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Submission No 16

DUBLIN PORT COMPANY

DUMPING AT SEA PERMIT APPLICATION

FOR ABR PROJECT

REF NO. S0024-01

SUBMISSION FROM THE IRISH UNDERWATER COUNCIL

The Dublin Port Company lodged an application for a Dumping at Sea (DaS) permit with the Environmental Protection Agency (EPA) on 13 July 2015 with a subsequent notice in the Irish Independent newspaper on the 31 July 2015. The dumping is associated with the Alexandra Basin Redevelopment (ABR) project. The ABR project includes a capital dredging programme for Dublin Port with a proposal to dump the dredged material at the Burford Bank dump site.

This submission is from the Irish Underwater Council. The Irish Underwater Council is the national governing body for scuba diving, snorkelling, and related activities in Ireland. Paragraph 2a of the Irish Underwater Council Memorandum of Association states that *"the objects for which the council is established are to promote and advance underwater swimming and related activities ..., and interest in, study of, care of, and history of the marine environment generally including all scientific disciplines relevant thereto and all other related interests."*

The Irish Underwater Council represents around 2000 divers nationally. The greatest concentration of divers in Ireland is, naturally, in Dublin. Dublin Bay is therefore one of the most heavily used dive locations in Irish waters. It is noted from our Memorandum of Association that in representing Irish divers the organisation has a mandate to study and care for the marine environment. Surveys of our members clearly indicate that a clean healthy environment is a crucial element of the diving experience. The value to the wider society of having divers exploring and recording the beauty and diversity of our marine environment cannot be underestimated.

This submission from the Irish Underwater Council contains a number of issues that require further clarification. Many of these issues relate to the requirements under Article 6(2) of the EU Habitats Directive, which states that *"Member States shall take appropriate steps to avoid, in the special areas of conservation, the deterioration of natural habitats and the habitats of species as well as disturbance of the species for which the areas have been designated, in so far as such disturbance could be*

significant in relation to the objectives of this Directive". The proposed dump site at the Burford Bank lies entirely within a Special Area of Conservation (SAC), established as a requirement of the Habitats Directive. Dumping millions of cubic metres of silt into a SAC is entirely incompatible with the requirements of Article 6(2), and would therefore be illegal under European law.

Issues relating to the legality of this proposal are examined in further detail in the following submission.

1 NEWSPAPER NOTICE

Section 5A of the Dumping at Sea (Amendment) Act 2004 requires the applicant for a Dumping at Sea (DaS) permit to publish a notice in a newspaper within 21 days of submitting the application to the Environmental Protection Agency (EPA). The Act states that the purpose of this notice is "to bring the proposal to the attention of persons who may be affected". This is important because it is required for compliance with State obligations under the Aarhus Convention, which relates in part to public participation in decisions relating to the environment.

With regards the Alexandra Basin Redevelopment (ABR) project, the Dublin Port Company published a notice in the Irish Independent on Friday 31 July 2015 to inform third parties of its intention to apply for a DaS permit. A copy is available on the EPA website.

Section 5A (2) of the Dumping at Sea (Amendment) Act 2004 states that the notice must contain information on "the characteristics, composition and the approximate amounts of any substance [to be dumped]". The notice includes some details of the composition (sand/silt) and approximate amounts of substance. The applicant also proposes to dump gravel, which it intends to use to cap contaminated sediments (ABR Environmental Impact Statement, Section 11.2.4). The dumping of gravel has not been included in the newspaper notice.

Furthermore, the newspaper notice does not include details of the characteristics of the substance to be dumped. In particular, there is no information provided with regards the contaminated sediments to be dumped. These contain nickel at a concentration above the Marine Institute guideline for safe disposal at sea (Section 11.2.4 and Appendix 11 of the ABR EIS). This information is a characteristic of the material to be dumped that clearly should have been brought to the "attention of persons who may be affected". This omitted information would be useful in informing the decision of a person as to whether they should make a submission (or at least investigate further) due to being potentially affected.

This omitted information would be of material value to the decision if a person or a body representing a group of people would or would not make a submission to the application. By actively omitting this information, the newspaper notice aims to deceive the public to avoid some submissions to the application process. This therefore undermines the public consultation process which should be open and transparent.

It is suggested that these deficiencies in the newspaper notice are sufficient grounds to require a new notice and a restart to the notification process.

2 ALTERNATIVE DUMP SITES

Paragraph 4.6 of the *Dumping at Sea Dumping Site Selection Guidance Note* (Aquafact, 2012) relates to the selection of candidate dump sites. This paragraph states that "*at least 2 candidate dumping sites should be selected to allow comparison of effects from the disposal of dredged material*".

It is unclear from the EIS for the ABR project whether there was consideration of dump sites other than the Burford Bank. Clearly, if only one site was suggested then a second must also be assessed. The EIS contains assessment of only one dump site.

In Section E.1 of the ABR Dumping at Sea Permit Application, the applicant states that "*The offshore disposal site to the west of the Burford Bank has been selected to keep the fine sands deposited at the site within the natural Dublin Bay sediment cell. Over time the fine sands will migrate from the site, particularly as a result of storm action and will remain part of the natural coastal processes regime of Dublin Bay*". However, if the dredged material were to stay where it was, it would also contribute to the natural cycling of sediments within Dublin Bay. By artificially placing this material in the middle of Dublin Bay, it is not contributing to "natural" processes. Furthermore, if the dredge material were to be dumped further out to sea, for example, what difference would this loss of material from the closed system actually make to the natural processes of sediment movement within the Dublin Bay sediment cell? This does not seem to have been predicted.

3 ROCKABILL TO DALKEY ISLAND SAC

The Rockabill to Dalkey Island candidate Special Area of Conservation (cSAC) was proposed by the then Minister for Arts, Heritage and the Gaeltacht, Jimmy Deenihan T.D., on 3 December 2012. SAC are established as a requirement of the EU Habitats Directive to conserve specific habitats and animal and plant species that are listed in Annex II of the Directive. The habitats, and animal and plant species for which the SAC was established to conserve are known as the qualifying interests for the site. The Rockabill to Dalkey Island SAC, site code 003000, has two qualifying interests:

1. Rocky reefs
2. Harbour porpoise (*Phocoena phocoena*)

SAC and SPA (Special Protection Areas as established by the requirements of the EU Birds Directive) are known collectively as Natura 2000 sites. The Natura 2000 sites are designed to form a coherent network of protected sites for nature conservation that extends across the whole EU. Pursuant to Article 6(3) of the Habitats Directive, any plan or project that is likely to have a significant effect on a SAC or SPA must undergo a process known as Appropriate Assessment to establish if it will adversely affect the site's integrity.

