This report has been cleared for submission by Marie O'Connor, Programme Manager. Eve O'Sullivan 4 February 2021

OFFICE OF ENVIRONMENTAL SUSTAINABILITY

INSPECTOR'S REPORT ON A DUMPING AT SEA PERMIT APPLICATION

To:	Dr. Eimear Cotter, Director	
From:	Ciara Maxwell, Inspector	Environmental Licensing Programme
Date:	4th February 2021	
RE:	Application for a Dumping at Sea Permit from **Drogheda Port Company**, Permit Register No. **S0015-03.**	

Application Details	
Description of activity:	The application is for the loading and dumping at sea of 2,816,000 tonnes of dredged material from the River Boyne estuary and seaward approaches.
Permit application submitted:	6th December 2019
Public notice:	10th December 2019 *(Drogheda Independent)*
Site visit:	None (Covid-19 restrictions)
Submissions received:	None
Comments from notified consultees received:	Department of Culture, Heritage and the Gaeltacht (10th March 2020, 19th August 2020) Department of Agriculture, Food and the Marine (24th February 2020, 2nd March 2020)
Comments from Dumping at Sea Advisory Committee received:	Marine Institute (5th March 2020)
Section 5(2) Notice issued:	24th June 2020, 14th September 2020, 22nd January 2021
Response to Section 5(2) Notice received:	18th August 2020, 7th December 2020, 22nd January 2021

1. Introduction

Drogheda Port Company provides port facilities for both general freight and container services and maintains approximately 7km of the Boyne Estuary extending from Drogheda town to the sea at Mornington. There are a number of shipping berths and swing basins (turning circles) along the length of the navigation channel and within the town quays. Training walls were constructed along the banks of the river in the 1850s by the then Drogheda Harbour Commissioners to capture the main river flow and increase the tidal exit velocity, which produce a natural scouring effect. The walls resulted in the formation

of estuarine polders (low lying tracts of land prone to flooding) to the north and south of the training walls, which provide important habitats for wintering waterbirds.

The estuary requires regular maintenance dredging to facilitate safe navigation, particularly the outer seaward approaches which are vulnerable to coastal drift and, to a lesser extent, the channel, berths and swinging basins where deposition is caused by a combination of riverine and tidal processes. The need for maintenance dredging within the channel, berths and swinging basins has increased following capital dredging projects undertaken by Drogheda Port Company, most notably in 1999/2000. According to the applicant, while some pre-planning of maintenance dredging is possible, much of the activity is primarily weather driven, i.e., persistent and continuous easterly wind or storm events which are unpredictable. Therefore, the applicant states that a year-round maintenance dredging policy for the river mouth and seaward approaches without any encumbrances is essential to maintain the viability of port operations. This application relates to the loading of dredged material from the navigational channel, berths, ship swing basins, artificial dredged pockets, entrance and seaward approaches of the estuary and the dumping of the material at two established dumping sites in the Irish Sea.

The current dumping at sea (DAS) permit held by Drogheda Port Company, Reg. No. S0015-02, was granted by the EPA on the 11th February 2013. The permit authorised loading and dumping activities associated with maintenance dredging at Drogheda Port over an eight year period, expiring 12th February 2021. Clerical Amendment A was issued by the Agency on 23rd April 2013 to correct typographical errors in the original permit granted. The current application proposes the loading and dumping of equivalent quantities of dredged material, at the same loading and dumping sites, using the same techniques as those authorised by the DAS Permit Reg. No. S0015-02. An Environmental Impact Assessment Report (EIAR), dated December 2019, was submitted by the applicant in support of the DAS permit application. While the Foreshore Act 1933 as amended - which regulates dredging in Ireland - contains Environmental Impact Assessment (EIA) provisions, no such provisions are contained within the Dumping at Sea Act 1996 as amended. Therefore, while the Agency does not have the provisions to carry out EIA for loading and dumping activities under current legislation it shall have regard to all available information on the proposed activities and all supporting documentation provided in the application, including the EIAR.

Only the loading and dumping activities are the subject of this application; the dredging activity is the subject of a Foreshore Licence application granted by the Department of Housing, Local Government and Heritage (DHLGH) in 2013 (Ref. FS005747), which authorised maintenance dredging and beneficial re-use of some of the dredge material covering the period 10th April 2013 - 9th April 2021. The Marine Licence Vetting Committee (MLVC) carried out EIA Screening and determined that EIA was not required and the then Minister for the Environment, Community and Local Government granted the current Foreshore Licence (Ref. FS005747)[1] in May 2013.

The applicant has submitted an application to DHLGH for a new Foreshore Licence for maintenance dredging and partial re-use of sediments over the period 2021 - 2029 (Ref. FS007028), which is currently under assessment. An 'Environmental Report' was submitted with the foreshore licence application (Ref. FS007028) which is under assessment by DHLGH.

2. Consideration of alternatives to dumping at sea

The applicant has investigated the feasibility of alternative and beneficial uses of the dredged material from the River Boyne estuary and seaward approaches for a number of decades. The dredged material is of two distinct types, silt/mud from the channel, berths

[1] Details of Foreshore Licence (Ref. FS005747), including MLVC report, are available on the DHLGH website, http://www.housing.old.gov.ie/planning/foreshore/applications/drogheda-port-company.

and basins and sand/gravel from the seaward approaches. Potential alternative uses considered include:

- Engineering uses – beach nourishment, land creation/reclamation or improvement, landfill cover, offshore berm creation and coastal protection works
- Environmental enhancement – wetland habitat creation/enhancement, sediment cell maintenance, fill for abandoned mines/quarries
- Agricultural/product uses – concrete manufacturing, road sub-base construction, landfill liner, manufactured topsoil, production of bricks/ceramics.

The conclusion of the applicant's assessment is that for material of a high moisture and silt/mud content there is no other suitable alterative to dumping at sea, having regard to environmental, economic, logistics and amenity considerations. The applicant proposes to re-use clean sand as a raw material for concrete manufacturing/road construction. As mentioned in Section 1 above, the Foreshore Licence granted to Drogheda Port in 2013 (Ref. FS005747) authorises the extraction and sale of *"a maximum of 60,000 cubic metres of Material per annum obtained only from the Extraction Area to any and all third parties to be utilised for construction-related purposes".* The Marine Licence Vetting Committee (MLVC) report to the Minister, recommending the grant of that licence subject to conditions, assessed the proposal to bring ashore 60,000m^3 of sand dredged from the river entrance and seaward approaches and its subsequent commercial re-use. The MLVC was satisfied based on hydraulic modelling results submitted that the proposal did not represent "over dredging" or "sand mining", given the commitment by Drogheda Port Company to dredging only when water depths are reduced below a safe navigational level, and was not likely to result in significant environmental impacts. It is noted that the current Foreshore Licence application under consideration by DHLGH (Ref. FS007028), proposes the re-use of the same quantity of sand as a raw material in the manufacture of concrete for use in buildings, roads and other civil engineering works. This re-use option applies only to sandy material from the seaward approaches; no suitable alternatives to dumping at sea exists for the fine muddy material from the channel, berths and swinging basins. It is intended that the remainder of the dredged material (see quantities in Table 1 below) will be disposed of at sea.

Condition 3.18 of the recommended permit requires the applicant to continue to investigate alternative re-use options for the dredged material and to report on its investigations in the Annual Environmental Report (AER).

3. Description of operations

The charts included with the application shows that dredged material will be loaded from navigational channel, berths, ship swing basins, artificial dredged pockets, entrance and seaward approaches of the Boyne estuary *(Appendix 1)*. Table 1 below summaries the quantities proposed to be dredged based on data on quantities dredged historically and an annual contingency quantity. These quantities are equivalent to the quantities authorised to be dumped under the current DAS permit, Reg. No. S0015-02. The proposed contingency quantity is to allow for unexpected events that may impede the navigational channel, e.g. storm deposition or the overflow of material from the estuarine polders into the channel such as occurred in 2001. The use of the contingency has formed part of the assessment and the recommended permit stipulates that it shall only be used if the loading of this material is required to maintain navigable depths, as evidenced by pre-dredge and post-dredge bathymetric surveys (Condition 3.9).

As shown in Table 1, the majority of maintenance dredging is required in the seaward approaches, where deposition is heaviest due to coastal drift which produces a net transport of sand in a northerly direction. While maintenance dredging within the channel is typically a planned event, the timing and frequency of dredging at the seaward approaches is wind-driven and less predictable.

Table 1: Total quantities of material to be dumped annually.

Location	Annual quantities	
	Cubic metres	Tonnes (wet weight)
Channel from town to sea, including all berths and ship swing areas	30,000	192,000
Entrance and seaward approaches	90,000	
Contingency	100,000	160,000
	Total, incl. contingency:	352,000

Loading will take place primarily by trailing suction hopper dredger (TSHD), although the applicant states that a grab, backhoe or plough dredger may occasionally be used to remove material from confined areas that are inaccessible to the TSHD (Conditions 3.6 and 3.7). The dredged material will be dumped approximately 4 km offshore at two dumping sites A1 and A2 that have previously been used by the applicant *(Appendix 1)*. The proposed operation is described in Table 2.

Table 2: Summary of operations

Operation	Comment
Type of activity	Loading and dumping activities
Reason for operations	Maintenance dredging of navigation channel and seaward approaches
Method of loading/dumping	Trailing suction hopper dredger, supported by plough dredger, backhoe dredger and grab dredger. Dumping via hull bottom doors or split barge.
Estimated time to complete	Typically 2 to 3 planned campaigns (each lasting 2-3 weeks) annually, with dredging carried out twice daily for 3-4 hours around the high water tidal phase and contingency to respond to unforeseen events, as provided for in Condition 3.9.
Multi-annual permit application	Yes, annually over 8 years (2021-2029)
Maximum tonnage	352,000 tonnes, including contingency

4. Characteristics of the material for disposal

15 sediment samples taken from representative locations in the Boyne river/estuary at Drogheda Port were analysed for granulometric and chemical composition on 5th April 2019. Two further samples, one each from dumping sites A1 and A2, were also analysed; these results are discussed in Section 5 of this report. Granulometrically the Boyne river/estuary samples analysed consisted on average of slightly sandy organic silt or slightly gravelly slightly silty sand, with coarser sediment including some gravel, predominantly in the outer approaches.

The chemical composition of the sediment samples analysed is summarised in Table 3 below, with reference to published Irish action levels[2]. Sediments below the lower level

[2]As published in Cronin, M., McGovern, E., McMahon, T. & Boelens, R., 2006, "Guidelines for the Assessment of Dredge Material for Disposal in Irish Waters", Marine Environment and Health Series No. 24, Marine Institute,

(Class 1 sediments) are considered essentially clean and suitable for dumping at sea, sediments that exceed the upper level (Class 3 sediments) are considered unsuitable for conventional dumping at sea, while sediments between the upper and lower action levels (Class 2 sediments) must be assessed for dumping at sea using a weight of evidence approach.

The sampling programme was developed and conducted by the applicant in consultation with the Marine Institute.

Table 3: Composition of the material for disposal with reference to Irish Action Levels.

