OFFICE OF CLIMATE, LICENSING & RESOURCE USE

INSPECTORS REPORT ON A PERMIT APPLICATION

To:	Directors	
From:	Tara Higgins	**ENVIRONMENTAL LICENSING PROGRAMME**
Date:	14th July 2011	
RE:	Application for a Dumping at Sea Permit by Dublin Port Company, Permit Register No. S0004-01.	

Application Details	
Description of activity:	The application is for the loading and dumping at sea of a maximum of 4,000,000 tonnes (1,875,000 m^3) of uncontaminated and contaminated dredged material from maintenance dredging at Dublin Port over a six-year period.
Permit application received:	1st October 2009
Public notice:	*The Irish Times*, 15th October 2009
Site visit:	30th March 2010
Submissions received from statutory and notified consultees:	Nine
Comments received from Dumping at Sea Advisory Committee:	Two
Section 5(2) Notice issued:	18th October 2010 and 21st April 2011
Response to Section 5(2) received:	29th November 2010, 25th February 2011 and 20th May 2011

1. Introduction

This application from Dublin Port Company was submitted to the Department of Agriculture, Fisheries and Food (DAFF) on 01/10/09 and transferred to the EPA in March 2010. The proposed activity consists of the loading and dumping at sea of 4,000,000 tonnes of dredged material from Dublin Port over a six-year period. The proposed dumping will take place at a previously used spoil ground at the Burford Bank in outer Dublin Bay (Figure 1). Sediment is deposited in the port's fairway and berths from the River Liffey and incoming tides, necessitating regular maintenance dredging to maintain charted depths and ensure safe navigation. The accreted sediment includes both uncontaminated (Class 1) and low-level contaminated (Class 2) material. A contamination gradient is evident, whereby the Class 2 material is concentrated in the river channel upstream of the port and in the berths, while the downstream section of the fairway consist of clean Class 1 material. The contamination results from a historical legacy of port activities, municipal wastewater and other licensed discharges, urban runoff from Dublin City and

likely other activities upstream in the Liffey catchment. Monitoring indicates that contamination levels in Dublin Port are declining with successive dredging campaigns, reflecting improved environmental management practices. Dublin Port Company's last 5-year dumping at sea permit (No. 326) expired in 2006. That same year, new and more stringent action levels were published for assessing the suitability of material for dumping at sea which meant that a proportion of the Dublin Port sediment was no longer deemed suitable for unconfined dumping at sea. The port subsequently applied, and was granted, a one-year permit (No. 388) which permitted for the first time a technique called Level Bottom Capping (LBC) for the disposal of 800,000 tonnes of dredged material. LBC is the placement of contaminated material in a mounded configuration on the seabed and its subsequent covering with clean sediment. OSPAR considers capping an acceptable strategy for the disposal of contaminated dredged material under certain conditions and has been used for several decades in the US[1], Holland[2], and Norway[3] and more recently in the UK[4]. The current application proposes LBC for the disposal of 100,000 tonnes of marginally contaminated dredged material and 3,900,000 tonnes of uncontaminated dredged material over a six-year period (see Section 3).

2. Consideration of alternatives to dumping at sea

Disposal to landfill and beneficial re-use of the dredged material were considered by Dublin Port. A significant portion (32%) of the dredged material consists of silt, which is unsuitable for most engineering and construction activities. Re-use of the dredged material in land reclamation, for example, would thus require significant additional processing involving the separation of the silt fractions, dewatering and improvement of the engineering properties of the sediment by mixing it with coarser material or the addition of cement. Current space constraints within the port estate render the storage and processing of the dredged material for subsequent re-use unfeasible at present. The applicant states that it is possible that future projects within the port will have a requirement for infill material, in which case a viable and cost-effective processing option could be developed. While disposal of dredged material to landfill is possible where suitably licensed sites have the capacity, there are significant economic costs and environmental risks associated with bringing dredged material ashore, dewatering it and transporting it via road to landfill. The large quantity of material involved and the city location of the port are further constraints. In a policy context, disposal to landfill is the least favourable option in the waste management hierarchy. The proximity of a previously approved spoil ground enhances dumping at sea as currently the most viable management option.

3. Operational description

Dublin Port Company proposes to load and dump a maximum of 4,000,000 tonnes (1,875,000 m^3) of dredged material over a six-year period from the berths and fairway at Dublin Port. The berths, shown in Figures 2 and 3, are located east of the East Link Bridge and their standard depths vary between -6.5m and -11.3m below Lowest Astronomical Tide (LAT). The fairway is the main channel through the port complex, running from the East Link Bridge through the centre of the Port and out to Dublin Bay, and is maintained at standard depths of between -6.5m to -7.8m below LAT. The material to be dredged consists of silt and sand, of which 3% is Class 2 sediment containing low-level contamination while the remaining 97% is uncontaminated (Class 1) sediment (Table 2). The Class 2 material is concentrated in the river channel immediately downstream of the East Link Bridge and upstream of a line between the western end of Berth 35 and the western end of Berth 41, referred to as Area A (Figure 2). The remaining areas seaward of this line are referred to as Area B where uncontaminated Class 1 material prevails. Loading of material from Dublin Port will be carried out using a trailer suction hopper dredger (TSHD) and dumping will be effected from the water surface by opening the hopper's bottom doors. During

[1] US EPA 2006. Guidance for in-situ subaqueous capping of contaminated sediments. US EPA Assessment and Remediation of Contaminated Sediments Programme, Chicago.
[2] Vellinga, T. & Eisma, M. 2005. Management of contaminated dredged material in the Port of Rotterdam. In: J Vermaat *et al.* (Eds.), Managing European Coasts: past, present & future. Springer, Berlin, p315-322.
[3] Skei, J. *et al.* 2000. Capping of contaminated marine sediments in Norway—an experimental approach. In: Munawar, M. *et al.* (Eds.), Fourth International Symposium on Sediment Quality Assessment, Otsu, Japan, October 24–27, pp. 162– 163.
[4] Blake, S. 2009. The first UK offshore contaminated dredge material capping trial: Lessons learned. DEFRA and Marine and Fisheries Agency.

