavier material settles, is transported, and released at a permitted dumping site/area for dumping. The material generally collected by the trailing hopper suction dredger includes sand, silt, clay and gravel but cannot be used for heavier material such as rock, unless specially adapted	This is used for the outer areas and includes the approach channel, packet quay, North Quay and the majority of the East Pier.
	Backhoe Dredger	Generally, these dredgers are stationary and have a single hydraulic bucket located at the end of an arm. The Backhoe is mounted on a barge or specialised and rotatable pontoon which then moves the material back towards the backhoe dredger for the collection of material. Backhoe dredgers can be used for a variety of areas and are suitable for dredging materials such as sand, clay, stone/cobbles, and heavier/stronger material including fractured and unfractured rock.	The method is primarily used in the inner areas of the harbour and includes the Southern Quay, Leitrim River and North Quay. Additional minor areas in the remainder of the port may also use this method (i.e. where TSHD access is restricted).
	Plough Dredging	A plough vessel generally uses, if available, a bulldozer type plough to relocate material, although a standard open box plough can suffice on occasion. Sediment movement is achieved by towing the plough behind a powered vessel, usually a small workboat or tug. If used correctly, the plough is suspended at a controlled height from an A-frame mounted over the stern of the towing vessel. Height, or depth of submergence, is controlled by a deck mounted hoist winch. The cutting blade at the leading edge of the plough slices the surface sediment and pushes the material to deeper/target areas. The plough is then raised above the general seabed level and the towing vessel returns to the area from which sediment is to be moved and repeats the cycle.	Ploughing is also proposed within the marine berth areas where limited access for large dredging plant occurs. The plough dredger can move sediments to a location where it can be accessed safely, dredged and removed by TSHD. A mechanical dredger such as a backhoe or grab can be used in conjunction with the plough dredger. A plough is often used on dredging sites to even out irregularities in the seabed.

Activity	Methods	Purpose	Dredging/Disposal Effort
	Water Injection Dredging (WID)	Water Injection Dredging (WID) method is used in areas where the sediment is composed of fine sand, silts and clay. Water is injected into the subsoils which allows the sediment to be moved by density currents. Although Water Injection Dredging (WID) is generally described as a method of dredging it does not 'dredge' in the conventional sense. With WID the sediment is mobilised using water jets. A pipe, with water nozzles arranged at small separations perpendicular to the seabed, is lowered close to the seabed. Water, at relatively low pressure, is then pumped into the bottom sediment. The water breaks the cohesion in the seabed sediments and fluidises the material into a dense near-bed suspension. This high-density layer of fluidised material can then move down gradient under gravity, aided by local currents (working during the falling tide from high to low), or be instilled with a directional flow produced by the advancing WID unit.	The potential transport distance of the suspended material depends largely on its grain size, composition and density as well as the local hydrological and bathymetric conditions.
Offshore Disposal	Dredgers for disposal	For disposal, dredgers usually have doors in the hull to empty the dredged material by splitting the doors in two halves and opening on hydraulic hinges, where the dredged material is discharged through bottom doors at the selected location	The dredged material contained within the TSHD will be transported to the proposed disposal location.

2.3 MAINTENANCE DREDGING AND DUMPING AT SEA SCHEDULE

The intention is to begin the dredging and disposal activities as soon as feasible following license award, capitalising on suitable weather windows over the licence duration. The exact mobilisation dates will not be known until the process of procuring a contractor is complete.

Timing of the dredging and disposal activities is dependent on many factors including weather, tidal flows, availability of vessels and the grant of a dredging licence and dumping at sea permit under the Maritime Area Regulatory Authority (hereafter referred to as MARA). The granting of a licence will have a direct effect on the timing of the proposed works. The exact mobilisation dates will not be known until the process of procuring a contractor is complete.

2.4 PREVIOUS DREDGING CAMPAIGNS

As indicated above, 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 Dumping at Sea (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.

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 between 2025 and 2032 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.

4 CONSIDERATION OF DIRECTIVES

This section considers the implication of the proposed maintenance dredging and disposal activities with regard to the following directives:

- Environmental Impact Assessment (EIA) Directive
- Water Framework Directive (WFD)
- Marine Strategy Framework Directive (MSFD).

4.1 EIA DIRECTIVE REQUIREMENTS

Article 2(1) of the EIA Directive[1] provides:

"Member States shall adopt all measures necessary to ensure that, before development consent is given, projects likely to have significant effects on the environment by virtue, inter alia, of their nature, size or location are made subject to a requirement for development consent and an assessment with regard to their effects on the environment. Those projects are defined in Article 4."

Article 4(1) requires that *"…projects listed in Annex I shall be made subject to an assessment…"*. EIA is therefore mandatory for the project types listed in Annex I. Article 4(2) requires that Member States must determine for Annex II project types whether EIA is required, through:

a) a case-by-case assessment, or

b) thresholds or criteria set by the member State.

The Maritime Area Planning Act 2021 (hereafter referred to as MAP) transposes the Article 4 requirement through Part 1 Section 4 as follows:

> "1.4 Effect or further effect, as the case may be, is given to by this Act to an act specified in the Table to this section, adopted by an institution of the European Union or, where appropriate, to part of such an act:
>
> 7. Environmental Impact Assessment Directive."

As is the case under EU law, under national law the requirement to carry out EIA or screening for EIA only arises in relation to projects which come within the scope of one or more classes of project listed in Parts 1 or 2 of Schedule 5.

EIA or screening for EIA is not required where a proposed development does not come within any of the classes of project listed in Schedule 5, interpreted broadly, irrespective of the size or location of the proposed development or whether it is considered likely to have a significant effect on the environment.

[1]Environmental Impact Assessment (EIA) Directive (Council Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment, as amended by Directive 2014/52/EU)

Part 1 of Schedule 5 of the Planning and Development Regulations 2001, as amended (Planning Regulations) lists the project types for which EIA is mandatory, transposing Annex I of the EIA Directive.

Part 2 lists project types for which EIA is mandatory if a specified threshold is exceeded. For all other project types listed in Part 2, corresponding to Annex II, which do not exceed a threshold or for which no threshold is set, a screening analysis and determination are required on a case-by-case basis. An EIA is also required for projects which do not exceed the threshold, but where the Minister determines that the proposed project will be likely to have significant effects on the environment.

4.1.1 Approach to EIA Screening

The Office of the Planning Regulator issued a practice note, OPR Practice Note PN02, on Environmental Impact Assessment Screening for development proposals (Office of the Planning Regulator, 2021). While the aim of the Practice Note is to provide guidance for compliance with the planning legislation, it provides useful guidance for EIA Screening for other consent regimes.

The Practice Note recommends a step-by-step approach to EIA Screening, as follows:

Step 1: Understanding the proposal

The first step comprises the following tests:

a) Is the proposed development a project as per the EIA Directive?

   If not, then the proposed development is not subject of EIA Directive, no screening is required, and no EIA is required.

b) Is the project listed in Schedule 5 Part 1 or does it meet or exceed the thresholds in Part 2 of the Planning and Development Regulations, SI 600 of 2001, as amended?

   If it does, no screening is required and EIA is mandatory.

c) Is the project sub threshold?

   If it is, then the project must proceed to Step 2, as preliminary examination is required.

Step 2: Preliminary Examination & Conclusion

This step consists of a preliminary examination of, at least, the nature, size, **or** location of the development, considering:

- **Nature** of the development including production of wastes and pollutants
- **Size** of the development
- **Location** of the development including proximity to ecologically sensitive sites and the potential to affect other environmental sensitivities in the area

Step 2 will have one of three outcomes:

a) There is no real likelihood of a significant effect on the environment and no further action is required. The reasons for this conclusion will be recorded.

b) There is significant doubt as to the effects on the environment; the project must proceed to Step 3, as a formal screening determination is required.

c) There is a real likelihood of a significant effect on the environment and an EIA is required.

Step 3: Formal Screening Determination

In this step, a Screening exercise must be carried out in order to determine if the proposal is likely to have significant effects on the environment. In making the determination, the planning authority must have regard to Schedule 7 criteria, Schedule 7A information, results of other relevant EU assessments, the location of sensitive ecological sites, or heritage or conservation designations. Mitigation measures may be considered.

The Screening Determination must record the outcome of the Screening exercise and state the main reasons and considerations, with reference to the relevant criteria listed in Schedule 7 of the Regulations and mitigation if relevant.

4.1.2 SCREENING FOR MANDATORY EIA

Part 1 of Schedule 5

All of the project types in Part 1 have been considered in the preparation of this report. The proposed maintenance dredging and disposal activities do not constitute a project type or class listed in Part 1 of Schedule 5 of the Regulations.

Part 2 of Schedule 5

All of the project types in Part 2 have been considered in the preparation of this report. The proposed maintenance dredging and disposal at sea activities do not constitute a project type or class listed in Part 2 of Schedule 5 of the Regulations.

4.1.3 CONCLUSION OF THE EIA SCREENING

In answering ***Step 1, question (a): Is the proposed development a project as per the EIA Directive?*** as per OPR Practice Note 02, the answer is ***'No'***, and the conclusion is that the proposed maintenance dredging and disposal at sea activities are not subject of the EIA Directive, no Screening is required, and no EIA is required.

The proposed project does not fall within the classes specified in Annex I or Annex II of the Environmental Impact Assessment (EIA) Directive. Therefore, it is not subject to the provisions of the EIA Directive.

4.2 WATER FRAMEWORK DIRECTIVE

Council Directive 2000/60/EC (the Water Framework Directive [WFD]) on establishing a framework for community action in the field of water policy was adopted by all member states in October 2000. Since 2000, the WFD has been the main law for water protection in Europe. It applies to inland, transitional and coastal surface waters as well as groundwaters. It ensures an integrated approach to water management, respecting the integrity of whole ecosystems, including by regulating individual pollutants and setting corresponding regulatory standards. It is based on a river basin district approach

to make sure that neighbouring countries cooperate to manage the rivers and other bodies of water they share.

The key objectives of the WFD are set out in Article 4. It requires Member States to use their River Basin Management Plans (RBMPs) and Programmes of Measures (PoMs) to protect and, where necessary, restore water bodies in order to reach good status, and to prevent deterioration. Good status means both good chemical and good ecological status.

The WFD is the primary legislation, which is supported by the Groundwater Directive, and other directives targeting the quality of surface waters.

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 6.3.

4.3 MARINE STRATEGY FRAMEWORK DIRECTIVE (MSFD)

In 2008, the EU adopted the Marine Strategy Framework Directive (MSFD) to maintain healthy, productive and resilient marine ecosystems while securing a more sustainable use of marine resources. The MSFD Directive requires Member States to develop national marine strategies in order to achieve, or maintain where it exists, 'good environmental status'. Such status should have been achieved by 2020.

The marine strategies comprise regular assessments of the marine environment, setting objectives and targets, establishing monitoring programmes and putting in place measures to improve the state of marine waters. All these actions must be done in close coordination with neighbouring countries at regional sea level (European Commission, 2020).

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 'good environmental status (GES)'. These are shown in Table 4-1 with reference to sections where they are assessed.

Table 4-1 Marine Strategy Framework Directive GES Descriptors

	GES Descriptors	Details	Section references
1	Biodiversity	The quality and occurrence of habitats and the distribution and abundance of species are in line with prevailing physiographic, geographic and climatic conditions.	Section 6.4
2	Non-indigenous species	Non-indigenous species introduced by human activities are at levels that do not adversely alter the ecosystems.	Section 6.4
3	Populations of commercial species	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 6.5
4	Food web structure	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.	Sections 6.4 & Section 6.5.3

	GES Descriptors	Details	Section references
5	Eutrophication	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	Sections 6.2, 6.3 & 6.4
6	Sea floor integrity	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 6.4.1
7	Alterations to hydrography	Permanent alteration of hydrographical conditions does not adversely affect marine ecosystems	Section 6.3
8	Contaminants	Contaminants are at a level not giving rise to pollution effects.	Section 6.11
9	Sea-food contaminants	Contaminants in fish and other seafood for human consumption do not exceed levels established by Community legislation or other relevant standards.	Section 6.5
10	Marine litter	Properties and quantities of marine litter do not cause harm to the coastal and marine environment.	Section 6.14
11	Energy and noise	Introduction of energy, including underwater noise, is at levels that do not adversely affect the marine environment.	Section 6.7 & 6.4.3

5 PLANNING AND DEVELOPMENT

This section has been prepared to demonstrate that the maintenance dredging and dumping at sea activities/works, which are proposed to be carried out in the Licence Application Area, are consistent with the National Marine Planning Framework (2021).

5.1 THE NATIONAL MARINE PLANNING FRAMEWORK (2021)

The NMPF is a national plan for Ireland's seas, setting out, over a 20-year horizon, how Ireland will use, protect, and enjoy its seas. The NMPF sits at the top of the hierarchy of plans and sectoral policies for the marine area.

The NMPF establishes a vision for the future development of the marine planning system towards 2040. It will play an important role in supporting both the short-term recovery and the longer-term planning for Ireland's maritime area, to have a lasting effect on Ireland's most significant natural resource.

The NMPF is Ireland's first comprehensive marine spatial planning framework, as required under Directive 2014/89/EU of the European Parliament and of the Council of July 23rd 2014 establishing a framework for maritime spatial planning, known as the Maritime Spatial Planning (MSP) Directive. Member States establishing and implementing MSP must consider economic, social and environmental aspects to support the sustainable development and growth of the maritime sector.

The NMPF is also a parallel document to the National Planning Framework (NPF), which guides strategic terrestrial planning and development, and it is important that each is consistent with the other, as well as regional and local plans.

The NMPF states "*where required compliance assessments associated with authorisations have been carried out and incorporated into subsequent competent authority decision(s)",* proposals for capital dredging will be supported where it is necessary to safeguard the capacity of national ports and to ensure Ireland's international connectivity.

More specifically, chapter 18 of the NMPF sets out policies in relation to maintenance dredging, some of which County Councils must comply with and others which are aimed at the various regulatory authorities and other stakeholders. Those policies that are relevant to this application are discussed below in Table 5-1 to further demonstrate how this application is consistent with the NMPF.

This application relates to a licence to carry out maintenance dredging and dumping at sea activities of a port, which would ensure the port remains operational for vessels, to contribute to all of the above objectives, and to ensure continuance of economic, social and environmental benefits to the country and local coastal communities.

Within the NMPF, it states, for proposals for the management of dredged material, that consideration of alternative management techniques is assessed against the waste hierarchy based on the most up to date definition provided by the Department of Environment, Climate and Communications, i.e. the Waste Framework Directive (2008/98/EC).

We believe that the above, together with Table 5-1, demonstrates that this application is consistent with the policies of the NMPF that are considered relevant to the proposed activities under this licence application.

Table 5-1 Table containing consistency of this Licence Application with relevant NMPF Ports, Harbours and Shipping Policies.

Policy	Description	Conclusion
Ports, Harbours and Shipping Policy 1	*To provide for shipping activity and freedom of navigation the following factors will be taken into account when reaching decisions regarding development and use:* *• 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;* *• A mandatory Navigation Risk Assessment;* *• Where interference is likely: whether reasonable alternatives can be identified; and* *• Where there are no reasonable alternatives: whether mitigation through measures adopted in accordance with the principles and procedures established by the International Maritime Organisation can be achieved at no significant cost to the shipping or ports sector.*	This dredging application is for the operator of Wicklow harbour and is essential for the existing harbour access and operations. It is intended to undertake the dredging works and avoid any significant adverse impacts to the current activities or future opportunity of the harbour.
Ports, Harbours and Shipping Policy 2	*Proposals that may have a significant impact upon current activity and future opportunity for expansion of port and harbour activities should demonstrate that they will, in order of preference:* *a) avoid,* *b) minimise, or* *c) mitigate significant adverse impacts, and* *d) if it is not possible to mitigate significant adverse impacts on current activity and future opportunity for expansion of port and harbour activities, proposals should set out the reasons for proceeding.*	Please see response above to Policy 1.
Ports, Harbours and Shipping Policy 3	*Proposals that may have significant impact upon current activity and future opportunity 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.*	Please see response above to Policy 1.
Ports, Harbours and Shipping Policy 4	*Proposals within ports limits, beside or in the vicinity of ports, and / or that impact upon the main routes of significance to a port, must demonstrate within applications that they have:*	The proposed maintenance dredging and disposing activities are consistent and compliant with NMPF Ports, Harbours and Shipping Policy 4, which indicates that the application should be supported.

Policy	Description	Conclusion
	• been informed by consultation at 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 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.*	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).*	This application is for maintenance dredging; therefore, this policy does not apply to this application.
Ports, Harbours and Shipping Policy 6	*In areas of authorised dredging activity, including those subject 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 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*	The outcomes from the environmental assessments have been summarised within this report. The assessment is contained within the SISAA (report number 23145-REP-002) and RAAIVS (report number 23145-REP-004). The proposed maintenance dredging and disposing activities are consistent and compliant with NMPF Ports, Harbours and Shipping Policy 7, which indicates that the application should be supported.
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. The proposed activities are consistent and compliant with NMPF Ports, Harbours and Shipping Policy 8, which indicates the application should be supported.

Policy	Description	Conclusion
Ports, Harbours and Shipping Policy 9	*Proposals for the management of dredged material must demonstrate that they have been assessed against the waste hierarchy (see Glossary).*	The proposal for the management of dredged material and assessment against the waste hierarchy has been completed – refer to Arklow Disposal Site Suitability Assessment technical note 23145-TN-002. The proposed activities are consistent and compliant with NMPF Ports, Harbours and Shipping Policy 9, which indicates the application should be supported.
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 proposal for the management of dredged material and assessment against the waste hierarchy has been completed – refer to technical notes Arklow Disposal Site Review (report number 23145-TN-001 and Arklow Disposal Site Suitability Assessment (report number 23145-TN-002). The proposed activities are consistent and compliant with NMPF Ports, Harbours and Shipping Policy 10, which indicates the application should be supported.