Parameter	Result (no. of samples)			Comment
	Class 1 sediments	Class 2 sediments	Class 3 sediments	
Arsenic	15	0	0	Samples clean
Cadmium	13	2	0	Two samples exceeded lower action level (AL)
Chromium	15	0	0	Samples clean
Copper	13	2	0	Two samples exceeded lower AL
Nickel	15	0	0	Samples clean
Lead	14	1	0	One sample (DP11) exceeded lower AL
Mercury	15	0	0	Samples clean
Zinc	14	1	0	One sample (DP11) exceeded lower AL
TBT & DBT **Note 1**	14	0	0	Samples clean
γ-HCH (Lindane) **Note 2**	14	0	0	Samples clean
HCB **Note 3**	14	0	0	Samples clean
PCB **Note 4**	13	1	0	One sample (DP16) exceeded lower AL for congeners 052, 101, 138, 153, 180 and 118.
PCB **Note 5**	13	1	0	One sample (DP16) exceeded lower AL
PAH **Note 6**	13	1	-	One sample (DP15) exceeded lower AL
TEH **Note 7**	14	0	-	Samples clean

Note 1: Sum of tri-butyl and di-butyl tin.
Note 2: Gamma-hexachlorocyclohexane.
Note 3: Hexachlorobenzene.
Note 4: Individual congeners of ICES 7 polychlorinated biphenyls (PCB 028, PCB 052, PCB 101, PCB 138, PCB 153, PCB 180, PCB 118).
Note 5: Sum of ICES 7 polychlorinated biphenyls (PCB 028, PCB 052, PCB 101, PCB 138, PCB 153, PCB 180, PCB 118).
Note 6: Sum of 16 polycyclic aromatic hydrocarbons (Naphthalene, Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, Anthracene, Fluoranthene, Pyrene, Benzo(a)anthracene, Chrysene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Dibenzo(ah)anthracene, Benzo(ghi)perylene, Indeno(123-cd)pyrene).
Note 7: Total extractable hydrocarbons.

In general, Irish marine sediments may contain elevated concentrations of nickel and arsenic, even in areas where no source of contamination exists, reflecting natural background levels, whereas elevated concentrations of other parameters typically indicate inputs from anthropogenic sources. This assessment takes account of the Marine Institute's 2019 *'Addendum to the 2006 Guidelines for the Assessment of Dredged Material*

and Marine Institute, 2019, "Addendum to 2006 Guidelines for the Assessment of Dredged material in Irish Waters (Cronin *et al*)", both available at: http://www.epa.ie/licensing/watwaste/dumping/.

in Irish Waters', which revised (upwards) the lower action levels for arsenic and nickel based on evidence of background concentrations.

The samples from Drogheda Port demonstrated that the sediment is largely uncontaminated, with concentrations of most determinands for most samples falling below the lower action levels. There is evidence of low category 2 levels of contamination in some samples, mainly copper and cadmium. One of two samples from the 'Swing Basin' turning area (DP11) demonstrates low Class 2 concentration levels of cadmium, lead and zinc (see location map in *Appendix 2*). The Marine Institute was consulted as part of the assessment (Section 7 below) and had no objection to the material being dumped at sea. The Marine Institute noted that sediment chemistry is broadly in line with previous results, though concentrations of lead and cadmium in sample DP11 (from the 'Swing Basin' turning area) are marginally higher than those previously reported. The Marine Institute recommended that material from the 'Swing Basin' turning area be dredged first and mixed in the barge with clean sediment from further down river, before disposal at Dumping Site A1 in 14m water depth. The sediment will subsequently be covered with the remaining sediment, in effect capping it.

Condition 3.7 includes the requirement for sequencing of loading and dumping activities such that loading shall be undertaken at the Port's 'Swing Basin' turning area (sediment sampling location DP11) first prior to loading material from further down river into the vessel and this material shall be dumped at Dumping Site A1 only. The recommended permit (RP) includes a requirement for re-testing of the dredged material on a three-year cycle in order to confirm its ongoing suitability for dumping at sea (Condition 4.5.1). Following submission of the results of the sediment analyses, the agreement of the Agency must be obtained before loading and plough dredging activities may proceed (Condition 4.5.2).

Radiological analysis of the marine sediments (5 grab samples) at Drogheda Port was carried out as part of the sediment analysis in May 2019. The results of the analyses indicate that dumping of these materials at sea will not result in a radiological hazard.

It is considered, based on the characteristics of the material to be disposed, that the dredged material in question is suitable for dumping at sea subject to the conditions included in the RP.

5. Receiving environment and impact

As part of the assessment, the potential impacts of the proposed loading and dumping activities on the marine environment were examined (see Table 4 below).

Table 4: Characteristics and sensitivity of the loading area and dumping sites.

	Loading Area		**Dumping Sites A1 and A2**	
Characteristic	**Classification**	**Comment**	**Classification**	**Comment**
Receiving waterbody name & type	Boyne Estuary (EA_1010_1011) Boyne Estuary Plume Zone (EA_010_0000)	Transitional water body Coastal water body	Site A2 is located within the Louth Coast (HA06) (NB_025_0000) coastal water body	Site A1 is located outside the WFD boundary for coastal water bodies

WFD overall status	Boyne Estuary – Moderate Status; WFD Monitoring Period 2013-2018 Boyne Estuary Plume – Moderate Status; WFD Monitoring Period 2013-2018	Nutrients is the primary pressure for Boyne Estuary and adjacent plume zone. Boyne Estuary is designated as a heavily modified water body (HMWB) due to flood defences, navigation and dredging. This HMWB designation is currently under review.	Status of the Louth Coast (HA06): High	WFD 2013-2018 reporting period [extrapolated]
Other Considerations	The Boyne Estuary is used for shipping/port activities and commercial fishing. It is used for angling and leisure craft. Archaeological remains including the "Boyne Boat" and "Viking Boat" close to beacons in the navigation channel.		Shipping and commercial fishing occur in the vicinity of the dumping sites. The inshore waters outside the Boyne estuary is home to a Razor clam *(Ensis siliqua)* fishery. There are a number of recreational beaches shoreward of the dumping sites.	
Designated areas				
Shellfish Waters	Balbriggan/Skerries (PA2_0063) is approx. 2 km south of the estuary mouth.	No significant impacts anticipated.	Balbriggan/Skerries (PA2_0063) is approx. 3.5km south of Site A1. Dundalk Bay (IEPA2_0044) is approx. 5.5km north of site A2.	No significant impacts anticipated.
SAC	River Boyne and River Blackwater (002299); Boyne Coast and Estuary (001957)	The loading activity will take place within the SAC boundaries. The RP includes mitigation measures to reduce potential impacts on SACs.	Site A2 is 0.8km north east of Boyne Coast and Estuary SAC. Site A1 is approx. 4km east of Boyne Coast and Estuary	The RP includes mitigation measures to reduce potential impacts on SACs.
SPA	Boyne Estuary (004080)	Loading will occur within the SPA boundary. The RP includes mitigation measures to reduce potential impacts on SPAs.	Boyne Estuary SPA is approx. 1.5 km south west of Site A2 and 3.5 km west of site A1.	The RP includes mitigation measures to reduce potential impacts on SPAs.
Bathing Waters	Laytown/ Bettystown (PA3_0107) is approx. 2km south of the estuary mouth.	No significant impacts likely.	Site A2 is approx. 700m east of Seapoint (PA3_0088) and 1km south-east of Clogherhead (PA3_0089).	Condition 3.4 of the RP prohibits dumping at Site A2 during the bathing season.

Loading Area

The River Boyne rises in the north midlands and enters the sea at Mornington on the Louth/Meath border. The Boyne estuary extends for approximately 14 km from the sea at Mornington to several kilometres upstream of Drogheda town. The majority of the loading activity will take place within the Boyne Estuary (EA_01_0100) transitional water body, while the seaward approaches extend into the Boyne Estuary Plume Zone (EA_010_0000) coastal water body. The current status of these water bodies under Water Framework Directive monitoring is Moderate, with nutrients identified as the primary pressure. The Boyne Estuary is designated as a heavily modified water body (HMWB) due to flood defences, navigation and dredging and this designation is currently under review.

To minimise the impact of the proposed activities on the receiving environment, and as stipulated in the current permit Reg. No. S0015-02, Condition 3.9 of the recommended permit states that the annual contingency quantity specified in *Schedule A.1* shall only be used if the loading of this material is required to maintain navigable depths, as evidenced by pre-dredge and post-dredge bathymetric surveys.

Sediment dispersion modelling

Dredging plume modelling simulations were undertaken in 2019 of suspended sediment plumes resulting from trailing suction hopper dredging at three locations within the loading area -

(i) the Boyne entrance bar,

(ii) Tom Roe's terminal berth and the 'Swing Basin' turning area, and

(iii) the river navigation channel.

It should be noted that the recommended permit addresses the loading and dumping (including plough dredging[3]) activities only. The maintenance dredging activity - via trailing suction hopper/grab/backhoe dredger - is the subject of Foreshore licensing, as outlined in Section 1 of this report.

The results of the simulations show that the dredging plume at all locations will have a limited and transient extent. At the entrance bar, away from the immediate area around the dredger, the total suspended sediment concentrations predicted from dredging sand material are less than 80mg/l and the plume does not approach the area where Little terns nest on the northern side of the training walls. According to the modelling report, regular storm wave events in the area around the bar and adjoining beaches give rise to suspended sediment concentrations of up to 380mg/l. Predicted sediment deposition levels generated by the dredging activity around the bar and estuary area are minimal (<0.0025mm thickness).

Simulations of the maintenance dredging activities of the fine silt deposits from Tom Roe's terminal berth, the swing basin and the river channel show that apart from the immediate area around the dredger, the suspended sediment plume concentrations are generally low (<80mg/l) and disperse relatively quickly. Sediment deposition levels predicted at the berth, basin and around the channel and estuary polder area are minimal (<0.0005mm) as material is completely dispersed by a combination of tidal and river flows.

Given the short duration and intermittent nature of the proposed loading activities and the findings of the plume modelling simulations, it is considered that the proposed loading activities will have no significant impact on water quality in the estuary, subject to compliance with conditions in the recommended permit to minimise water quality impacts. Loading shall be primarily by trailing suction hopper dredger which releases a minimum amount of sediment into the water column (Condition 3.5) and use of backhoe, grab and plough dredgers is restricted to confined areas (Condition 3.6). The applicant shall limit the release of suspended solids into the water column during loading and on voyages to

[3] Under Section 1 of the Dumping at Sea Act 1996 as amended, the technique *plough dredging* is included in the definition of "dumping" where it is used for any deliberate disposal of material in the maritime area.

and from the dumping sites (Condition 3.12). For operational reasons, loading activity in the Boyne Estuary takes place around the high tidal phase with overflow from the dredger only occurring in the latter stages of the loading operation; this typically coincides with the ebb tide which limits the extent and spread of the sediment plume. Condition 3.8 prohibits loading during periods of low tide, which will allow windows of low turbidity in the estuary. Condition 5.4 requires that the applicant shall update and maintain a documented Emergency Response Procedure that addresses any emergency situation which may arise. This procedure shall include provision for minimising the effects of any emergency on the environment.

Dumping Sites

The material is proposed for disposal at two well-established dumping sites A1 and A2 *(Appendix 1)*. Dumping Site A1 is located approx. 4 km northeast of the estuary in approx. 14m water depth, while site A2 is located in the surf-zone in water of approx. 4m depth to the north of the mouth of the River Boyne. Dumping Site A2 is located within the Louth Coast (HA06) (NB_025_0000) coastal water body. The current status of this water body under Water Framework Directive monitoring is High status, via extrapolation, and the environmental objective is to maintain this status.

Chemical analysis of samples taken February 2019 from each of the Dumping Sites A1 and A2 showed that the material at site A1 (muddy fine sand with some shell particles) and site A2 (clean fine sand) is clean, with concentrations of all determinands falling below the lower action levels for the assessment of dredge material discussed in Section 4.

The seaward Dumping Site A1 has been used as the primary dumpsite for dredged material generated during capital and maintenance projects over the past three decades. There have been no changes to the water depth at the site and dredge material migration is minimal as evidenced by tracking drogue release survey in 2006[4] and reviewed in 2019. The 2006 study demonstrated that there is little or no movement of dumped sediment shoreward when released at Dumping Site A1. As no significant change in coastline has occurred since that the 2006 study the applicant contends that the tidal regime is likely unchanged.