The ABR project has the potential to impact on a number of SAC and SPA in Dublin Bay. The Dublin Port Company has undergone the Appropriate Assessment process with regards the ABR project and has produced a Natura Impact Statement (NIS) in addition to an Environmental Impact Statement (EIS). Of particular concern is the fact that the proposed dump site at the Burford Bank lies entirely within the boundary of the Rockabill to Dalkey Island SAC. This is the first application for a DaS permit for dumping at the Burford Bank since its inclusion within the SAC.

The National Parks and Wildlife Service (NPWS) is the State body with responsibility for the management of SAC and SPA. The NPWS produces the documentation required to manage the site. For the The Rockabill to Dalkey Island SAC the two main documents are:

1. NPWS (2013a) *Conservation Objectives: Rockabill to Dalkey Island SAC 003000*. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
2. NPWS (2013b) *Rockabill to Dalkey Island SAC (site code: 3000) Conservation objectives supporting document - Marine Habitats and Species*. Version 1. April 2013. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

These two documents contain the essential information required when assessing the impacts of a proposed plan or project on the qualifying interests of the SAC. NPWS (2013a) states that "*A site-specific conservation objective aims to define favourable conservation condition for a particular habitat or species at that site*". [Emphasis added]

With regards the harbour porpoise, NPWS (2013b) states that: "*the size, community structure and distribution or habitat use of harbour porpoise inhabiting Rockabill to Dalkey Island SAC are not fully understood. In acknowledging limitations in the understanding of aquatic habitat use by the species within the site, it should be noted that all suitable aquatic habitat is considered relevant to the species range and ecological requirements at the site and is therefore of potential use by harbour porpoises*".

The same document then adds that "*gaps remain in the knowledge of the species foraging ecology within Rockabill to Dalkey Island SAC and the available data may be biased toward particular locations due to the nature of survey effort and opportunistic reports from a range of sources. No detailed information is currently available on individual or group movements by harbour porpoise within or into and out of the site, nor is it known whether individuals or groups of the species demonstrate any faithfulness to the site (i.e. site fidelity or residency). Nevertheless, the consistent annual and seasonal occurrence of the species at the site, its occurrence during the calving/breeding period and density/population estimates available to date all indicate the importance of this coastal site for the species*".

There are a number of very important pieces of information contained within these two quotes that are necessary for the assessment of any impacts that a proposed plan or project might have on harbour porpoise:

1. For assessment purposes, "*all suitable aquatic habitat is considered relevant to the species range and ecological requirements at the site and is therefore of potential use by harbour porpoises*". Therefore, the Burford Bank is as important as any other location within the SAC.
2. There can be no doubt that there is a lack of knowledge regarding the use of the SAC by harbour porpoise.
3. The SAC is considered an important breeding site for harbour porpoise.

NPWS (2013b) contains the appropriate assessment notes, conservation objectives, and targets required to make an informed assessment of the likely impact of a plan or project on the qualifying objectives for the SAC. These are attached for convenience in Appendix 1. For the rocky reef habitat the objective is to maintain favourable conservation condition of reefs in Rockabill to Dalkey Island SAC. Where a project or plan may have an adverse impact on the reef habitat, this can be assessed by using a list of attributes and targets which are clearly defined and quantified. However, the same is not true of the targets used to assess the favourable conservation condition of harbour porpoise.

For harbour porpoise, Target 1 is that the "*species range* [of harbour porpoise] *within the site should not be restricted by artificial barriers to site use. This target may be considered relevant to proposed activities or operations that will result in the permanent exclusion of harbour porpoise from part of its range within the site, or will permanently prevent access for the species to suitable habitat therein. It does not refer to short-term or temporary restriction of access or range*".

The use of the terms "permanent" and "short-term" are very ambiguous and open to interpretation. Neither the NIS nor the EIS examine the potential for the proposed ABR project to constitute a barrier to movement of harbour porpoise through the SAC. This is a very significant short-coming in both documents.

Target 2 is that "*human activities should occur at levels that do not adversely affect the harbour porpoise community at the site. Proposed activities or operations should not introduce man-made energy (e.g. aerial or underwater noise, light or thermal energy) at levels that could result in a significant negative impact on individuals and/or the community of harbour porpoise within the site. This refers to the aquatic habitats used by the species in addition to important natural behaviours during the species annual cycle. This target also relates to proposed activities or operations that may result in the deterioration of key resources (e.g. water quality, feeding, etc) upon which harbour porpoises depend. In the absence of complete knowledge on the species ecological requirements in this site, such considerations should be assessed where appropriate on a case-by-case basis.*" [Emphasis added].

It must be noted that both targets use the word "should" as the quantifying term. This is very vague. However, in practice for implementation of the requirements of the Habitats Directive, the term "should" can be interpreted as "must". Target 2 is particularly weakly composed. Terminology such as "should", "could" and "may" (as highlighted) are not sufficient to quantify and assess an impact. It is simply not possible to assess whether human activities (such as dumping at sea) will have a "*significant negative impact*" without a quantifiable metric (as is provided for the rocky reef habitat). The site-specific conservation objective aims do not in this case clearly define the favourable conservation condition for this particular species at the site. It is noted that the NPWS Target 2 relates to negative impacts on individual harbour porpoise as well as the community of harbour porpoise within the site.

The vagueness of the conservation targets must be viewed in terms of the poor data available on the use of the SAC by harbour porpoise. The Habitats Directive requires a precautionary approach to management of Natura 2000 sites, including those in the marine environment. The Court of Justice of the European Union has said that "*where doubt remains as to the absence of adverse effects on the integrity of the site linked to the plan or project being considered, the competent authority will have to refuse the authorisation*" (Waddenzee, C-127/02 at para 57).

Article 6(3) of the Habitats Directive requires that an appropriate assessment must "*contain complete, precise and definitive findings and conclusions capable of removing all reasonable scientific doubt as to the effects of the work proposed on the protected site concerned*" (Sweetman, C-25/11 at para 44). Therefore, the appropriate assessment must meet these standards before the plan or proposal is authorised. Under Article 6(3), the standard of certainty set by the Court is that the authority (in this case the EPA) must be sure that "*no reasonable scientific doubt remains as to the absence of [adverse effects on site integrity]*" (Waddenzee, C-127/02 at para 59).

It is apparent that the appropriate assessment for the ABR cannot provide the scientific certainty required by Article 6(3) of the Habitats Directive. This is in part due to the lack of information on harbour porpoise within the SAC, and in part due to the inability to quantify impacts against the targets set for the conservation objectives. Without the necessary scientific certainty, the application for a DaS permit must be refused.