6 ASSESSMENT OF IMPACTS

6.1 OVERVIEW

The following documents also provide a description of the known receiving environment for the Application Area, identify the potential environmental impacts of the proposed dredging and disposal activities, and assess the possible effects of these impacts on the receiving environment:

- Supporting Information for Screening of Appropriate Assessment (SISAA)
- Risk Assessment for Annex IV Species (RAAIVS)

Table 6-1 sets out, for each of the documents listed above, the specific sections and sub-sections where relevant information for this AIMU can be found.

Table 6-1 Relevant sections and sub-section in other reports submitted in support of the Application.

Report	Section/Subsection	Content Description
Supporting Information for Screening of Appropriate Assessment (SISAA)	Section 3. Potential Environmental Impacts 3.1 Physical Disturbance to Marine Benthic Communities and habitat loss 3.2 Disturbance from Vibration and Underwater Noise 3.3 Injury due to Collision (Survey Vessels and Sampling Equipment) 3.4 Physical and Noise Disturbance to Bird Species 3.5 Pollution Event	Describes potential environmental impacts from the proposed maintenance dredging and dumping at sea activities on the receiving environment
	Section 4. Identification of relevant European Sites (SPAs and SACs) 4.2 Identification of relevant Natura 2000 sites using Source-Pathway-Receptor model and compilation of information Qualifying Interests, Special Conservation Interests and conservation objectives	Describes the Natura 2000 considered relevant to the maintenance dredging and dumping at sea activities, i.e. the Special Protected Areas and their Special Conservation Interests and the Special Areas of Conservation, designated Annex I Habitats and designated Annex II Species considered relevant to be included for Appropriate Assessment Stage 1 Screening (and subsequent Stage 2 Appropriate Assessment where necessary)
	Section 5. Assessment of Likely Significant Effects (LSE) to Natura 2000 Sites in the Zone of Influence of Proposed Activities	Assesses the likelihood of significant effects from the proposed maintenance dredging and DaS activities on the integrity of relevant Natura 2000 sites and their Conservation Objectives (COs)
	Section 5.5 Screening for In-combination effects	Describes other known or proposed plans and projects in the vicinity of the maintenance dredging and DaS activities, including other proposed activities known at the time of submission of the Application documentation, and their interactions with the proposed maintenance dredging and dumping at sea activities

Report	Section/Subsection	Content Description
		Assesses the likelihood of in-combination significant effects, from the proposed maintenance dredging and DaS activities with the described plans, and projects on the integrity relevant Natura 2000 sites and their Conservation Objectives
	Section 7. Screening Statement Outcome	Details the conclusions of the AA Stage 1 Screening and identifies the Natura 2000 sites screened in for a Stage 2 AA
Risk Assessment for Annex IV Species	Section 3. Annex IV Species In the Vicinity of the FLA Area	Describes the Annex IV species which may be found on site
	Section 4. Potential Impacts 4.1 Disturbance from Vibration and Underwater Noise Associated with Surveys 4.2 Injury due to Collision 4.3 Pollution Event	Describes potential environmental impacts from the proposed maintenance dredging and dumping at sea activities on Annex IV species
	Section 5.2 Impact Assessment	Assesses the impacts identified above on Annex IV species in the absence of any mitigation measures
	Section 6. Protection measures to prevent harm to Annex IV species	Proposes measures necessary to avoid, reduce or offset any identified negative effects

Sections 6.2 to 6.17 of this report consider potential impacts from the maintenance dredging and disposal at sea activities on receptors outlined in Table 6-2.

Table 6-2: Topic Sections

Section Number	Topic
6.2	**Land and Soils**
6.3	**Water**
6.4	**Biodiversity** - Marine Benthos - Natura 2000 Sites - Marine Mammals - Birds - Fish Ecology
6.5	**Commercial Fisheries and Aquaculture** - Data Availability - Fishing Activity - Aquaculture and Shellfish Ecology
6.6	**Air Quality**
6.7	**Noise and Vibration**
6.8	**Landscape and Seascape**
6.9	**Marine Traffic**
6.10	**Archaeology and Cultural Heritage**
6.11	**Population and Human Health including Tourism and Recreation** - Tourism and Recreation
6.12	**Major Accidents and Disasters**
6.13	**Climate**
6.14	**Waste**

Section Number	Topic
6.15	Material Assets
6.16	Interactions
6.17	Other Proposed Developments

6.2 LAND AND SOILS

The proposed maintenance dredging and dumping at sea activities are all within the marine environment and there is no potential impact on land and soils.

6.3 WATER

The Environmental Protection Agency (EPA) provides information from river surveys on Water Framework Directive (WFD) status, pollution status and condition of hydrometric areas and river catchments around Ireland's coastline. For each river site, Q values are assigned based on the proportion of pollution sensitive to tolerant macroinvertebrates, with these being identified as the young stages of insects mainly but also including snails, worms and shrimp etc (EPA, 2023). Table 6-2 below illustrates the general Q value and water quality condition breakdown.

Table 6-3 EPA River Quality Surveys (Reproduced from EPA, 2023)

Q Value	WFD Status	Pollution Status	Condition
Q5, Q4-5	High	Unpolluted	Satisfactory
Q4	Good	Unpolluted	Satisfactory
Q3-4	Moderate	Slightly polluted	Unsatisfactory
Q3, Q2-3	Poor	Moderately polluted	Unsatisfactory
Q2, Q1-2, Q1	Bad	Seriously polluted	Unsatisfactory

The Southwestern Irish Sea coastal – Killiney Bay (HA10) waterbody, which overlaps with the harbour area of the licence application area, was given a status of 'high' following WFD status monitoring between 2016-2021.

The main pressure to affect rivers, transitional and coastal waterbodies in the area has been identified as agriculture, with hydromorphological pressures (i.e. drainage schemes and in river structures, which may affect siltation rates within river systems), urban wastewater, diffuse urban, domestic wastewater also contributing (EPA, 2018).

The proposed dredging and disposal activities will be undertaken at sea. These will result in a temporary increase in vessels using the area to transport dredging and disposal, which may increase the risk of accidents and resultant fuel spills.

Under the provisions of the OPRC Convention and Sea Pollution Act 1999, Port Authorities are required to have contingency plans for a Tier One response in the event of an oil pollution incident. The Merchant Shipping (Salvage and Wreck) Act 1993, similar to the Sea Pollution Act 1999, confers certain functions on the Harbourmaster of a port for the control and response to such incidents.

Wicklow County Council has a Pollution Response Plan. Wicklow Port maintains a "Tier One" pollution response unit.

All vessels carry fuel during these activities. Lubricants are also present onboard. Any other potentially harmful substances are at very limited amounts and stored in purpose made storage containers or facilities and adequately secured. There is no production of any substances involved and no bulk transportation of oil or chemical substances.

Assessment of Potential Impacts

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.

Any chemical material used will be from the List of Notified Chemicals (approved chemicals) and discharged into the marine environment under the Offshore Chemical Notification Scheme.

Therefore, it is considered not likely that there would be any occurrence of a pollution event, accidental or otherwise, that could directly or indirectly affect the environment.

In compliance with the Water Framework Directive (WFD) objectives, the proposed dredging and disposal activities are not anticipated to result in a long-term deterioration in a designated water body (or protected area) and will not jeopardise the attainment of good status (or the potential to achieve good ecological and chemical status).

6.4 BIODIVERSITY

6.4.1 MARINE BENTHOS

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.

Macrofaunal invertebrate communities which occur within a particular habitat type and environmental conditions (e.g. depth, wave/tide energy) can be assigned to hierarchical habitat classification systems (e.g. European Nature Information System (EUNIS) Classification[2]) and as biotopes, which can encompass both biotic and abiotic elements.

Survey-derived habitat classification and biotope data can be used with other geospatial information such as sediment and bathymetry data to create habitat and biotope maps, such as EUSeaMap (2021),

[2] https://eunis.eea.europa.eu/habitats-code-browser.jsp

which is a broad-scale map of physical habitats covering European marine basins, including Ireland's seabed.

6.4.1.1 MARINE BENTHIC HABITATS IN DREDGING AND DISPOSAL AREAS

Figure 6-1 below illustrates the habitat types predicted by EUSeaMap (2021) to be present in the dredge and disposal areas and the wider area, classified down to EUNIS Level 4 habitat types where possible. Note no sediment type information is available from EUSeaMap 2021 for the dredge site.

Detailed descriptions of the habitat types predicted to be found in the disposal area are provided in the paragraphs below.

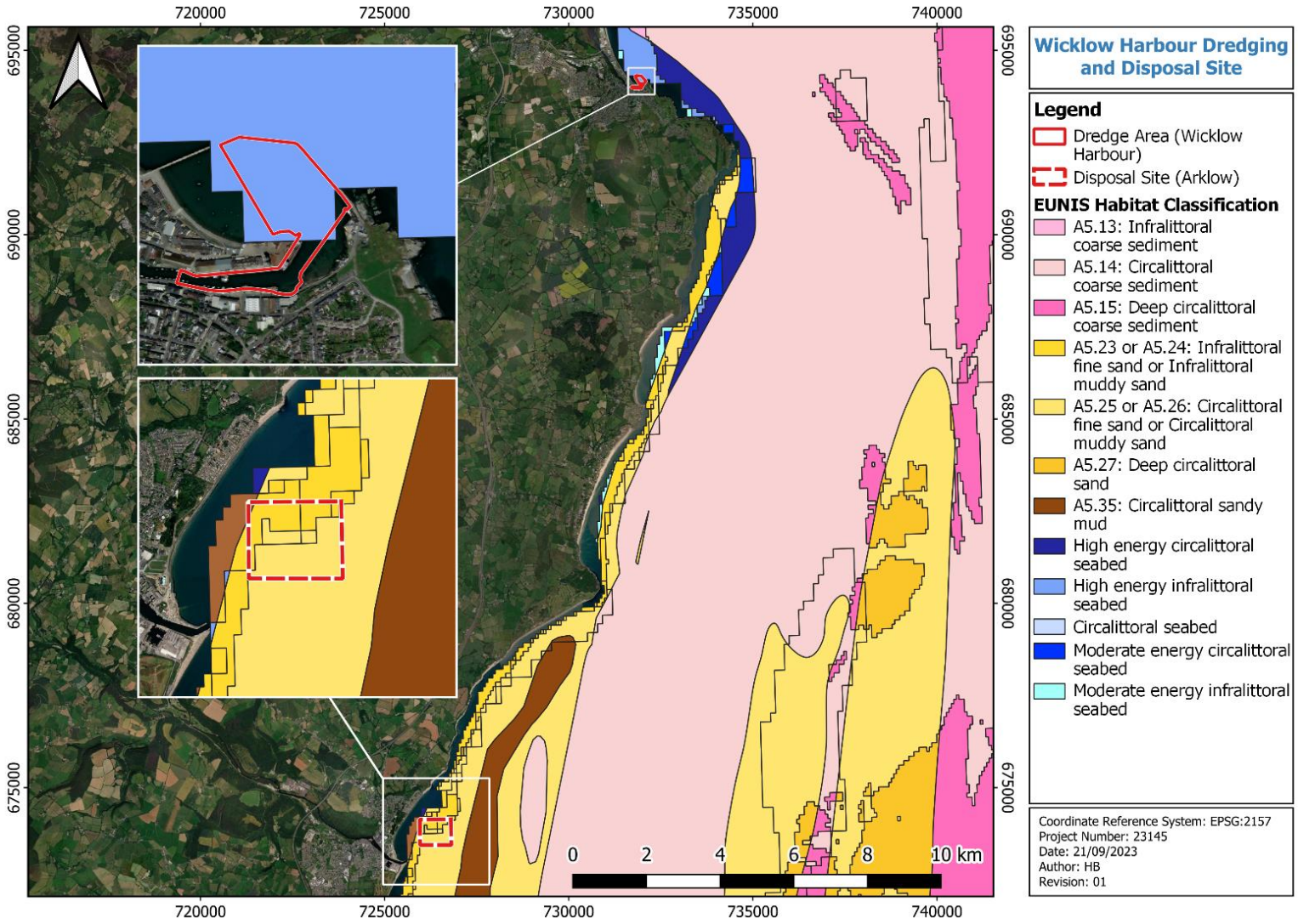

Figure 6-1 Predicted Benthic Habitats in dredge and disposal areas as per EUNIS Classification (EUSeaMap, 2021).

A5.23 - Infralittoral fine sand

These are clean sands which occur in shallow water, either on the open coast or in tide-swept channels of marine inlets. The habitat typically lacks a significant seaweed component and is characterised by robust fauna, particularly amphipods (Bathyporeia) and robust polychaetes including Nephtys cirrosa and Lanice conchilega.

A5.24 - Infralittoral muddy sand

This is a non-cohesive muddy sand (with 5% to 20% silt/clay) in the infralittoral zone, extending from the extreme lower shore down to more stable circalittoral zone at about 15-20 m. The habitat supports a variety of animal-dominated communities, particularly polychaetes (Magelona mirabilis, Spiophanes bombyx and Chaetozone setosa), bivalves (Fabulina fibula and Chamelea gallina) and the urchin Echinocardium cordatum.

A5.25 - Circalittoral fine sand

Clean fine sands with less than 5% silt/clay in deeper water, either on the open coast or in tide-swept channels of marine inlets in depths of over 15-20 m. The habitat may also extend offshore and is characterised by a wide range of echinoderms (in some areas including the sea urchin Echinocyamus pusillus), polychaetes and bivalves. This habitat is generally more stable than shallower, infralittoral sands and consequently supports a more diverse community.

A5.26 - Circalittoral muddy sand

Circalittoral non-cohesive muddy sands with the silt content of the substratum typically ranging from 5% to 20%. This habitat is generally found in water depths of over 15-20 m and supports animal-dominated communities characterised by a wide variety of polychaetes, bivalves such as Abra alba and Nucula nitidosa, and echinoderms such as Amphiura spp. and Ophiura spp., and Astropecten irregularis. These circalittoral habitats tend to be more stable than their infralittoral counterparts and as such support a richer infaunal community.

A5.27 Deep circalittoral sand

Offshore (deep) circalittoral habitats with fine sands or non-cohesive muddy sands. Very little data is available on these habitats however they are likely to be more stable than their shallower counterparts and characterised by a diverse range of polychaetes, amphipods, bivalves and echinoderms.

A5.35 Circalittoral sandy mud

Circalittoral, cohesive sandy mud, typically with over 20% silt/clay, generally in water depths of over 10 m, with weak or very weak tidal streams. This habitat is generally found in deeper areas of bays and marine inlets or offshore from less wave exposed coasts. Sea pens such as Virgularia mirabilis and brittlestars such as Amphiura spp. are particularly characteristic of this habitat whilst infaunal species include the tube building polychaetes Lagis koreni and Owenia fusiformis, and deposit feeding bivalves such as Mysella bidentata and Abra spp.

Grab sample data collected from the proposed dredge area indicate benthic habitats are composed of sand and fine sand with patches of fine sediment and some coarse material present (Figure 6-2) Water depths across the area ranges from 0.5m to 4m below CD.

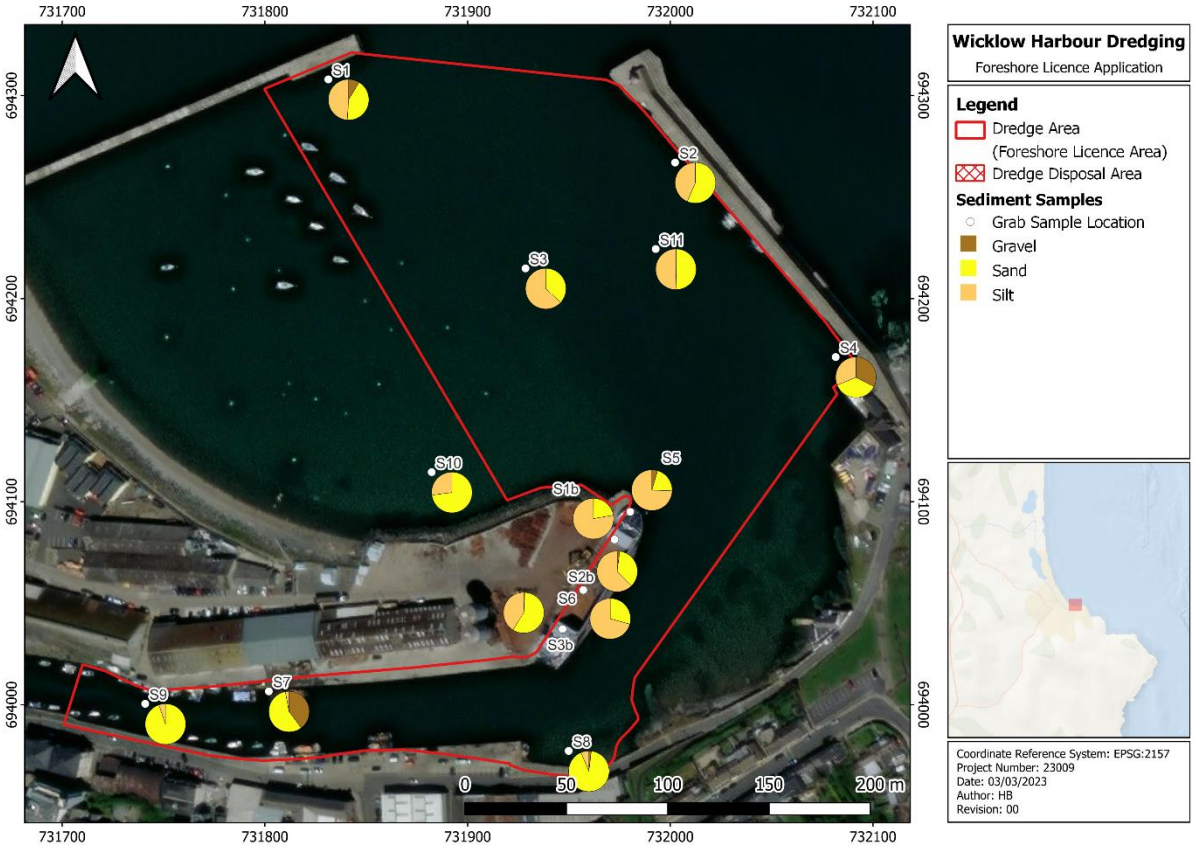

Figure 6-2 Sediment fractions present in the Dredge Area (sampled in 2021 and 2022).

