

**Port of Tyne Application DC 6742**

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Date: 18 June 2003  
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Miss S Reed - CEFAS Burnham Laboratory  
Dr S Rowlett/ Dr H Rees/Dr K Thomas - CEFAS Burnham Laboratory  
Dr P Kershaw/ Dr R Parker - CEFAS Lowestoft Laboratory  
Dr P Larcombe/Dr J Aldridge - CEFAS Lowestoft Laboratory  
Mr P Leonard, Defra SD  
Mr R Henderson, SFI NE

Some further thoughts following the meeting with the Port of Tyne (PoT), Keith Wilson's letter to you dated 5 June 2003, my further examination of the application documents and discussions at Burnham with CEFAS colleagues:

**Specific Queries on the Application**

1. There are a number of specific queries related to the application in the attached Annex 1.

**Previous Consultations with CEFAS**

2. Dr Murray and Dr Waldock have very different recollections of previous meetings with the PoT to those expressed by PoT at the meeting on 4 June 2003. They are quite certain that they made it very clear that they were discussing the findings of CEFAS research on TBT, including work on remediation of sediments, in order to help PoT to:
  - ♦ find alternative options to deal with their most contaminated sediments, and
  - ♦ to take action to ensure the bulk of sediments remained sufficiently uncontaminated for sea disposal to be possible in the future.
3. Dr Murray and Dr Waldock are also quite certain that there was no implication that the discussions were dealing with matters that would form part of an application for disposal at sea from specific areas, or of the most contaminated sediments. In addition, Dr Murray and Dr Waldock very clearly recall pointing out to PoT that, in their view, the analytical results from the Posford Duvivier survey in 1999 indicated that the most contaminated

sediments were totally unsuitable for sea disposal due to the organic tin content. They are also sure that they have maintained a consistent line on the above issues throughout the discussions with PoT over several years. The Posford Duvivier Report itself makes it clear that the contaminant levels at a number of locations are unlikely to be acceptable for sea disposal - see pages 8, 9 and 10 of Part 3 of their report.

4. The preceding 2 paragraphs throw a somewhat different light on the position adopted by PoT at the meeting last week where they claimed that CEFAS had approved all of their actions leading to the application. We, therefore, cannot accept that PoT have any case for feeling misled by CEFAS. We are, therefore, at an early, not a late, stage of consultation on this application.

### **Alternative Disposal Options**

5. While we are content that PoT and its consultants have carried out a thorough review of the potential alternative disposal options for the contaminated sediments, they have not provided specific cost estimates for the options considered in the 'Legal/Environmental Risk Framework Matrix for TBT Contaminated Sediments from the Tyne Estuary'. The current simple ranking of costs is insufficient.
6. When we were considering the options for phasing out industrial wastes in the early 1990's, we required specific costings for alternative options with evidence supplied from the relevant organisations/authorities to support the costing and practicality of the options. It should be noted that these disposal operations were considered environmentally acceptable at that time and that evidence of greater cost of alternatives was insufficient to rule them out from serious consideration. The latter point is consistent with the BPEO approach developed by the Royal Commission on Environmental Pollution in its 12<sup>th</sup> Report.
7. Therefore, we would particularly wish to see cost estimates for and evidence of the practicality or otherwise of, the following alternative disposal options:
  - ♦ Landfill
  - ♦ Confined disposal/encapsulation within an existing water area
  - ♦ Land reclamation of a confined area of estuary
8. We would also wish to see the latter 2 options above include appropriate isolation/encapsulation techniques and technologies (geotextiles, bentonite etc.) to minimise any releases from the facility and thus environmental exposure to contaminants from the confined material.

### **Sediment Characterisation**

9. We remain very concerned that we would be open to very serious criticism if we permit the disposal at sea of the material in question without characterising the material at greater than 1 metre depth as suggested by PoT. As we understand it, PoT will wish to dredge down to 2.5 metres at some locations. Given the history of metal contamination in the Tyne, we believe that it is quite conceivable that deeper sediments may contain at least as high levels of trace metals than the upper layers. We therefore believe that characterising the material below 1 metre is essential before we can consider the disposal of that material. If samples of that material were not

obtained for analysis, we would recommend that it should not be permitted for sea disposal. This is entirely consistent with the approach of the OSPAR and London Conventions' dredged material guidelines. Section 4.10 of the London Convention Guidelines states " If dredged material is so poorly characterised that proper assessment cannot be made of its potential impacts on human health and the environment, it shall not be dumped".