The northern near-shore Dumping Site A2 has been used only for sand dredged at the entrance channel and seaward approach. Dumping at site A2 has been permitted for use since 2002 with a view to combatting local beach erosion by keeping the clean dredged sand within the coastal cell. Due to its shallow nature (4m at chart datum), use of this dumping site is subject to tides, weather and vessel manoeuvrability. The applicant proposes to dump sandy material from the channel entrance and seaward approach at the Dumping Site A2 outside of the Closed Period imposed to protect nearby bathing waters, as required under the previous permit S0015-02. Hydraulic modelling in 2012 *('Boyne Entrance Channel Dredging – Impact on Sediment Cell')* determined that dumping at this site is advantageous to aid coastal processes and beach maintenance. The 2012 report was reviewed in 2019 in light of new data on coastal processes and expected extreme water levels (due to combinations of high tides and storm surges). The 2019 review confirmed that, while offshore extreme storm wave heights may have increased slightly in recent years, these waves will be depth limited as they approach the coast and it is the occurrence of extreme water levels that is most important in determining the changes to sediment transport rates along the shoreline and there has been no change to the levels established in 2010. As there had been no change in the extreme water levels, confirmed by the fact that maintenance dredging quantities at the Boyne entrance bar have not increased, the modelling results of 2012 are still relevant.

Condition 3.10 requires the dumping of clean sand from the seaward approach at Dumping Site A2 except during the Closed Period or when access is restricted due to tidal or weather

[4] Floatation drogues (surface, mid and bottom depths) were released at flood and ebb tidal periods during a dumping campaign in November 2006. The drogues travelled parallel to the coast in either a north-south or south-north direction, indicating that no sediment would come ashore when released from Dumping Site A1.

conditions to keep most of the clean sand material within the coastal cell. All material loaded from the navigation channel, berths and swinging basins shall be dumped at the seaward Dumping Site A1 (Condition 3.11); this fine silty/muddy material is unsuitable for placement at the near-shore site due to potential impacts on water column turbidity and interference with amenity uses. In line with the Marine Institute's recommendation (see Sections 4 and 7), Condition 3.7 requires that material from the 'Swing Basin' turning area, which exhibited low Class 2 concentration levels of cadmium, lead and zinc, shall be loaded first prior to loading material from further down river into the vessel and this material shall be dumped at the Dumping Site A1 only. To ensure that only low risk material shall be dumped at sea, Condition 4.5 requires triennial monitoring of the quality of the sediment to be dumped. To minimise the mounding of dredged material at the dumping sites, dumping shall be conducted by way of release of the material through the hull of the vessel while the vessel is in motion (Condition 3.3) and in a manner that ensures a uniform spread of material throughout the dumping sites (Condition 3.13).

Shellfish Areas

Balbriggan/Skerries (PA2_0063) shellfish area, which is used for the production of razor clams (*Ensis siliqua*), is situated approx. 2 km south of the Boyne estuary mouth and approx. 3.5km south of Dumping Site A1. Dundalk Bay shellfish area is approx. 5.5km north of Dumping Site A2. The bivalve mollusc production areas Skerries, Gormanston and Dundalk Bay are all classified (10 August 2020) as 'Class A' for razor clams (Dundalk Bay is also 'Class B' for cockles) for food hygiene purposes indicating uncontaminated waters in Skerries and Gormanston. Given the intermittent nature of the loading and dumping activities and conditions in the recommended permit to reduce impacts on water quality, no significant impact on the designated shellfish areas or the razor clam fishery is anticipated.

Benthic Impact Assessment

An assessment of benthic micro fauna and macro fauna was undertaken, following intertidal benthic flora surveys at 12 sample sites within the Boyne Estuary and subtidal benthic fauna surveys at 16 sample sites within the Boyne Estuary and surrounds, including dumping sites (A1, A2 and redundant site A3) undertaken April 2019. The assessment concluded that as loading activities are limited to the subtidal zone, there will be no direct impact on intertidal habitats. The activities will lead to occasional temporary disturbance of the existing subtidal benthic communities with the removal of sediment and associated fauna for disposal at the dumping sites. However, the fauna present are adapted to disturbance, and recovery will occur, aided by migration, colonisation from adjacent habitats.

Impact on Fish

The River Boyne is an important salmonid river and the system hosts five migratory species (Atlantic salmon, Sea trout, European eel, Sea and River lamprey), which move through the estuary on migrations from spawning grounds to feeding grounds. Many other fish species make use of the estuary for all or part of their life cycle. Due to their mobile nature, fish are unlikely to suffer lethal effects from events such as high sediment loads in the water column and salmonids are known to avoid sediment plumes. All fish living in estuarine systems are adapted to deal with occasional high levels of suspended sediments. Sediment dispersion modelling has demonstrated that the dredging plume generated during the loading activities will have a limited and transient extent. The risk of entrainment by the trailing suction hopper dredger's drag head is assessed as negligible. For operational reasons, loading activity in the Boyne Estuary takes place around the high tidal phase with overflow from the dredger only occurring in the latter stages of the loading operation; this typically coincides with the ebb tide which limits the extent and spread of the sediment plume. Condition 3.8 prohibits loading during periods of low tide, which will allow windows of low turbidity in the estuary. Inland Fisheries Ireland was consulted as part of the

assessment of this application and made no comments on the proposed loading or dumping operations.

No significant impacts on water quality or resident or migratory fish species are anticipated subject to compliance with the conditions in the recommended permit, in particular those measures to protect water quality in the receiving environment. Loading shall be primarily by trailing suction hopper dredger which releases a minimum amount of sediment into the water column (Condition 3.5) and use of backhoe, grab and plough dredgers is restricted to confined areas (Condition 3.6). The applicant shall limit the release of suspended solids into the water column during loading and on voyages to and from the dumping sites (Condition 3.12). Condition 3.8 prohibits loading during periods of low tide, which will allow windows of low turbidity in the estuary. Condition 5.4 requires that the applicant shall update and maintain a documented Emergency Response Procedure that addresses any emergency situation which may arise. This procedure shall include provision for minimising the effects of any emergency on the environment.

Designated Bathing Waters

Laytown/Bettystown (PA2_0107) bathing water is situated south of the Boyne estuary mouth. Laytown/Bettystown currently achieves Good Water Quality and is classified as achieving a Good Water Quality rating for the four consecutive years 2016 to 2019. Activities on the beach include sandsculpting and kitesurfing. Laytown/Bettystown has hosted the National Sand Sculpting and Sandcastle Competition in recent years. Laytown Strand Race is a horse racing event which takes place annually on Laytown strand. No significant impact on the designated waters is anticipated since the loading activity at the seaward approach will involve clean, recently deposited sand.

Dumping Site A2 lies within 1km of designated bathing waters of Seapoint (PA3_088) and Clogherhead (PA3_0089). Both Seapoint and Clogherhead bathing waters currently achieve Excellent Water Quality and have achieved an Excellent Water Quality rating for the four consecutive years 2016 to 2019. To avoid any impact on bathing waters, and in line with the Closed Period applied in the previous permit, Reg. No. S0015-02, the recommended permit prohibits dumping at the near-shore Dumping Site A2 during the bathing season (Condition 3.4/*Schedule A.3*). Prohibiting dumping at this site during the bathing season (1st June – 15th September inclusive) is a precautionary measure aimed at avoiding potential interference with recreation. Little or no dumped sediment is expected to come ashore following dumping at Dumping Site A1 as currents at this location move parallel to the coast with little shoreward travel. It is considered that subject to compliance with the conditions of the recommended permit, the proposed loading and dumping activities will have no significant impact on any bathing waters.

Archaeology

The applicant notes the presence of two archaeological remains within the loading area, the "Boyne Boat" and "Viking Boat", which are located close to the navigational beacons at Queensboro and Milestone, respectively. As part of the 2002–2007 maintenance dredging programme a once-off archaeological monitoring programme was undertaken and no artefacts were found. There are no recorded archaeological features at the two dumping sites. The Department of Culture, Heritage and the Gaeltacht (DCHG)[5] was consulted as a statutory consultee as part of this assessment (see Section 8) and made no comments in relation to underwater archaeology. The recommended permit requires that the Underwater Archaeology Unit of the Department of Housing, Local Government and Heritage (DHLGH) be informed immediately if material of archaeological potential is recovered during the course of the permitted activities (Condition 4.6).

[5] As a result of the formation of Government in June 2020, the Heritage function of this Department transferred to the Department of Housing, Planning and Local Government, the name of which was then altered to the Department of Housing, Local Government and Heritage.

Marine Mammal Risk Assessment

A marine mammal survey and risk assessment is included in the Natura Impact Statement and Environmental Impact Assessment Report submitted in support of the permit application. The National Parks and Wildlife Service (NPWS) was not consulted by the applicant prior to the preparation and completion of the marine mammal risk assessment, which is a standard Agency requirement for DAS permit applicants since July 2018. The applicant was requested to consult with the NPWS specifically in relation to the MMRA and update the assessment, as necessary, further to any recommendations. The applicant corresponded with the NPWS on three occasions during October 2020. However, no response was received from NPWS. It is noted that the Department of Culture, Heritage and the Gaeltacht submitted comments on 10th March 2020 and 19th August 2020 to the EPA as part of statutory consultation during the application assessment process (Section 8), which acknowledged the marine mammal assessment undertaken.

Harbour porpoise and Harbour seal (also known as Common seal) have been recorded regularly in the Boyne estuary. Bottlenose dolphins have been recorded in waters between the estuary and the dumping sites. Grey seals have been recorded near Clogherhead to the north and Cardy Rocks, Balbriggan to the south. Three Harbour porpoises were sighted at the mouth of the estuary and outside the estuary during the 2019 surveys. No notable reaction to sea craft activity was recorded during surveys. Harbour seals were observed swimming and hauled out on the mudflats to the north and south of the channel with up to 15 individuals hauled out within Baltray Bay. This is a resting site and does not serve as a nursey area.

Potential impacts on marine mammals from the activities considered include noise, collision and impacts on foraging efficacy on seals. Given the evident habituation of harbour porpoises and seals to current levels of shipping and dredging activities, significant disturbance impacts can be ruled out. Sediment dispersion modelling shows that the dredging plume will have a limited and transient extent. Given the wide foraging area available to Harbour and Grey seals, and the short-term effects of the activities, the continuation of dredging activities will have no significant impact on seals.

Otter can be found throughout the River Boyne and Estuary system and are likely to have breeding sites within it, although no holts were identified during surveys. It is unlikely that holts are located within or adjacent to the loading areas as there is a lack of suitable habitat along the river channel which is enclosed by training walls. The river channel is currently frequently used by fishing and cargo vessels, pilot boats and current dredging activities. There is no predicted change in volumes of craft using the river channel proposed and the continuation of existing dredging operations will not cause disturbance to Otter occurring within the area. The potential for reduced prey availability as a result of increased turbidity in the water column and deteriorating detection of prey is low given the results of hydraulic modelling. Reduced visibility in the localised area of the sediment plume will not reduce the feeding efficacy of Otter in the River Boyne system.

The risk assessment concluded that the data collected during desk study and field survey indicates that the Boyne Estuary and adjacent marine waters are of low importance for marine mammals, with the exception of Harbour seals which use the estuary for hauling out. On the basis of the survey data and information provided in the application and considering the non-continuous and temporary nature of the proposed loading and dumping activities, the low records for marine mammals within or in proximity to the proposed activities and the location of the proposed activities, it is considered that the proposed activities are not likely to have a significant impact on marine mammals either at an individual or population level.

Impact on Birds

The Boyne Estuary hosts internationally important numbers of wintering waterfowl and an internationally important colony of breeding Little tern, *Sterna albifrons,* occurs at a shingle beach at Baltray, north of the estuary. Little terns are the rarest of Ireland's five breeding

tern species, with a population that fluctuates between 200-300 pairs from year to year; the Baltray site can host up to 45 pairs. They feed mainly on sand eels as well as other small fish and crustaceans which are caught by plunge-diving.