Grab sample data collected from the proposed disposal area indicate benthic habitats are predominantly composed of sand (Figure 6-3). Water depths across the area ranges from 6m to 11m below CD.

Four stations were sampled within the dredge site in Wicklow Harbour by MERC Ltd on the 13th of March 2023 (MERC, 2023). At each station a 0.1m^2 Day grab was used and 3 replicate samples for faunal analysis and an additional sample for granulometry were collected.

A dropdown video survey of the benthic sampling stations and their environs was carried out on 13th April 2023. Drop-down video was deployed over the same areas where benthic grab samples were taken and in the surrounding area.

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 Leitrim 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. 479 individuals were recorded across 39 taxa.

No Annex I habitats or species of conservation importance were identified from available grab sampling or ROV imagery data.

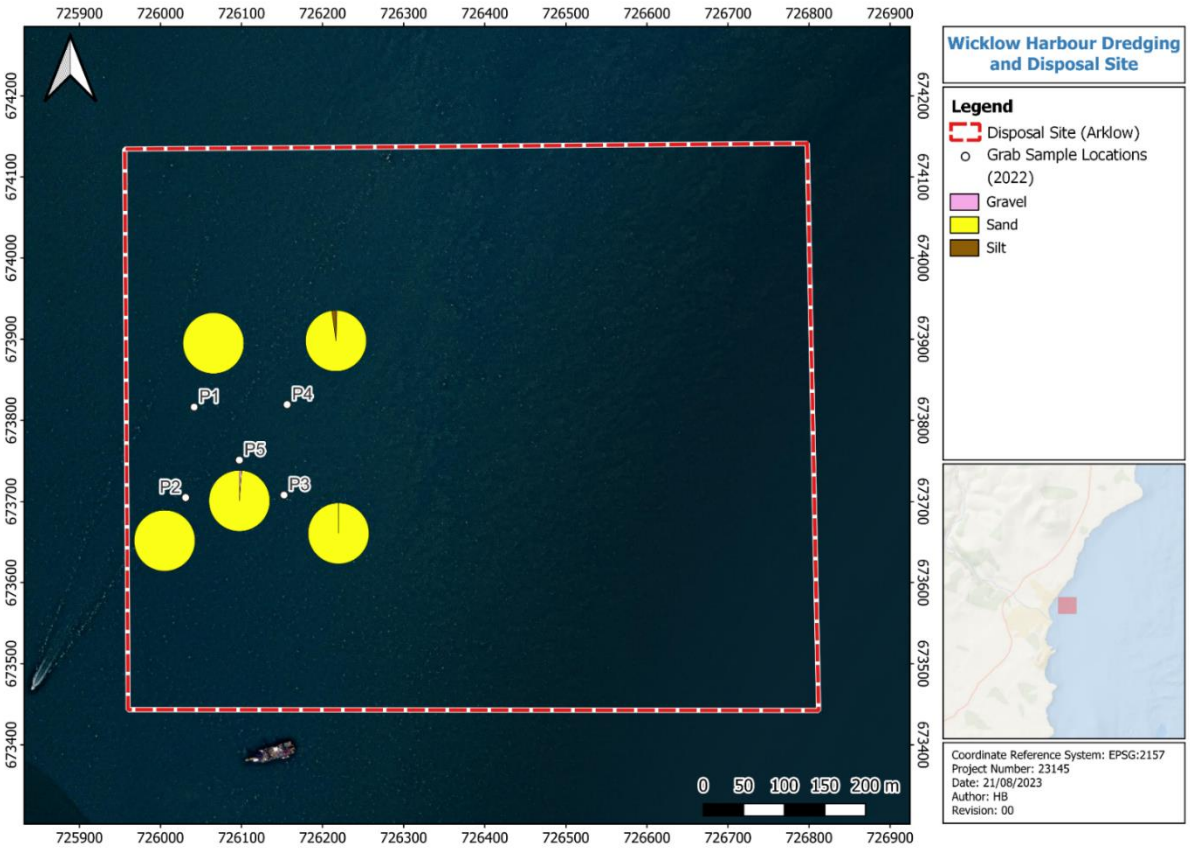

Figure 6-3 Sediment fractions present in the Disposal Site (sampled in 2022).

Information relating to the Arklow disposal site has been collated in by GDG and is presented in Appendix I: Arklow Bank Disposal Site Data Inventory.

Additionally the summarising report was prepared by GDG: Arklow Disposal Site Study (2023), where the microbenthic composition of the disposal site was discussed.

The summary of this report indicated that:

- Sand is the dominant sediment type at the disposal site, with some cobbles and boulders observed from the ROV survey conducted in October 2023
- The macrobenthic assemblage identified here in 2007 was made up of 51 individuals in 2007, over 100 individuals in 2016 and 2017, increased to nearly 600 individuals in 2018 and then dropped to less than 50 individuals in 2020 and 2022.
- Community composition differed over time with Annelida taxa dominating the assemblage in 2007, 2016 and 2020, Mollusca taxa taking over in 2017, and Miscellaneous taxa becoming

dominant in 2018 and 2022. In contrast diversity was dominated by Annelida taxa during all monitoring years apart from 2022 when Miscellaneous taxa dominated.

- Analysis of ROV imagery collected in 2023 indicates the epifauna in the site is dominated by larger, mobile opportunists such as hermit crabs (Pagurus sp.) and bloody Henry starfish (Henrici sp.) with increased diversity of epifauna including polychaetes, bryozoans and hydroids observed where these sessile taxa could attach to coarser sediments.
- No Annex I habitats were identified or species of conservation importance were identified from available grab sampling or ROV imagery data.

Dumping at Sea Permit S0002-01 was granted by the EPA in April 2011 for dredging works at Arklow Harbour and subsequent disposal at sea of dredged material in a site located 0.4 km offshore from Arklow, which were undertaken in 2014.

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

The 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 conducted by GDG has predicted that the effect of the dredging and disposal activities on the seabed will be localised in nature.

The localised nature of the proposed works, environmental conditions with strong tidal currents and the nature of the area suggest that **no likely significant effect** on benthic habitats is expected in the receiving environment.

Please note impacts on designated benthic habitat features of SACs have been assessed in the SISAA report, which concluded no likely significant effects are foreseen on the benthic habitats which constitute a Qualifying Interest for any SAC.

6.4.2 NATURA 2000 SITES

Please note impacts on designated features of SACs and SPAs have been assessed in the SISAA report, which concluded no likely significant effects are foreseen on the habitats or species which constitute a Qualifying Interest for any of the SACs or Special Conservation Interests of any of the SPAs considered.

6.4.3 MARINE MAMMALS

A review of existing data sources regarding marine mammals was carried out in the SISAA and the RAAIVS reports and is summarised below.

Marine mammal species recorded in the area include harbour porpoise (*Phocoena phocoena*), bottlenose dolphin (*Tursiops truncatus*), Risso's dolphin (*Grampus griseus*), common dolphin

(*Delphinus delphis*), killer whale (*Orcinus orca*), minke whale (*Balaenoptera acutorostrata*), fin whale (*Balaenoptera physalus*), humpback whale (*Megaptera novaeangliae*), grey seal (*Halichoerus grypus*) and harbour seal (*Phoca vitulina*).

Assessment of Potential Impacts

The following potential impacts have been identified for the dredging and disposal activities proposed under this application:

- Disturbance from vibration and underwater noise associated with the proposed works
- Injury due to collision (vessels)
- Pollution event

The SISAA concluded that no likely significant effects are foreseen on marine mammal species which constitute a Qualifying Interest for any of the SACs considered.

A detailed impact assessment was carried out in the Risk Assessment for Annex IV Species which concluded that marine mammal and leatherback turtle species whose range overlaps the Dredge and Disposal areas will not be significantly affected by the activities proposed.

Therefore, it is concluded that the proposed dredging and disposal activities will not result in any significant effects on marine mammals.

6.4.4 BIRDS

Ireland is host to several nationally and internationally important bird species which inhabit areas including coastal sea cliffs, estuaries and offshore islands. Coastal habitats provide important breeding sites for many species of seabirds, several of which are protected under national and European legislation.

At least 45 species of seabird (including divers and grebes) have been recorded during at-sea surveys in Irish waters, of which 23 species regularly breed around Ireland (Pollock et al., 2008, Mackey et al., 2004). In addition, a further 59 species of waterfowl and wader regularly occur at coastal sites such as estuaries around Ireland including 5 grebe species, 2 heron species, 26 species of wildfowl and 26 wader species (Crowe, 2005). Some of these species are migratory and are present only during migration periods in spring and autumn; others come to Ireland to breed or to spend the winter, while some are resident all year round (Lewis et al., 2019; Jessop et al., 2018).

Assessment of Potential Impacts

The SISAA concluded that no likely significant effects are foreseen on bird species which constitute a Qualifying Interest for any of the SPAs considered.

Other bird species may be at risk from physical and noise disturbance. However, they are within an area of regular shipping traffic and background harbour activities.

Flushing disturbance may temporarily displace the birds that are close to vessels and any dredge and disposal equipment.

However, it is considered that given localised nature of the proposed works, the works are not expected to cause any significant effects for the birds present in nearby areas.

6.4.5 FISH

6.4.5.1 COMMERCIALLY IMPORTANT FISH SPECIES – SPAWNING AND NURSERY GROUNDS

The Dredge and Disposal areas overlap with the nursery grounds of some commercially important species of fish (Ireland Marine Atlas, 2021).

Atlantic cod (*Gadus morhua*) use the dredging site area as a spawning and nursery ground. Mackerel (*Scomber scombrus*) and horse mackerel (*Trachurus trachurus*) use the dredging area as a nursery ground. The area also supports a population of wild Atlantic Salmon.

The Avoca River enters the Irish Sea at Arklow town, where it widens into a large estuary. A fish stock survey, conducted in 2010 by Inland Fisheries Ireland (IFI), found a total of 12 fish species in the Avoca Estuary. The river lamprey, a species listed on Annex II and V of the EU Habitats Directive (92/43/EEC), were one of the species recorded including brown trout, sea trout, and eels (listed as critically endangered in the Irish Red Data Book No.5 – Amphibians, Reptiles and Freshwater Fish). Cod and haddock were also recorded, along with juvenile thick-lipped grey mullet, indicating the utilisation of this water body as a nursery habitat for this species. The Avoca River supports cod, haddock, brown trout and sea trout, which are all important commercial or angling species (IFI – Avoca River, 2010).

Cod, horse mackerel and mackerel use the dumping at sea area as a nursery ground. The area also supports a population of wild Atlantic Salmon. The extent of the overlap with the dredging site and dumping at sea site with the mapped cod spawning and nursery grounds are shown in Figure 6-4, and in Figure 6-5 the Mackerel and Horse Mackerel nursery grounds are mapped, with the range of wild Atlantic salmon shown in Figure 6-6. In Table 6-4 and Table 6-5 the fish distribution within the area of the dredging site and disposal site are summarised, respectively.

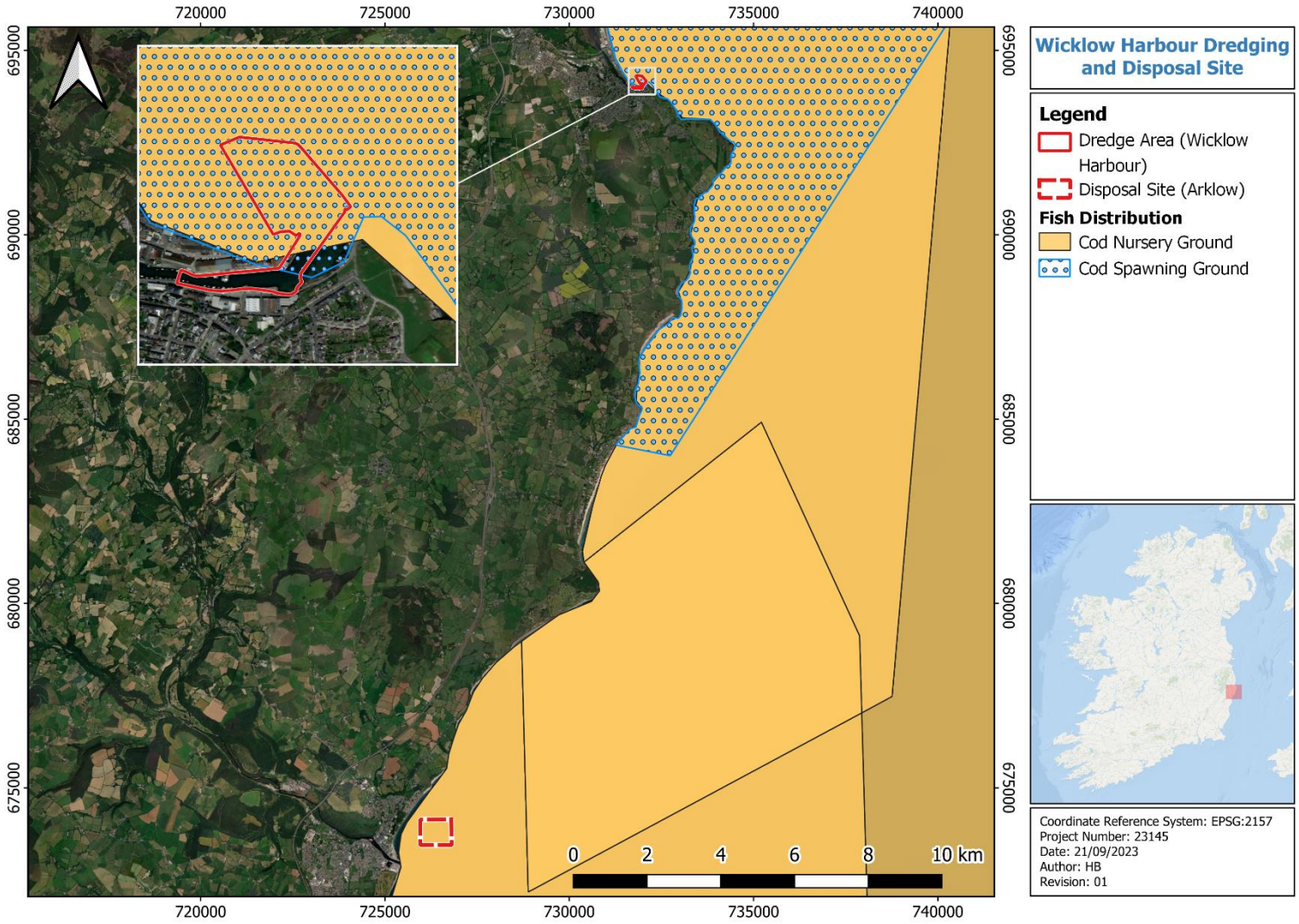

Figure 6-4 Cod Spawning and Nursery Grounds (Ireland's Marine Atlas, 2021a).

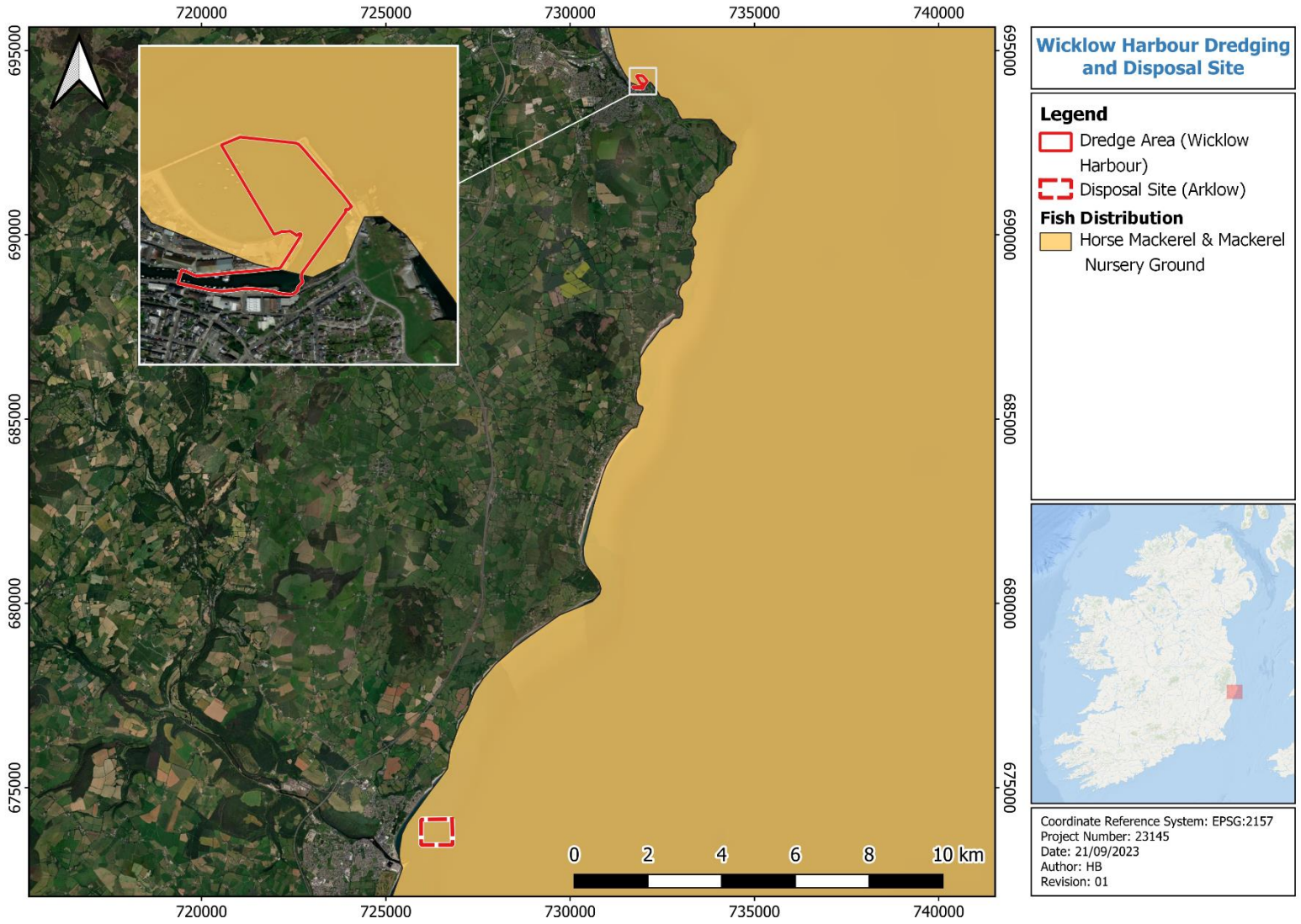

Figure 6-5 Mackerel and Horse Mackerel Nursey Grounds (Ireland's Marine Atlas, 2021a).