10. I also note that samples from several of the areas that PoT wish to dredge have only been obtained from the surface. This covers the following locations:
  - ♦ A&P Tyne (North Shields) Ltd - 1 m dredging depth
  - ♦ Aker McNulty Ltd - 1.5 m dredging depth
  - ♦ A&P Tyne Ltd Hebburn - Bede and West Quays - 1.5 m dredging depth
  - ♦ Bill Point - 2.5 m dredging depth
11. In relation to TBT, without knowing the contaminant levels down to the full extent of dredging, we cannot know whether PoT's claim that this proposed operation will clean out the estuary of TBT in sediments once and for all will in fact do anything of the sort. If high levels of TBT extend to greater depths than the proposed dredging depth, then the dredging operation will simply expose fresh TBT contaminated sediment to the River Tyne. In the short-term this may well introduce a pulse of TBT into the water column since the TBT in those sediments at depth will not be in equilibrium with the water column.
12. Given the relatively small number of samples at each location and the variability of the contaminant data (see the attached Excel file), we are not confident that the number of samples taken is sufficient to satisfactorily characterise the sediments at those locations if they were to be disposed of at sea. In addition, the sampling density is inadequate if it is necessary to delineate areas that might have acceptable levels of contaminants for sea disposal. Hence the statements in paragraph 4 and 5 of your letter to Pot dated 8 May 2003. This is despite PoT quoting the comment from the AE0232 final report "...the most intensive ever conducted in the UK to assess the extent of TBT contamination in dredged material". While the statement may well have been correct at the time, it does not mean that the sampling density of the locations proposed to be dredged is sufficient for the purposes of this application.

### **Capping the Contaminated Material placed at the Disposal Site with Cleaner Sediment**

13. We have reconsidered the option of capping the material at the disposal site with the uncontaminated maintenance dredged material from the PoT. Capping operations are designed to seal off contaminated material from the marine environment to prevent adverse impacts on biota and other uses of the sea. Capping materials are usually placed 1 – 2 metres deep, over the contaminated material and the material used should remain in place permanently under normal hydrodynamic conditions so as to maintain the cap. In view of the relatively small volumes of maintenance dredged material (~250,000 tonnes) available to cap the contaminated material, it is likely to be difficult to achieve an appropriate cap thickness. In addition, since this maintenance dredged material consists of muddy sands and sandy muds, we consider that it will be subject to transport off the disposal site. Thus, such a capping operation will only delay exposure of the contaminated sediments

rather than provide permanent isolation that is the normal intent of capping. Therefore, capping as proposed will not provide any long-term environmental benefit in this case, just short-term isolation of the contaminated material.

**Keith Wilson's letter to you dated 5 June 2003**

14. If you wish to respond to the reference to me in Keith Wilson's letter you could say - "Dr Vivian spent some 10 years advising on licensing the disposal at sea of sewage sludge, industrial wastes and dredged material after arriving at the Burnham Laboratory in 1986. He then moved on to dealing with the international issues of waste disposal at sea under the OSPAR and London Conventions, as well as advising on marine aggregate extraction issues until 31<sup>st</sup> December 2002. He chaired the working group that revised the OSPAR 'Guidelines for the Management of Dredged Material' adopted in 1998. He is currently the Chairman of the OSPAR SEABED Working Group and Vice-Chairman of the London Convention Scientific Group."
15. I think that the PoT has a cheek suggesting a 3-way split of costs in the 2<sup>nd</sup> paragraph on page 3 of their letter. Since they will be disposing of their maintenance dredged material at the same disposal site in any case, there would be little or no additional costs for the PoT to bear! I question whether there is any justification for Defra bearing the costs of monitoring as I suggest it is clearly the responsibility of licensees. Given that cost recovery is provided for in FEPA, I would have thought that the Treasury would take a dim view of Defra paying for the monitoring. In addition, this would set a very unfortunate precedent that other ports would undoubtedly seek to exploit.
16. Specific comments on the Enviro Centre Response document attached to the letter from Keith Wilson, PoT dated 5 June 2003 are in Annex 2.