Little tern surveys were carried out at Baltray between May and August 2018. The survey focussed on feeding behaviour of Little terns within the zone of influence of the dredging activity. Observations were also made of Roseate tern, Common tern, Arctic tern and Sandwich tern and records of other seabirds and waders were made as well as presence/absence of a dredger within the estuary channel. During the 2018 survey, it was noted that walkers and dogs caused the majority of disturbance. Dredging activity did not appear to cause disturbance to foraging birds and in one case, Little terns were observed diving for prey in the wake of the dredger. The Department of Culture, Heritage and the Gaeltacht[6] submitted comments on the apparent spatiotemporal limitations of the applicant's survey in terms of providing a quantitative assessment of the likely impacts on terns and their prey base as addressed in Section 8 below.

Sediment dispersion modelling has demonstrated that the dredging plume generated during the loading activities will have a limited and transient extent. At the Boyne entrance bar, away from the immediate area around the dredger, the total suspended sediment concentrations predicted from dredging sand material are less than 80mg/l and the plume does not approach the area where Little terns nest on the northern side of the training walls, which appears to be their preferred feeding area. Therefore, suspended sediments will not impede Little tern feeding by way of reduced visibility. According to the modelling report, regular storm wave events in the area around the bar and adjoining beaches give rise to suspended sediment concentrations of up to 380mg/l. Dumping activities at Dumping Sites A1 and A2 will have no impact on the tern colony, given that Little tern are shallow water tidal feeders and generally feed within close proximity to the shore.

The applicant notes that Little terns have successfully fed in areas of the Boyne Estuary affected by dredging in previous years and surveys carried out in 2018, focusing on Little tern foraging activity, did not show any obvious change in feeding behaviour when the dredger was present or not. Little terns have bred at Baltray since at least 1984 and long-term monitoring, undertaken by Louth Nature Trust, suggests that other environmental factors such as predation and severe easterly weather events have the greatest damaging impacts on the breeding colony (this is discussed further in Section 8 below). Similar to Little tern, Roseate, Common and Sandwich terns are shallow water feeders and dive to catch their prey. The sediment plume created during the loading activities is not predicted to impact feeding efficacy of tern species as the suspended sediment concentrations will be very low and will disperse relatively quickly as a result of the tidal flow.

Wintering waterbirds which occur in wetlands in the Boyne Estuary are intertidal feeding species, which feed on vegetation or buried organisms present in the intertidal mudflats and sandflats. Suspended sediments generated by dredging activities will not impact these waterbirds. Wintering waterbird surveys were carried out between September 2018 and April 2019 recorded a total of 34 wintering species. Wintering birds use mudflats in the polders behind the river channel training walls for feeding and roosting. There will be no direct impact on the polders from the proposed loading and dumping activities and it is considered that the continuation of existing loading/dumping operations will not cause any disturbance to wintering waterbirds occurring within the intertidal habitats.

Subject to compliance with the conditions of the recommended permit, in particular those measures to protect water quality in the receiving environment, it is considered that there will be no impact on birds from the proposed loading and dumping activities. Loading shall be primarily by trailing suction hopper dredger which releases a minimum amount of sediment into the water column (Condition 3.5) and use of backhoe, grab and plough

[6] As a result of the formation of Government in June 2020, the Heritage function of this Department transferred to the Department of Housing, Planning and Local Government, the name of which was then altered to the Department of Housing, Local Government and Heritage.

dredgers is restricted to confined areas (Condition 3.6). The applicant shall limit the release of suspended solids into the water column during loading and on voyages to and from the dumping sites (Condition 3.12).

6. Compliance with EU Directives and international conventions

In considering the application, regard was had to the London and OSPAR Conventions and the Water Framework, Bathing Water, Habitats, Birds and Marine Strategy Framework Directives.

Compliance with Directives/Regulations	**Description and Conditions in RP**
London Convention (and Protocol) and OSPAR Convention	Condition 6 and *Schedule D: Annual Environmental Report* of the RP requires the applicant to submit an annual OSPAR dumping report as part of the Annual Environmental Report. The recommended permit (RP), as drafted, fulfils the requirements of the OSPAR and London Conventions, including triennial sediment analysis to confirm ongoing suitability of the dredge material for dumping at sea (Condition 4.5.1).
Water Framework Directive (WFD) [2000/60/EC]	Taking into consideration the scale, duration and intermittent nature of the loading and dumping activities, the characteristics of the material to be dumped, the characteristics of the receiving environment and the conditions included in the RP, the proposed activities are not considered likely to impact on the achievement of the WFD objectives for the affected water bodies.
Bathing Water Directive [2006/7/EC]	Condition 3.4 of the RP prohibits dumping at Site A2 during the bathing season (1 June – 15 September) which will prevent any interference with recreation. Subject to compliance with the conditions of the RP, the proposed loading and dumping activities will have no significant impact on any bathing waters.
Marine Strategy Framework Directive (MSFD) [2008/56/EC]	The proposed activities will not impact on the achievement of the MSFD objectives for the affected coastal waters. MSFD descriptors assessed for potential impact at the loading and dumping sites include: D1 biodiversity, D3 commercial fish species, D4 food webs, D5 eutrophication, D6 sea floor integrity, D8 contaminants and D10 marine litter. Sediments have been assessed as suitable for disposal to sea. Condition 2.8 of the RP will ensure that marine litter is controlled.

Habitats Directive [92/43/EEC] & Birds Directive [2009/147/EC]

The proposed loading activities will be undertaken within three European Sites; River Boyne and River Blackwater SAC, Boyne Coast and Estuary SAC and Boyne Estuary SPA. The loading area overlaps with the Boyne Coast and Estuary proposed Natural Heritage Area (pNHA), (Site Code 001957) which is designated for the same features for which the Boyne Coast and Estuary SAC and Boyne Estuary SPA have been: estuarine intertidal and dune habitats, a wide range of wintering and passage birds and breeding Little tern. Dumping Site A1 is located 3.5km offshore from the Boyne Estuary SPA while Dumping Site A2 is approximately 720m east of Boyne Coast and Estuary SAC. There are a number of additional designated sites in the vicinity of the proposed activities. Appendix 4 lists the European Sites assessed, their associated qualifying interests and conservation objectives along with the assessment of the effects of the activities on the European Sites.

A screening for Appropriate Assessment was undertaken to assess, in view of best scientific knowledge and the conservation objectives of the site, if the activities, individually or in combination with other plans or projects are likely to have a significant effect on any European Site. In this context, particular attention was paid to the European Sites at River Boyne and River Blackwater Special Area of Conservation (SAC), Site Code: 002299; Boyne Coast and Estuary SAC (Site Code: 001957); Boyne Estuary Special Protection Area (SPA), Site Code: 004080; River Nanny Estuary and Shore SPA (Site Code: 004158); River Boyne and River Blackwater SPA (Site Code: 004232); Dundalk Bay SPA (Site Code: 004026); Rockabill to Dalkey Island SAC (Site Code: 003000) and Rockabill SPA (Site Code: 004014).

The activities are not directly connected with or necessary to the management of any European Site and the Agency considered, for the reasons set out below, that it cannot be excluded, on the basis of objective information, that the activities, individually or in combination with other plans or projects, will have a significant effect on any European Site and accordingly determined that an Appropriate Assessment of the activities was required. This determination was based on the nature and location of the proposed activities within three European Sites; River Boyne and River Blackwater SAC, Boyne Coast and Estuary SAC and Boyne Estuary SPA. Other European Sites within the zone of influence of the activities are the River Nanny Estuary and Shore SPA, River Boyne and River Blackwater SPA, Dundalk Bay SPA, Rockabill to Dalkey Island SAC and Rockabill SPA. It was considered that the loading and dumping activities may give rise to significant habitat loss/deterioration, water quality impacts and disturbance or displacement effects on the qualifying interests of these European Sites. It was noted that a Natura Impact Statement (NIS), dated November 2019, was submitted as part of the permit application.

An Inspector's Appropriate Assessment has been completed and has determined, based on best scientific knowledge in the field and in accordance with the European Communities (Birds and Natural Habitats) Regulations 2011 as amended, pursuant to Article 6(3) of the Habitats Directive, that the activities, individually or in combination with other plans or projects, will not adversely affect the integrity of any European Site, in particular River Boyne and River Blackwater SAC, Boyne Coast and Estuary SAC, Boyne Estuary SPA, River Nanny Estuary and Shore SPA, River Boyne and River Blackwater SPA, Dundalk Bay SPA, Rockabill to Dalkey Island SAC and Rockabill SPA, having regard to their conservation objectives and will not affect the preservation of these sites at favourable conservation status if carried out in accordance with this recommended permit and the conditions attached hereto for the following reasons:

- The material to be dumped is predominantly clean silt, sand and gravel which has been deemed suitable for dumping at sea.
- Sediment dispersion modelling has demonstrated that the dredging plume generated by the trailing suction hopper dredger during the loading activities will have a limited and transient extent; localised to the dredger, of low suspended sediment concentrations, rapidly dispersing in the tidal conditions.
- Loading shall be primarily by trailing suction hopper dredger which releases a minimum amount of sediment into the water column (Condition 3.5) and use of backhoe, grab and plough dredgers is restricted to confined areas (Condition 3.6).
- The applicant shall limit the release of suspended solids into the water column during loading and on voyages to and from the dumping sites (Condition 3.12).
- Condition 3.8 prohibits loading during periods of low tide, which will allow windows of low turbidity in the estuary for fish passage.
- Condition 5.3 requires that the applicant shall update and maintain a documented Accident Prevention Procedure that addresses hazards, particularly in relation to the prevention of accidents with a possible impact on the environment.

- Condition 5.4 requires that the applicant shall update and maintain a documented Emergency Response Procedure that addresses any emergency situation which may arise. This procedure shall include provision for minimising the effects of any emergency on the environment.

In light of the foregoing reasons no reasonable scientific doubt remains as to the absence of adverse effects on the integrity of those European Sites, River Boyne and River Blackwater SAC, Boyne Coast and Estuary SAC, Boyne Estuary SPA, River Nanny Estuary and Shore SPA, River Boyne and River Blackwater SPA, Dundalk Bay SPA, Rockabill to Dalkey Island SAC and Rockabill SPA.

7. Advisory Committee Comments

A Dumping at Sea Advisory Committee has been established under Section 41 of the EPA Act 1992 as amended. The role of the Advisory Committee is to provide consultation and technical advice to the Agency on aspects of the dumping at sea permitting function, in accordance with its terms of reference. One member of the Advisory Committee submitted comments on this application.

7.1 Marine Institute Comments

The Marine Institute commented on the sediment analysis results provided by the applicant - 17 sediment samples were taken, including a sample from each dumping site, A1 and A2, and analysed in April 2019, in accordance with the sampling and analysis plan supplied by the Marine Institute. The Marine Institute considered that the sediment is largely uncontaminated and sampling results are broadly in line with previous results, though concentrations of lead and cadmium in sample DP11 (from the turning area) are marginally higher than previously reported. The Marine Institute concludes that the sediment chemistry does not preclude dumping at sea and, to err on the side of caution, recommends that material from the turning area be dredged first and mixed in the barge with clean sediment from further down river, before disposal at dumping site A1 in 14 m water depth. The sediment would subsequently be covered with the remaining sediment, in effect capping it.

Inspector Response:

The Marine Institute's comments have been noted. It is considered, based on the characteristics of the material to be disposed, that the dredged material in question is suitable for dumping at sea subject to the conditions included in the recommended permit (RP). Condition 3.7 includes the requirement for sequencing of loading and dumping activities such that loading shall be undertaken at the Port's turning area (sediment sampling location DP11) first prior to loading material from further down river into the vessel and this material shall be dumped at Dumping Site A1 only. The RP includes a requirement for re-testing of the dredged material on a three-year cycle in order to confirm its ongoing suitability for dumping at sea (Condition 4.5.1). Following submission of the results of the sediment analyses, the agreement of the Agency must be obtained before loading and plough dregding activities may proceed (Condition 4.5.2).