4 CHANGE IN DUMPING METHODOLOGY

The last operational DaS permit for the Burford Bank, issued prior to the designation of the Rockabill to Dalkey Island SAC, was also for the Dublin Port Company (Dumping at Sea Permit No. S0004-01). A typical page from the log of dumping of dredged spoil at sea from the *Annual Environmental Report (AER) 2012* for this permit is attached as Appendix 2. This indicates trips from the dredge site to the dump site approximately every 3-6 hours with the load of around 700 to 5000 tonnes of silt and sand discharged in between 5 and 25 minutes, depending on load. This is indicated on the attached log as instantaneous method of dumping. The maximum load during this dredging campaign was 6217 tonnes and the average was 3340 tonnes.

Section E.3 of the ABR Dumping at Sea permit application provides details of the proposed method of dumping for the current capital dredging campaign. The method for the new campaign is substantially different to that used in previous campaigns. The applicant states that, if a DaS permit were to be granted, "*dredge disposal would take place 24 hours per day, 7 days per week during each 6 month winter dredging campaign*". The proposed spill rate used in the DaS permit application is 108 kg/s. Spread evenly over 24 hours this gives a disposal rate of 5400 m^3 per day.

This fundamental change in dumping methodology means that data from previous campaigns cannot be used to support outcomes and impacts in the current campaign. For example, in their submission to An Bord Pleanala, the Irish Underwater Council raised concerns regarding increased levels of suspended solids due to disposal of dredge spoil at the Burford Bank. Adrian Bell is the author of Chapter 9 of the ABR Environmental Impact Statement (EIS). The issue of increased suspended solids was addressed in Paragraph 6.1.1 of Adrian Bell's witness statement to the ABR oral hearing:

"It should be noted that in 2012 a maintenance dredging campaign of some 650,000 m^3 was undertaken with the same rate of dredging and disposal at the licenced site at the Burford Bank with no adverse suspended solids issues. This confirms the validity of the proposed dredging operations described in the EIS."

No evidence was provided to support the claim that there were "no adverse suspended solids issues" in the previous campaign. Furthermore, the use of a different method of disposal for the current application precludes the use of historical data to verify outcomes for the current proposal. Finally, the quote above indicates that there is some confusion about the method of dumping proposed.

5 CONTAMINATED SEDIMENTS

5.1 Characterisation of Contaminated Sediments

Laboratory analysis was undertaken on sediment samples collected at a number of positions within the port to determine the chemical characteristics of the material to be dredged. Based on this analysis, the sediments were classified as uncontaminated (or suitable for dumping at sea), slightly/moderately contaminated, or contaminated. Assessment was based on the Marine Institute *Guidelines for the Assessment of Dredge Material for Disposal in Irish Waters* (2006). Figure 11.6 of the ABR EIS indicates the location of these different sediment types within the dredging area.

Sample points DC03 and DC04 lie within the area considered as suitable for disposal at sea without the implementation of the "capping" method (Figure 11.3 of EIS). However, the laboratory data presented in the tables in Appendix 11 indicate that samples DC03A (surface) and DC04 (surface) both exceeded the Marine Institute upper guideline value for nickel (as per Table 11.1 in the EIS).

Furthermore, samples DC03 (1 m) and DC04 (1 m) both exceeded the Marine Institute upper guideline for both nickel and mercury. Significantly, the levels of mercury were many times over the upper guideline value (x34 and x24 respectively). It must therefore be questioned whether the sediment in these areas is indeed suitable for disposal at sea as proposed by the applicant.

Nickel and mercury are both heavy metals which are toxic to humans and fish, they are easily accumulable in fish and other tissure and therefore have a high probability of entering the food chain. Nickel is considered to be moderately toxic and mercury is considered to be very toxic. The level of this material above guideline values would appear to be in contradiction of section 3 of the *Dumping at Sea Site Selection Guidance Note (Aquafact/EPA 2012)* outlining the requirement to consider deciding to grant a permit based on the chemical and biochemical properties of material, toxicity, persistence in the environment, accumulation and biotransformation in biological materials or sediments and probability of the material to reduce the marketability of resources (e.g. fish and shellfish).

It is noted that different concentrations for mercury are given in Attachment B1 iii of the DaS permit application form (Sediment Chemistry Navigation cannal) [sic], with these values being below the guideline values.

Clarification of these values, and an explanation for the significant deviation in reporting the same data set is required before further assessment is possible. It is also a great concern that simple data transfer has been handled so incompetently. This raises concerns that other incompetencies may also exist in other applicant documentation.

5.2 Capping Method for Dumping of "Slightly/Moderately Contaminated" Material

The applicant proposes to dump "slightly/moderately contaminated" dredge material at sea using a capping procedure (Section 11.2.4 of the ABR EIS). This capping procedure is not described in the ABR Dumping at Sea Permit Application.

As noted in Section 5.1 above, this "slightly/moderately contaminated" material includes sediments with high levels of mercury and nickel. The quantity of "slightly/moderately contaminated" sediment is stated as being 500,000 cubic metres, approximately 8% of the total volume to be disposed at sea. The proposal is to "cap" the "slightly/moderately contaminated" material with gravel extracted from the main channel, which will be dredged simultaneously.

A total of 36 sediment samples were taken from various positions across the area to be dredged (Figure 11.5 of EIS). These samples were analysed for particle size to determine relative percentages of clay, silt, sand, gravel and cobbles. Of the 36 samples, only two were of gravel (samples D04 and D15), equivalent to 5.5% of the samples taken. Sample sites D04 and D15 are not contiguous, so the total volume of gravel available is not known. It may, or may not, be sufficient. It seems impossible to grant a DaS permit with such poor quality data available on the material to be dumped, such that it is not known if there is sufficient gravel to provide the volume required for the cap material.

Sample point D04 (particle size analysis sample) lies between sample points DC03 and DC04 (chemical analysis points). As noted in section 5.1 above, according to the data presented in Appendix 11 of the EIS, the sediments at sample points DC03 and DC04 contained mercury at levels far above those considered safe by the Marine Institute for disposal at sea. If the high level of mercury is confirmed, then the material dredged from location D04 is unsuitable for use as capping.

Depending on the outcome of the clarification of the mercury data for sample point D04, there are only one or two sample locations that contain material that is remotely appropriate for use as a gravel capping material. It does not seem possible to cap 8% of the material to be dumped with less than 5.5% of the material.

This capping method was apparently used in the previous maintenance dredging campaign. In Paragraph 5.4.3.ii of his Witness Statement to the An Bord Pleanala oral hearing, Adrian Bell states that: "*This process has already been successfully carried out during the last maintenance dredging campaign. Monitoring has shown that the gravel capping is still in place and working as it was designed to do.*" Showing that the gravel has not moved from the dump site is not the same as showing that the capping method has worked. This is merely a (very expensive) demonstration that stones sink in water.

In order to be effective, the gravel cap must smother and encapsulate all of the contaminated material. No evidence at all has been produced to indicate that this was successful in the previous campaign. This would require proof that all of the contaminated material that was dumped is still under the gravel.