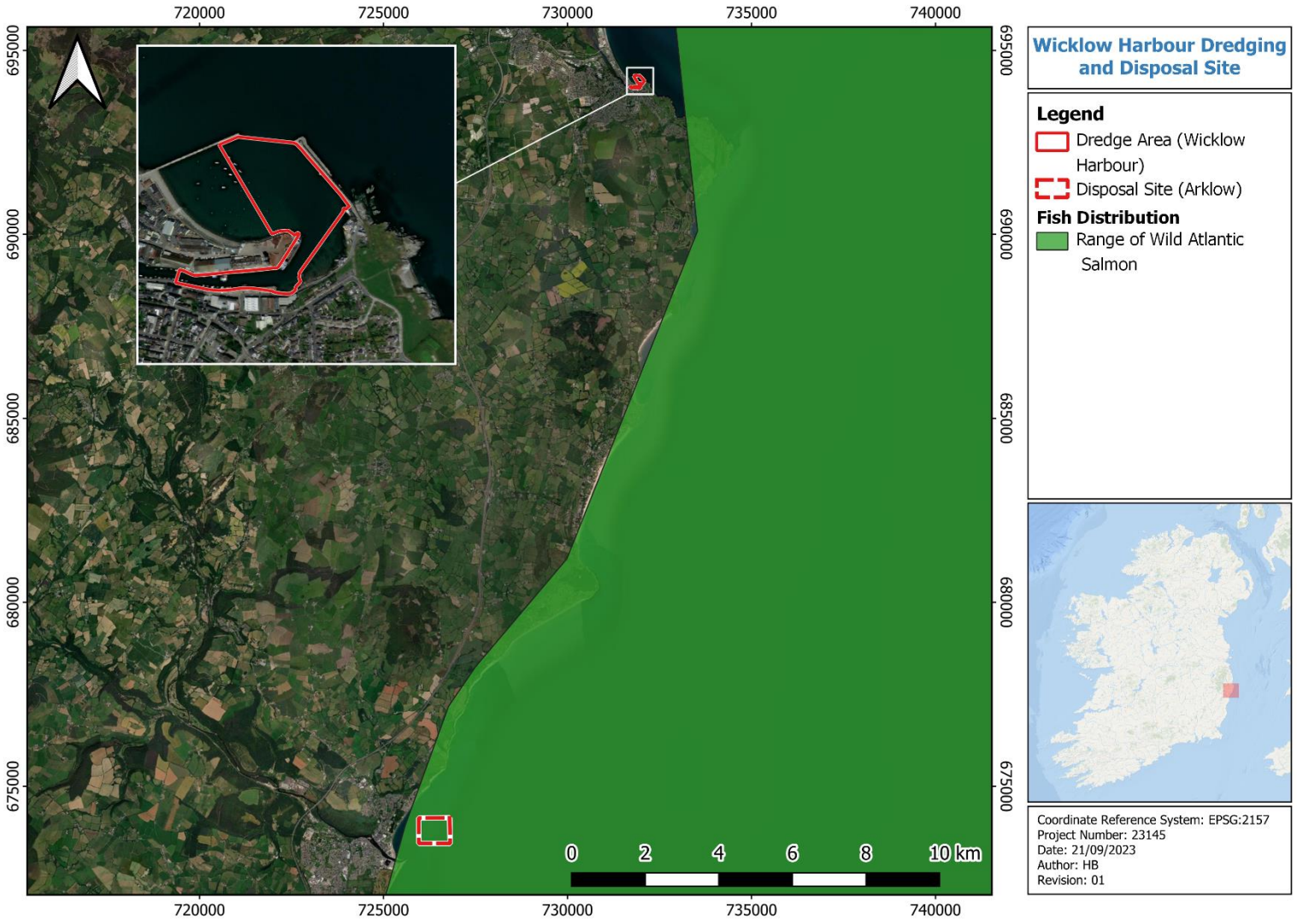

Figure 6-6 Range of Wild Atlantic Salmon (Ireland's Marine Atlas, 2021a).

Table 6-4 Application area overlap with the Dredging Site and commercial fish species distribution areas.

Species	Nursery Area	Spawning Area
Cod	✓	✓
Mackerel	✓	X
Horse Mackerel	✓	X

Table 6-5 Application area overlap with the DaS and the commercial fish species distribution areas.

Species	Nursery Area	Spawning Area
Cod	✓	X
Mackerel	✓	X
Horse Mackerel	✓	X

The range of Wild Atlantic Salmon covers both the dredging site and the disposal site.

Assessment of Potential Impacts

The proposed dredging works will be carried out within areas recognised as nursery and spawning grounds for cod, and nursery grounds for other commercially important fish species and could introduce increased underwater noise, sediment disturbance, substratum loss, smothering and sediment suspension.

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 works will be carried out within areas recognised as nursery grounds for cod, horse mackerel and mackerel, all of which are commercially important fish species. These proposed disposal activities could introduce increased underwater noise, sediment disturbance, substratum loss, smothering and sediment suspension.

The disposal site is located 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 sediment disturbance and substratum loss, smothering and increased levels of suspended solids in water column during dredging and disposal activities.

However, 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 commercially important adult fish or their nursery or spawning grounds.

6.4.5.2 MIGRATORY FISH SPECIES

Wicklow Harbour is located at the mouth of River Vartry. 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).

The dumping at sea area is located approximately 0.7km north-east of the mouth of the Avoca River. The Avoca River supports a population of migratory fish including Atlantic Salmon, brown and sea trout, and eel.

Atlantic salmon (*Salmo salar*)

The Atlantic salmon is native to Ireland, commercially important fish and its geographic range includes the North Atlantic Ocean and in rivers around the Atlantic coasts of Europe and eastern North America. The Atlantic salmon is one of the most widespread fish in Ireland and is found in most rivers and in marine waters.

Brown trout (*Salmo trutta*)

The brown trout is native to Ireland, and its native geographic range includes Europe and parts of northern Africa. Brown trout have been widely introduced to other temperate parts of the world and are the most widespread fish in Ireland, found in practically every stream, river and lake in the country.

River lamprey (*Lampetra fluviatilis*)

The river lamprey is native to Ireland, and it is distributed throughout Europe. Like all lampreys, they lack gill covers or paired fins and have an oral sucker disc instead of a mouth with jaws.

Sea lamprey (*Petromyzon marinus*)

The sea lamprey is native to Ireland, and its geographic range includes the Atlantic coastal waters of Europe and North America and their inflowing rivers. Like all lampreys, sea lamprey lack gill covers or paired fins and have an oral sucker disc instead of a mouth with jaws. Adult sea lamprey are about a metre in length and have a dark, mottled colour, with rows of curved teeth in their suckers, which gives them a striking appearance.

Twaite shad (*Alosa fallax*)

The twaite shad is native to Ireland and occurs in coastal waters and estuaries in the Southeast. Their geographic range includes the coastal waters and inflowing rivers of the Atlantic coast of Europe and the Mediterranean Sea.

Allis shad (*Alosa alosa*)

The allis shad is native to Ireland and occur in very low numbers in coastal waters and estuaries in the Southeast. Their geographic range includes the coastal waters and inflowing rivers of the Atlantic coast of Europe and the Mediterranean Sea. There are no recent records of spawning populations in Ireland; therefore, allis shad caught in Irish waters probably originated from European populations.

European eel (*Anguilla anguilla*)

The European eel is native to the North Atlantic Ocean and to the river systems of Ireland, Europe and parts of northern Africa. The European eel is a catadromous fish, which means that it hatches in the ocean but migrates to rivers to spend most of its adult life in freshwater before migrating back to the ocean to spawn.

Assessment of Potential 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 of migration.

Note the SISAA submitted as part of this Application has considered potential impacts from the proposed dredging and dumping at sea activities on migratory fish species, specifically Annex II species (Atlantic salmon, Sea lamprey, River lamprey and Twaite shad) noise and sensitivity to sound pressure, using guidance from Popper et al. (2003; 2004), Mann et al. (2001), Putland et al. (2018) and Teague and Clough (2011), and Atlantic salmon sensitivity to sound pressure from Popper and Hawkins (2019), with particular focus on the impacts of noise from the proposed dredging and dumping at sea activities, and concluded that no likely significant effects are foreseen on these fish species which constitute a Qualifying Interest for any of the SACs considered.

Wicklow Harbour and Arklow Harbour are 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 (IFI, *pers. comm*). 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. Disposal activities will take place 0.7km north-east of the mouth of the Avoca River so no impact to fish migration is anticipated.

6.5 COMMERCIAL FISHERIES AND AQUACULTURE

6.5.1 DATA AVAILABILITY

The availability of information on fishery activity specifically related to fishing grounds and areas in Irish waters is dependent on the target species, fishing gear and the size of the vessels engaged in the fisheries. Broadly speaking good quality data are available for fish species which are managed via a quota system and are fished by larger vessels; conversely less data is available from smaller vessels targeting non-quota species.

Vessels >12 m long are legally obliged to transmit VMS (Vessel Electronic Monitoring System) data and (with some exceptions) to submit logbooks of their catches; this information is collated by the Marine Institute (MI) to produce the Atlas of Commercial Fisheries which maps fishery activity. The data are filtered and processed by the MI to screen out non-fishing activity which is done on the basis of vessel speed upper and lower parameters in combination with industry knowledge. The data is of low certainty for some fisheries due to the difficulties in relating vessel position at a given time with

logbook records for individual species, also data from all fisheries other than otter trawling are considered indicative and not quantitative due to uncertainties around effort.

Vessels <10 m are not required to transmit VMS data or to record their catches in logbooks. Information from this sector is derived from sales notes, the Bord Iascaigh Mhara (BIM) Inshore Sentinel Vessel Programme, the MI Observer Programme and industry knowledge. This classification of vessel accounts for the majority of pot-fishing inshore fleet targeting crab, lobster, shrimp and whelks. Vessels <10 m may also target finfish with gillnets, jiggers and longlines. Vessels 10-12 m are not required to transmit VMS data but must maintain logbooks, in which positional data are recorded only at the ICES (International Council for the Exploration of the Sea) Statistical Rectangle scale.

The Irish Groundfish Survey (IGFS) is an annual fisheries-independent trawl survey carried out by the MI in Irish waters to contribute to the assessment of commercial fish stocks and to feed data into the ICES stock assessments which in turn determine the size and allocation of European quotas. These data along with commercial catch data are published in the Irish Stock Book and are also available in mapping formats in Ireland's Marine Atlas. The IGFS does not survey the Irish Sea or the far north of the island, these data gaps are filled by the UK – Northern Ireland Groundfish Survey (NIGFS) and the UK – Scottish West Coast Groundfish Survey (SCOWCGFS) under the coordination of the ICES International Bottom Trawl Survey Working Group (IBTSWG).

6.5.2 FISHING ACTIVITY

Ireland's Marine Atlas (Ireland's Marine Atlas, 2021) indicates that fishing activity takes place in the dredge and disposal areas.

The distribution of fishing activities recorded in the dredging area and disposal site in 2018 are presented in Figure 6-7 to Figure 6-10 below. It is noted that fishing activities are shown adjacent to Arklow Harbour, this is likely to represent boats slowing down as they approach or leave the harbour, as opposed to fishing activities occurring.

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^2/year effort. There may be other areas of fishing not recorded in Ireland's Marine Atlas.

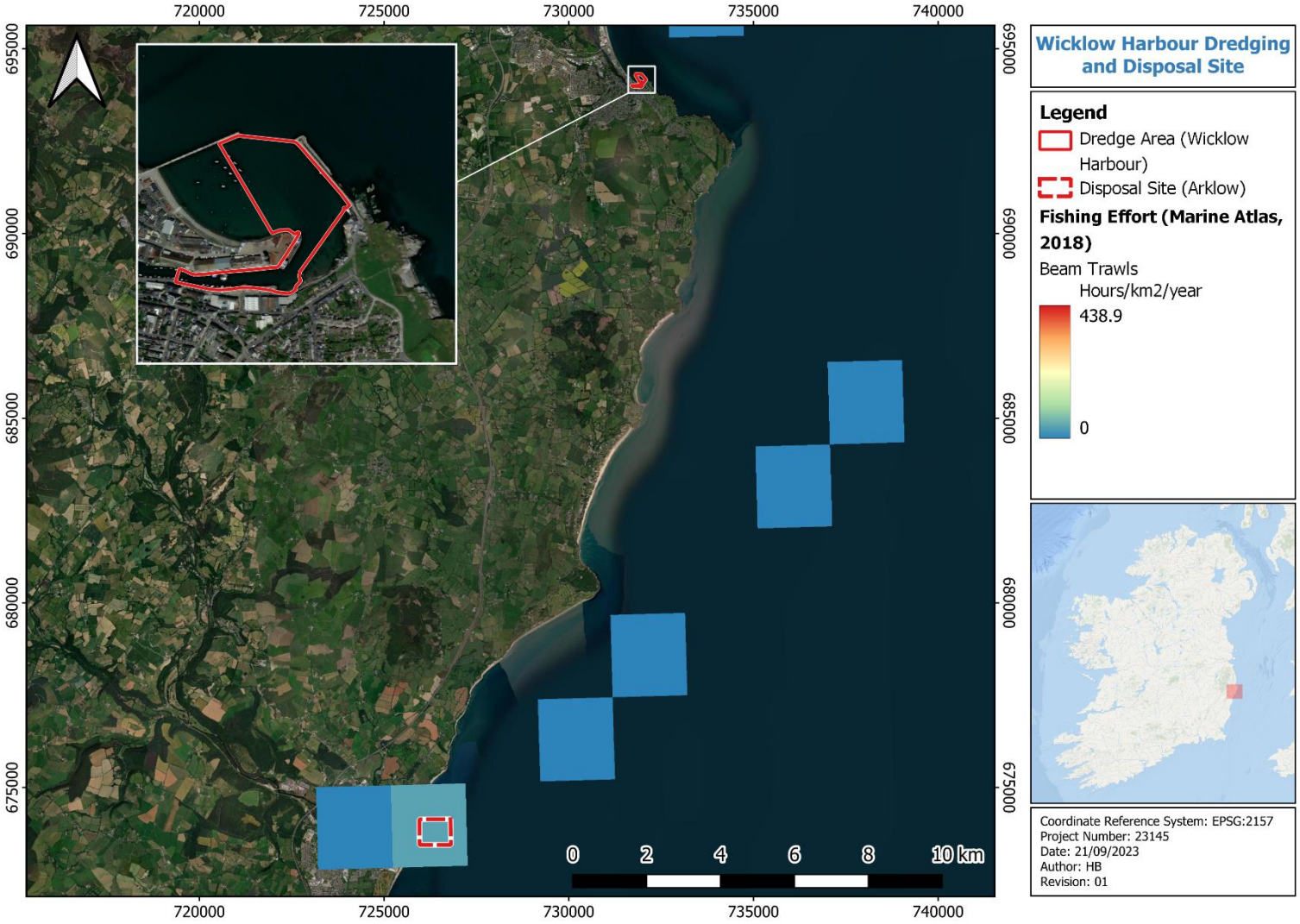

Figure 6-7 Fishing Activities of Beam Trawls in 2018 (Av. Hours/km2/year) (Ireland's Marine Atlas, 2021b)

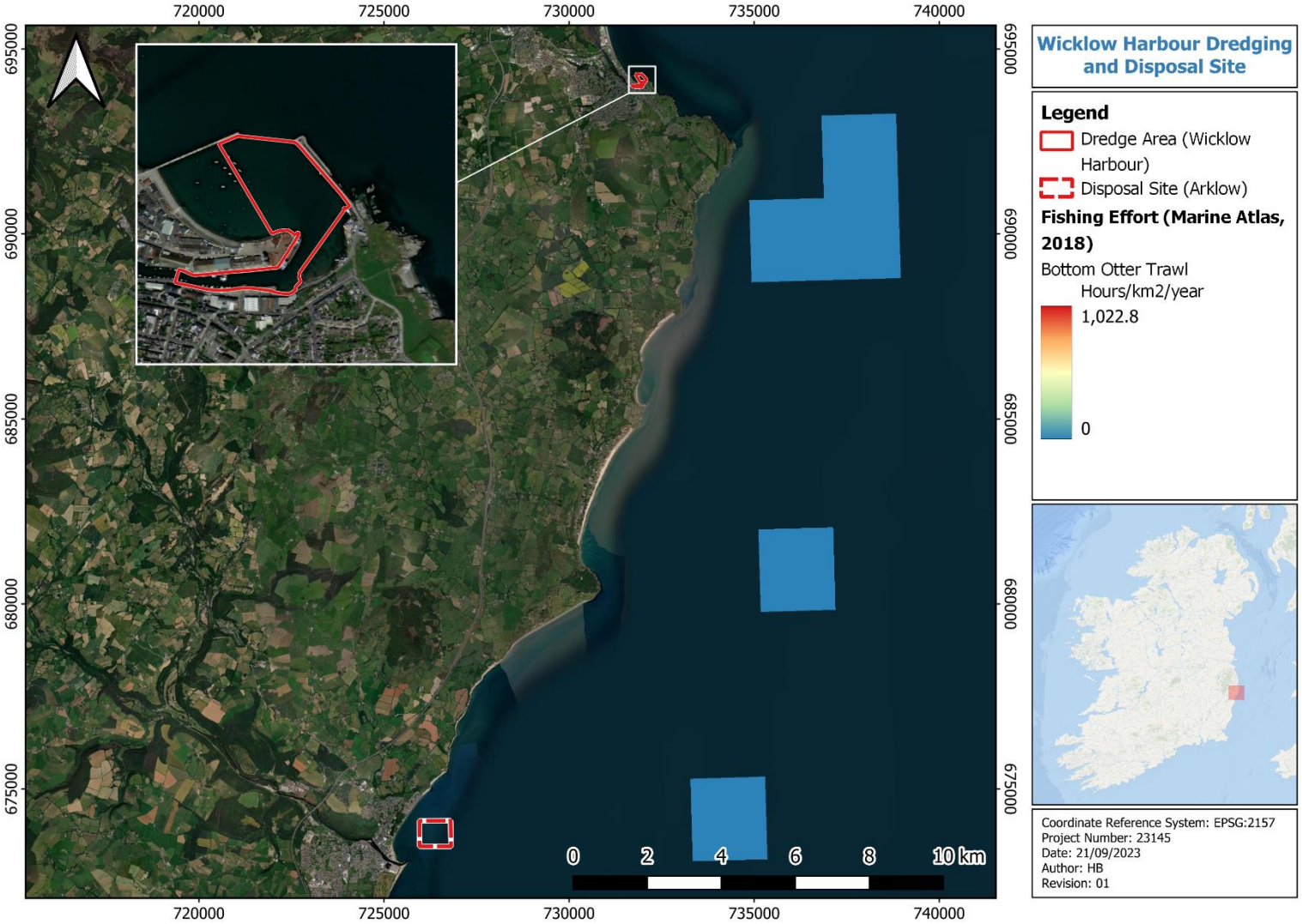

Figure 6-8 Fishing Activities showing Bottom Otter Trawls Fishing in 2018 (Av. Hours/km2/year) (Ireland's Marine Atlas, 2021b)