**Supporting Information for Sea Disposal Permit Application for TBT Contaminated Tyne Estuary Sediments**

17. The OSPAR Guidelines for the Management of Dredged Material are primarily a scientific and technical framework for assessing dredged material proposed for disposal at sea. Economic considerations are acknowledged but are expected to be dealt with outside the scientific and technical assessment framework.
18. Therefore, the suggestion that the Legal/Environmental Risk Framework Matrix should replace the 4 boxes between 'Dredged material characterisation' and 'Selection of sea disposal site' in Figure 1a of the OSPAR Guidelines in the supporting information is quite unacceptable. It also would distort the whole assessment process as it pre-empts effective consideration of some of the boxes below.
19. Specific comments on this item are in Annex 3.

**Legal/Environmental Risk Framework Matrix for TBT Contaminated Tyne Estuary Sediments and Best Practicable Environmental Option (BPEO)**

20. The assessments and scorings made in Tables 4 and 5 are not supported by sufficiently credible detailed information to justify all of assessments, particularly the sea disposal option.

21. We do not accept that sea disposal is the BPEO since we do not accept that the scoring employed in the legal/environmental framework matrix is defensible.
22. The cost of the necessary monitoring has not been included in the sea disposal option in Table 5. It does not matter who pays, it still needs to be included as indicated by the RCEP in its 12<sup>th</sup> Report on BPEO in paragraph 2.6.
23. We do not believe that the BPEO concept should be used to attempt to make unacceptable options acceptable as we believe is being done in this case. We believe this is a distortion of the BPEO concept.
24. Further specific comments on the framework are covered in the comments on the Enviro Centre response document in Annex 2.

### **Disturbance of Sediment During Dredging**

25. While section 11 of the application form contains reassuring statements about the minimal disturbance of sediment during dredging that were also made at the 4 June meeting, conventional dredging techniques are not generally thought of causing minimal sediment disturbance. This is a potential problem as levels of TBT and other contaminants in the water column may well rise as freshly exposed sediment releases them into the dissolved and/or suspended phase. The Environment Agency may have concerns on this score. It is also the case that many of our continental colleagues would require the use of specialised low disturbance dredging techniques to dredge sediments with these contaminant levels, whatever the final disposal option selected.

### **Sediment Trace Metal Data Supplied with the Application**

26. I have examined the trace metal data in the application from PoT for the proposed dredging locations – see attached Excel file. As you can see, there are many individual sample values greater than Action Level 2 for zinc and a significant number for cadmium, copper, mercury and lead. We would normally seek to exclude the material from these areas from disposal at sea. In addition, compared to Action Level 2, the maximum level found at any location for these metals are approximately:

Cadmium	2 times
Copper	3.5 times
Mercury	8.5 times
Lead	3 times
Zinc	4 times.

27. The levels of one or more of these trace metals are sufficient for CEFAS to recommend against sea disposal for 7 out of the 8 locations without considering the TBT values. Unlike TBT, these trace metals do not degrade, since they are elements. Thus, the argument put forward to permit disposal of TBT contaminated material i.e. that it will degrade in the marine environment, does not apply to these contaminants.

### **'Contaminated' or 'Uncontaminated' Sediment**

28. The application lists separate volumes of dredged material at the individual berths for 'contaminated' or 'uncontaminated' material. As virtually all the

results for all the trace metals in Part 3 of the application document exceed Action Level 1, nearly all the sediment is contaminated to some extent. Therefore, the so-called 'contaminated' sediment is in reality 'highly contaminated' and the 'uncontaminated' sediment is in reality 'contaminated' i.e. there is no 'uncontaminated' sediment.