However, the applicant intends to use a completely different method of dumping for the current campaign with material being released from the dump barges over hours rather than minutes. This proposed capping methodology further complicates the capping method since the applicant has stated that the dumping of "slightly/moderately" contaminated material will be restricted to periods of slack water (Section 11.2.4 of ABR EIS). Slack water lasts for a period of about 1 hour around the times of both low water and high water. Yet the time taken to dump a whole load will take many hours. It is not possible to dump a whole load within the narrow time window available around high and low water. And it is not indicated how the gravel will be dumped to perfectly capture the dispersing sediment plume over a depth of between 12 and 24 metres.

The applicant has also stated that the Burford Bank is a preferred dump site because it is dispersive for silts (e.g. Section E.1 of ABR DaS Permit Application). This means that the fine sediment will disperse before it can be capped.

Since no proof has been provided to indicate the efficacy of the capping method using the previous dumping method, it is not possible to state that it will work with the new dumping method that has been proposed.

Bearing in mind that the proposed dump site lies entirely within the Rockabill to Dalkey Island SAC, the attention of the EPA is drawn to the requirement of Article 6(3) of the Habitats Directive whereby an appropriate assessment must contain complete, precise and definitive findings and conclusions capable of removing all reasonable scientific doubt as to the effects of the work proposed on the protected site concerned. Under Article 6(3), the standard of certainty set by the Court is that the authority (i.e. the EPA) must be sure that no reasonable scientific doubt remains as to the absence of adverse effects on site integrity (Waddenzee, C-127/02 at para 59).

5.3 Impact of Release of Contaminated Material

In Paragraph 6.2.4 of his Witness Statement to the An Bord Pleanala oral hearing, Adrian Bell states that under normal tidal conditions, 85% of the material dumped at the dump site on the Burford Bank does not remain on the dump site. This has to be interpreted to mean that under normal conditions

85% of the material disperses away from the dump site. It would seem logical, therefore, to suggest that the capping method is at best going to retain around 15% of the dumped material.

According to the data in Appendix 11 of the ABR EIS, the sediment in the locations that have been classified as "slightly/moderately contaminated" are composed primarily of silt and sand. As indicated widely in the EIS, and as dictated by common sense, the sand particles will sink faster than the silt. My own PhD was on heavy metal contamination of industrial wastewaters so I can comment with a high level of authority to state that, in the absence of any detailed information from the applicant, the majority of heavy metal contamination in the sediment is most likely to be associated with the silt fraction. This is due to the much higher surface area of silt (compared to sand), which provides a greater number and variety of active chemical and physical binding sites for heavy metals (and probably other contaminants such as PAHs, PCBs, etc.).

In view of the absence of any credible evidence that capping has been successful, it must be suggested that the process probably traps a relatively small quantity of the relatively uncontaminated sand fraction of the previous dump.

This therefore raises the question as to the fate of the re-mobilised contaminants. Based on the data presented in Attachment B1 iii of the DaS permit application form (Sediment Chemistry Navigation cannal) [sic], the sediments that have been classified as "slightly/moderately contaminated" contain appreciable levels of arsenic, cadmium, chromium, copper, nickel, lindane, and hexachlorobenzine (and possibly mercury, subject to clarification). Most of these are between the Marine Institute lower and upper guideline values, but it is re-iterated that nickel exceeds the upper guideline for a material to be considered safe for dumping at sea. Mercury toxicity is widely published. However, nickel is also a toxic metal, and one that is very mobile in the aquatic environment. The EPA document, *Parameters of Water Quality – Interpretation and Standards* (2001) states that:

- Heavy metals are : "*toxic to humans...and to fish...Easily accumulable in fish and other tissue and hence liable to enter the food chain*".
- Mercury is "*very toxic...This is a very toxic element, the hazards of which are magnified by the accumulation of organo-mercury compounds in fish*".
- *There have been some major pollution incidents where both death and severe damage to health has been caused to many people consuming fish and shellfish contaminated by heavy industrial discharges of mercury.*
- Nickel is "*of moderate concern because of possible carcinogenicity as far as humans are concerned; it also has variable harmful effects on aquatic life. It is toxic to plant life, too, and is a hazard to fish*".

Section 5.2.5 (Marine Mammals) of the ABR EIS states that "*Consumption of contaminated prey items resulting from contaminants entering the food chain*" could have an adverse impact on marine mammals (this information is repeated in Section 3.2.3 of the ABR NIS). Apart from stating this as a risk, the EIS does not provide any further details for assessment. Dr Simon Berrow, expert witness on marine mammals at the An Bord Pleanala oral hearing answered a question regarding consumption of contaminants by marine mammals (Para 5.3.2) but considered the only risk to be from the highly contaminated material that is not being dumped at sea.

Section 5.4 of the ABR EIS on Benthic Ecology and Fisheries does not even consider the possibility of re-mobilisation of industrial contaminants as a potential issue. Clearly, the intention of the capping method is to trap the contaminated material under the gravel cap. This should have been fully understood by the author(s) of Section 5.4 of the EIS since benthic infauna living in contaminated

sediments can act as potential vectors for movement of toxins to species occupying higher trophic levels (including fish and marine mammals).

It must be noted that man also occupies a high trophic level and is potentially at risk from any contaminants entering the food chain. For this reason, it is considered that information relating to the presence of nickel in the substance to be dumped should have been included in the newspaper notice published by the applicant to inform third parties of their intention to apply for a DaS permit (Section 1 of this submission).

The data presented in Section 5 of this submission clearly indicates that there is uncertainty with regards the fate of nickel and other contaminants present in the "slightly/moderately contaminated" sediments that are proposed to be dumped within the Rockabill to Dalkey Island SAC.

Again, the attention of the EPA is drawn to the requirement of Article 6(3) of the Habitats Directive whereby an appropriate assessment must contain complete, precise and definitive findings and conclusions capable of removing all reasonable scientific doubt as to the effects of the work proposed on the protected site concerned. Under Article 6(3), the standard of certainty set by the Court is that the authority (i.e. the EPA) must be sure that no reasonable scientific doubt remains as to the absence of adverse effects on site integrity.

6 BARRIER TO MOVEMENT OF HARBOUR PORPOISE IN THE SAC

Section 5.2 of the EIS for the ABR project relates to marine mammals. Section 5.2.3 states that "*harbour porpoises are very sensitive to vessel noise and activity and are unlikely to approach areas of high activity*". This is entirely consistent with other sources of data relating to harbour porpoise interactions with boats (e.g. http://www.iwdg.ie/conservation/?speciesid=2217, accessed 23 August 2015).