8. Comments from Notified Consultees

The following comments were received from notified consultees:

8.1 Department of Culture, Heritage and the Gaeltacht [7] Comments

The Department of Culture, Heritage and the Gaeltacht (DCHG) submitted two heritage recommendations relating to Nature Conservation on the permit application. The second communication received 19th August 2020 reiterates and updates DCHG's initial comments,

[7] As a result of the formation of Government in June 2020, the Heritage function of this Department transferred to the Department of Housing, Planning and Local Government, the name of which was then altered to the Department of Housing, Local Government and Heritage.

dated 10th March 2020. The issues raised in the DCHG's communications are summarised below. However, the original correspondence should be referred to for greater detail and expansion of particular points. DCHG points out that the layout of the EPA's webpages in relation to this application is not very user friendly and could be improved by having more descriptive titles to the various links.

DCHG's comments relate primarily to the Natura Impact Statement (November 2019) submitted by the applicant and, in particular, the potential impacts of the proposed activities on marine ecology and birds. DCHG summarises the proposed activities, the scope of the Natura Impact Statement (NIS) and European Sites at risk of effects from the proposed works and draws conclusions on the impact assessments undertaken for marine ecology and birds, specifically the Little tern breeding colony at Baltray. In its updated comments, DCHG notes that as of July 2020, the Little tern breeding colony at the Boyne Estuary (Baltray) has had one of its most successful breeding seasons.

On marine ecology, DCHG notes that the conclusion of the NIS document is that the proposed seabed dumping-at-sea works are unlikely to pose a significant likely risk to nature conservation interests in the vicinity provided appropriate mitigation is implemented. DCHG concurs with this conclusion save for the observation below relating to breeding Little tern. DCHG also advises the applicant to ensure that other activities not covered by the DAS permit application take account of requirements for assessment under European and national legislation for nature conservation.

In relation to potential impacts on birds, DCHG queries the NIS's stated exclusion of likely impacts that the maintenance dredging may have on the foraging resources of the Little tern population of Baltray which is a listed interest for Boyne Estuary SPA. According to DCHG, *"In this particular case the most pertinent pathways for the dredging to negatively impact of the breeding population of Little Tern's foraging resources are: (a) increased turbidity of the water column causing a reduction in the foraging efficacy of the terns and/or the displacement of their prey species; and (b) direct impact caused by the collection and/or dumping of dredged material to the seabed causing a reduction in the local prey base."*

DCHG points to relevant aspects of Little tern ecology from scientific literature and comments on the apparent spatiotemporal limitations of survey data relied upon in the applicant's NIS. As a significant part of the dredging area lies within relatively close proximity to the tern colony and one or more of the dumping areas may overlap with the distal reaches of the foraging range of the SPA's Little tern population, DCHG is of the opinion that a more quantitative assessment, including further spatiotemporal information on the terns and their prey base at relevant scales, is required to provide the necessary evidence base to form a more robust conclusion on the likely impacts of this activity on the SPA's breeding tern population.

Applicant Response:

The applicant was asked to respond to DCHG's comments specifically in relation to the Little tern breeding colony at Baltray as part of a Section 5(2) notice issued by the Agency, 14th September 2020. The applicant responded on the 18th August 2020; just prior to the Agency's receipt of DCHG's second communication, which confirmed the breeding success of the Little tern population as of July 2020.

According to the applicant, the NIS addresses the turbidity in the water column and plume created by the dredger in relation to Little tern feeding behaviour and feeding range. It highlights that Little tern continue to breed successfully at Baltray, together with dredging campaigns that operate under the existing licence and that environmental factors (e.g. predation or weather events) have the greatest impact on the breeding colony. It also addresses dredging activity and the potential for reduced prey availability in the context of the sand eel lifecycle and potential for removal of sand eel due to dredging. It concludes that "*Overall, the dredging*

operation, which is currently ongoing and will continue at the same level under a renewed licence will not affect prey availability or feeding efficacy of Little tern."

The applicant provided a copy of a technical review (*'Critique of Baltray Little Tern Colony Report 2017'*) of a previous report published by Louth Nature Trust[8] (LNT), which suggested that dredging activity by Drogheda Port in the Boyne Estuary had caused tern breeding failure in the area in 2017. The technical review of the LNT report was commissioned by the applicant and was undertaken by a specialist ornithological consultancy, HiDef Aerial Surveying Limited (HiDef), which provided evidence of significant seabird expertise. The LNT report asserted that an increased dredging regime both in time and in volume in end 2016 and through the breeding season in 2017 is a likely cause of the breeding failure. The HiDef critique notes that Baltray has been a regular breeding site for terns since records began in the 1900s with mixed breeding success over the years. Another breeding tern site nearby at Portrane, where there is no apparent pressure from dredging operations, showed the same poor breeding success as at Baltray in 2017.

The HiDef critique notes that Little tern breeding at Baltray failed early, with no eggs known to have been laid. Thus, the focus for direct effects would be on summer dredging and whether this impacted on terns feeding at a particular crucial moment in the breeding cycle. According to HiDef, in 2017 dredging continued intermittently through the summer with daily frequency reduced from mid-August, but this did not deter terns gathering at the Boyne Estuary again post-breeding season. At this time, the area was used by Little terns from other colonies as part of their migration. As the prey species will also be sand eels, it can be assumed that no long-term impacts appear to have occurred during the dredging operations.

Sand eel spawning occurs during the late winter and HiDef suggests that the interplay between sand deposition and sand eel abundance may also have an influence; it may be that the events that result in large amounts of sediment deposition at Drogheda Port could also affect sand eel abundance. Thus, years in which there is a requirement for large amounts of dredging may be coincidental to years when sand eel abundance is normally poor at this site. It is also noted that terns move between breeding sites and breeding was successful elsewhere in 2017 (in Kilcoole in Wicklow and Gronant, Wales). HiDef suggests that high Little tern breeding success at other colonies could have discouraged birds from using Baltray and recommends that – *"a wider reporting view on little tern nesting activity around the Irish Sea would seem appropriate to discuss the wider trends of this meta-population."*

The critique concludes that - "*There is no clear evidence that dredging, and its associated works, plays any part greater than any other factor. Other significant disturbance events are listed, and these would all have to be investigated with scientific rigour to show that they were not the cause of poor breeding."* Other issues raised as possible contributing factors include weather, disturbance by dog walkers, jet skis, paragliders and drones flying over the colony as well as predation (by fox, crows and gulls) and absence of full-time night wardens to deter predators.

HiDef states that *"Overall no single factor is likely to have been responsible for the breeding failure in 2017. Terns are long-lived species with low productivity and as such are not successful every season and tend to have a number of years where no young are successfully reproduced. As such, the concern raised regarding this single colony in two years seems premature."*

[8] Louth Nature Trust manages the Baltray Little Terns Conservation Project. Volunteers and professional wardens patrol fenced off tern nesting areas to protect vulnerable eggs and chicks from recreational users and natural predators. The conservation project has been running in various forms since 2005 with support from The Heritage Council, Louth County Council, NPWS and Birdwatch Ireland.

Having regard to the DCHG comments relating to apparent spatiotemporal limitations of Little tern surveys carried out in support of the application, the applicant clarifies that the aim of the surveys was not to ascertain the full extent of the Little tern foraging range at Baltray. One year of Little tern surveys were undertaken at Baltray to inform the NIS and focused on the feeding behaviour of Little terns within the zone of influence of the dredging operations. This information supplemented considerable data available from Louth Nature Trust on the breeding success of the Little tern colony at Baltray which is monitored annually and has been monitored for many years by Louth Nature Trust; a project which has been financially supported by Drogheda Port Company. The applicant states that there was sufficient scientific data to undertake a full assessment of the likely significant impacts on the Little tern population.

The applicant provides a summary of maintenance dredging operations over the past 20 years, showing that there have been 19 maintenance dredging campaigns undertaken within the Little tern season (April-October) with material dumped at sea or brought ashore for beneficial re-use under DAS Permit or Foreshore Licence, respectively. There have been slight changes to the frequency and volumes of dredged material being removed over this time. The Little tern colony has bred at Baltray during each of the years where dredging campaigns occurred within the Little tern season (April-October). The success of the colony is variable from year to year, however this is attributable to a range of factors including disturbance events, predation and weather events.

The applicant states that the NIS has relied on sufficient scientific data to undertake a full assessment of the likely significant impacts on the Little tern population, a Special Conservation Interest of the Boyne Estuary SPA, and conclude robustly that *"This NIS has examined and analysed, in light of the best scientific knowledge, with respect to those European sites within the zone of influence of the works, the potential impact sources and pathways, how these could impact on the sites' special conservation interest species and whether the predicted impacts would adversely affect the integrity of the* ***River Boyne and River Blackwater SAC, Boyne Coast and Estuary SAC, Rockabill to Dalkey Island SAC, Boyne Estuary SPA, River Nanny and Estuary SPA, River Boyne and River Blackwater SPA, Rockabill SPA, and, Dundalk Bay SPA****. There are no other European sites at risk of effects from the works."*

Inspector Response:

With reference to the DCHG comment on the layout of the EPA's webpages, it is acknowledged that the naming convention used by the applicant for the electronic submission of application documentation lacks descriptive terms and there are more than 20 individual attachments with the application form. However, the applicant has met the EPA's stated naming requirements for submission of an application in electronic format, in accordance with the Agency's Dumping at Sea Permit Application Guidance Note, whereby each attachment must be numbered to correspond with the relevant section of the application form, i.e.,

- Attachment A.2 *(relates to Section A.2. of the application form)*
- Attachment B.2 *(relates to Section B.2. of the application form)*, etc.

In this case Attachment F.1, which comprises the applicant's *Assessment of Impact on the Environment,* includes among others, a maritime archaeology impact assessment, NIS and EIAR with substantial appendices (including Drogheda Port Company's Waste Management Plan, Emergency Plan and Environmental Liabilities Risk Assessment).

The observation made by DCHG in relation to the scientific basis for the NIS's stated exclusion of likely impacts that the maintenance dredging may have on the foraging resources of the Little tern population of Baltray has been addressed comprehensively by the applicant. It is noted that only clean, uncontaminated sand

material will be loaded in the vicinity of the Little tern nesting site and that loading activities will be of limited duration. Sediment dispersion modelling has demonstrated that the dredging plume generated during the loading activities will have a limited and transient extent. At the Boyne entrance bar, away from the immediate area around the dredger, the total suspended sediment concentrations predicted from dredging sand material are less than 80mg/l and the plume does not approach the area where Little terns nest on the northern side of the training walls, which appears to be their preferred feeding area. Therefore, suspended sediments will not impede Little tern feeding by way of reduced visibility. According to the modelling report, regular storm wave events in the area around the bar and adjoining beaches give rise to suspended sediment concentrations of up to 380mg/l. Dumping activities at Dumping Sites A1 and A2 will have no impact on the tern colony, given that Little tern are shallow water tidal feeders and generally feed within close proximity to the shore.

Louth Nature Trust's warden's blog notes that 2019 was a good year for the Little terns at Baltray (http://www.louthnaturetrust.info/little-terns/), with about 50 chicks fledged. DCHG comments that as of July 2020, the Little tern breeding colony has had one of its most successful breeding seasons. It is noted that loading/dumping campaigns were undertaken in Q4 2019 and Q1 2020 in advance of the 2020 Little tern breeding season. The applicant confirmed that dredging of material for beneficial re-use under Foreshore Licence has been conducted over the last four summer seasons (April-October) 2016-2019 and was ongoing at the time of their response in August 2020. The proposed loading and dumping activities are equivalent (in terms of tonnages, technique and approximate duration of campaigns, etc.,) to those carried out over the period February 2013 – February 2021, authorised under DAS permit S0015-02.