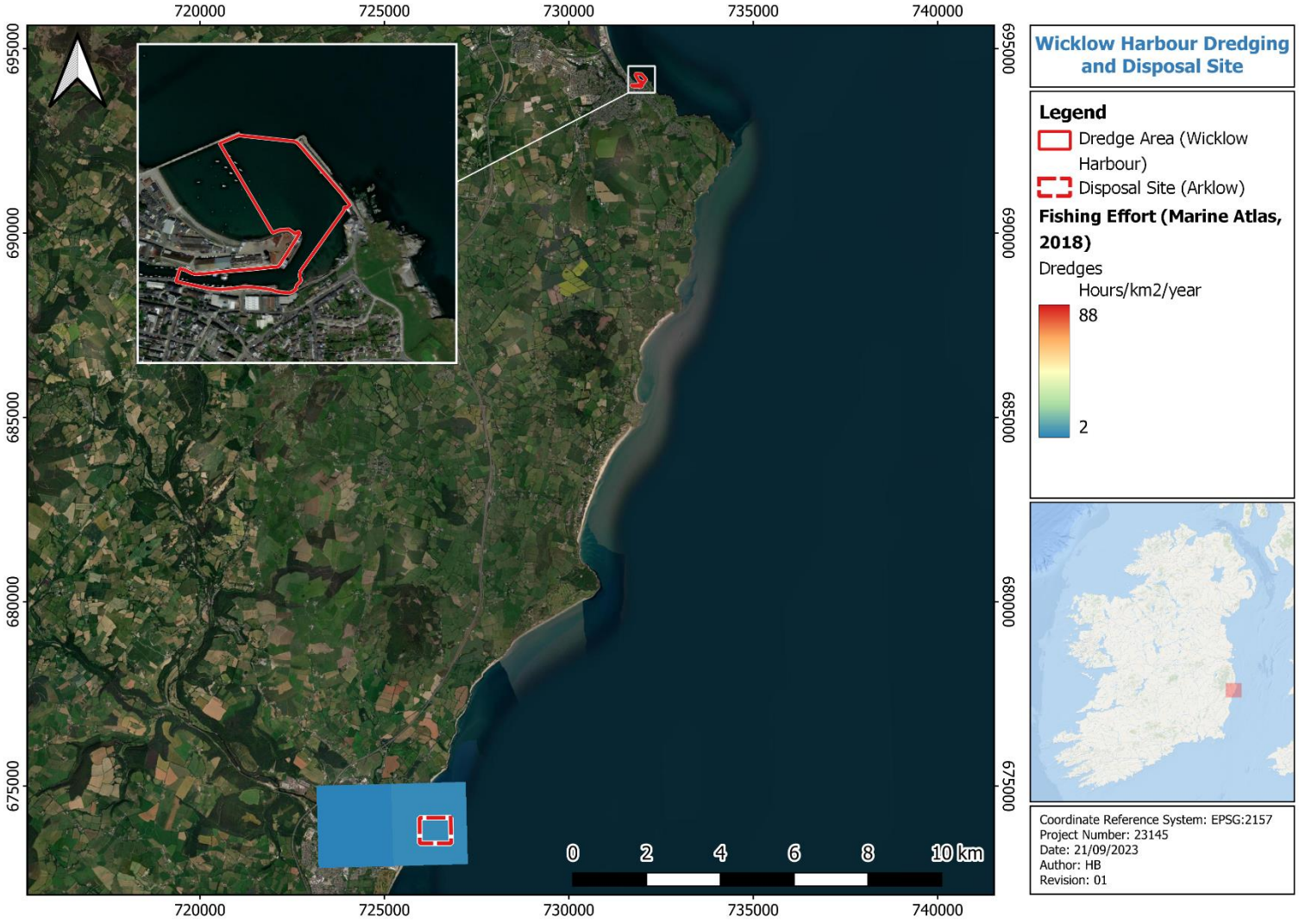

Figure 6-9 Fishing Activities showing Dredges in 2018 (Av. Hours/km2/year) (Ireland's Marine Atlas, 2021b)

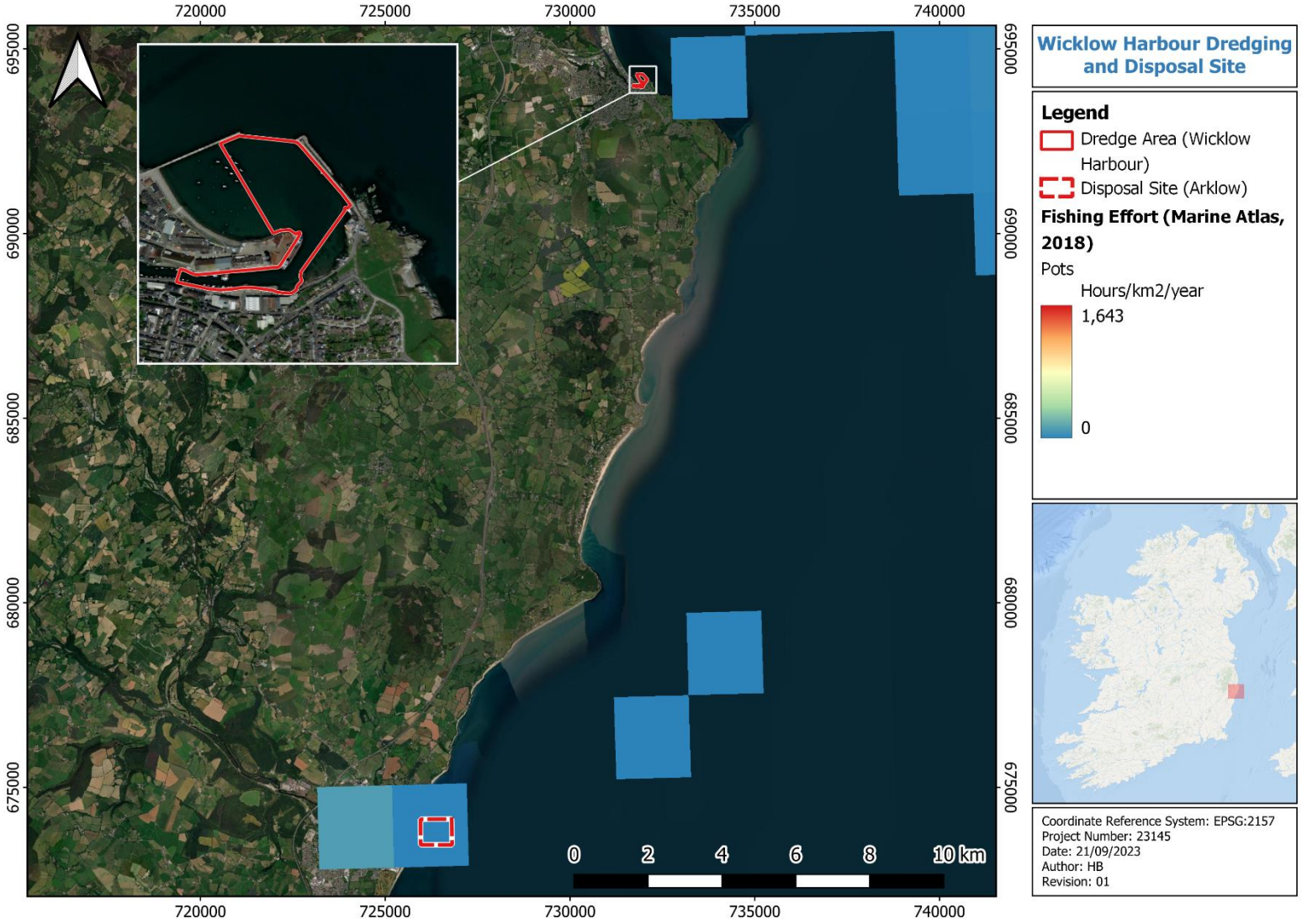

Figure 6-10 Fishing Activities showing Pot Fishing in 2018 (Av. Hours/km2/year) (Ireland's Marine Atlas, 2021b).

Assessment of Potential Impacts

Proposed dredging and disposal activities may require temporary removal of the fishing gear from the transit and disposal areas. 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 areas.

6.5.3 AQUACULTURE AND SHELLFISH ECOLOGY

The Department of Agriculture, Food and the Marine (DAFM) has responsibility for the regulation of aquaculture. Under Section 6 of the Fisheries (Amendment) Act, 1997 (as amended), it is illegal to engage in aquaculture without an appropriate Aquaculture Licence. Aquaculture includes the culture or farming of fish, aquatic invertebrates, aquatic plants, or any aquatic form of food suitable for the nutrition of fish.

As 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 and 5 km to the south of the disposal site (Figure 6-11). Another aquaculture site, Rainbow Trout, is situated upstream of Arklow town up the Avoca River as shown in Figure 6-11.

No Designated Harmful Algal Blooms (HABs) and Inshore Shellfish Production Areas (ISPA) or administrative units used for reporting purposes in the management, collection and analysis of shellfish and phytoplankton sample data, for aquaculture production activities are within or adjacent to, or in the vicinity of, the dredging or disposal areas. Shellfish Waters Directive Areas (SWDA) aim to protect or improve shellfish waters in order to support shellfish life and growth. They are designed to protect the aquatic habitat of bivalve and gastropod molluscs, which include oysters, mussels, cockles, scallops and clams.

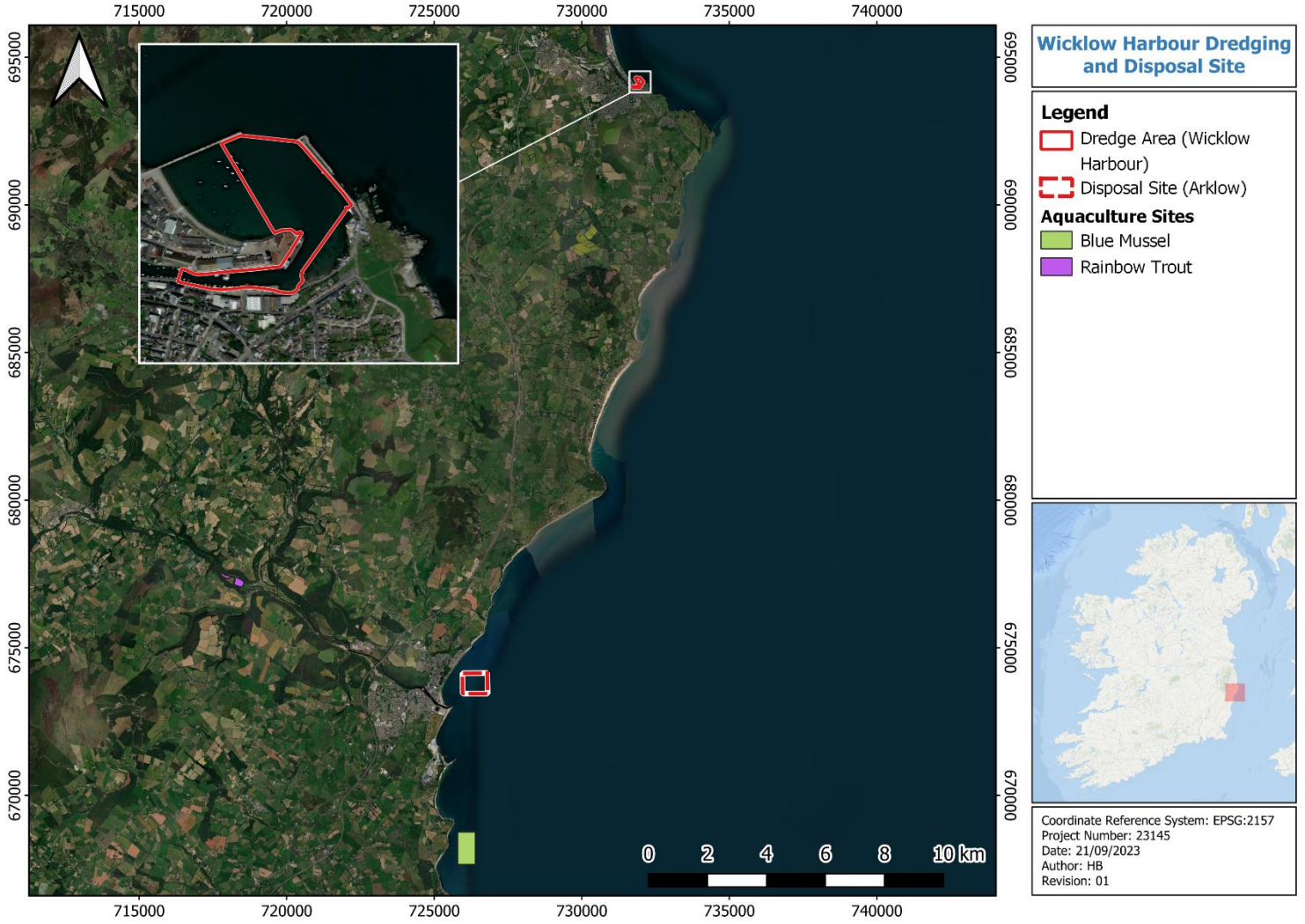

Figure 6-11 DAFM Licenced Aquaculture (Ireland's Marine Atlas, 2021).

Assessment of Potential Impacts

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.

As there are no HAB ISPAs or SWDAs within or adjacent to, or in the vicinity of, the dredge or disposal areas, no significant effects on aquaculture operations are expected.

6.6 AIR QUALITY

There will be no releases to air, other than routine vessels exhausts. Air quality standards will not be exceeded. There is not likely to be a significant effect on the environment.

6.7 NOISE AND VIBRATION

The largest type of dredger that will be used in Wicklow Port is a Trailing Suction Hopper Dredger (TSHD). It is likely to be small in nature (<2,000m³) as the port is tidally restrictive and only dredgers with limited draughts could be used efficiently. Operations may be 24hrs a day. Noise results from a slightly larger dredger (2,300m³) in the Port of Waterford returned an average noise level of less than 45dB. These noise levels are not deemed significant in an urban environment and other larger trade vessels regularly use the harbour.

Assessment of Potential Impacts

There is likely to be an increase in noise from the dredging activity. However, to ensure against noise pollution, the port intends to establish a local communication plan in advance of the works to ensure that any issues, regarding noise or any other matter, can be managed promptly and appropriately.

6.8 LANDSCAPE AND SEASCAPE

The dredge and disposal areas are not subject to any designation intended to protect landscape quality. The coastline along Wicklow Harbour where the dredging activities are proposed is classed as the Regional Seascape character type 'Broad estuarine Bays & complex low and cliff coastline'. The coastline along Arklow Bay is classed as the character type 'Low lying & estuarine coastal plain with long, narrow sandy beaches'. 'Shallow offshore waters' is another regional seascape that is located offshore, adjacent to the disposal site and dredging activities (Marine Institute, 2020).

Assessment of Potential Impacts

The visual disturbance caused by the proposed site dredging activities and at the disposal site will be limited to the presence of 1-2 survey vessels on site. The area is 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.

No significant effects to landscape and seascape receptors are predicted.

6.9 MARINE TRAFFIC

The Irish Coastguard monitors the movement of vessels in Irish waters via an Automatic Identification System (AIS) for maritime transport safety and security. The European Communities (Vessel Traffic Monitoring and Information System) Regulations 2010 govern the use of AIS systems and states that "Any fishing vessel with an overall length of more than 24 metres but less than 45 metres which is (a) registered in the State, (b) operating in the territorial waters, or (c) landing its catch in a port of the State, shall be fitted with an automatic identification system (Class A) which meets the performance standards drawn up by the IMO".

Figure 6-12 shows all vessel density data available for the 2021 period within and surrounding the dredge and disposal areas from the European Marine Observation Data Network (EMODnet) dataset. Figure 6-13 to Figure 6-16 provide a breakdown of the vessel density types from 2021 which show the individual density of vessel traffic for fishing, tanker, cargo and passenger vessels within and surrounding the dredge and disposal areas.