Section 3 of this submission includes details of the wording of the NPWS conservation objectives for harbour porpoise in the Rockabill to Dalkey Island SAC. Target 1 is that the "*species range* [of harbour porpoise] *within the site should not be restricted by artificial barriers to site use*". The modelling of coastal processes presented in the ABR EIS (Chapter 9) is based on continuous dumping, 24 hours a day for 7 days a week for the period October to March every year for six years. This also forms the basis for the DaS permit application (see Section E.3(I) of the ABR Dumping at Sea permit application form). Recognising that the dump site lies entirely within the SAC, the dumping activity itself, if allowed to proceed, would result in the total exclusion of harbour porpoise from the area of the Burford Bank for six months every year for six years. This level of human disturbance will undoubtedly constitute a barrier to movement of harbour porpoise through the SAC.

The NPWS Target 1 conservation objective continues "*This target may be considered relevant to proposed activities or operations that will result in the permanent exclusion of harbour porpoise from part of its range within the site, or will permanently prevent access for the species to suitable habitat therein. It does not refer to short-term or temporary restriction of access or range*". As already highlighted in Section 3 of this submission, the terms "permanent", "permanently" and "short-term" are open to considerable interpretation. Since nothing lasts forever, the term "permanent" must be viewed as meaning "long-term" (itself a vague concept).

According to the section on harbour porpoise on the Irish Whale and Dolphin Group website (http://www.iwdg.ie/conservation/?speciesid=2217, accessed 23 August 2015), harbour porpoise typically live for around 15 years with females becoming sexually mature at 4 years old. An individual

female harbour porpoise is therefore reproductively active for at most 11 years. They have a gestation period of 11 months and an annual breeding cycle.

As already highlighted in Section 3 of this submission, there is no detailed data available on precise habitat use by harbour porpoise within the SAC, although the site is considered to be important for breeding and calving. It is re-iterated that the NPWS consider all aquatic habitat within the SAC to be of equal importance, including the area of the dump site. The proposed dumping activity itself will form a *de facto* barrier to movement of harbour porpoise for six months every year for six years. This constitutes more than half of the reproductive life time of an individual female harbour porpoise, which would tend to suggest a long-term, or permanent, effect.

There is no data provided in the EIS to indicate what effect exclusion of harbour porpoise from the Burford Bank area of the SAC will have on harbour porpoise. Indeed, neither the EIS nor the NIS for the ABR project even considers barriers to movement of harbour porpoise in the SAC even though it is one of only two conservation targets.

Once more, the attention of the EPA is drawn to the requirements of Article 6(3) of the Habitats Directive whereby an appropriate assessment must contain complete, precise and definitive findings and conclusions capable of removing all reasonable scientific doubt as to the effects of the work proposed on the protected site concerned, and the standard of certainty set by the Court of Justice of the European Union is that the authority (in this case the EPA) must be sure that no reasonable scientific doubt remains as to the absence of adverse effects on site integrity.

7 IN-COMBINATION EFFECTS

Article 6(3) of the Habitats Diective states that "*Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives.*" [Emphasis added].

The Burford Bank has been a licenced site for the dumping of dredge material since 1996. Table E.1.1 of the ABR Dumping at Sea Permit Application form provides a synopsis of dumping activity at the dump site since 1996.

Section 3.5 of the NIS for the ABR project considers the assessment of in combination effects with other plans or projects. This section includes the maintenance dredging for Dublin Port in the in-combination section. Whilst the maintenance dredging activity is acknowledged, there is no consideration of the significance of in-combination effects resulting from the dumping of maintenance dredge material with the proposed dumping associated with permit application S0024-01 for the ABR project.

However, there is no identification of the fact that all previous dumping at the licensed dump site of the Burford Bank, which lies entirely within the boundary of the Rockabill to Dalkey Island SAC, constitute in-combination effects. The sea bed is significantly different to that which existed prior to any dumping having occurred. Section 5.4.4 of the ABR EIS contains information regarding macrobenthos community assemblages at locations in and around the dump site and those a short distance away. It is noted that there were significant differences between the two. Sample locations on the dump site and immediate vicinity were characterised by the presence of *Nephtys hombergii* and *Macoma balthica*, whilst those further away were characterised by the presence of *Amphiura filiformis*, *Mysella bidentata* and *Abra nitida*. Previous dumping has already altered the nature of the

seabed within the dump site, meaning that these previous dumping activities have already impacted on the integrity of the SAC site as a whole.

Furthermore, Dun Laoghaire Harbour has submitted a planning application for significant redevelopment of its infrastructure (planning number PL06D.PA0042) which also incorporates a capital dredging component, with dredge material scheduled to be dumped at the Burford Bank.

In the absence of a full assessment of in-combination effects, the attention of the EPA is again drawn to the requirements of Article 6(3) of the Habitats Directive whereby an appropriate assessment must contain complete, precise and definitive findings and conclusions capable of removing all reasonable scientific doubt as to the effects of the work proposed on the protected site concerned, and the standard of certainty set by the Court of Justice of the European Union is that the authority (in this case the EPA) must be sure that no reasonable scientific doubt remains as to the absence of adverse effects on site integrity.

8 MARINE MAMMAL MITIGATION MEASURES

In Section F of the ABR Dumping at Sea Permit Application, the applicant states that "*mitigation measures with respect to marine mammals were agreed by NPWS at the oral hearing*".

For clarification purposes, any agreement made with the NPWS is superseded by the conditions of the planning permission granted by An Bord Pleanala. Should the DaS permit be granted, Condition 8 states that "*in relation to marine mammals, all of the measures contained in the Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Waters as published by the Department of Arts, Heritage and the Gaeltacht shall be fully implemented including a 1,000 metre exclusion zone for piling and a 500 metre exclusion zone for dredging*".

Also for clarity, should the applicant be granted a DaS permit, the NPWS *Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Waters* (2014) requires all start up procedures to take place in daylight hours with wind speed of Force 4 or less (the applicants own EIS suggests Force 3 or less for visual observation of harbour porpoise). This is to allow the Marine Mammal Observer (MMO) to implement effective visual monitoring for marine mammals. Note that the NPWS 2014 guidelines also state that "*while the use of PAM [passive acoustic monitoring] in Ireland is broadly encouraged as a helpful and beneficial tool for detecting and monitoring certain cetacean species the Department does not believe it is sufficiently developed to be regarded as the primary or sole monitoring approach for risk management purposes.*" There must be no confusion with regards planning permission Condition 8 (d) which requires the developer to utilise PAM. This condition is for broadening scientific knowledge in relation to ecology in Dublin Bay. The use of PAM is not to be considered a replacement to the visual assessment by the MMO.

Section 5.2.9 of the ABR EIS lists the mitigating measures for the protection of marine mammals. The second bullet point states "*In the absence of year-round data on marine mammal use within Dublin Bay, there is no justification for limiting works to any particular season*". This statement highlights the assertion by the NPWS that there is a lack of data regarding use of the SAC by harbour porpoise. However, the author is then completely incorrect to suggest that lack of data means no limit on work schedules. As dumping is to occur in an SAC, the precautionary principle must apply and the works should not take place in any season. As already stated, the gestation period of the harbour porpoise is 11 months. Therefore, disturbing activities will occur during the annual reproductive cycle of the harbour porpoise.