dumping, it is proposed to cap the Class 2 sediment from Area A using the clean sediment from Area B, thereby containing the contaminated material and mitigating its dispersal. The applicant states that the Area B sediment is suitable as a capping material as is similar granulometrically to the seabed material at the dumping site. This capping methodology, referred to as level bottom capping (LBC), was used in the previous 2007/2008 maintenance dredging campaign under Permit No. 388. Five dredging operations are proposed during the lifetime of the six-year permit, equating to approximately 375,000 m^3 (800,000 tonnes) in each campaign. Each campaign will involve approx. 10,000 m^3 of Class 2 sediments, which includes a buffer area around Area A. Dublin Port Company envisages that the dredging campaigns will be undertaken at 18-month intervals.

All of the Class 2 material from Area A will be deposited on the seabed at the dumping site, which will take an estimated 3.5 days, before capping commences. It will be placed in a line no greater that 100 m long, with dumping commencing at the south end. The Class 2 material will be dumped at slack water to minimise dispersion. GPS equipment will ensure that the dumping locations are accurately monitored. On the basis of bed level currents at the Burford Bank, average grain size of the Class 2 material and published data on the velocity of entrained sediments, the applicant predicts that the net movement of the uncapped Class 2 sediments will be 20 m per day in a northerly direction. Over a 5 day period (which includes 1.5 day contingency) it is possible that the uncapped Class 2 material may migrate approximately 100 m in a northerly direction. Allowing for a 100 m northwards migration, 10,000 m^3 of Class 2 material will have a deposition area of 100 × 200 m and 0.5 m deep. Following completion of the placement of the Class 2 sediments, at least 20,000 m^3 of cap material from River Area B will immediately be placed in a line formation completely covering the Class 2 sediments, providing at a minimum a cap thickness of 0.53 m over a 150 m × 250 m area. Following this initial capping, material from the remaining areas (Alexandra Basin East, Oil Berths, South Quays and Ferryport), will be loaded and dumped at the dumping site in sequence, followed by the remaining clean coarse sediment from River Area B, providing additional cap thickness. Up to 375,000 m^3 of Class 1 sediments will be dumped during each campaign over and above the minimum quantity required for the cap, providing an additional cap thickness of 1.5 m over an area of 450 m × 550 m. As it is expected that the additional capping material may erode over time, the same dumping site will be used in each campaign so that the capping layer will be reinforced on an 18- monthly basis. Any additional dumping of sediments at the Burford Bank site by third parties will assist the maintenance of the cap integrity. A post-dumping survey will be carried out to demonstrate the effectiveness of the LBC technique (see Section 5.2.3).

4. Characteristics of the material for disposal

The material to be dredged consists of silty sand and sandy silt. It comprises 2% rock/gravel, 60% sand, 32% silt and 6% mud. The most recent sediment sampling was conducted in October 2008 at 19 locations around Dublin Port: the river channel (×3), North Quay Extension (×2), Alexandra Basin East (×3), Oil Berths (×3), Ferryport (×3) and South Quays (×2), and the approach channel (Bar West) (×3). The sampling programme was developed and conducted by the applicant in consultation with the Marine Institute. Table 1 summarises the results, with reference to published Irish action levels (criteria for assessing the acceptability of dredged material for dumping at sea). The current action levels were published in 2006 by the Marine Institute[5]. Sediments below the lower level (Class 1) are generally suitable for dumping at sea, those that exceed the upper level (Class 3) are generally regarded as unsuitable for conventional (unconfined) dumping at sea while sediments between the upper and lower action levels (Class 2) require further site-specific assessment. As these action levels are not set down in legislation, they do not constitute pass/fail criteria but are used in a weight-of-evidence approach.

The Dublin Port sediments demonstrated generally low levels of contamination typical of industrial port sediment. About half of the samples exhibited low Class 2 levels of arsenic, cadmium, nickel, zinc and PAHs, while a smaller number of samples exhibited low Class 2 levels of copper, lead, mercury, organotins, PCBs and total extractable hydrocarbons. The two North

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

Quay Extension samples had high (Class 3) concentrations of zinc and organotins, respectively, as well as Class 2 levels of heavy metals, organotins and hydrocarbons. Samples from the River Area A, Alexandra Basin East, Oil Berths and South Quays all exhibited some low Class 2 levels of contamination. Only those samples from the Ferryport and the fairway were completely clean (Class 1). Overall, the levels of contamination recorded in the 2008 samples were lower than those recorded in previous 2006 and earlier sampling, likely reflecting the removal of contaminated sediment during previous dredging campaigns and improved environmental management. However, samples taken from the river channel upstream of the port both in 2006 and 2008 indicate that moderate to high levels of contamination still exist upstream of the East Link Bridge; this contamination, originating from external sources, may be transported downstream into the port area in future. In 2006, toxicity testing of the sediments from Area A was undertaken with two organisms, the bacterium *Vibrio fischeri* and the amphipod *Corophium volutator*., which some minimal acute toxicity, though not of significant levels. Six samples from Dublin Port (Areas A and B) underwent radiological testing by the RPII in December 2009. The RPII have confirmed that the radiological properties of the material are not of concern.