29. The 'contaminated' and 'uncontaminated' categorisation by the PoT is based upon samples from a small number of individual boxes within a grid at each location – see Annex 4 for an example. We do have a query in Annex 1 as to how the volumes of 'contaminated' and 'uncontaminated' sediments were estimated from the contaminant data. As the 'contaminated' and 'uncontaminated' sediments are often mixed up at the berths, it will be very difficult, if not impossible in most cases, to dredge them separately. In most cases this would require additional sampling to the full dredging depth to delineate areas that might have acceptable levels of contaminants for sea disposal, as is our normal practice.
30. The average values for at least 1 contaminant for all of the material from all 8 locations exceed Action Level 2. Therefore, in the absence of additional sampling, we need to consider the whole 251,563 m<sup>3</sup> proposed for disposal under this application to be 'highly contaminated' and deal with it as such.
31. The contaminants that exceed Action Level 2 for the average value ('contaminated' + 'uncontaminated' sediments) at each of the locations are:

<u>Location</u>	<u>Contaminants</u>
♦ A&P Tyne (N Shields) Ltd	TBT, Zn
♦ Branmore Investments Ltd	TBT, Hg
♦ Aker McNulty Ltd	TBT
♦ Swan Hunter	TBT, (Pb)*, Zn
♦ A&P Wallsend Ltd	TBT, Zn
♦ NCC Neptune Yard	TBT, Cd, Pb, Zn
♦ A&P Tyne Ltd Hebburn	TBT, (Zn)*
♦ Bill Point	Cd, Pb, Zn

\* average level just under Action Level 2

32. The values for UK Action Level 2 for most contaminants are relatively generous when compared with countries in Europe and North America that have set Action Levels for dredged material. These Action Levels will be regularly reviewed in the light of scientific evidence and it is likely that TBT will be a particular focus of attention as it is a Priority Hazardous Substance for both OSPAR and the EU. For example, Germany has recently reviewed its Action Levels for TBT and proposes to reduce its current Action Level 2 of 0.6 mg/Kg to 0.3 mg/Kg at the beginning of 2005 and to further reduce it to 0.06 mg/Kg by 2010. Action Level 1 in Germany is currently 0.02 mg/Kg and will remain at that level. There is good scientific evidence to suggest that the current UK Action Levels for TBT are generous and should probably be reduced significantly over time.

### **CEFAS Sampling of the Proposed Dredging Locations**

33. Paul Leonard and I have independently suggested to you that CEFAS could use a Kasten corer that we have at Lowestoft to obtain sediments from greater than 1 metre depth at the PoT berths concerned. However, when

Peter Kershaw and I considered this option carefully, it became obvious that this is unlikely to be completely satisfactory and there would be a risk that we might only be able to get samples from down to about 1.5 metres depth. We have 2 and 3 metre core barrels for the Kasten corer. However, you can never obtain a completely full core barrel due various factors such as sediment consolidation preventing the corer from fully penetrating the sediment. Peter told me that he had only been able to get a core down to about 2.5 on one occasion when coring very soft sediments.

34. Given that the Tyne sediments have not been dredged in some cases for many years, it seems likely that the sediment in the 1 – 3 metre depth zone will have achieved some degree of consolidation. Peter and I therefore consider that we would be lucky to get cores of 2 metres and might only be able to achieve 1.5 metres at some locations. If we were to go ahead and these predictions were to come true, CEFAS and Defra might be embarrassed at the failure to obtain samples from the depths we are saying are necessary. We therefore believe that if CEFAS were to carry out any sampling at the PoT berths, we will need to use equipment that we are certain can retrieve samples from a depth between 2 and 3 metres, depending on the location. This type of equipment will be that referred to by the PoT at the 4 June meeting as being expensive to hire.
35. We could use some of the funds that Paul Leonard believes he could make available from the R&D budget to carry out the required sampling as indicated above, probably under AE0257. I have spoken to my contacts in the marine aggregate industry and they tell me we would need to budget for a cost of £1,000 per core as the total inclusive cost covering mobilisation, sampling and reporting. Since there 8 separate locations and previously we sampled 28 stations at those locations, it would cost around £28,000 to re-sample the locations to a greater depth. Given our concerns about the sampling density, this is likely to be a minimum figure. As indicated above, there is a strong likelihood that that the deeper sediments will be at least as contaminated as the upper 1 metre layer and thus be unsuitable for sea disposal. In these circumstances, MWD need to consider whether Defra should be paying for such a sampling exercise when it should be clearly the responsibility of the applicant.

#### **Potential Disposal Site Research under AE1224**

36. Paul Leonard, in his discussions with Peter Kershaw and Ruth Parker, suggested that they might be able to carry out additional work on their planned AE1224 charter in mid-July. The intention was to provide additional information on conditions at the disposal ground, to assist in the decision on the PoT application by the beginning of September.
37. However, following discussions with CEFAS colleagues, we believe that it would not be appropriate for Defra R&D funds to be spent on carrying out an assessment of the impacts of the proposed dumping operation on the Souter Point disposal site. It would set a very unfortunate precedent that other ports would undoubtedly seek to exploit and we suggest that this is clearly the responsibility of the applicant.