9 CONDITIONS OF PLANNING PERMISSION

Whilst the decision of An Bord Pleanala to grant planning permission for the ABR project is outside the control of the Environmental Protection Agency, the inclusion of Conditions 8 through to 12 of the planning permission do not appear to be appropriate under the requirements of both Articles 6(2) and 6(3) of the EU Habitats Directive. In summary, these conditions are as follows:

- Condition 8 relates to marine mammals and includes a requirement for the developer to monitor marine mammal ecology.
- Condition 9 relates to the monitoring of seals by the developer.
- Condition 10 relates to the monitoring of river lamprey in the River Liffey by the developer.
- Condition 11 relates to the monitoring of winter wetland birds by the developer.
- Condition 12 relates to the monitoring of black guillemot, common tern and arctic tern in Dublin Port by the developer.

These conditions are all included for the reason of "*In the interest of wildlife protection and to broaden scientific knowledge in relation to ecology in Dublin Bay*".

Under both Articles 6(2) and 6(3), the authority's obligation is to prevent damage, not to react to damage. Under Article 6(2), it must "*avoid [...] deterioration [...] as well as disturbance*". The inclusion of these conditions to the planning permission for on-going ecological monitoring in the "*interest of wildlife protection*" indicates that An Bord Pleanala did not have sufficient information available to make a confident decision with regards the environmental impacts of the ABR project. Any regulatory response which involves waiting for damage to take place and to be evidenced before prohibitory measures are taken will not comply with the obligations of the Habitats Directive.

It is not allowable to monitor the animals of Dublin Bay whilst work is in progress to find out whether they are adversely impacted or not (i.e. to establish whether the wildlife are being sufficiently protected). This is the function of the EIS and NIS, which must be capable of removing all reasonable scientific doubt as to the effects of the work proposed on the protected site concerned in advance of any work being undertaken. If there was no reasonable scientific doubt as to the impact of the project, then there would be no necessity to monitor the ecology of Dublin Bay. However, if there was any reasonable scientific doubt, then planning permission should not have been granted. Similarly, if there are any doubts regarding the effects of the dumping, then a Dumping at Sea permit should not be granted.

10 CONCLUSIONS

There has been a significant change in status for the Burford Bank proposed dump site since the last DaS permit was granted. The dump site is now within the boundaries of a Special Area of Conservation. It is, first and foremost, part of a European network of sites that are to receive protection for nature conservation. This is a European designated site for wildlife conservation under Irish guardianship.

Beyond the European designation, Dublin Bay has been recognised as a globally important centre for biodiversity through the designation of the Dublin Bay UNESCO Biosphere Reserve. It does not reflect well on Ireland that a designated site is being considered for on-going use as a rubbish dump.

This submission raises a number of issues relating to the legality of the proposed dumping on the Burford Bank. In summary, particular concerns include:

1. The newspaper notice did not include details of the gravel material that the applicant proposes to dump at sea. Nor did it state that the substance to be dumped contains nickel at a level above that considered safe for dumping at sea. The newspaper notice therefore fails to meet the requirements demanded by the Dumping at Sea (Amendment) Act 2004.
2. Alternative dump sites were not considered.
3. The ABR Dumping at Sea Permit Application does not mention the dumping of "slightly/moderately contaminated" materials, and nor does it mention the proposed capping method for containing these materials as outlined in the ABR EIS.
4. The proposed dump site lies entirely within a SAC, in an area of the SAC for which the only qualifying interest present is harbour porpoise. The information provided by the applicant leaves room for reasonable scientific doubt as to the impact of the dumping activity on harbour porpoise at individual and population level, and on the overall integrity of the site. The Court of Justice of the European Union has said that, in relation to plans or projects taking place in a Natura 2000 site, "*where doubt remains as to the absence of adverse effects on the integrity of the site linked to the plan or project being considered, the competent authority will have to refuse the authorisation*". Issues around which reasonable scientific doubt remains include:
   - the practicality and efficacy of the proposed method for capping "slightly/moderately contaminated" substances;
   - the potential effects of nickel being re-mobilised;
   - the restriction of movement of harbour porpoise through the SAC due to continuous disturbance at the dump site;
   - in-combination effects due to previous dumping and predictable proposed future dumping at the Burford Bank.

In view of the number of potential areas in which this proposal does not meet the requirements of European and Irish law, it is essential that the EPA perform a thorough review of the applicant's documentation to fully determine the legality of the proposed operation.

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APPENDIX 1

Extract from:

NPWS (2013b) Rockabill to Dalkey Island SAC (site code: 3000) Conservation objectives supporting document - Marine Habitats and Species. Version 1 April 2013. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht

Annex II Marine mammals

PHOCOENA PHOCOENA (HARBOUR PORPOISE)

This small toothed cetacean species (from the mammal Order Cetacea - whales, dolphins and porpoises) occurs in estuarine, coastal and offshore waters in which it carries out breeding, foraging, resting, social activity and other life history functions. Its distribution extends predominantly throughout continental shelf waters and the species may range over many hundreds or thousands of kilometres. As air-breathing mammals, harbour porpoises must return to the water surface to breathe but they are otherwise wholly aquatic. Individual porpoises of all ages use sound as their primary sensory tool in order to navigate, communicate, avoid predators, or locate and facilitate the capture of prey under water. Group sizes tend to be small (i.e. in single figures, more commonly 2 to 3 individuals) although larger aggregations may occasionally be recorded, particularly in the summer months.

Harbour porpoise breed annually in Ireland, predominantly during the months of May to September. The principal calving period in Irish waters is thought to occur in the months of May and June, although it may extend throughout the summer months and into early autumn. Newborn calves are weaned before they are one year old. Mating commonly occurs several weeks after the calving season.

The occurrence of harbour porpoises within a prescribed marine area can be estimated using visual observation and passive acoustic methods in order to deliver an assessment of community or population size (i.e. relative abundance or absolute abundance), density and distribution. The size, community structure and distribution or habitat use of harbour porpoise inhabiting Rockabill to Dalkey Island SAC are not fully understood. In acknowledging limitations in the understanding of aquatic habitat use by the species within the site, it should be noted that all suitable aquatic habitat (Figure 3) is considered relevant to the species range and ecological requirements at the site and is therefore of potential use by harbour porpoises.