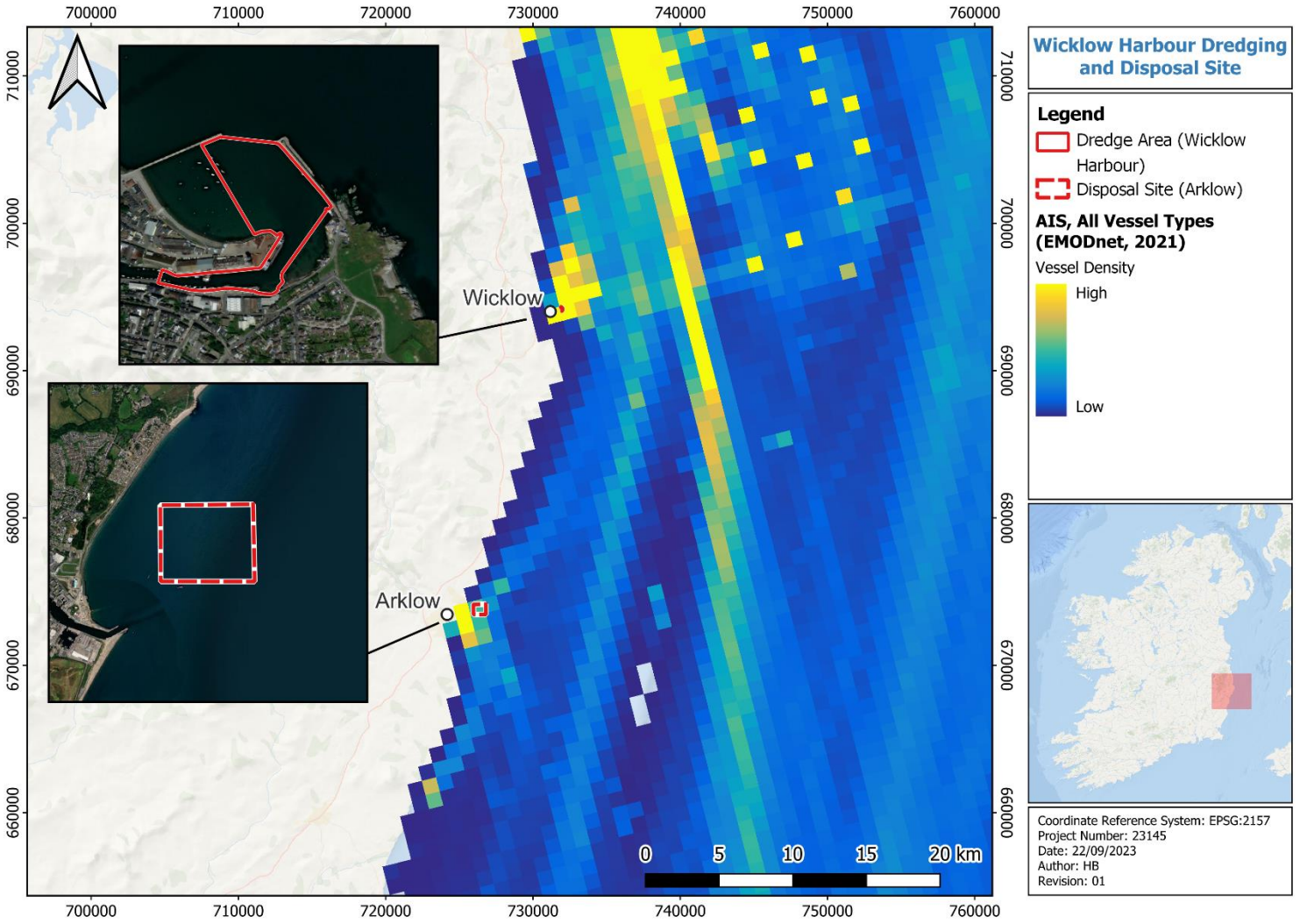

Figure 6-12 All Vessel Density 2021 data (hours per square km per year) within and surrounding the dredging and disposal areas (EMODnet, 2023)

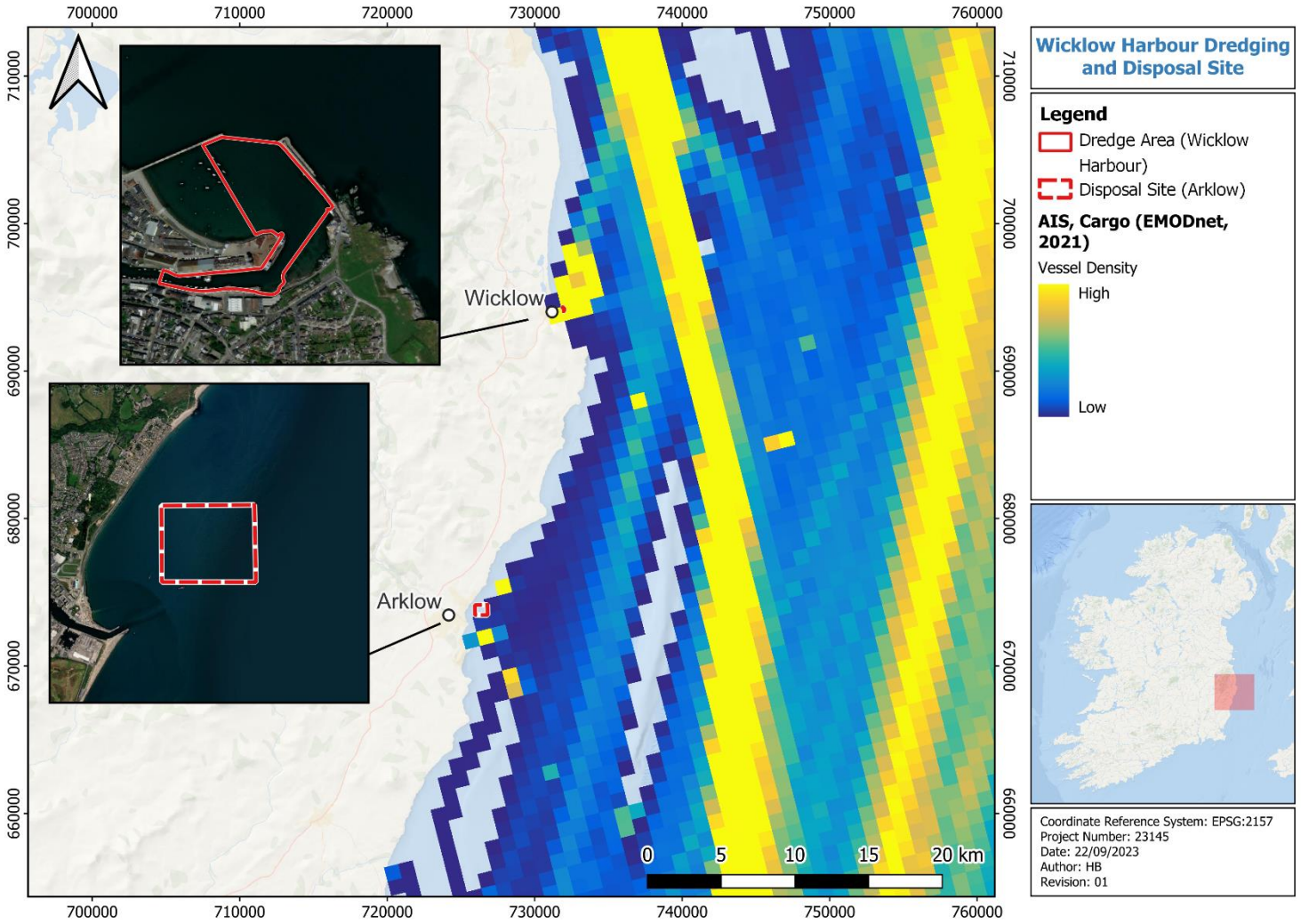

Figure 6-13 Vessel Density Types Dataset for 2021 (hours per square km per year) showing Cargo Vessels within and surrounding the dredging and disposal areas (EMODnet, 2022)

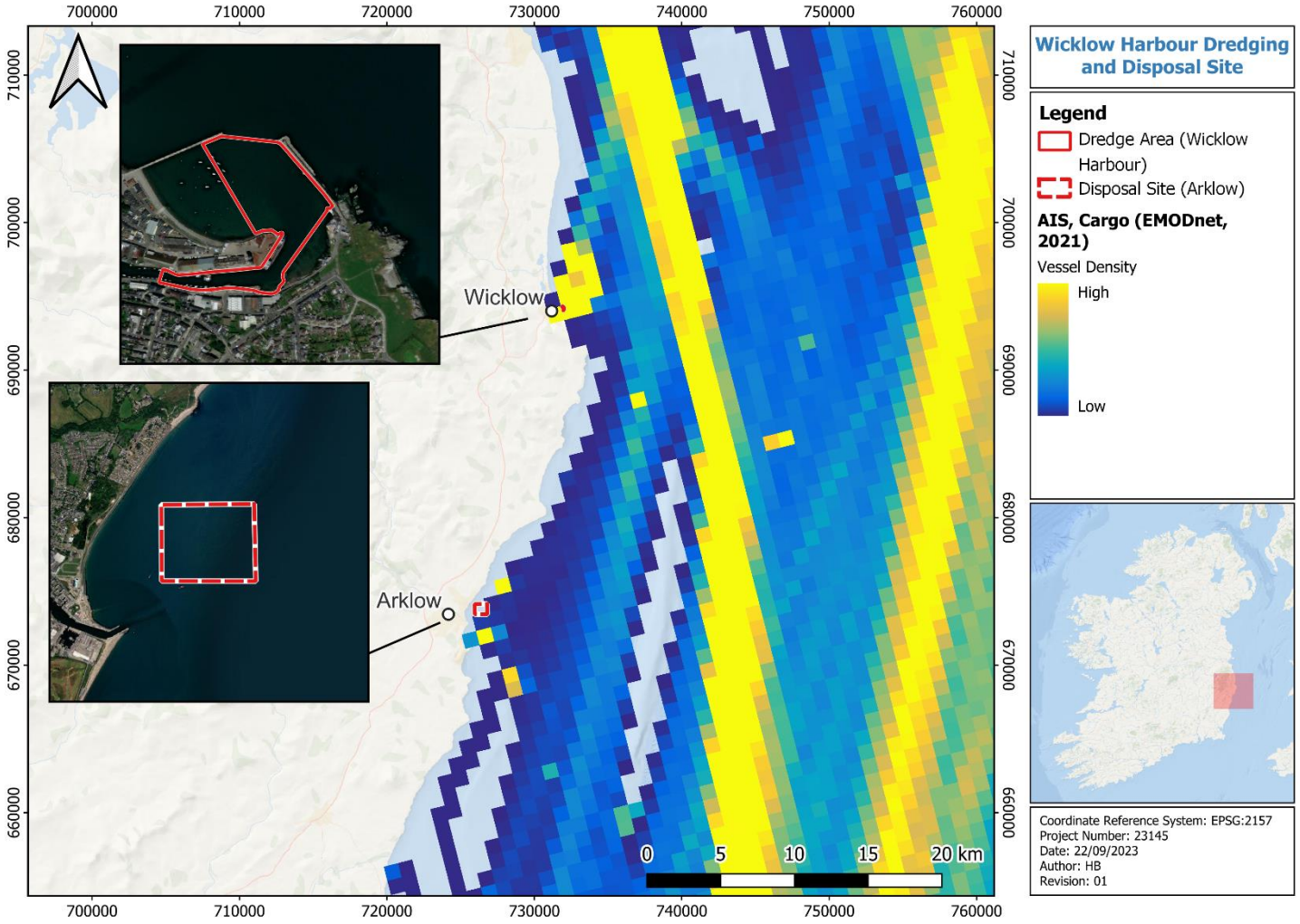

Figure 6-14 Vessel Density Types Dataset for 2021 (hours per square km per year) showing Fishing Vessels within and surrounding the dredging and disposal areas (EMODnet, 2022)

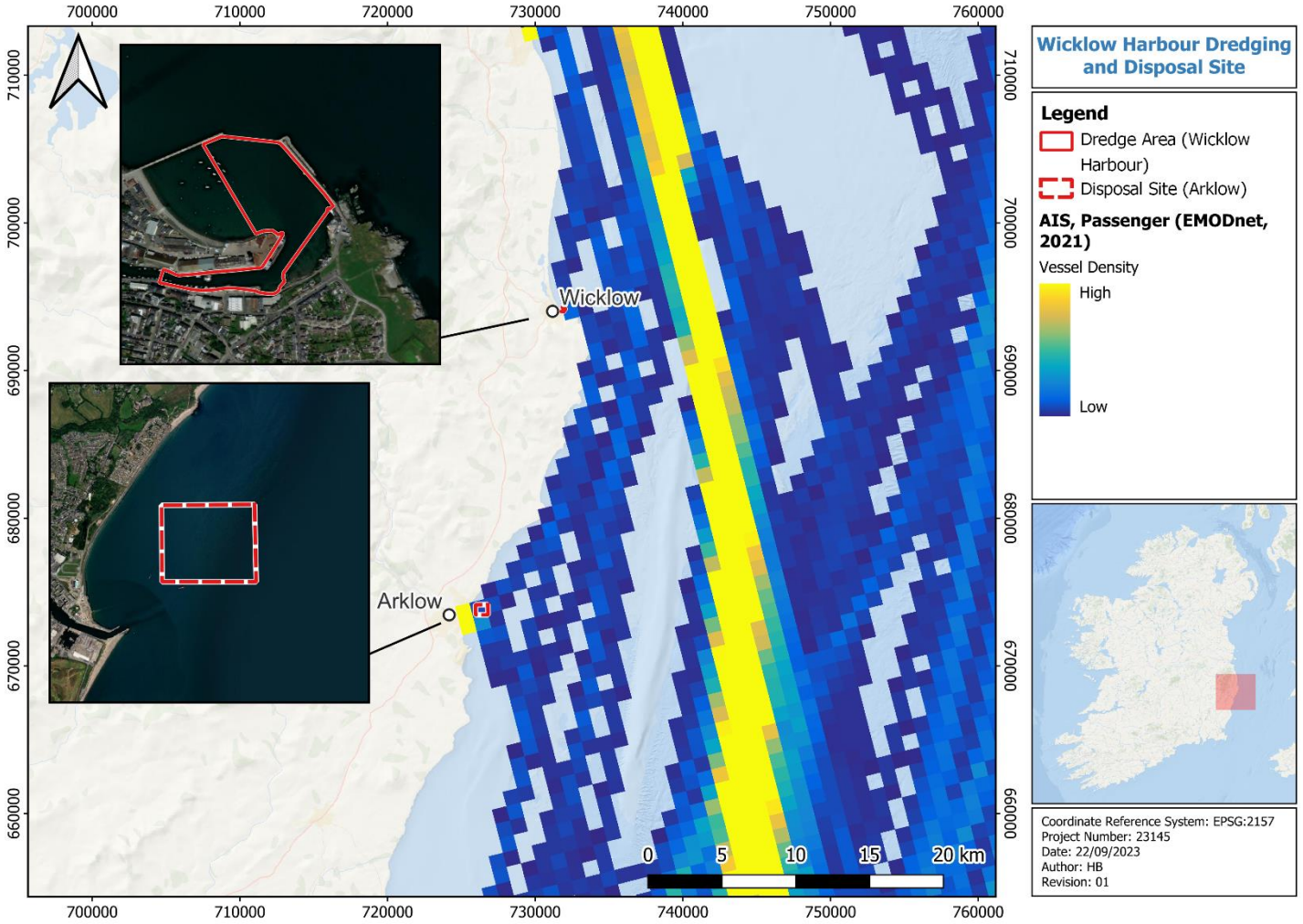

Figure 6-15 Vessel Density Types Dataset for 2021 (hours per square km per year) showing Fishing, Tanker, Cargo and Passenger Vessels within and surrounding the dredging and disposal areas (EMODnet, 2022)

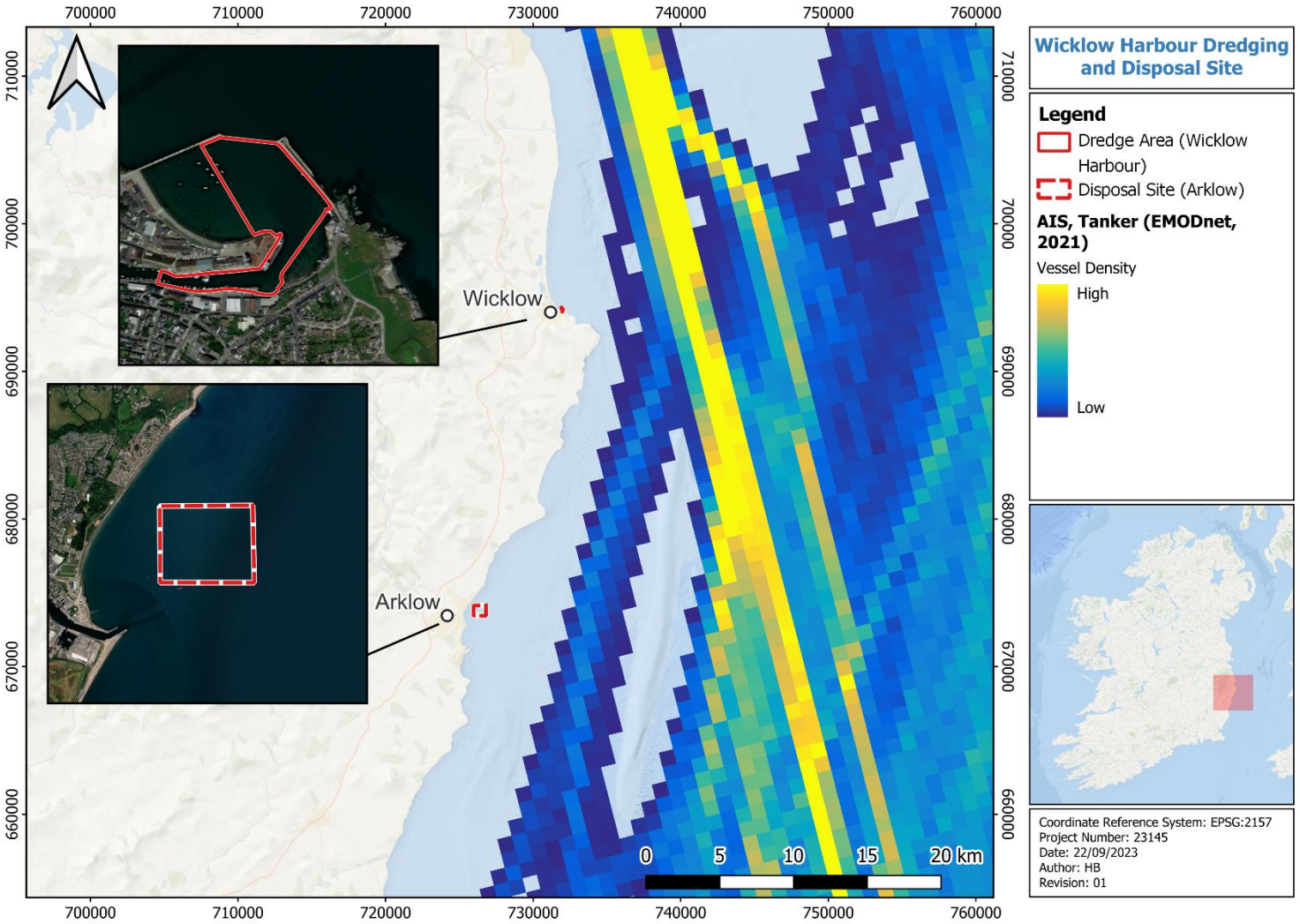

Figure 6-16 Vessel Density Types Dataset for 2021 (hours per square km per year) showing Tanker Vessels within and surrounding the dredging and disposal areas (EMODnet, 2022)

The main navigation routes within the proposed dredging area 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 (Figure 6-13).