Table 1 Composition of the material for disposal with reference to Irish Action Levels (AL)

Parameter	Result (no. of samples)			Comment
	Class 1 sediments	Class 2 sediments	Class 3 sediments	
Arsenic	10	9	0	No sample exceeded the upper AL
Cadmium	9	10	0	No sample exceeded the upper AL
Chromium	19	0	0	No sample exceeded the lower AL
Copper	14	5	0	No sample exceeded the upper AL
Nickel	10	9	0	No sample exceeded the upper AL
Lead	15	4	0	No sample exceeded the upper AL
Mercury	17	2	0	No sample exceeded the upper AL
Zinc	11	7	1	Upper AL was exceeded in 1 sample (SL4) from North Quay Extension (B006)
TBT & DBT [1]	16	2	1	Upper AL was exceeded in 1 sample (SL5) from North Quay Extension (B006)
PCB [2]	9	10	0	No sample exceeded the upper AL
PCB [3]	16	3	0	No sample exceeded the upper AL
PAH [4]	10	9	n/a	Lower AL was exceeded in 9 samples
TEH [5]	18	1	n/a	Lower AL was exceeded in 1 sample

Note 1: Sum of tri-butyl and di-butyl tin.
Note 2: Individual congeners of ICES 7 polychlorinated biphenyls (PCB 028/052/101/138/153/180/118).
Note 3: Sum of ICES 7 polychlorinated biphenyls (PCB 028/052/101/138/153/180/118).
Note 4: 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 5: Total extractable hydrocarbons

5. Receiving environment and impact

As part of the Agency's assessment, the potential impacts of the proposed loading and dumping operations on the marine environment were examined. Table 2 summarises the main considerations in relation to the receiving environment.

Table 2 Characteristics and sensitivity of the loading areas and dumping site

	Loading Areas		Dumping site	
Characteristic	**Classification**	**Comment**	**Classification**	**Comment**
Receiving waterbody	Liffey Estuary Lower (EA_090_0300)	WFD transitional waterbody.	Irish Sea	Dumping site is outside the WFD coastal waterbody boundary.
WFD overall status	Moderate	Issues with MRP and priority substances. Deadline to achieve Good status extended to 2027.	N/A	The adjacent WFD coastal waterbodies (Irish Sea Dublin (HA 09) and Dublin Bay) are of Moderate status.
Pressures	At risk of not achieving good status	Pressures from Combined sewer overflows, IPPC licensed discharges, upstream diffuse agricultural, urban diffuse pollution. Highly modified water body due to flood defences, port activities, navigation, dredging	N/A	The nearby WFD coastal waterbodies are deemed 'at risk' of not achieving good status due to pressures from WWTP and IPPC discharges, wastewater from unsewered properties & dangerous substances.
Bathing waters	N/A	Nearest are Sandymount Strand (PA3_0044) (4 km S); Dollymount Strand (PA3_0045) (5 km N); Merrion Strand (PA3_0046) (6 km S); Seapoint (PA3_0057) (7 km S)	N/A	Nearest are Dollymount Strand (PA3_0045) (8 km N); Seapoint (7.5 km S) (PA3_0057); Merrion Strand (PA3_0046) (9 km S); Sandymount Strand (PA3_0044) (10 km S)
Salmonid waters	N/A	None in vicinity	N/A	None in vicinity
Shellfish waters	N/A	None in vicinity	N/A	Nearest is Malahide approx. 10 km N
Resource use	Port activities, shipping	Dublin Port is the largest and busiest port in Ireland, with approx. 17,000 shipping movements per year.	Shipping	The site is charted as a spoil ground and is closed to shipping due to the traffic separation lanes in the bay.
Amenity use	None	The loading areas are within the commercial port estate	None	Fishing or other amenity use is highly unlikely due to the proximity of shipping lanes.
Cultural resources	None	No known features of archaeological interest	None	No known features of archaeological interest
SAC	N/A	The closest are South Dublin Bay (site code: 000210) 1 km SE and North Dublin Bay (site code: 000206) 1.6 km NE.	N/A	The closest are Howth Head (site code: 000202) 3.6 km N and North Dublin Bay (site code: 000206) 5.9 km N.
SPA	South Dublin Bay and River Tolka Estuary SPA (site code: 004024).	North Bull Island (site code: 004006) is directly adjacent to the port.	N/A	The closest are Howth Head Coast (site code: 004113) 3.5 km N and North Bull Island (site code: 004006) 4.4 km NW.

5.1 Loading areas

5.1.1 Characteristics

The loading areas at Dublin Port are located in the Liffey Estuary Lower. The overall status of this transitional waterbody is moderate due to water quality issues with phosphate and priority substances from a diverse range of sources: combined sewer overflows, IPPC licensed discharges, upstream diffuse agricultural and urban diffuse pollution. The deadline to achieve good status has been extended until 2027. The Liffey Estuary Lower is designated as a heavily modified waterbody (HMWB) due to the presence of flood defences and physical modifications along the quays, shipping and dredging by Dublin Port Company. The loading areas are within the commercial Dublin Port area and are not in the immediate vicinity of any amenity areas. The nearest designated bathing waters are Dollymount Strand (5 km) to the north and Sandymount Strand (4 km), Merrion Strand (6 km) and Seapoint (7 km) to the south. There are no recorded shipwrecks in the area and the Department of the Environment, Community and Local Government (DECLG) has been consulted and has no underwater archaeological objections to the proposed operations. There are no designated shellfish waters or salmonid waters in the vicinity. The applicant states that there have been no reported negative water quality, ecological or socio-economic impacts from previous loading campaigns. As there are a number of protected sites within the Dublin Bay area, screening for appropriate assessment was required (see below).