Having regard to the scientific evidence provided in the NIS and supporting documents which clearly indicate that variability in Little tern breeding success occurs notwithstanding annual maintenance dredging activities, it is considered that, subject to compliance with the conditions of the recommended permit, the proposed activities will not adversely affect prey availability or feeding efficacy of Little tern.

An inspector's Appropriate Assessment has been undertaken (Section 6) which assessed the impacts of the activities, individually and in combination with other plans or projects, on European Sites within the zone of influence of the loading and dumping activities. These include the Boyne Estuary SPA, for which the Little Tern population of Baltray is a listed interest. All mitigation measures relevant to the proposed loading and dumping activities have been included in the recommended permit. Specific impacts, and the necessity for additional mitigation measures, relating to the dredging activity are a matter for the Department of Housing, Local Government and Heritage as part of the foreshore licensing process.

8.2 Department of Agriculture, Food and the Marine Comments

The Department of Agriculture, Food and the Marine (DAFM) confirmed that it had no comments or observations to make in respect of the application.

Inspector Response:

The correspondence received from DAFM has been noted.

9. Submissions

No submissions were received in relation to this application.

10. Site Visit

No site visit was conducted as part of the assessment of this application due to Covid-19 restrictions.

11. Cross-office Liaison

Advice and guidance issued by the Dumping at Sea Technical Working Group (TWG) was followed in the assessment of this application. Advice and guidance issued by the TWG is prepared through a detailed cross-office co-operative process, with the concerns of all sides taken into account. The Board of the Agency has endorsed the advice and guidance issued by the TWG for use by licensing inspectors in the assessment of dumping at sea permit applications.

12. Recommended Permit (RP)

The Recommended Permit (RP), as drafted, permits the loading and dumping of dredged material at sea subject to the conditions set out in the RP.

13. Charges

The RP proposes that the permit holder shall pay to the Agency a sum as the Agency from time to time determines based on the enforcement effort required for the loading and dumping at sea operations.

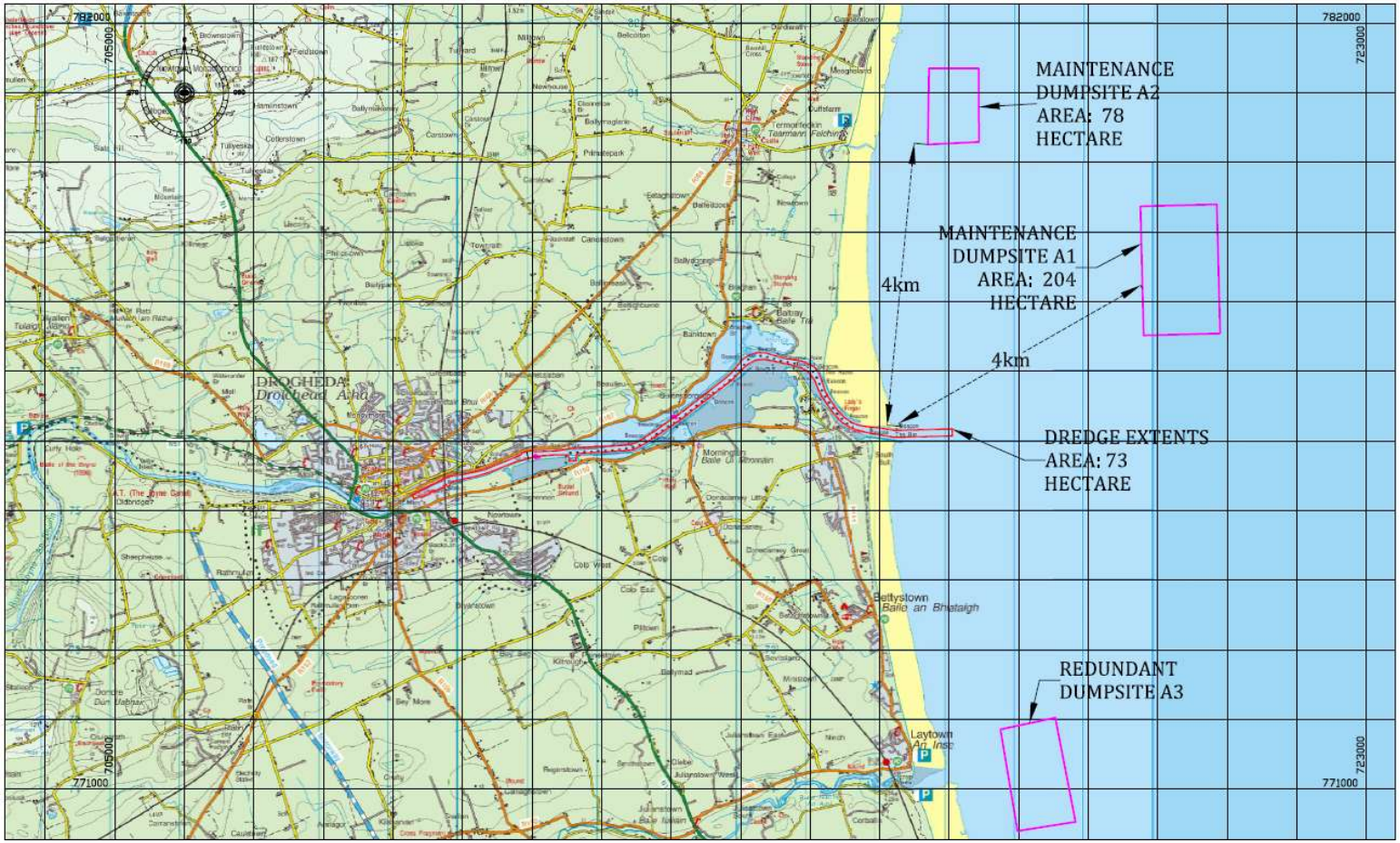
14. Recommendation

I recommend that a Final Permit be issued subject to the conditions and for the reasons as set out in the attached Recommended Permit.