The main navigation routes within the proposed disposal area are associated with the harbour traffic in and out of Arklow Harbour with cargo and passenger vessels transiting to and from Dublin Port and Rosslare Europort passing to the west of the proposed disposal area. Fishing vessels make up most of the marine traffic density in Arklow Harbour and the surrounding area (Figure 6-14).

Assessment of Potential Impacts

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.

As the proposed activities will be localised in nature, the effect on commercial shipping is considered not to be significant.

6.10 ARCHAEOLOGY AND CULTURAL HERITAGE

Shipwreck data available through both the INFOMAR project and National Monuments Database is shown in Figure 6-17.

INFOMAR is a joint venture between the Geological Survey of Ireland and the Marine Institute surveying Irelands seabed. Part of this involves the identification, mapping, and archiving of shipwrecks in Irish waters. The INFOMAR shipwreck data shows no confirmed shipwrecks within the dredge or disposal areas.

The National Monuments Database shipwreck data shows 1 unconfirmed shipwreck within the harbour near to the dredge area and one just outside the dredge area outside the eastern breakwater. Note many of the wrecks from the National Monuments Database are unconfirmed and, unlike the INFOMAR data, do not have recent survey data associated with their records. The Harbourmaster and a review of the 2023 benthic survey seabed imagery have confirmed that the shipwreck within the harbour is outside the dredging area.

The National Monuments Database shipwreck data shows no shipwrecks within the disposal area or within vicinity of the disposal site. 1 unconfirmed shipwreck is within the Avoca River, between the piers and the quay. 2 other unconfirmed shipwrecks are located ~0.5km north-west and ~0.8km north (closest point to closest point) of the proposed disposal area.

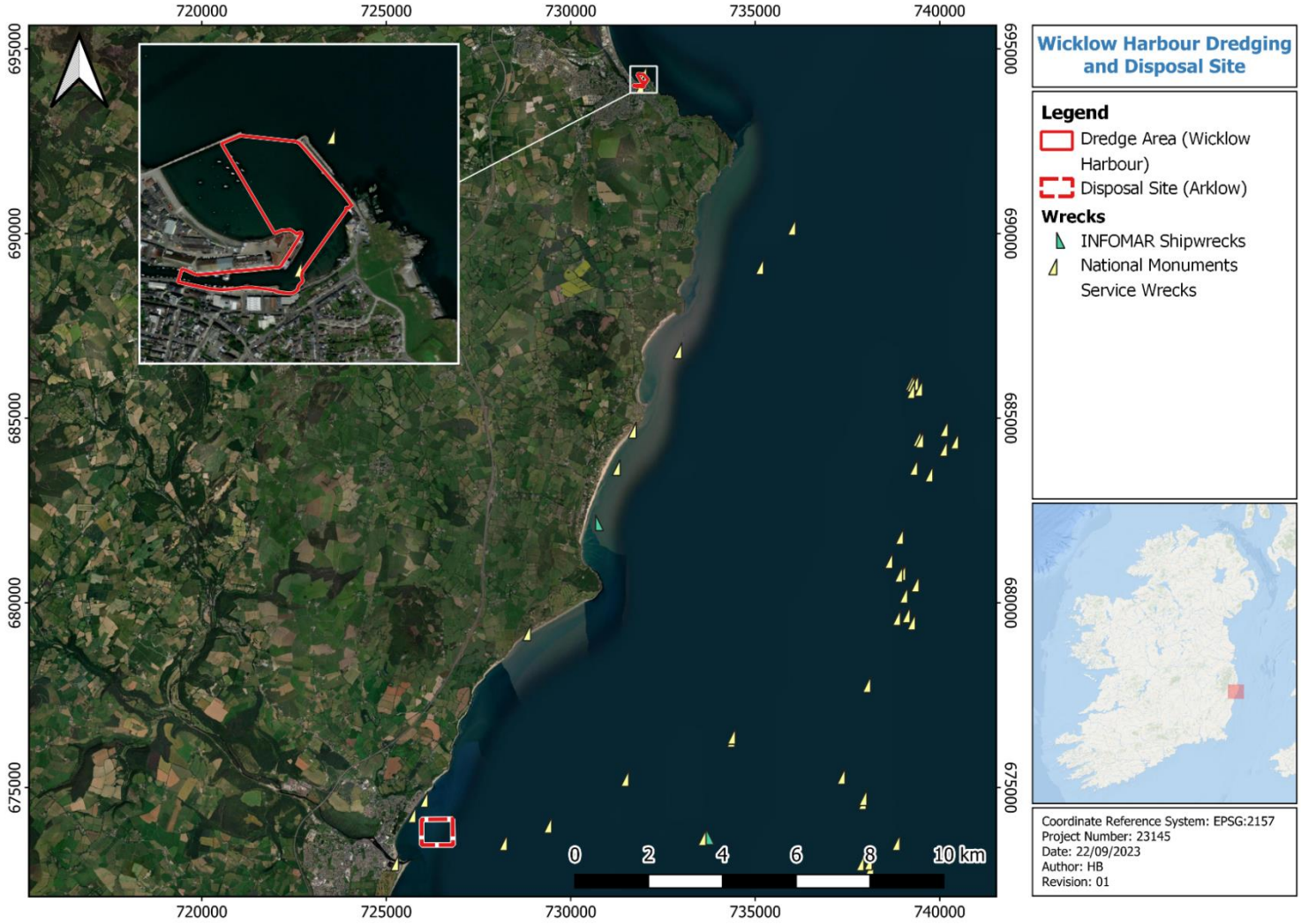

Figure 6-17 National Monument Service (NMS) (DAHG, 2020) and INFOMAR shipwreck data.

Assessment of Potential Impacts

The potential for unrecorded shipwrecks in the area is considered to be low. The National Monuments Database recorded unconfirmed shipwreck is outside the area of dredging.

6.11 POPULATION AND HUMAN HEALTH

The proposed dredging activity may result in a temporary and localised noise nuisance during operations in the harbour.

The port intends to establish a local communication plan in advance of the works to ensure that any issues, regarding noise or any other matter, can be managed promptly and appropriately. 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 dumping at sea activities.

6.11.1 TOURISM AND RECREATION

Wicklow Town is the capital town of Co. Wicklow. According to local history, the town was founded circa AD 795 by the Vikings. The Black Castle ruins which overlook the harbour stand as a reminder of the Norman invasion. The harbour and its surrounds play an integral part in the life of the town, both commercially and from a tourist point of view.

Principal urban centres are all located at harbours or estuaries, with sheltered bays, like those around the Wicklow region. Tourism is well established within Wicklow region to include Wicklow harbour area. Wicklow harbour and the surrounding area are serviced by the mainline railway which providing good access and transport from urban and coastal areas. Sailing is a popular activity with the Wicklow region and particularly in Wicklow harbour where they have the Wicklow Sailing Club and a number of sailing events every year to include famous Round Ireland yacht race (Marine Institute, 2020). Other popular spots for sailing, and other water-based activities, include Greystones, Bray and Brittas Bay with swimming being another popular activity. Wicklow harbour is important fishing port on the east coast. Coastal walking routes are often used along the Bray, Greystones and Brittas Bay. Scenic views are possible along the coastal bays and headlands route from Bray to Greystones with the use of the DART coastal railway line with easy access to all the locations and cliff walks (Marine Institute, 2020).

Arklow town is situated on the Avoca River and Estuary in the southern corner of Co. Wicklow. Historically, the port of Arklow was one of the busiest ports in Ireland and is renowned for its rich Maritime heritage including boat building and sea fishing. The fishing town character remains evident today within the area known as “The Fisheries”, where an impressive fleet of fishing boats remain in operation (Visit Wicklow, online), several docks and references to fishing grounds dating back centuries.

The town is connected to the rail Dublin/Rosslare rail line and is an excellent holiday location for tourists, where the Vale of Avoca is situated to the east, sandy beaches of Brittas Bay to the north and

the beautiful Clogga Bay ~6.5km south of the town. Riverwalks along the wide and meandering Avoca River is a haven for nature tourists, as well as the Arklow Rock Cliff Walk, which dominates the skyline to the South Coast, which was once an active volcano.

Assessment of Potential Impacts

Short term and localised impact of the proposed dredging and disposal activities on tourism and recreation may occur. This would include disturbance by noise generated during dredging activities in the harbour, potential disturbance to sailing and other water - based activities where possible harbour traffic limitation may be imposed on temporary basis. These activities may also influence on the recreational fishing where the fish may leave the adjacent area to avoid underwater disturbance generated by dredging and disposal activities.

However, to ensure against disruption to leisure and recreation activities in Wicklow Harbour, the port intends to establish a local communication plan in advance of the works to ensure that any issues, regarding noise or any other matter, can be managed promptly and appropriately.

A notice to mariners will be issued in advance of the proposed dredging and disposal activities. No specific exclusion zone will be sought; however, vessels will be asked to maintain a safe distance in keeping with accepted maritime safety practices.

As the proposed activities and related disruption will be temporary and localised, the effect on tourism and recreation is considered not to be significant.

6.12 Major Accidents and Disasters

The proposed dredging and disposal activities are not anticipated to exacerbate natural disasters such as earthquakes, subsidence, landslides, erosion or flooding.

Assessment of Potential Impacts

The potential for a major accident to arise as a result of the proposed activities will be minimised through mitigation measures including publication of a formal Marine Notice, lights, shapes and other internationally recognised identification or warning signals displayed on survey vessels, a communication protocol with the Wicklow Harbour Master and Arklow Harbour Master, and compliance with all requirements of the International Regulations for Preventing Collisions at Sea.

6.13 Climate

The survey will be conducted over a relatively short timeframe and effects contributing to climate change will not arise.

Assessment of Potential Impacts

There is not likely to be a significant effect on the environment.

6.14 WASTE

There will be no additional waste resulting from the dredging and disposal activities, other than dredged material. Any waste generated during the activities will be disposed of on land. There will be no planned release of potentially harmful substances or waste from the dredge 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. Therefore, it is considered not likely that there would be any occurrence of a pollution event, accidental or otherwise, that could directly or indirectly affect the environment.

6.15 MATERIAL ASSETS

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

6.16 INTERACTIONS

A review of available information for the area surrounding the Licence Area was undertaken to identify other activities and potential plans, projects and activities in the area. This included the DHLGH License Applications and Determinations search tool (DHLGH, 2023) and the Environment Protection Agency (EPA) Dumping at Sea Register (EPA, 2022b).

The dumping at sea sites in the vicinity of the Licence Area are shown in Figure 6-18.

The possible in-combination effects of other projects detailed below and the proposed site dredging activities were identified and assessed in Appendix I of the SISAA, where it was found that there were no likely in-combination effects.

Figure 6-18 shows dumping at sea sites in the vicinity of the dredging and disposal area (EPA, 2022b). Note the current application proposes to use the Dumping at Sea Site shown, as this was used for disposal of material dredged in the previous Wicklow Harbour dredging campaign in 2014.

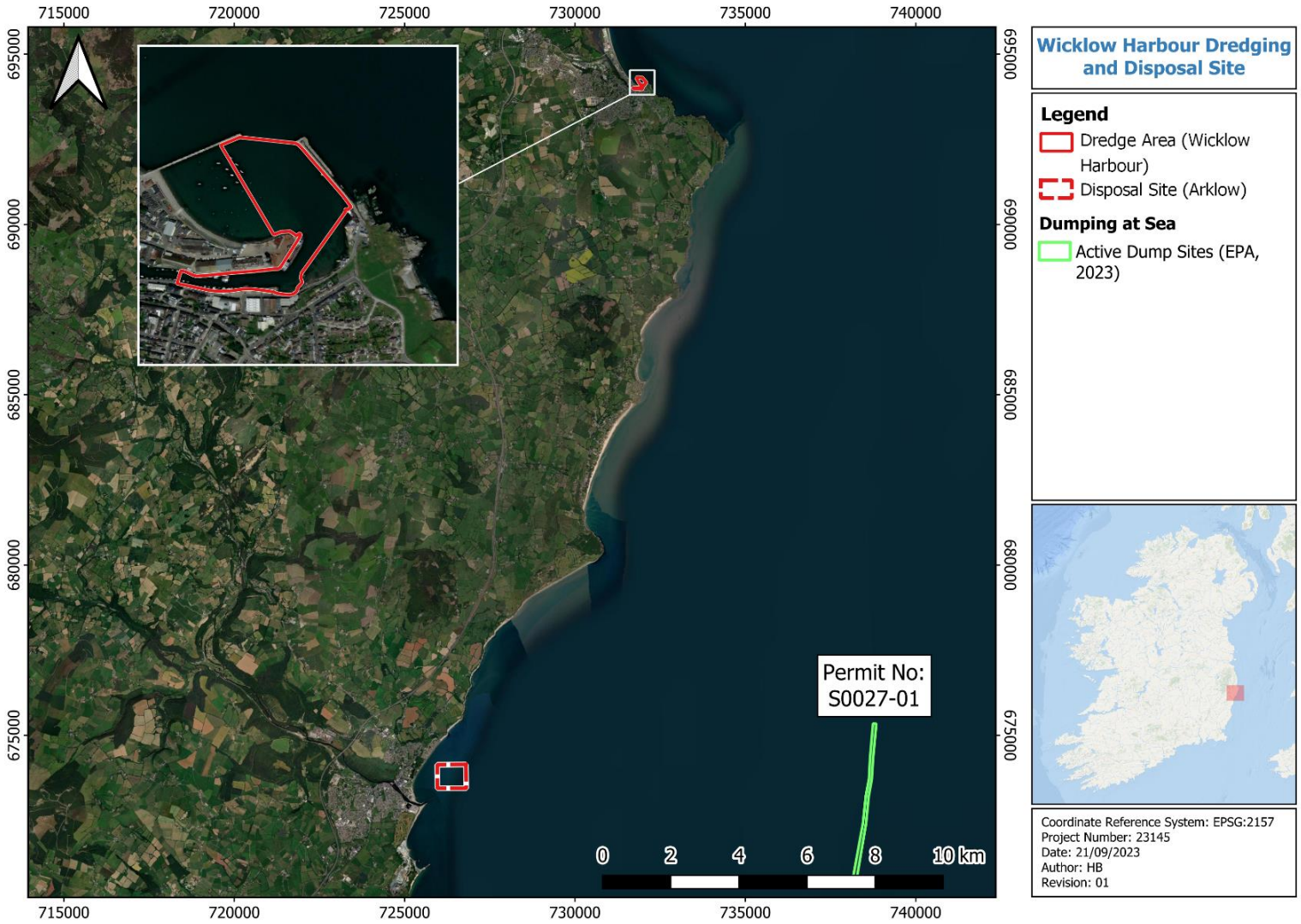

Figure 6-18 Dumping at Sea locations in vicinity of the dredge and disposal areas.

6.17 OTHER PROPOSED DEVELOPMENTS

A review of available information for the area surrounding the Marine Usage Licence dredging and disposal areas was undertaken to identify other activities and potential plans, projects and activities in the area. This included the DHLGH FLA Applications and Determinations search tool (DHLGH, 2023)– see Figure 6-19, and Figure 6-20.