5.1.2 Appropriate Assessment

There are a number of protected sites within the Dublin Bay area. Part of the port estate lies within the boundary of the South Dublin Bay and River Tolka Estuary SPA (site code: 004024), which is of special conservation interest for birds (Light-bellied Brent Goose, Golden Plover, Knot, Sanderling, Bar-tailed Godwit, Redshank, and three species of Tern). Both Common Tern and Arctic Tern breed in Dublin Docks on a man-made mooring structure. Directly adjacent to the port lies North Bull Island SPA (site code: 004006), likewise of special conservation interest for birds (Light-bellied Brent Goose, Shelduck, Pintail, Shoveler, Oystercatcher, Ringed Plover, Grey Plover, Knot, Dunlin, Black-tailed Godwit, Bar-tailed Godwit, Redshank, Turnstone and 20,000 wintering birds), and a UNESCO Biosphere area. There are two SACs in close proximity (<2km) to the loading areas: South Dublin Bay (site code: 000210) and North Dublin Bay (site code: 000206). The former is an intertidal site with extensive areas of sand and mudflats (Annex I habitats) and of international importance for waterfowl. The latter, which encompasses North Bull Island, holds good examples of ten Annex I habitats including saltmarsh, intertidal lagoons and various types of dunes, and is also of importance for several wintering bird species, invertebrates and a number of rare plant species.

On foot of a Section 5(2) notice issued by the Agency, the applicant carried out a Stage 1 Screening assessment under Article 6(3) of the Habitats Directive on the likelihood of significant effects of the proposed activities on Natura 2000 sites. The screening found that the loading activity will not result in likely significant direct or indirect impacts on the structure, function or conservation objectives of any Natura 2000 site. The screening report concluded that the protected sites and their qualifying interests will not be significantly affected by the loading operations. The dredging operator contracted by Dublin Port is subject to Standard Operating Procedures under the Dublin Port Environmental Management System designed to ensure that activities within the port are conducted in accordance with environmental best practice. Accordingly, the techniques employed in the loading process, employing a trailing suction hopper dredger, releases a minimum amount of sediment into the water column. The noise generated by the loading activities will not cause a disturbance to feeding birds as the area currently operates as a busy shipping port. The likelihood of significant effects is lessened by the intermittent nature of the loading campaigns, the position of the Natura 2000 relative to the loading areas and the types of intertidal biota potentially affected which have developed to withstand Dublin Bay's dynamic environment. Refer also to Section 6 of this report.

5.1.3 Requirements in the RP

The RP mitigates any potential significant impacts on the receiving environment from the loading activity. Condition 3.4 of the RP requires that the loading be conducted in sequence, commencing

with the most contaminated material and finishing with the clean material. The RP requires that the most contaminated material from the North Quay Extension be loaded on an incoming tide (Condition 3.5) to ensure that any contaminants released into the water column during loading are transported upstream to an already contaminated area. Condition 3.3 requires the permit holder to take all reasonably practicable measures to limit the release of suspended solids into the water column. In order to ensure that the loading activities do not give rise to noise nuisance, the RP requires that all reasonably practicable measures are adopted to minimise the noise impacts of the permitted activities and ensure that they do not cause a nuisance at any NSLs (Condition 2.1). The permit holder is required to establish and maintain a Public Awareness and Communication Programme to ensure members of the public can obtain information at reasonable times (Condition 2.7). The RP includes a requirement for monitoring of sediment chemistry and granulometry at loading areas in 2012 and 2015 (Condition 4 and *Schedule B*), in order to assess any change in the contamination level of the material permitted to be dumped. The monitoring requirements set out in the RP were developed in consultation with the Marine Institute. The Agency is satisfied that, subject to compliance with the conditions set out in the RP, the proposed loading activities will have no significant impact.

5.2 Dumping site

5.2.1 Characteristics

The proposed dumping site, the Burford Bank, has been routinely used by the Dublin Port Company since 1996, prior to which an adjacent site was used from the 1960s until 1996. Its location is charted on the Dublin Bay Admiralty map (Figure 1). The site was used by the Dublin Port Company for level-bottom capping (LBC) in 2008. The dumping site is situated in outer Dublin Bay approximately 5.5 km from the shore and extends over an area of 2.12 km^2, with an average water depth of 20 m. The seabed sediments are predominantly sand with low silt levels. The prevailing tidal regime within the Dublin Bay leads to a clockwise current being generated within the bay. Bed currents measurements indicate that the flood and ebb tidal currents move predominately in a South to North direction at the dumping site, with peaks of 0.3m/s (flood tide) and 0.4m/s (ebb tide). Dublin Bay is heavily used by commercial and private vessels entering and leaving Dublin Port and Dun Laoghaire harbour, although the vessel traffic separation lanes in the bay mean that the waters overlying the dumping site itself are closed to shipping. The dumping site has also been used by various other permit holders: Poolbeg Yacht and Boat Club, Howth Yacht Club, Dun Laoghaire Harbour Company, the EBS and Dublin City Council and a new application by Howth Yacht Club (S0010-01) to dump 120,000 tonnes of dredged material from Howth Harbour at the site is currently under assessment by the Agency. A benthic impact study of the dumping site undertaken in 1995 indicated a clean sand community comprising of bivalves, featherworms and brittlestars, while a subsequent 2008 study indicated that the macrobenthic communities were typical of these habitat types and concluded that overall the dumping site appeared to have recovered well from previous dumping operations and was capable of receiving further spoil.

It is proposed that dumping of the contaminated material will be carried out at slack water. The applicant states that bottom dumping, i.e. by way of opening the bottom doors in the hull of the dredger, will minimise the time taken to deposit the material and ensure that placement can be completed at slack water, thereby minimising dispersion. Use of a pumped delivery system for the placement would entrain large volumes of water, resulting in extended settlement/dispersal time and as placement could not be completed at slack water would result in greater dispersal of suspended sediments during the flood or ebb tides. Modelling of the proposed dumping activities predicts that, following dumping at slack water, over 92% of the material will settle on the bottom within 8 minutes and 97% within 16 minutes of release. The very fine sediments could take between 23 minutes and 11 hours to settle on the seabed.