38. However, we consider that any additional research designed to improve the robustness of the science, address shortcomings in the model database, and test the assumptions on TBT degradation would be useful and have general applicability. It would also fit in with the overall aims of the CEFAS R&D project AE1224. The degradation studies would require mainly site investigations. We also consider that further studies on resuspension and sediment movement on the disposal grounds would require the deployment of in-situ MiniPods over the winter period to obtain realistic results to better understand the physical processes at the disposal site and to calibrate any modeling work. This work will inevitably take at least a year to carry out.

### **Disposal Site Concerns**

39. We are still very concerned at the potentially very significant impacts on the marine environment in and around the disposal site if the material proposed by the PoT were dumped at the Souter Point disposal site. The potential scale of contaminant inputs is of a different order to the current inputs (potential additional load of TBT is ~ 1.6 tonnes) and is very likely to significantly enlarge the footprint of contaminated sediments beyond the disposal site boundaries. In these circumstances, we do not accept that the current information is sufficient to make a decision on this application, unless it is to refuse the application.

40. Therefore, we still maintain that the work proposed in paragraphs 12 to 16 in your letter to Keith Wilson dated 8 May 2003 would be an essential precursor to any decision that could lead to a sea disposal operation. This would take some time to complete and inevitably delay any decision on this application beyond the late August/early September decision date requested by PoT.

41. Transport of sediment away from the disposal site does potentially raise the risk of contaminating biota, including fish and shellfish, outside the disposal site to a level of concern. This has been dismissed in the application but it would need to be re-visited if disposal at sea were to be seriously considered, not least for human health reasons.

42. In addition, English Nature has concerns about contaminants affecting protected sites and species covered under the EU Habitats Directive or other conservation legislation e.g. porpoises and dolphins.

### **OSPAR Considerations**

43. We need to take into account the OSPAR agreement on the reduction of inputs of hazardous substances. Extracts from the OSPAR Hazardous Substances Strategy and the 1998 OSPAR Sintra Statement are in the attached Annex 5. I suggest that permitting the disposal at sea of the material requested by the PoT would certainly be seen by other OSPAR Contracting Parties to be in conflict with the UK commitment to the OSPAR agreement on the reduction of inputs of hazardous substances. This would be likely to cause serious disagreements with the other OSPAR Contracting Parties and revive the 'Dirty Man of Europe' label.

### **Conclusions**

44. I suggest that there are a number of key issues about this application that we should focus upon as the determining factors in any decision. There are



several secondary issues as well that may apply to one or more disposal options. However, these are not as important and we should not let these issues distract us from the key issues.

45. We believe that the key issues are:

- ♦ The material proposed for sea disposal that has been characterised is categorically unsuitable for sea disposal due to the very high levels of TBT, cadmium, mercury, lead and zinc in the sediments – see paragraphs 26-32 above.
- ♦ The uncharacterised material proposed for sea disposal is also likely to be unsuitable for sea disposal – see paragraphs 9 and 11 above.
- ♦ While the PoT have carried out a thorough review of the potential alternative disposal options, additional information is required about the cost and practicality of some options – see paragraphs 5-8 above.
- ♦ We do not accept that sea disposal is the BPEO since we do not accept that the scoring employed in the legal/environmental framework matrix is defensible – see paragraphs 20-23 above.
- ♦ We still have significant concerns about the potentially very significant impacts on the marine environment in and around the disposal site if the material proposed by the PoT were dumped at the Souter Point disposal site – see paragraphs 39-42 above.
- ♦ Disposal of this material at sea would not be consistent with our OSPAR commitments – see paragraph 43 above.

46. The secondary issues are:

- ♦ A proportion of the material proposed for sea disposal has not been characterised at all. Additional sampling would also enable more accurate delineation of the extent of highly contaminated sediment and might identify some areas suitable for sea disposal. CEFAS could attempt to sample this material. – see paragraphs 9-12 and 33-35 above.
- ♦ Capping of the contaminated sediments with cleaner maintenance dredged material – see paragraph 13 above.
- ♦ Disturbance of contaminated sediment by conventional dredging equipment – see paragraph 25 above.
- ♦ Further disposal site research – see paragraphs 36-38 above.