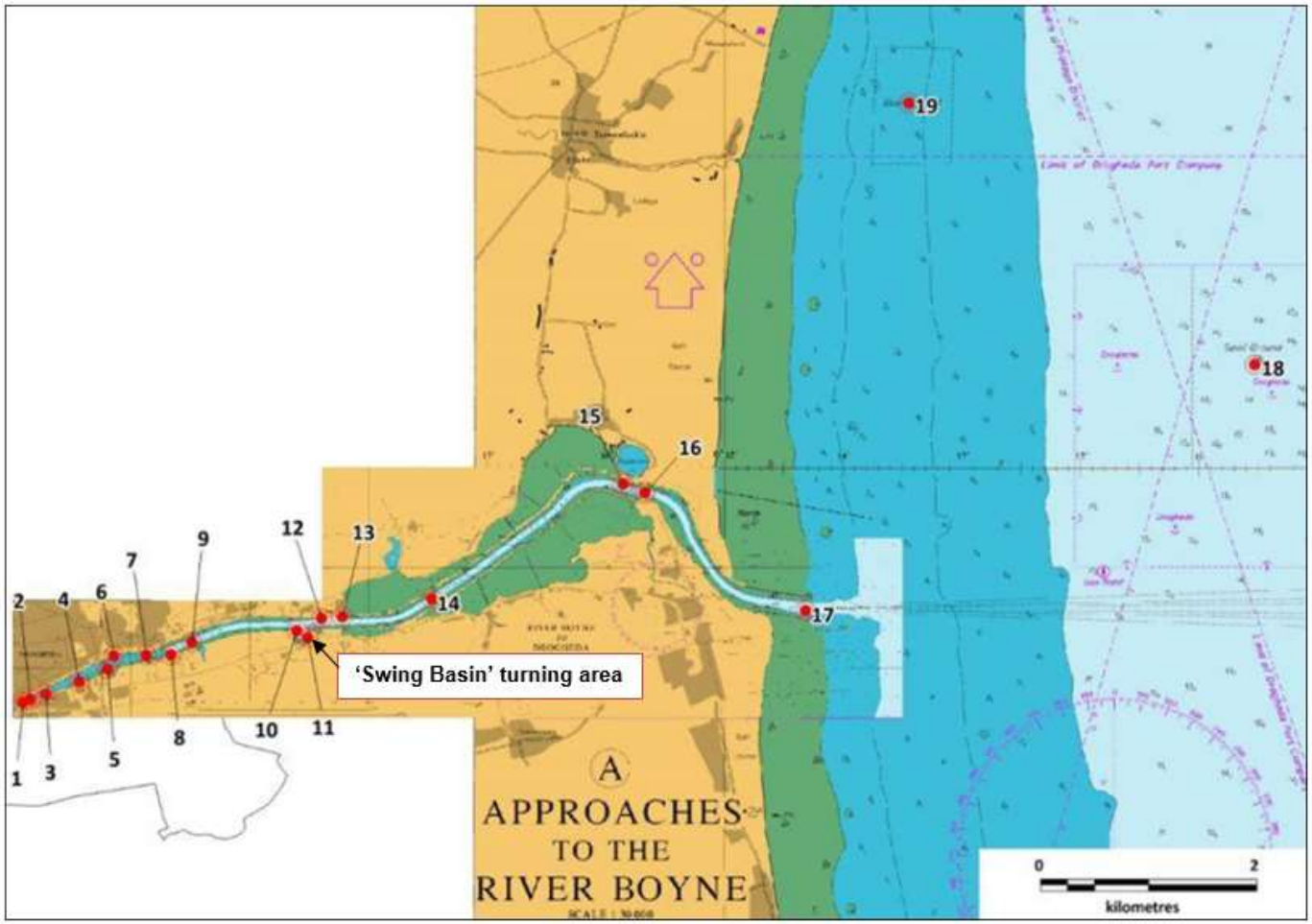
Signed,

Ciara Maxwell
Inspector

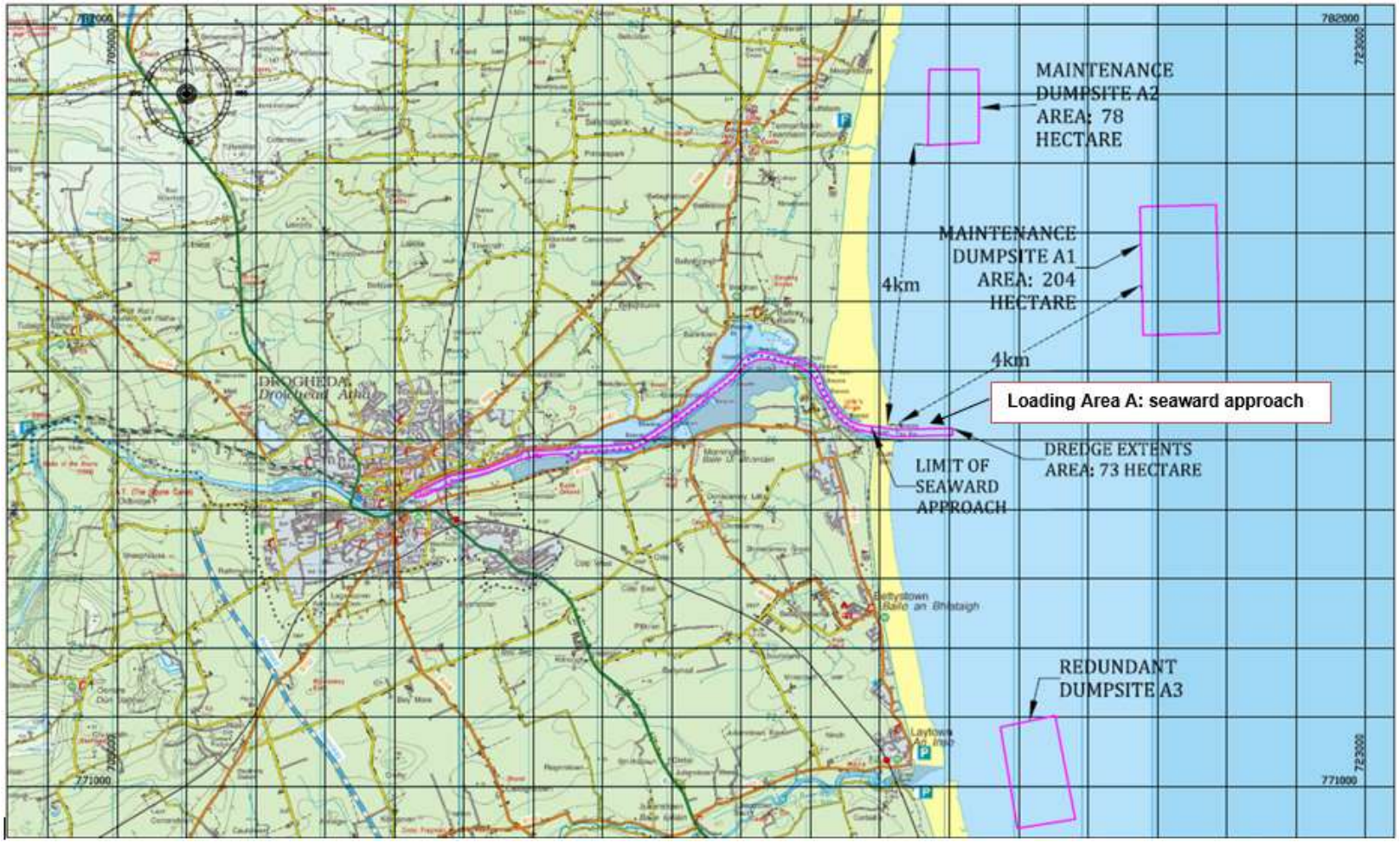
Appendix 1: Location of the loading area (outlined in red) and dumping sites A1 and A2 (boundaries shown in pink). [Note that former dumping site A3 indicated is now redundant due to its location within the Balbriggan/ Sherries (PA2_0063) shellfish production area and is not considered in this assessment.]



Appendix 2: Map showing location of Drogheda Port's 'Swing Basin' turning area at sediment sampling location 11.



Appendix 3: Map showing extent of Loading Area A: seaward approach, from which sand shall be dumped at the near-shore Dumpsite A2, outside the Closed Period.



Appendix 4: Assessment of the effects of activities on European sites and proposed mitigation measures.

Site Code	Site Name	Qualifying Interests (* denotes a priority habitat)	Conservation Objectives	Assessment
001957	Boyne Coast and Estuary SAC	**Habitats** 1130 Estuaries 1140 Mudflats and sandflats not covered by seawater at low tide 1210 Annual vegetation of drift lines 1310 Salicornia and other annuals colonising mud and sand 1330 Atlantic salt meadows (Glauco-Puccinellietalia maritimae) 2110 Embryonic shifting dunes 2120 Shifting dunes along the shoreline with Ammophila arenaria (white dunes) 2130 Fixed coastal dunes with herbaceous vegetation (grey dunes)*	As per *NPWS (2012) Conservation Objectives: Boyne Coast and Estuary SAC 001957. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.*	Boyne Coast and Estuary SAC includes most of the tidal sections of the River Boyne, intertidal sand and mud flats, salt marshes, marginal grassland, and the stretch of coast from Bettystown to Termonfeckin that includes the Mornington and Baltray sand dune systems. The applicant's Natura Impact Statement (NIS) assessed the potential for the loading and dumping activities to affect the conservation objectives, and therefore the integrity of the SAC, because of: ➢ Habitat loss or disturbance, and ➢ Effects of siltation. There will be no permanent habitat loss. However, a limited area of the habitat Estuaries will be disturbed by removal of sediment and associated fauna for disposal at the dumping sites. This habitat is resilient to disturbance due to the dynamic nature of the estuarine and marine system. Sediment dispersion modelling has demonstrated that the dredging plume generated by the trailing suction hopper dredger during the loading activities will have a limited and transient extent; localised to the dredger, of low suspended sediment concentrations, rapidly dispersing in the tidal conditions. An accidental pollution event (e.g., hydrocarbon leak/spill) is unlikely to occur. However, if it occurs at a sufficient magnitude, and in the absence of mitigation, it could affect the quality of the intertidal habitats (Mudflats and sandflats not covered by water at low tide; Salicornia and other annuals colonising mud and sand; Atlantic salt meadows) and therefore the integrity of the SAC. The proposed loading and dumping activities will not have a significant impact on the SAC, subject to compliance with the conditions of the recommended permit (RP) and, in particular, implementing the following mitigation measures:

Site Code	Site Name	Qualifying Interests (* denotes a priority habitat)	Conservation Objectives	Assessment
				• Loading shall be primarily by trailing suction hopper dredger which releases a minimum amount of sediment into the water column (Condition 3.5) and use of backhoe, grab and plough dredgers is restricted to confined areas (Condition 3.6). • The applicant shall limit the release of suspended solids into the water column during loading and on voyages to and from the dumping sites (Condition 3.12). • Condition 5.3 requires that the applicant shall update and maintain a documented Accident Prevention Procedure that addresses hazards, particularly in relation to the prevention of accidents with a possible impact on the environment. • Condition 5.4 requires that the applicant shall update and maintain a documented Emergency Response Procedure that addresses any emergency situation which may arise. This procedure shall include provision for minimising the effects of any emergency on the environment.
002299	River Boyne and River Blackwater SAC	**Habitats** 7230 Alkaline fens 91E0 Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)* **Species** 1106 Salmon *(Salmo salar)* 1355 Otter *(Lutra lutra)* 1099 River Lamprey *(Lampetra fluviatilis)*	As per *NPWS (2020) Conservation objectives for River Boyne and River Blackwater SAC [002299]. Generic Version 7.0. Department of Culture, Heritage and the Gaeltacht.*	All three qualifying species of the River Boyne and River Blackwater SAC occur within the loading area. Salmon and River lamprey are among the migratory fish species that pass through the estuary, while Otter occupies the intertidal habitats bounding the estuary. Alkaline fen and Alluvial forests are located a considerable distance upstream of the loading area and outside the zone of influence of the proposed activities. The NIS assessed the potential for the loading activities to affect the conservation objectives, and therefore the integrity of the SAC, because of: ➢ Disturbance and displacement impacts ➢ Mortality as a result of a pollution event ➢ Reduced prey availability, and ➢ Mortality as a result of entrapment.

Site Code	Site Name	Qualifying Interests (* denotes a priority habitat)	Conservation Objectives	Assessment
				There will be no impact on the spawning habitats of Salmon or River lamprey. For operational reasons, loading activity in the Boyne Estuary takes place around the high tidal phase with overflow from the dredger only occurring in the latter stages of the loading operation; this typically coincides with the ebb tide which limits the extent and spread of the sediment plume. Sediment dispersion modelling has demonstrated that the dredging plume generated by the trailing suction hopper dredger during the loading activities will have a limited and transient extent; localised to the dredger, of low suspended sediment concentrations, rapidly dispersing in the tidal conditions. Due to the intermittent nature and short duration of the loading activities, and the avoidance behaviour of salmonids, there is limited potential for effects on fish migrating through the Boyne Estuary. The risk of entrainment by the trailing suction hopper dredger's drag head is considered to be negligible. An accidental pollution event (e.g., hydrocarbon leak/spill) is unlikely to occur. However, if it occurs at a sufficient magnitude, and in the absence of mitigation, it could have significant impacts on water quality and therefore indirectly on Atlantic salmon, River lamprey and Otter. The proposed loading activities will not have a significant impact on the SAC, subject to compliance with the conditions of the RP and, in particular, implementing the following mitigation measures: • Loading shall be primarily by trailing suction hopper dredger which releases a minimum amount of sediment into the water column (Condition 3.5) and use of backhoe, grab and plough dredgers is restricted to confined areas (Condition 3.6). • The applicant shall limit the release of suspended solids into the water column during loading and on voyages to and from the dumping sites (Condition 3.12).

Site Code	Site Name	Qualifying Interests (* denotes a priority habitat)	Conservation Objectives	Assessment
				• Condition 3.8 prohibits loading during periods of low tide, which will allow windows of low turbidity in the estuary for fish passage. • Condition 5.3 requires that the applicant shall update and maintain a documented Accident Prevention Procedure that addresses hazards, particularly in relation to the prevention of accidents with a possible impact on the environment. • Condition 5.4 requires that the applicant shall update and maintain a documented Emergency Response Procedure that addresses any emergency situation which may arise. This procedure shall include provision for minimising the effects of any emergency on the environment.
003000	Rockabill to Dalkey Island SAC	**Habitats** 1170 Reefs **Species** 1351 Harbour Porpoise *(Phocoena phocoena)*	As per *NPWS (2013) Conservation Objectives: Rockabill to Dalkey Island SAC 003000. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.*	The NIS assessed the potential for the loading/dumping activities to affect the conservation objectives, and therefore the integrity, of the Rockabill to Dalkey Island SAC because of: ➢ Disturbance and displacement impacts ➢ Mortality as a result of collision, and ➢ Effects of siltation The NIS discounts any possible impact on Reef habitat, as it is too distant from the loading/dumping activities for there to be any adverse siltation effect. Low usage of the coast in the vicinity of the loading/dumping activities by Harbour porpoise and the slow speeds at which the dredger travel, along with avoidance behaviour of Harbour porpoise, means that the risk of collision is negligible. The noise levels from the trailing suction hopper dredger are below those likely to cause injury. Given the location, non-continuous and temporary nature and scale of the proposed loading and dumping activities, and the low records for Harbour porpoises within or in proximity to the proposed activities, it

Site Code	Site Name	Qualifying Interests (* denotes a priority habitat)	Conservation Objectives	Assessment
				is concluded that there will be no significant adverse impacts on the SAC's qualifying interests.
004080	Boyne Estuary SPA	**Birds** A048 Shelduck *(Tadorna tadorna)* A140 Golden Plover *(Pluvialis apricaria)* A162 Redshank *(Tringa totanus)* A144 Sanderling *(Calidris alba)* A143 Knot *(Calidris canutus)* A156 Black-tailed Godwit *(Limosa limosa)* A195 Little Tern *(Sterna albifrons)* A169 Turnstone *(Arenaria interpres)* A141 Grey Plover *(Pluvialis squatarola)* A142 Lapwing *(Vanellus vanellus)* A130 Oystercatcher *(Haematopus ostralegus)* **Habitats** Wetlands	As per *NPWS (2013) Conservation Objectives: Boyne Estuary SPA 004080. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.*	The NIS assessed the potential for the proposed activities to affect the conservation objectives, and therefore the integrity of the Boyne Estuary SPA, because of: ➢ Disturbance and displacement impacts ➢ Mortality as a result of a pollution event, and ➢ Reduced prey availability Wintering waterbirds are not at risk to disturbance from the proposed activities as there will be no loading activity within the polders where roosting and feeding occurs. In addition, the river channel is regularly frequented by commercial shipping and fishing activity and current dredging activities; this level of activity will not increase as a result of the proposed activities. Ongoing dredging operations observed during surveys of the Little tern colony at Baltry in May-August 2018 did not appear to cause disturbance to foraging Little terns, and the area of highest foraging activity overlapped with the dredging site in the river channel and at the breakwaters. Sediment plumes have the potential to affect the foraging efficiency of birds that dive through the water column in search of prey items that may fed within the plume zone and therefore reduce prey availability in the River Boyne, Boyne Estuary and Irish Sea. Sediment dispersion modelling has demonstrated that the dredging plume generated by the trailing suction hopper dredger during the loading activities will have a limited and transient extent; localised to the dredger, of low suspended sediment concentrations, rapidly dispersing in the tidal conditions. The modelled plume does not approach the shoreline immediately adjacent to where the Little terns nest on the northern side of the breakwaters, which appears to be their preferred feeding area. Given the localised extent of the loading activities, it is