As the dumping site is within an avoidance area between the shipping lanes in Dublin Bay, the proposed operations will not have a significant impact on navigation and is highly unlikely to be used for commercial or recreational fishing or other amenity uses. There have been no reported negative ecological or socio-economic impacts from previous dumping campaigns. The nearest designated bathing waters are Dollymount Strand (8 km) to the north and Merrion

Strand (9 km), Sandymount Strand (10 km) and Seapoint (7.5 km) to the south. There are no recorded shipwrecks or artefacts at the dumping site and the DECLG has been consulted and has no underwater archaeological objections to the proposed operations. There are no pipelines of other engineering uses recorded on the site. While this area of the western Irish Sea includes cod spawning and nursery grounds and sprat nurseries, there have been no reported impacts on fisheries from previous dumping. The Sea Fisheries Protection Authority (SFPA) and Inland Fisheries Ireland (IFI) have been consulted and the RD takes into account the comments received from the latter. There are no aquaculture sites in the vicinity of the dumping site. The nearest shellfishery area, used predominantly for the production of razor clams, is located 10 km away. The re-use of a previously designated dumping site is preferred as a means of restricting the impacts of dumping to a confined, well characterised area that is known not to contain any archaeological remains, special ecological features or designations and that will not interfere with navigation or amenity uses. The applicant states that there have been no reported negative water quality, ecological or socio-economic impacts from previous loading campaigns.

5.2.2 Appropriate Assessment

There are a number of designated conservation sites (SPAs and cSACs) in the vicinity of the dumping site. Howth Head SAC (site code: 000202) is situated 3.6 km north of the dumping site; this site holds good examples of two Annex I habitats, sea cliffs and dry heaths, and is also of importance for its seabird colonies, invertebrates and a number of rare plant species. North Dublin Bay SAC (site code: 000206), described in section 5.1.2 above, is 5.9 km north of the dumping site. Howth Head Coast SPA (site code: 004113) is 3.5 km north of the dumping site; this is a rocky headland of importance due to its seabird colonies and is of special conservation interest for Kittiwake. The cliffs also support a breeding pair of Peregrine Falcon, an Annex I species. North Bull Island SPA (site code: 004006), which is a site of high ornithological importance as described in section 5.1.2 above, is 4.4 km north-west of the dumping site. The applicant undertook a screening exercise to determine if an appropriate assessment was required. The screening report concluded that the protected sites and their qualifying interests are unlikely to be affected by the dumping operations due to the prevailing tidal regime within Dublin Bay and the position of the Natura 2000 sites relative to the dumping site. The likelihood of significant effects is lessened by the intermittent nature of the dumping campaigns, the low quantities of sediment potentially dispersed away from the dumping site and the types of intertidal biota potentially affected, which have developed to withstand the Dublin Bay's dynamic environment.

5.2.3 Requirements in the RP

The RP mitigates any potential significant impacts on the receiving environment from the dumping activity. Material from the North Quay Extension and River Area A must be dumped within 30 minutes either side of slack water (Condition 3.7). Material from the North Quay Extension and River Area A must be dumped in a line formation (Condition 3.8) and then capped without undue delay with a layer of clean coarse sand from River Area B which must be maintained at a depth of at least 0.5 m (Condition 3.9). This methodology, developed in line with international best practice guidance on the management of contaminated marine sediments, is designed to mitigate the potential release of contaminants into the water column and prevent any impact from contaminated material on nearby coastal waterbodies and protected European sites. The RP includes monitoring requirements (Condition 4 and *Schedule B*) in order to assess the stability of the cap over the short, medium and long term. The monitoring requirements set out in the RP were developed in consultation with the Marine Institute. Condition 6 provides for aftercare management of the dumping site. The RP, as drafted, ensures that the dumping operations shall not have a significant impact on the receiving environment.

6. Compliance with EU Directives and international conventions

In considering the application, regard was had to the requirements of relevant legislation:

London Convention (and Protocol) and OSPAR Convention

Dumping of dredged material at sea is regulated internationally by the London Convention 1972 (including the 1996 London Protocol) and the Convention for the Protection of the Marine

Environment of the North East Atlantic 1992 (the 'OSPAR Convention'). Contracting parties to these Conventions are required to appropriately regulate dumping at sea in accordance with the relevant adopted criteria, guidelines and procedures, and to report annually to the OSPAR Commission on the nature and quantities of material dumped at sea and the locations and methods of dumping used. As part of the assessment, the suitability of the material for dumping at sea was evaluated in accordance with OSPAR and London Convention guidelines, with particular reference to the upper and lower action levels for various substances published by the Marine Institute. The Agency is satisfied that, subject to the conditions in the RP, the proposed activities fulfil the requirements of the OSPAR and London Conventions.

Water Framework Directive [2000/60/EC]

In assessing the application, regard was had to the potential impact of the proposed loading and dumping operations on the Liffey Estuary Lower, Dublin Bay and Irish Sea Dublin (HA 09) meeting their objectives under the WFD. The potential impacts of the proposed loading and dumping operations on water quality and ecological status, and associated mitigation measures, are discussed in section 5 above. Taking into consideration the characteristics of the receiving environments, and the conditions included in the RP designed to mitigate against potential adverse impacts, the proposed operations are not considered likely to impact on the achievement of the WFD objectives for the affected waterbodies.

Bathing Water Directive [2006/7/EC]

There are four designated bathing waters within Dublin Bay: Dollymount Strand (PA3_0045) to the north and Sandymount Strand (PA3_0044), Merrion Strand (PA3_0046) and Seapoint (PA3_0057) to the south. In the Agency's report on '*The Quality of Bathing Water in Ireland – An Overview for the Year 2009*', all of these bathing waters were deemed to comply with EU Mandatory and Guide Values (Good Water Quality). The northerly bed-level currents prevailing at the Burford Bank mean that the beaches to the south are unlikely to be affected by the dumping operations while, to the north, Dollymount Strand is situated 8 km from the dumping site. The applicant states that there have been no reported negative water quality, ecological or socio-economic impacts from previous loading and dumping campaigns. The permit holder is required to establish and maintain a Public Awareness and Communication Programme to ensure members of the public can obtain information at reasonable times (Condition 2.7). Taking into consideration the temporary nature of the operations, the distances involved and the conditions in the RP to mitigate negative impacts on water quality, the Agency is satisfied that the proposed activities will have no significant impact on any bathing waters.