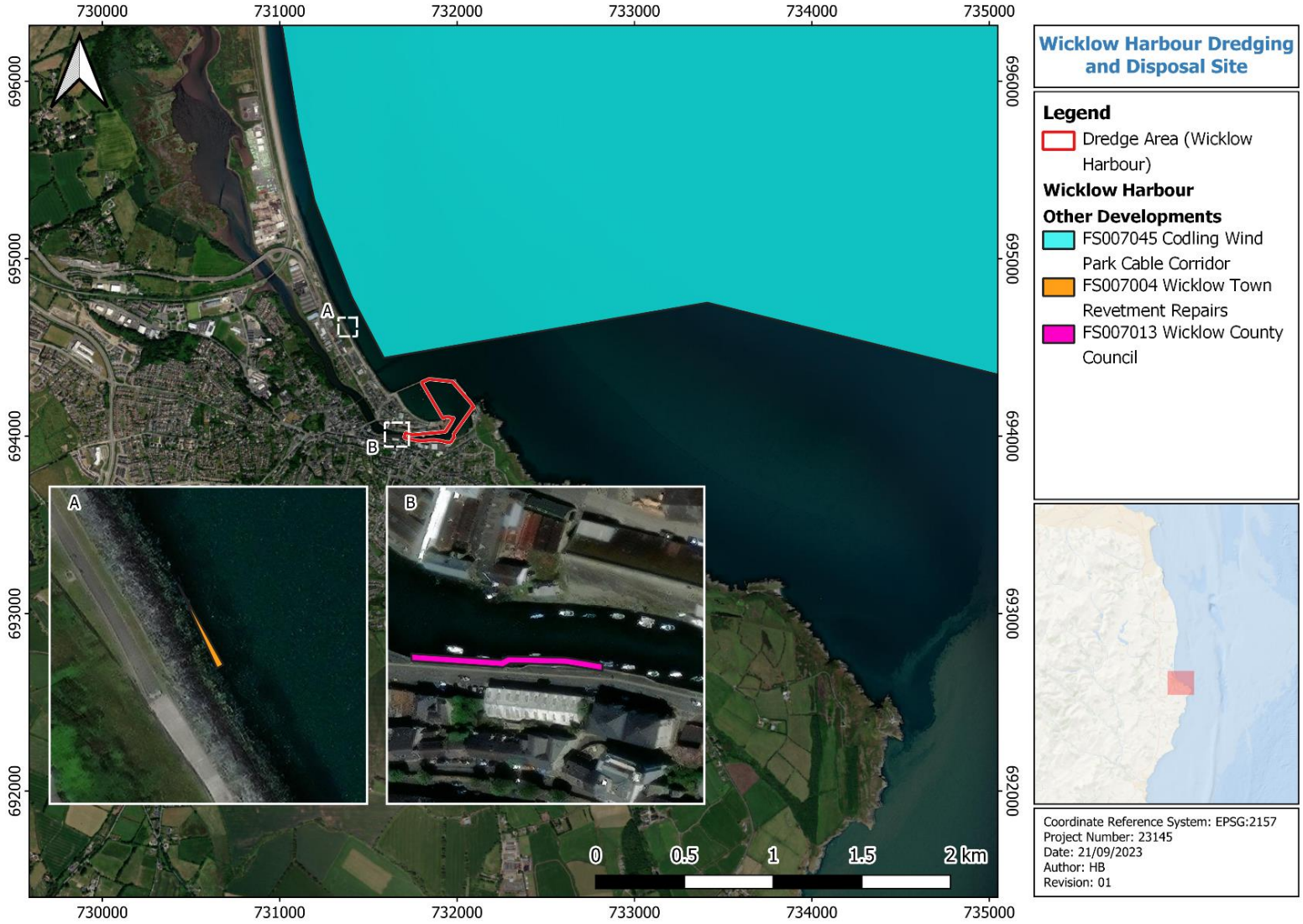

Figure 6-19 Other developments and activities in the vicinity of the Dredging Area.

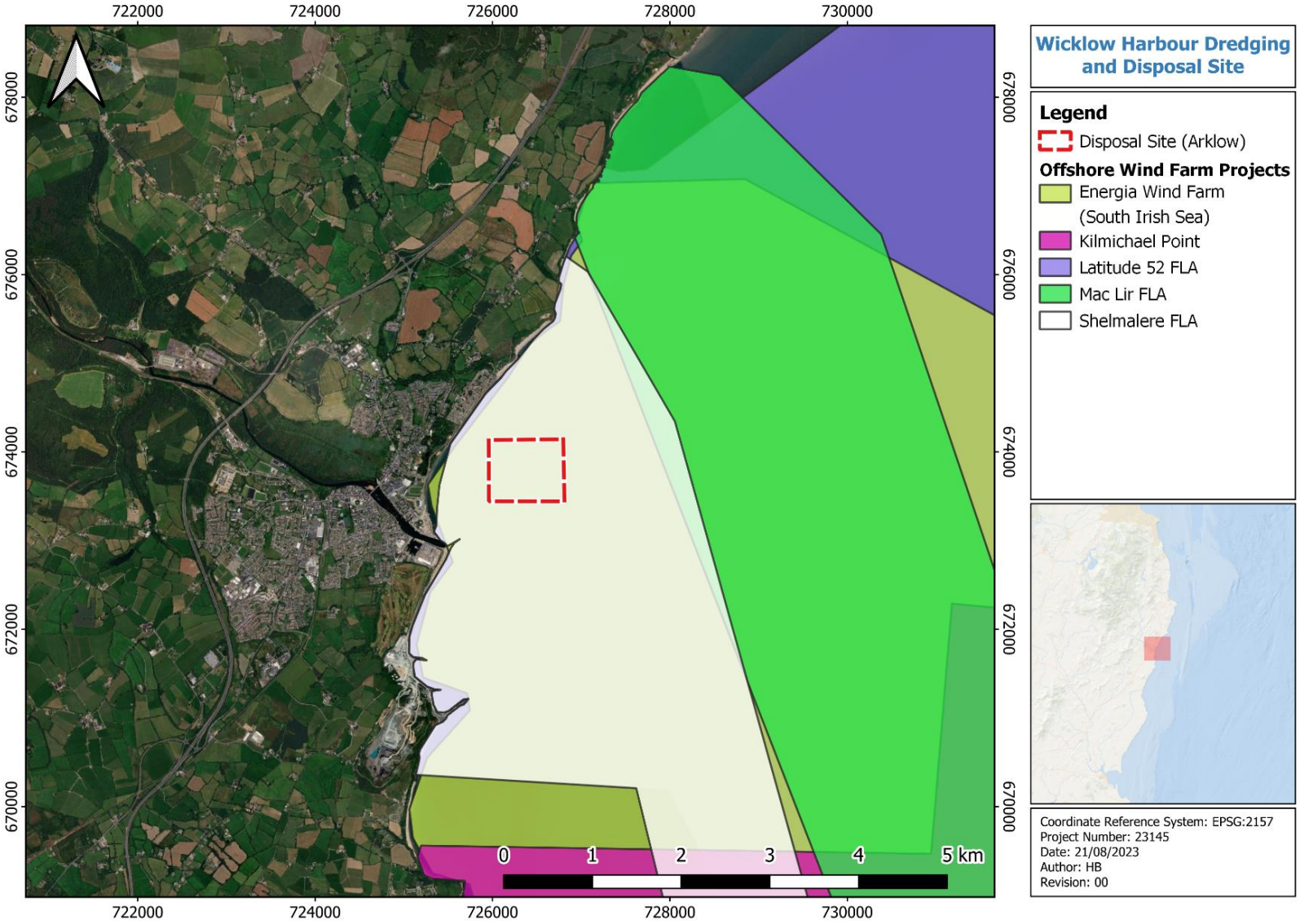

Figure 6-20 Other developments and activities in a vicinity of the Disposal Site (Arklow).

The chemical monitoring sites within the vicinity of the Marine Usage Licence Area include areas sampled in 1997 and 2011. This sediment sampling carried out in Wicklow Harbour found black gritty sediments with stone, shells and pebbles, sand and small shell fragments, and medium brown mud (EPA, 2022b).

The following developments were considered as having the potential to contribute to in-combination effects on the Natura 2000 sites identified:

- Codling Wind Park Ltd (FS007045)
- Wicklow Town Revetment Repairs (FS007004)
- Wicklow County Council (FS007013)
- Energia Wind Farm (South Irish Sea) (FS007048)
- Kilmichael Point (FS006788)
- Latitude 52 FLA (FS007232)
- Mac Lir FLA (FS007472)
- Shelmalere FLA (FS007261)

Locations of these projects are shown in Figure 6-19 and Figure 6-20, and the details of these projects, their interaction with the activities proposed and the potential for likely in-combination effects is set out in the SISAA.

The possible in-combination effects of the projects detailed above and the proposed site dredging activities were identified and assessed in Appendix I of the SISAA, where it was found that there were no likely in-combination effects.

7 SUMMARY OF MITIGATION MEASURES PROPOSED

The receiving environments and potential impacts for the maintenance dredging and disposal activity areas were identified above. A summary of the mitigation measures proposed for each of the receiving environments and any impacts identified above are described in below Table 7-1.

Table 7-1 Summary of the proposed mitigation measures for Wicklow Harbour dredging and Arklow disposal activities

	Proposed Mitigation Measures	
	Section	**Mitigation**
6.2	**Land and Soils**	Not required as all activities are in the marine environment.
6.3	**Water**	Chemical material used will be from the List of Notified Chemicals (approved chemicals) and discharged into the marine environment under the Offshore Chemical Notification Scheme. The port intends to establish a local communication plan in advance of the works to ensure that any issues can be managed promptly and appropriately. All proposed 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. 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 chemical 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.
6.4	**Biodiversity**	
6.4	**Marine Benthos**	As no likely significant effects are expected for any protected benthic habitat due to the proposed maintenance dredging and disposal activities, no mitigation measures are proposed.
6.4	**Natura 2000 Sites**	As no likely significant effects are expected for any QI or SCI of Natura 2000 sites due to the proposed maintenance dredging and disposal activities, no mitigation measures are proposed.

	Proposed Mitigation Measures	
6.4	**Marine Mammals**	No likely significant effects are expected for any marine mammals as a result of the proposed maintenance dredging and disposal activities; however, project vessels will be moving at a maximum speed of 13 knots during the transit to allow for marine mammal species to move away from the vessel should they be disturbed by the vessel presence.
6.4	**Birds**	As no likely significant effects are expected for any bird species due to the proposed maintenance dredging and disposal activities, no mitigation measures are proposed.
6.4	**Fish Ecology**	To avoid disturbance or impediment to the passage of fish during the critical migratory period (April to September), the following restrictions will be observed: • Ploughing operations will not occur between April to September • WID operations will not occur between April to September • TSHD operations will be restricted between April to September to a maximum of 12 hrs per day in the upper harbour, to ensure there is only temporary disturbances with large breaks in the operations to avoid disturbance or impediment to passage of fish. No restrictions in outer harbour. BHD operations will be restricted between April to September to a maximum of 12 hrs per day in the upper harbour, to ensure there is only temporary disturbances with large breaks in the operations to avoid disturbance or impediment to passage of fish. No restrictions in outer harbour.
6.5	**Commercial Fisheries and Aquaculture**	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. The proposed dredging and disposal activities will be temporary and have a short duration. The Harbourmaster will engage with the local fishing community in order to determine the full extent of fishing effort in the Foreshore Licence Area, and to minimise disruption to the activity.

		Proposed Mitigation Measures
		As no likely significant effects are expected for aquaculture operations or shellfish ecology in result of the proposed maintenance dredging and disposal activities, no mitigation measures are proposed.
6.6	**Air Quality**	No likely significant effects are predicted from the maintenance dredging and disposal activities on Air or Climate, therefore no mitigation measures were proposed.
6.7	**Noise and Vibration**	The port intends to establish a local communication plan in advance of the works to ensure that any issues, regarding noise or any other matter, can be managed promptly and appropriately. All proposed 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. No likely significant effects are predicted from the maintenance dredging and disposal activities on Vibration, therefore no mitigation measures were proposed.
6.8	**Landscape and Seascape**	As no likely significant effects are expected to any landscape or seascape in result of the proposed maintenance dredging and disposal activities, no mitigation measures are proposed.
6.9	**Marine Traffic**	Navigational channels within the site 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 and users of the navigational channels, at appropriate times. 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, dredge material transit 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 Port authorities to agree the timing of works and to agree a communication protocol.
6.10	**Archaeology and Cultural Heritage**	As no likely significant effects are expected for archaeological sites and shipwrecks as a result of the proposed maintenance dredging and disposal activities, no mitigation measures are proposed.

	Proposed Mitigation Measures	
6.11	**Population and Human Health**	The port intends to establish a local communication plan in advance of the works to ensure that any issues, regarding noise or any other matter, can be managed promptly and appropriately. All proposed 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.
6.11	**Tourism and Recreation**	The Harbourmaster will maintain communications with the local fishing communities and other marine users, including leisure users, in order to minimise disruption to leisure and recreation activities. A notice to mariners will be issued in advance of the proposed dredging and disposal activities. No specific exclusion zone will be sought; however, vessels will be asked to maintain a safe distance in keeping with accepted maritime safety practices.
6.12	**Major Accidents and Disasters**	Safety of shipping and navigation mitigation will include publication of a formal Marine Notice, lights, shapes and other internationally recognised identification or warning signals displayed on working vessels, communication protocol with the relevant Harbour Master and compliance with all requirements of the International Regulations for Preventing Collisions at Sea.
6.13	**Climate**	No likely significant effects are predicted from the maintenance dredging and disposal activities on Climate, therefore no mitigation measures were proposed.
6.14	**Waste**	No likely significant effects are predicted from the maintenance dredging and disposal activities on Waste, therefore no mitigation measures were proposed.
6.15	**Material Assets**	As no likely significant effects are expected for material assets as a result of the proposed dredging and disposal activities, no mitigation measures are proposed.
6.16	**Interactions**	Relevant mitigation measures were included in the Sections above where possible in-combination effects were identified on particular receptors. Adverse in-combination effects of the proposed maintenance dredging and disposal activities identified in Section 6.16 are not considered likely due to the:

		Proposed Mitigation Measures
		1. Implementation of effective communication between Wicklow County Council and those projects listed in Section 6.16; 2. Likely timing and phased nature of proposed maintenance dredging and disposal activities; 3. Temporary nature of proposed maintenance dredging and disposal activities; 4. Very localised and imperceptible effects of proposed maintenance dredging and disposal activities; and 5. Implementation of mitigation measures outlined above.
6.17	**Other Proposed Developments**	As no likely significant in-combination effects are expected as a result of the proposed dredging and disposal activities, no mitigation measures are proposed.

8 CONCLUSION

The EIA Screening exercise described above has concluded that the proposed maintenance dredging and disposal activities are not subject to the EIA Directive. No other EIA stages are therefore required, and no EIA is required.

The AIMU in this report has been undertaken based upon the information provided in this report, as well as in the information provided in the accompanying reports, and the implementation of the mitigation measures proposed therein. These reports are:

- Supporting Information for Screening of Appropriate Assessment (SISAA)
- Risk Assessment for Annex IV Species

This AIMU concludes that due to the nature, scale and location of the proposed maintenance dredging and disposal activities and proposed mitigation measures, there are no foreseeable significant effects on the environment to arise from the proposed maintenance dredging and disposal activities.

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APPENDIX I: ARKLOW BANK DISPOSAL SITE DATA INVENTORY

Survey	Date	Data collected	Notes
2022 Annual Monitoring Survey (HSL)	29/11/2022, 17/12/2022	Single beam bathymetry, side scan sonar, grab samples	5/5 grab stations sampled with mini-Hamon
2021 Annual Monitoring Survey (HSL)	13/01/2022	Single beam bathymetry, side scan sonar, grab samples	2/5 grab stations sampled with Van Veen; fails due to hard substrate
2020 Annual Monitoring Survey (HSL)	8/10/2020	Single beam bathymetry, side scan sonar, grab samples	2/5 grab stations sampled for macrofauna, 4 sediment samples collected but unclear if these are reps or from 4 stations, with Van Veen; sampling failure due to hard substrate. Sediment samples unlikely to be representative of seabed if insufficient grab volume attained
2019 Annual Monitoring Survey (HSL)	28/08/2019	Single beam bathymetry, side scan sonar, grab samples	2/5 grab stations sampled with Van Veen; fails due to hard substrate
2018 Annual Monitoring Survey (HSL)	29/08/2018	Single beam bathymetry, side scan sonar, grab samples	5/5 grab stations sampled with Van Veen. Note to obtain a sample P5 was moved westwards to the edge of the outer box and midway between points P1 and P2 and renamed P5A

Survey	Date	Data collected	Notes
2017 Annual Monitoring Survey (HSL)	18-19/09/2017	Single beam bathymetry, side scan sonar, grab samples	5/5 grab stations sampled with Van Veen. 25 m spacing for acoustic survey
2016 Annual Monitoring Survey (HSL)	6/09/2016	Single beam bathymetry, side scan sonar, grab samples	5/5 grab stations sampled with Van Veen. 50 m spacing for acoustic survey
2016 6-Month Monitoring Survey (HSL)	4/02/2016	Single beam bathymetry, side scan sonar, grab samples	5/5 grab stations sampled with Van Veen. 50 m spacing for acoustic survey
2008/2009 environmental baseline surveys (Moore Group)	December 2008 and February 2009	Single beam bathymetry, side scan sonar, magnetometer, benthic core and seabed imagery (dive), drogue tracking (5m depth), Valeport 308 current meters and Valeport 740 stationary tide gauge samples	Benthic fauna sampling undertaken as an in situ photographic and HD video dive with four replicate core samples at 6 of the sampling locations using no less than 0.1m2. The core samples were sieved through a 1mm stainless steel sieve and the remaining infauna in plastic containers and preserved in a buffered formalin solution. 50m spacing for acoustic survey.
2007 Benthic survey (Aquafact)	June 2007	Benthic cores (dive)	5 replicate samples at 7 stations with 20cm diameter, 40cm long cores for macrofauna, organic carbon and PSA. Benthic samples wet sieved on a 1mm mesh sieve not 24 hours after collection and stained with formalin and preserved in alcohol.

APPENDIX II: CONSIDERATION OF LIKELIHOOD OF IN-COMBINATION EFFECTS

Project/Activity/Development name and application/licence reference number	Licence status	Proposed activities	Spatial Overlap and Area (if applicable)	Potential in – combination effects	Conclusion
Codling Wind Park Ltd (FS007045)	Approved – works underway	Geophysical, Geotechnical, Fish & Shellfish, surveys, Benthic & Intertidal Surveys, Archaeological surveys, Metocean and Floating LiDAR, Marine Mammal Acoustic POD survey	Overlap with Dredge Disposal Area, no overlap with Dredge Area	There is a spatial overlap with this project and the proposed dredge disposal area, however the two projects are not likely to result in in-combination effects given the nature of the activities proposed under the two applications.	**No likely in-combination effects**
Wicklow Town Revetment Repairs (FS007004)	Consultation	Maintenance and repair of an existing revetment Re-profiling of existing revetment and	No spatial overlap	There is no spatial overlap with this project and the proposed dredge and disposal area. The two projects are not likely to result in in-combination effects given the nature of the activities proposed under the two applications.	**No likely in-combination effects**

Project/Activity/Development name and application/licence reference number	Licence status	Proposed activities	Spatial Overlap and Area (if applicable)	Potential in – combination effects	Conclusion
		placement of rock armour			
Wicklow County Council (FS007013)	Consultation	Installation, use and maintenance of a floating pontoon, gangway and associated infrastructure. 4 weeks for installation for a permanent pontoon	No spatial overlap	There is no spatial overlap with this project and the proposed dredge and disposal area. The two projects are not likely to result in in-combination effects given the nature of the activities proposed under the two applications.	**No likely in-combination effects**

APPENDIX III: FISHERMEN LETTER OF SUPPORT

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