Survey effort targeting the 2008 summer-autumn season delivered initial estimates of 0.54-6.93 animals per km^2 within the northern half of the site (overall estimate across four surveys: 2.03 individuals per km^2, N=211±47 individuals, 95% Confidence Intervals: 137-327, Coefficient of Variation=0.23) and 0.48-2.05 animals per km^2 within the southern half of the site, including outer Dublin Bay (overall estimate across four surveys: 1.19 individuals per km^2, N=138±33 individuals, 95% Confidence Intervals: 86-221, Coefficient of Variation=0.24). While the numbers of harbour porpoise encountered during any survey within the site are variable, additional acoustic data plus casual and effort-related sighting rates from coastal observation stations are significant for the east coast of Ireland and, comparatively high group sizes (>5 individuals) have been recorded from this area. The species is present at the site in all seasons, while important cohorts within the harbour porpoise community such as adults,

juveniles and newborn calves have also been recorded within the site, including during the calving/breeding season.

Harbour porpoise is a successful aquatic predator that feeds on a wide variety of fish, cephalopod and crustacean species occurring in the water column or close to the seabed. Dive depths in excess of 200m have been recorded for the species. Foraging areas for harbour porpoise are often associated with areas of strong tidal current and associated eddies; therefore the occurrence of porpoises close to shore or adjacent to islands and prominent headlands is commonly reported. However gaps remain in the knowledge of the species foraging ecology within Rockabill to Dalkey Island SAC and the available data may be biased toward particular locations due to the nature of survey effort and opportunistic reports from a range of sources. No detailed information is currently available on individual or group movements by harbour porpoise within or into and out of the site, nor is it known whether individuals or groups of the species demonstrate any faithfulness to the site (i.e. site fidelity or residency). Nevertheless, the consistent annual and seasonal occurrence of the species at the site, its occurrence during the calving/breeding period and density/population estimates available to date all indicate the importance of this coastal site for the species.

Section 2

Appropriate Assessment Notes

Many operations/activities of a particular nature and/or size require the preparation of an environmental impact statement of the likely effects of their planned development. While smaller operations/activities (i.e. sub threshold developments) are not required to prepare such statements, an appropriate assessment and Natura Impact Statement is required to inform the decision-making process in or adjacent to Natura 2000 sites. The purpose of such an assessment is to record in a transparent and reasoned manner the likely effects on a Natura 2000 site of a proposed development. General guidance on the completion of such assessments has been prepared and is available at www.npws.ie.

Annex I Habitats

It is worth considering at the outset that in relation to Annex I habitat structure and function, the extent and quality of all habitats varies considerably in space and time and marine habitats are particularly prone to such variation. Habitats which are varying naturally, i.e. biotic and/or abiotic variables are changing within an envelope of natural variation, must be considered to have favourable conservation condition. Anthropogenic disturbance may be considered significant when it causes a change in biotic and/or abiotic variables in excess of what could reasonably be envisaged under natural processes. The capacity of the habitat to recover from this change is obviously an important consideration (i.e. habitat resilience) thereafter.

This Department has adopted a prioritized approach to conservation of structure and function in marine Annex I habitats.

1. Those communities that are key contributors to overall biodiversity at a site by virtue of their structure and/or function (keystone communities) and their low resilience should be afforded the highest degree of protection and any significant anthropogenic disturbance should be avoided.
2. In relation to the remaining constituent communities that are structurally important (e.g. broad sedimentary communities) within an Annex I marine habitat, there are two considerations.
   2.1. Significant anthropogenic disturbance may occur with such intensity and/or frequency as to effectively represent a continuous or ongoing source of disturbance over time and space (e.g. effluent discharge within a given area). Drawing from the principle outlined in the European Commission's Article 17 reporting framework that disturbance of greater than 25% of the area of an Annex I habitat represents unfavourable conservation status, this Department takes the view that licensing of activities likely to cause continuous disturbance of each community type should not exceed an approximate area of 15%. Thereafter, an increasingly cautious approach

is advocated. Prior to any further licensing of this category of activities, an inter-Departmental management review (considering *inter alia* robustness of available scientific knowledge, future site requirements, etc) of the site is recommended.

2.2. Some activities may cause significant disturbance but may not necessarily represent a continuous or ongoing source of disturbance over time and space. This may arise for intermittent or episodic activities for which the receiving environment would have some resilience and may be expected to recover within a reasonable timeframe relative to the six-year reporting cycle (as required under Article 17 of the Directive). This Department is satisfied that such activities could be assessed in a context-specific manner giving due consideration to the proposed nature and scale of activities during the reporting cycle and the particular resilience of the receiving habitat in combination with other activities within the designated site.

The following technical clarification is provided in relation to specific conservation objectives and targets for Annex I habitats to facilitate the appropriate assessment process:

Objective — **To maintain the favourable conservation condition of Reefs in Rockabill to Dalkey Island SAC, which is defined by the following list of attributes and targets**

Target 1	The permanent area is stable or increasing, subject to natural processes.

- The area of this habitat represents the minimum estimated area of reef at this site and underestimates the actual area due to the presence of vertical rock wall and steeply sloping rock within the reef habitat.
- This target refers to activities or operations that propose to permanently remove habitat from the site, thereby reducing the permanent amount of habitat area. It does not refer to long or short term disturbance of the biology of a site.
- Early consultation or scoping with the Department in advance of formal application is advisable for such proposals.

Target 2	The distribution of reefs is stable or increasing, subject to natural processes.

- The likely distribution of reef habitat in this SAC is indicated in figure 1.
- This target refers to activities or operations that propose to permanently remove reef habitat, thus reducing the range over which this habitat occurs within the site. It does not refer to long or short term disturbance of the biology of reef habitats.
- Early consultation or scoping with the Department in advance of formal application is advisable for such proposals.

Target 3	Conserve the following community types in a natural condition: Intertidal reef community complex and Subtidal reef community complex

- A semi-quantitative description of the communities has been provided in Section 1.
- An interpolation of their likely distribution is provided in figure 2.
- The estimated areas of the communities within the Reefs habitat given below are based on spatial interpolation and therefore should be considered indicative. In addition, as this habitat contains areas of vertical rock wall and steeply sloping rock, the mapped community extents will be underestimated:
  - Intertidal reef community complex - 10ha
  - Subtidal reef community complex - 172ha
- This target relates to the structure and function of the reef and therefore it is of relevance to those activities that may cause disturbance to the ecology of the habitat.
- Significant continuous or ongoing disturbance of communities should not exceed an approximate area of 15% of the interpolated area of each community type, at which point an inter-Departmental management review is recommended prior to further licensing of such activities.
- Proposed activities or operations that cause significant disturbance to communities but may not necessarily represent a continuous or ongoing source of disturbance over time and space may be assessed in a context-specific manner giving due consideration to the proposed nature and scale of activities during the reporting cycle and the particular resilience of the receiving habitat in combination with other activities within the designated site.