EC Freshwater Fish Directive [2006/44/EC]

There are no designated salmonid waterways in the proximity of the loading areas. Inland Fisheries Ireland was consulted and its recommendations have been incorporated into the RP.

Shellfish Waters Directive [2006/113/EC]

The nearest designated shellfish waters are Malahide. The licensed area, which is predominantly used for the cultivation of razor clams, is classified as Class B indicating faecal contamination in the area. Key pressures identified in the Malahide Pollution Reduction Programme (RPR) are urban wastewater systems and on-site waste water treatment systems, while agriculture is identified as a potential secondary pressure. Neither the characterisation report nor the RPR refer to port activities, dredging or dumping at sea as potential pressures.

Habitats Directive [92/43/EEC] & Birds Directive [79/409/EEC]

The area around Dublin Bay contains three SACs and three SPAs: South Dublin Bay SAC (site code: 000210), North Dublin Bay SAC (site code: 000206), Howth Head SAC (site code: 000202), South Dublin Bay & River Tolka Estuary SPA (site code: 004024), Howth Head Coast SPA (site code: 004113) and North Bull Island SPA (site code: 004006). The SPAs are sites of high ornithological importance for a range of bird species while the cSACs contain the Annex I habitats: sea cliffs and dry heaths and are also of importance for seabird colonies, invertebrates and lichens and rare plant species. The qualifying interests of these conservation sites are outlined

in section 5. On foot of a section 5(2) notice issued by the Agency, the applicant undertook a screening exercise to determine if an appropriate assessment was required. The screening report concluded that the proposed loading and dumping operations will not result in likely significant direct or indirect impacts on the structure, function or conservation objectives for the any of the Natura 2000 sites, and that an appropriate assessment was not required. The screening found that the SPA selection features for birds will not be significantly affected by the loading or dumping activities and the conservation objectives of the SPAs will be maintained. Howth Head SAC's qualifying interests are terrestrial vegetation systems, which do not have direct or indirect effects pathway from the loading operations and therefore the site was screened out. The main potential effects to the other SACs relate to changes in water quality that could then have implications for intertidal biota; however, the proposed operations will have an insignificant impact on ambient water quality and in addition many of the qualifying features are above the high water line.

Environmental Liabilities Directive [2004/35/EC]
Condition 7.3 of the RP satisfies the requirements of the Environmental Liabilities Directive.

7. Site Visit

A site visit to Dublin Port was conducted on 30/03/2010 during which a site walkover and tour of the port via boat was conducted, taking in the areas of the various berths, river channel and approach channel proposed to be dredged.

8. Advisory Committee Comments

A Dumping at Sea Advisory Committee (DAS AC) has been established under Section 41 of the EPA Acts 1992 to 2007, comprising representatives of the Marine Institute, Inland Fisheries Ireland, Sea Fisheries Protection Authority, the Irish Environmental Network and Dublin Port. The role of the DAS AC is to provide consultation and technical advice to the Agency on aspects of the Dumping at Sea permitting function, in particular the assessment of permit applications. This application was discussed at the DAS AC meeting of 06/10/10. Two members of the DAS AC submitted comments on this application:

- **Inland Fisheries Ireland** (IFI) stated that both it and the former Eastern Regional Fisheries Board (ERFB) were satisfied that no specific windows need to be applied in respect of the proposed dumping activities in order to protect the passage of fish. It stated that Dublin Port Company should be required to compile a dataset on suspended solids levels within Dublin Port, with a view to understanding the role, if any, of elevated suspended levels on the biota of the port area. It also stated that the works programme be undertaken so as not to have any adverse medium/long-term impact on the aquatic environment.

Applicant response
The applicant questioned the value of suspended solids monitoring in the context of a large commercial port. Dublin Port has approximately 17,000 ship movements annually, with associated propeller-induced disturbance, and there are also pronounced naturally-induced variations in turbidity and suspended solids arising from storms, prolonged easterly tides and heavy rainfall in the Liffey catchment.
Agency response
The Agency is satisfied that sufficient data already exist on suspended solids and turbidity levels in Dublin Port and that, in the context of the busy port environment, a requirement for additional monitoring of suspended solids is unnecessary for the operation of the permit. The Agency is satisfied that the RP, as drafted, will ensure that proposed works will not have any adverse medium or long-term impact on the aquatic environment.

- **Marine Institute** (MI) stated that the sediment chemistry demonstrated some low levels of contamination (low class 2 levels) and is typical of industrial port sediment. It noted that the sample from the west end of Ocean Pier/North Quay Extension exhibited Class 3 levels of zinc and PAH, while the sample from the east side of Ocean Pier/North Quay Extension had Class 3 levels of TBT. The levels of contamination in the 2008 samples were lower than previously

recorded, most likely due to previous dredging campaigns having removed the most heavily contaminated material and improved environmental practices. It noted that very high levels of contamination still exist in areas upstream of the port, which may be transported downstream in future. The MI recommended that the sediment at North Quay Extension be dredged early in the campaign, followed by the sediment at Alexandra Basin East and the Oil Berths, thus allowing a capping effect from the remaining cleaner sediment. Dredging of the Ocean Pier sediment should take place on an incoming tide. Dumping of early sediment should take place within 30 minutes either side of slack water, within 2 days either side of neap tide. Binding the above sediment may work as an alternative to the above conditions. Clean coarse fairway sediment should be used to cap the earlier finer grained sediment. Monitoring at the dumping site should be continued on an interim basis in order to confirm the condition of the previous cap.