Site Code	Site Name	Qualifying Interests (* denotes a priority habitat)	Conservation Objectives	Assessment
				highly unlikely that the removal of dredged material will result in the removal of sand eel or other prey items to cause any perceptible reduction of prey biomass available. An accidental pollution event (e.g., hydrocarbon leak/spill) is unlikely to occur. However, if it occurs at a sufficient magnitude, and in the absence of mitigation, it could affect the water quality in intertidal, estuarine and marine habitats of the Boyne Estuary and Irish Sea which are used by internationally important numbers of wintering waterbirds and a breeding colony of Little tern for feeding and roosting or could cause harm or mortality through direct contact with birds. The proposed loading activities will not have a significant impact on the SPA, subject to compliance with the conditions of the RP and, in particular, implementing the following mitigation measures: • Loading shall be primarily by trailing suction hopper dredger which releases a minimum amount of sediment into the water column (Condition 3.5) and use of backhoe, grab and plough dredgers is restricted to confined areas (Condition 3.6). • The applicant shall limit the release of suspended solids into the water column during loading and on voyages to and from the dumping sites (Condition 3.12). • Condition 5.3 requires that the applicant shall update and maintain a documented Accident Prevention Procedure that addresses hazards, particularly in relation to the prevention of accidents with a possible impact on the environment. • Condition 5.4 requires that the applicant shall update and maintain a documented Emergency Response Procedure that addresses any emergency situation which may arise. This procedure shall include provision for minimising the effects of any emergency on the environment.

Site Code	Site Name	Qualifying Interests (* denotes a priority habitat)	Conservation Objectives	Assessment
004158	River Nanny Estuary and Shore SPA	**Birds** A143 Knot *(Calidris canutus)* A144 Sanderling *(Calidris alba)* A140 Golden Plover *(Pluvialis apricaria)* A130 Oystercatcher *(Haematopus ostralegus)* A184 Herring Gull *(Larus argentatus)* A137 Ringed Plover *(Charadrius hiaticula)* **Habitats** Wetlands	As per *NPWS (2012) Conservation Objectives: River Nanny Estuary and Shore SPA 004158. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.*	The River Nanny Estuary and Shore SPA comprises the estuary of the River Nanny and sections of the shoreline to the north and south of the estuary (c. 3 km in length) and is important as a roost and feeding habitat for wintering waders. Many of the birds also utilise the intertidal areas and beaches further to the north, at the Boyne Estuary, and south, and also the fields above the shore. The NIS assessed the potential for the proposed activities to affect the conservation objectives, and therefore the integrity of the SPA, because of: ➢ Disturbance and displacement impacts, and ➢ Mortality as a result of a pollution event. The wintering bird populations that occur within the Boyne Estuary use mudflats in the polders behind the training walls that define the river channel. Wintering birds are not at risk to disturbance from the proposed activities as there will be no loading activity within the polders. In addition, the river channel is regularly frequented by commercial shipping and fishing activity and current dredging activities; this level of activity will not increase as a result of the proposed activities and so will not cause any disturbance to wintering waterbirds. An accidental pollution event (e.g., hydrocarbon leak/spill) is unlikely to occur. However, if it occurs at a sufficient magnitude, and in the absence of mitigation, it could affect the water quality in intertidal, estuarine and marine habitats of the Boyne Estuary and Irish Sea which are used by internationally important numbers of wintering waterbirds and a breeding colony of Little tern for feeding and roosting or could cause harm or mortality through direct contact with birds. The proposed loading activities will not have a significant impact on the SPA, subject to compliance with the conditions of the RP and, in particular, implementing the following mitigation measures:

Site Code	Site Name	Qualifying Interests (* denotes a priority habitat)	Conservation Objectives	Assessment
				• Loading shall be primarily by trailing suction hopper dredger which releases a minimum amount of sediment into the water column (Condition 3.5) and use of backhoe, grab and plough dredgers is restricted to confined areas (Condition 3.6). • The applicant shall limit the release of suspended solids into the water column during loading and on voyages to and from the dumping sites (Condition 3.12). • Condition 5.3 requires that the applicant shall update and maintain a documented Accident Prevention Procedure that addresses hazards, particularly in relation to the prevention of accidents with a possible impact on the environment. • Condition 5.4 requires that the applicant shall update and maintain a documented Emergency Response Procedure that addresses any emergency situation which may arise. This procedure shall include provision for minimising the effects of any emergency on the environment.
004232	River Boyne and River Blackwater SPA	**Birds** A229 Kingfisher *(Alcedo atthis)*	As per *NPWS (2020) Conservation objectives for River Boyne and River Blackwater SPA [004232]. Generic Version 7.0. Department of Culture, Heritage and the Gaeltacht.*	The River Boyne and River Blackwater SPA is located c.3.5km upstream of the loading area and is designated for the single species, Kingfisher. Sediment dispersion modelling has demonstrated that the dredging plume generated by the trailing suction hopper dredger during the loading activities will have a limited and transient extent; the plume does not extend more than 600m upstream. The NIS notes that it is not expected that Kingfisher territories associated with the special conservation interest population of the River Boyne and River Blackwater SPA would extend as far downstream as the loading area and sediment plume created by the proposed activities. Therefore, Kingfisher will not be at risk from reduced prey availability impacts and is unlikely to be impacted by disturbance or displacement impacts.

Site Code	Site Name	Qualifying Interests (* denotes a priority habitat)	Conservation Objectives	Assessment
				Given the location, nature and scale of the proposed loading and dumping activities, it is concluded that there will be no significant adverse impacts on the SPA's qualifying species.
004026	Dundalk Bay SPA	**Birds** A143 Knot *(Calidris canutus)* A179 Black-headed Gull *(Chroicocephalus ridibundus)* A156 Black-tailed Godwit *(Limosa limosa)* A141 Grey Plover *(Pluvialis squatarola)* A182 Common Gull *(Larus canus)* A137 Ringed Plover *(Charadrius hiaticula)* A046 Light-bellied Brent Goose *(Branta bernicla hrota)* A184 Herring Gull *(Larus argentatus)* A053 Mallard *(Anas platyrhynchos)* A130 Oystercatcher *(Haematopus ostralegus)* A052 Teal *(Anas crecca)* A162 Redshank *(Tringa totanus)* A142 Lapwing *(Vanellus vanellus)* A140 Golden Plover *(Pluvialis apricaria)* A069 Red-breasted Merganser *(Mergus serrator)* A054 Pintail *(Anas acuta)* A048 Shelduck *(Tadorna tadorna)* A065 Common Scoter *(Melanitta*	As per *NPWS (2011) Conservation Objectives: Dundalk Bay SAC 000455 and Dundalk Bay SPA 004026. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.*	Dundalk Bay is a large open shallow sea bay with extensive saltmarshes and intertidal sand/mudflats. The NIS assessed the potential for the proposed activities to affect the conservation objectives, and therefore the integrity of the SPA, because of: ➢ Disturbance and displacement impacts, and ➢ Mortality as a result of a pollution event. The wintering bird populations that occur within the Boyne Estuary use mudflats in the polders behind the training walls that define the river channel. Wintering birds are not at risk to disturbance from the proposed activities as there will be no loading activity within the polders. In addition, the river channel is regularly frequented by commercial shipping and fishing activity and current dredging activities; this level of activity will not increase as a result of the proposed activities and so will not cause any disturbance to wintering waterbirds. An accidental pollution event (e.g., hydrocarbon leak/spill) is unlikely to occur. However, if it occurs at a sufficient magnitude, and in the absence of mitigation, it could affect the water quality in intertidal, estuarine and marine habitats of the Boyne Estuary and Irish Sea which are used by internationally important numbers of wintering waterbirds and a breeding colony of Little tern for feeding and roosting or could cause harm or mortality through direct contact with birds. The proposed loading activities will not have a significant impact on the SPA, subject to compliance with the conditions of the RP and, in particular, implementing the following mitigation measures: • Loading shall be primarily by trailing suction hopper dredger which releases a minimum amount of sediment into the

Site Code	Site Name	Qualifying Interests (* denotes a priority habitat)	Conservation Objectives	Assessment
		nigra) A160 Curlew *(Numenius arquata)* A157 Bar-tailed Godwit *(Limosa lapponica)* A149 Dunlin *(Calidris alpina)* A043 Greylag Goose *(Anser anser)* A005 Great Crested Grebe *(Podiceps cristatus)* **Habitats** Wetlands		water column (Condition 3.5) and use of backhoe, grab and plough dredgers is restricted to confined areas (Condition 3.6). • The applicant shall limit the release of suspended solids into the water column during loading and on voyages to and from the dumping sites (Condition 3.12). • Condition 5.3 requires that the applicant shall update and maintain a documented Accident Prevention Procedure that addresses hazards, particularly in relation to the prevention of accidents with a possible impact on the environment. • Condition 5.4 requires that the applicant shall update and maintain a documented Emergency Response Procedure that addresses any emergency situation which may arise. This procedure shall include provision for minimising the effects of any emergency on the environment.
004014	Rockabill SPA	**Birds** A192 Roseate Tern *(Sterna dougallii)* A193 Common Tern *(Sterna hirundo)* A194 Arctic Tern *(Sterna paradisaea)* A148 Purple Sandpiper *(Calidris maritima)*	As per *NPWS (2013) Conservation Objectives: Rockabill SPA 004014. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.*	Rockabill consists of two small low-lying granitic islets off the Dublin coast c.20km southeast of the loading/dumping sites and has a long history of nesting by terns and other breeding seabirds. It is now the most important Roseate tern colony in Europe and hosts nationally important populations of Common and Arctic tern. Intensive wardening, management and monitoring since the 1980s has seen the colony grow significantly. In winter the site supports a nationally important population of Purple Sandpiper. The NIS assessed the potential for the proposed activities to affect the conservation objectives, and therefore the integrity of the SPA, because of: ➢ Disturbance and displacement impacts ➢ Mortality as a result of a pollution event, and ➢ Reduced prey availability Roseate and Common terns were recorded foraging within the Little tern survey during surveys in 2018 and were noted to feed in a similar

Site Code	Site Name	Qualifying Interests (* denotes a priority habitat)	Conservation Objectives	Assessment
				area to Little terns but further seaward in deeper waters. Roseate and Common terns were also recorded roosting in high numbers on the breakwaters at the estuary mouth in August. The continuation of existing dredging operations will not cause any disturbance to roosting or feeding Roseate and Common terns which were recorded using the aquatic and marine habitats of the Boyne River, Boyne Estuary and Irish Sea. An accidental pollution event (e.g., hydrocarbon leak/spill) is unlikely to occur. However, if it occurs at a sufficient magnitude, and in the absence of mitigation, it could potentially affect the water quality in marine habitats of the Boyne Estuary and Irish Sea which are used by Common and Roseate terns for feeding and roosting or could cause harm or mortality through direct contact with birds. Sediment dispersion modelling has demonstrated that the dredging plume generated by the trailing suction hopper dredger during the loading activities will have a limited and transient extent; localised to the dredger, of low suspended sediment concentrations, rapidly dispersing in the tidal conditions. Sand eels are a large component of Common and Roseate tern diet in Ireland. Given the localised extent of the loading activities, it is highly unlikely that the removal of dredged material will result in the removal of sand eel or other prey items to cause any perceptible reduction of prey biomass available. Given the location, nature and scale of the proposed loading and dumping activities, it is concluded that there will be no significant adverse impacts on the SPA's qualifying interests.