Annex II species

The following technical clarification is provided in relation to specific conservation objectives and targets for Annex II species to facilitate the appropriate assessment process:

Objective	To maintain the favourable conservation condition of harbour porpoise in Rockabill to Dalkey Island SAC, which is defined by the following list of attributes and targets

Target 1	Species range within the site should not be restricted by artificial barriers to site use.

- This target may be considered relevant to proposed activities or operations that will result in the permanent exclusion of harbour porpoise from part of its range within the site, or will permanently prevent access for the species to suitable habitat therein.
- It does not refer to short-term or temporary restriction of access or range.
- Early consultation or scoping with the Department in advance of formal application is advisable for proposals that are likely to result in permanent exclusion.

Target 2	Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site.

- Proposed activities or operations should not introduce man-made energy (e.g. aerial or underwater noise, light or thermal energy) at levels that could result in a significant negative impact on individuals and/or the community of harbour porpoise within the site. This refers to the aquatic habitats used by the species in addition to important natural behaviours during the species annual cycle.
- This target also relates to proposed activities or operations that may result in the deterioration of key resources (e.g. water quality, feeding, etc) upon which harbour porpoises depend. In the absence of complete knowledge on the species ecological requirements in this site, such considerations should be assessed where appropriate on a case-by-case basis.
- Proposed activities or operations should not cause death or injury to individuals to an extent that may ultimately affect the harbour porpoise community at the site.

APPENDIX 2

Extract from:

Dublin Port Company, 6 Year Dredging Plan, Dumping at Sea Permit No. S0004-01, Annual Environmental Report (AER) 2012

Westminster Dredging Company Limited

Log of dumping of dredged spoil at sea

Type of spoil: Silt, Sand
Vessel: Shoalway
Contract: Dublin
2012

License no: S0004-01
method of dumping: instantaneous

Data from: 05 May 2012
To: 08 May 2012
Report nr: 4

Date	Trip no.	Depart dredge area	Dumping Arrive	Dumping Start	Dumping Finish	Position dump Start Lat.	Start Long	Finish Lat.	Finish Long	Method of posit.	course	speed	Weather and sea state	Wind Dir	Wind Force	Tide	Tide Dir	Dumped Quant. tonnes	Arrive port	Delay Min.
05-05-12	61	18:30	18:55	18:55	19:15	53°19.24 N	06°02.18 W	53°19.24 N	06°02.18 W	DGPS	var	var	Moderate	E	1	2	0.1	—	19:35	
05-05-12	62	22:45	23:25	23:25	23:50	53°19.23 N	06°02.20 W	53°19.23 N	06°02.20 W	DGPS	var	var	Moderate	E	3	182	0.8	535	0:30	
06-05-12	63	01:30	02:05	02:05	02:10	53°19.85 N	06°02.95 W	53°19.88 N	06°02.59 W	DGPS	var	var	Moderate	E	3	182	[illegible]	1255	2:45	
06-05-12	64	05:16	06:25	06:25	06:35	53°19.78 N	06°02.78 W	53°19.76 N	06°02.78 W	DGPS	var	var	Moderate	E	[illegible]	2	[illegible]	1691	8:00	
06-05-12	65	11:40	12:35	12:35	12:50	53°19.20 N	06°02.16 W	53°19.20 N	06°02.16 W	DGPS	var	var	Slight	NE	2	182	0.8	1995	13.10	
06-05-12	66	13.10	15:50	15:50	16:00	53°19.20 N	06°02.18 W	53°19.20 N	06°02.18 W	DGPS	var	var	Slight	NE	2	182	0.7	4595	16:25	
06-05-12	67	19:16	19:40	19:40	20:05	53°19.25 N	06°02.15 W	53°19.21 N	06°02.[illegible] W	DGPS	var	var	Slight	[illegible]	ars	2	2.1	4938	20:35	
06-05-12	68	23:00	23:30	23:30	23:55	53°19.23 N	06°02.14 W	53°19.23 N	06°02.14 W	DGPS	var	var	Slight	L	ars	2	0.7	4695	0:55	
07-05-12	69	02:05	02:50	02:50	02:55	53°19.48 N	06°03.01 W	53°19.4[illegible] N	06°02.42 W	DGPS	var	var	Slight	[illegible]	ars	182	2.2	933	3:50	
07-05-12	70	05:15	05:55	05:55	06:05	53°19.35 N	06°02.91 W	53°19.49 N	06°02.[illegible] W	DGPS	var	var	Rough	SE	7	182	0.1	973	5.50	
07-05-12	71	08:35	09:25	09:25	09:30	53°19.54 N	06°02.95 W	53°19.58 N	06°02.83 W	DGPS	var	var	Rough	SE	7	2	1.8	718	10:10	
07-05-12	72	12:10	12:56	12:56	13:00	53°19.33 N	06°02.96 W	53°19.33 N	06°02.[illegible] W	DGPS	var	var	Rough	SE	6	182	1	655	13:30	
07-05-12	73	15:00	15:25	15:25	15:40	53°19.32 N	06°02.92 W	53°19.32 N	06°02.07 W	DGPS	var	var	Rough	SE	6	182	2	2178	16:15	
07-05-12	74	17:40	18:05	18:05	18:25	53°19.29 N	06°02.88 W	53°19.29 N	06°02.85 W	DGPS	var	var	Moderate	W	3	182	1	2463	19:10	
07-05-12	75	20:20	21:10	21:10	21:20	53°19.88 N	06°02.75 W	53°19.35 N	06°02.75 W	DGPS	var	var	Slight	[illegible]	ars	2	1.8	737	22:10	
08-05-12	76	23:55	00:30	00:30	00:35	53°19.87 N	06°02.88 W	53°19.72 N	06°02.65 W	DGPS	var	var	Slight	[illegible]	ars	182	0.8		1:10	
08-05-12	77	01:55	02:30	02:30	02:35	53°19.83 N	06°02.98 W	53°19.52 N	06°02.89 W	DGPS	var	var	Slight	[illegible]	ars	[illegible]	[illegible]	1738	3:10	
08-05-12	78	04:00	04:35	04:35	04:40	53°19.40 N	06°03.02 W	53°19.40 N	06°03.02 W	DGPS	var	var	Slight	[illegible]	ars	182	1.8	1123	5:15	
08-05-12	79	06:30	07:00	07:00	07:15	53°19.63 N	06°02.73 W	53°19.63 N	06°02.70 W	DGPS	var	var	Slight	[illegible]	ars	2	0.8	2750	7:40	
08-05-12	80	09:40	10:05	10:05	10:20	53°19.90 N	06°02.84 W	53°19.00 N	06°02.84 W	DGPS	var	var	Slight	[illegible]	ars	2	2	4111	11:00	

Signature master:

S. Kovalskiy

SHOALWAY
Call sign: 5BYP2
IMO nr. 9556337
Gross Tonnage: 4066
Netto Tonnage: 1229
Total Engine Power: 6360 kW