Applicant response

The applicant agreed with the MI recommendations regarding the sequencing of the loading and dumping works and the dumping of the contaminated material at slack water. The applicant objected to the recommendation that dumping at slack water be restricted to two days either side of neap tide, as this would place considerable contractual/programme restrictions on the works. The merit of this restriction was questioned, since the there is no significant difference in water velocity/direction of currents at slack water on a spring or a neap tide, and only a marginal difference in water depth between the tidal ranges. The applicant contended that dumping at slack water should be allowed on any tide.

Agency response

The RP incorporates the Marine Institute's recommendations with regards to: the sequence of loading (Condition 3.4) and loading the material from North Quay Extension on an incoming tide (Condition 3.5). Material from the North Quay Extension and River Area A must be dumped within 30 minutes either side of slack (Condition 3.7) in order to minimise dispersion of potentially contaminated material; this requirement to dump at slack water is not confined to neap tides as this would in the Agency's view place excessive operational restrictions on the permit holder disproportionate with any potential environmental gain. The RP incorporates the MI recommendations with regard to capping the earlier finer grained sediment with clean coarse fairway sediment (Conditions 3.9) and monitoring at the dumping site, and the monitoring requirements set out in Condition 4 and *Schedule B* were developed in consultation with the Marine Institute and with reference to OSPAR guidance on recommended sampling frequency for potentially contaminated dredged material.

9. Submissions

- **Central Fisheries Board (now IFI)** requested clarification on the quantities of material and the dredging, placement and capping methodologies. It also requested further information of the potential re-use of the sand content for beach nourishment. It recommended that conditions be included requiring the permit holder to: (a) agree the timing of works with the ERFB to take account of life stages of migratory species, and (b) compile a report on suspended solids levels within the port area in order to assess the impact of elevated suspended solids levels on the biota.

Applicant response

The applicant gave clarification of the quantities of material to be dredged and dumped and clarified the detail of the proposed loading, dumping and capping operations (see section 2). The applicant stated that beach nourishment was considered but found to be economically unviable: separating the 60% sand content would require bringing the dredged material ashore for dewatering and processing. The 40% fine fraction would have to be disposed of either to landfill or at sea, the former being the lowest priority in the waste hierarchy. The applicant agreed to liaise with the ERFB on the timing of operations. Regarding monitoring of suspended solids, the applicant stated that as the essential maintenance operations are undertaken in the most environmentally sensitive manner using a suction dredger, it is unclear how further research into the level of suspended material in the water column could improve the dredging operation.

Agency response

The recommendations of IFI, which were included in a subsequent Advisory Committee submission, are addressed in Section 8 above.

- **Department of Enterprise, Trade and Employment** stated that it had consulted with Enterprise Ireland and had no objection to the application.

- **Department of Transport** (Marine Survey Office) stated that it had no objection from a navigational viewpoint to the proposed operations and advised that the applicant should arrange with that office the publication of a Marine Notice prior to commencement of operations.

Agency response

Condition 3.11 of the RP addresses the Marine Survey Office's requirements.

- **Department of Communications, Energy and Natural Resources (**Petroleum Affairs Division) stated that it had no observations to report in relation to this application.

- **Department of the Environment, Community and Local Government** (Development Applications Unit) made two submissions stating that it had no objections on archaeological grounds to the proposed operations.

- **An Taisce** stated that, due to resource constraints, it would not be submitting comments in relation to this application.

- **Radiological Protection Institute of Ireland** stated in its submission of 22/10/09 that it would like to repeat the analysis previously carried out in 2007.
- In a subsequent submission of 12/01/10, the RPII stated that it had analysed six sediment samples from Dublin Port and that the results indicate that dumping of these materials at sea will not result in a radiological hazard.

10. 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 the use by licensing inspectors in the assessment of dumping at sea permit applications.

Recommended Permit (RP)

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

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.

