Marine Institute
Foras na Mara

To: Suzanne Wilde, EPA
From: Margot Cronin, MI
RE: Haulbowline Dumping at Sea application, 2015
Date: 12/07/2016

DaS application from Department of Defence, Haulbowline.
Ref S0005-02

Dear Suzanne,

This application is to dredge ~25000 tonnes of predominantly fine sediment from the entrance channel and basin at Haulbowline and to dump at sea at the existing dumpsite outside Cork Harbour. Sediment sampling and analyses were carried out according to recommendations made by MI in 2015. Sediment chemistry was assessed on the basis of results provided to EPA (summarised in Table 1, below).

All samples can be classed as predominantly silt/mud, with <63um fraction ranging from 60% to 80%. Yields for CRM are acceptable.

Sediment chemistry results indicate some heavy metal contamination, particularly zinc, which is reported as class 3 at two stations. There are also one or more class 2 results for copper, lead, chromium, mercury, TBT and PCB. The majority of the class 2 results are in and around the relevant action level and therefore considered to be marginally contaminated.

Sample locations and results of analyses indicated similar contaminant concentrations and classification of sediment to those of 2008, which in turn reflected concentrations and locations to the previous analyses of 2003, and earlier. Yet again, there appears to be an area of contamination around the pontoon, where sample NV4 demonstrated class 3 concentrations of zinc as well as class 2 levels of copper and lead. In addition, samples from the east side of the inner basin also contained class 2&3 levels of zinc, as well as relatively low class 2 levels of copper, mercury , lead, chromium, PCB (Σ ICES7) and TBT.

Previous analyses in 1992, 1997 and 2003 indicated similar localised contamination in the area around the pontoon. In 2010, the contaminated area around the pontoon was subject to exclusion from the dredging. Although Haulbowline was last dredged in 2010 the concentrations of some heavy metals, do not appear to be declining.

As can be seen in Table 1, the average results are very similar to 2008, indicating no perceptible improvement in the quality of the sediment. There now appears to be contaminated sediment along the east side of the basin, demonstrating higher results than previously.

Recommendations:

On the basis of the test results from 2015, it appears that there is contamination in the area around the pontoon and also the east side of the inner basin. The area around the pontoon has previously been flagged as being contaminated. As can be seen in Table 1, the average results are very similar to 2008, indicating no perceptible improvement in the quality of the sediment.

It is acknowledged that, prior to 2006, this material was dredged and permitted for dumping at sea on the basis of earlier provisional action levels, which were less restrictive for some determinands. The amount of material to be dredged and dumped is relatively low, compared with the total amounts dumped at this dumpsite over the years of use. However, as was also the case with the previous application, it is considered that the contaminated sediment from these areas should be delineated and subject to alternative management actions. It is recommended that the contaminated sediments be subjected to remediation, rather than just exclusion, so that the problem of contamination can be dealt with rather than it becoming a legacy issue. Some commonly used options that might be considered include:

- Export of contaminated material.
  Either for landfill use or to the Schlufter.
- In-situ burial
  Over-dredging selected area of the basin followed by placement of the contaminated material and recovered by over-dredged material, thus confining the contaminated sediment within the existing area.
- Confined aquatic disposal at the dumpsite i.e. capping with clean sediment.
  This option may be unworkable due to depth of proposed dumpsite and lack of availability of clean, coarse sediment for capping.
- Treatment of the contaminated material prior to dumping at sea
  Pretreatment of the fine sediment to bind the contaminants and thus reduce bioavailability.

The Marine Institute has no objection to the unconfined (conventional) dumping at sea of the remainder of the material from the general area.

Best regards,

MCronin

Margot Cronin

Table 1:
Sediment chemistry summary

Sample	Cr mg kg^{-1}	Cu mg kg^{-1}	Hg mg kg^{-1}	Pb mg kg^{-1}	Zn mg kg^{-1}	Σ TBT & DBT mg kg^{-1}	Σ7 PCB ug kg^{-1}	PAH Σ 16 ug kg^{-1}	Result
NV1	65.4	19.6	0.1	30.3	117	<0.04			Class 1
NV2	65.4	19.3	0.08	34.9	107	<0.04			Class 1
NV3	64	22.7	0.16	42	128	<0.04	7.38	2243	Low class 2 – PCB
NV4	140	63.6	0.18	103	827	0.03	16.07	1069	Low class 2 - Pb, PCB Class 2 – Cu, Class 3 – Zn
NV5	124	64	0.08	37.2	208	<0.04	2.61	597	Class 2 – Cu, Zn
NV6	87.4	66.5	0.21	125	831	0.13	8.79	1745	Low Class 2 –Hg, TBT&DBT, PCB Class 2 – Cu, Pb Class 3 – Zn
NV7	83.6	39.1	0.09	63.6	373	<0.04	10.34	796	Low Class 2 – Pb, Zn, PCB Class 3 – Zn
Average 2016	90	42	0.13	62	370	0.08	9	1290	Low class 2 for Cu, Pb, Σ7 PCB Mid class 2 for Zn
Average 2008	39	43	0.11	86	379	0.07	13	1000	Low class 2 for Cu, Pb, Σ7 PCB Mid class 2 - Zn