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,

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Tara Higgins

Inspector

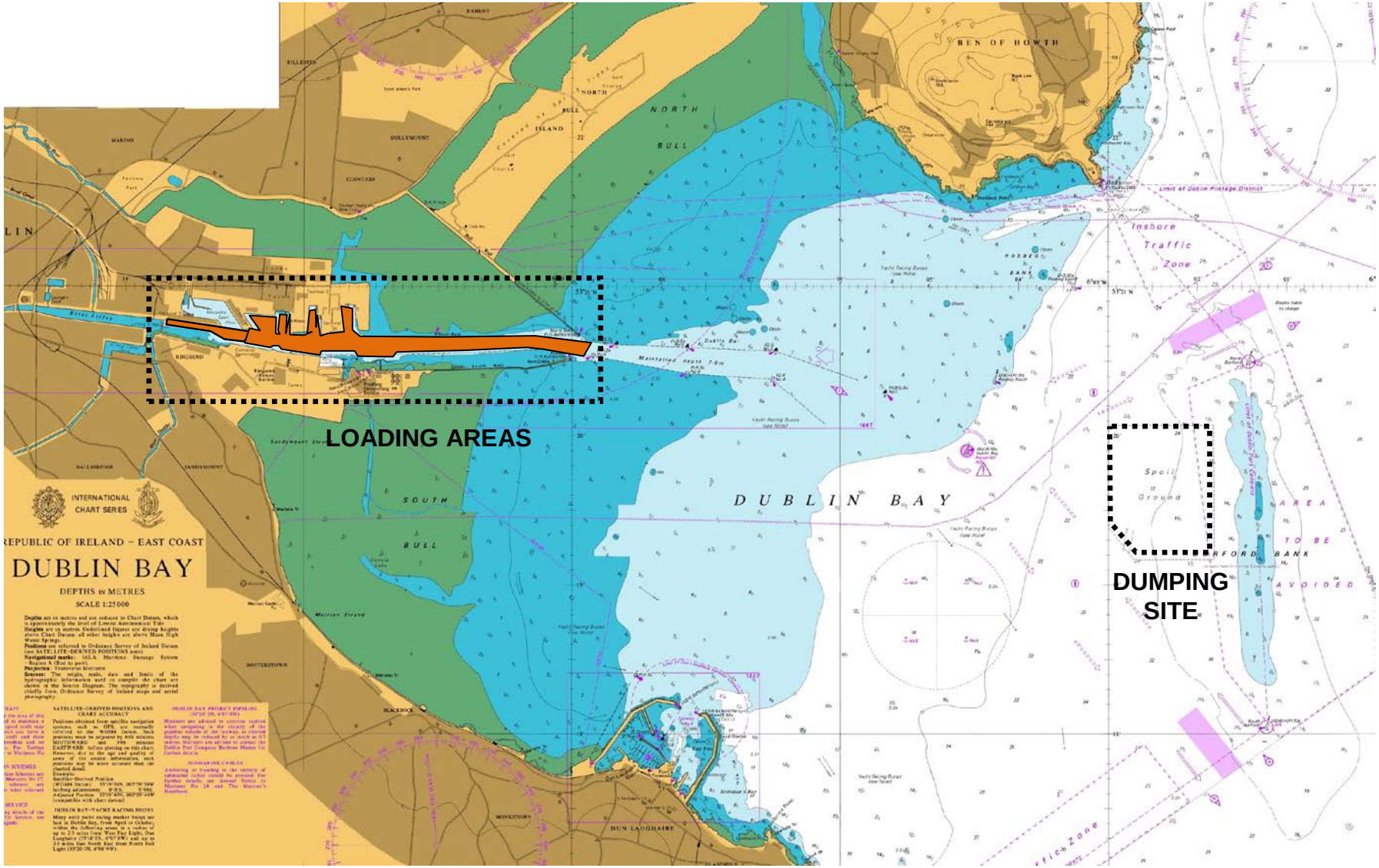
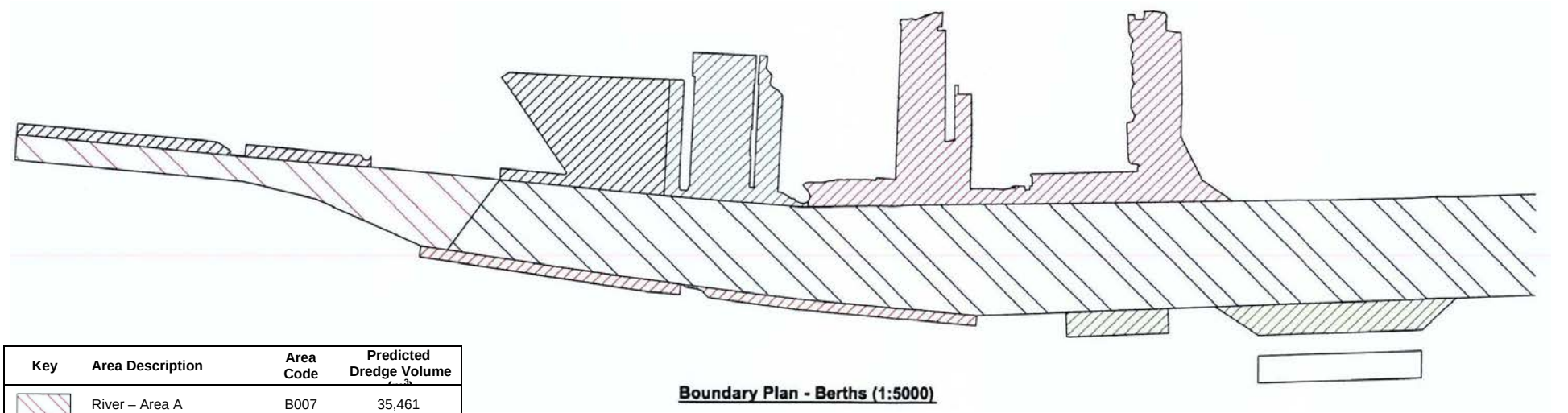


Figure 1 Location of the proposed loading areas and dumping site

Figure 2 Map of Dublin Port, showing the proposed loading areas



Key	Area Description	Area Code	Predicted Dredge Volume
	River – Area A	B007	35,461
	North Quay Extension Note 1	B006	8,057
	Alexandra Basin East	B008	50,617
	Oil Berths	B009	81,522
	Ferryport	B010	121,807
	South Quays	B012	59,863
	Sludge Jetty Note 2	B013	0
	River – Area B	B011	743,358
	Bar West Note 2	B016	0
	Bar East Note 2	B017	0

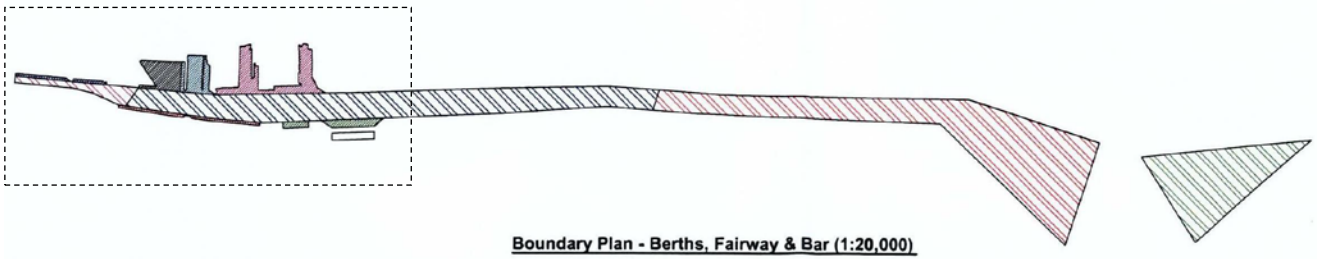


Figure 3 Loading areas and predicted dredge volumes by area

Note 1: Based on the Agency's assessment of the sediment chemistry results, sediment from the North Quay Extension (B006) is considered as predominantly Class 2. Note 2: As it is not proposed to load or dump any material from these areas, they are not included in the RP