47. In summary, our view is that:

- ♦ the material concerned is categorically unsuitable for sea disposal due to the potentially significant impacts in and around the disposal site,
- ♦ some additional work needs to be done on alternative means of disposal,
- ♦ we do not accept that sea disposal is the BPEO, and
- ♦ disposal of this material at sea would not be consistent with our OSPAR commitments

48. I suggest that it would be advisable to bring this to the attention of the Minister at an early stage before MPs or others start to lobby the Minister on

behalf of the PoT. If we get involved in wrangling over scientific and technical issues with PoT and Prof. Fleming that is likely to become more widely exposed, you may wish to inform the Chief Scientist about this matter.

Dr C Vivian

## **ANNEX 1**

### **Specific Queries Related to the Application**

1. PoT said at the meeting that they would dig out the dredging history of the berths they wished to dredge and provide details to us. I note that section 10 of the application form does record the date the locations were last dredged. However, it would be helpful to know what dredging took place at each of the locations over the 5-10 years preceding the last dredge.
2. In addition, PoT said they could let us know how much siltation had occurred at those berths since the 1999 sampling exercise.
3. Section 11 of the application form lists the depth of material to be removed from each location. However, at the meeting PoT indicated that up to 3 metres material might require removal at some locations. We would therefore request confirmation of the depth of material requiring removal at each location.
4. We would like to know how PoT estimated the volumes of 'contaminated' and uncontaminated' sediments at each location from the sediment contaminant data in Part 3 of the Posford Duvivier Report included with the application.
5. We requested at the meeting on 4 June that PoT provide more details of the problems involved in licensing the use of Northumberland Dock for dredged material disposal. In the light of our views on the unsuitability of the highly contaminated sediment for sea disposal, this disposal option is possibly one of the more likely practical alternative options. We therefore need the requested details in order to be able to discuss them with the Environment Agency and English Nature. Alternatively, we could try to obtain the information from the Environment Agency and English Nature.
6. We need clarification of any intention to dredge Bede Quay and/or West Quay at A&P Tyne Ltd, Hebburn. At present, the application document has question marks against these berths on the location plan in place of tonnages.
7. In addition, we need PoT to clarify whether Engine House Quay is to be dredged as part of the dredging of A&P (Tyne) Ltd, Wallsend Dry Docks. Is Engine House Quay the same as Engine Works Quay in the table of data on page 14 and 17 of part 3 of the application document?

## **ANNEX 2**

### **Comments on the 'Enviro Centre Response Document ' Attached to the Letter from PoT Dated 5 June 2003 (Using reference numbers in that document)**

#### **Response Summary**

2<sup>nd</sup> bullet - We do not agree. We believe the only decision that could be made at this time would be to reject the application.

3<sup>rd</sup> bullet - While the assessment work (it is not monitoring or research) would delay a decision, we consider that it is necessary to fully assess the potential impacts of disposing of the material concerned - also see below under 12, 13 & 14.

4<sup>th</sup> bullet - We do not accept this point - also see below under 4 & 5.

5<sup>th</sup> bullet - We do not believe that this has been established.

6<sup>th</sup> bullet - We have comments on the legal framework matrix below and in Annex Y.

7<sup>th</sup> bullet - The statement that no TBT decay was allowed for in the model is incorrect. While the model is an initial attempt, we do believe that it has some utility in indicating potential impacts.

8<sup>th</sup> bullet - See comments below under 18.

#### **Detailed Response**

3(l). This assumes a favourable response!

4. & 5. The scope is only being extended because PoT did not consult appropriately prior to making their application - see paragraphs 1 - 3 of main minute. We would not agree with the 2<sup>nd</sup> paragraph - see main minute. We would agree with the first 2 sentences of the 3<sup>rd</sup> paragraph in relation to monitoring the disposal site. However, the quoted paragraphs from Graham Boyes' letter dated 8 May 2003 did not deal with monitoring but characterisation of the material proposed for disposal at sea.

8. We maintain the validity of most of our comments on the risk assessment. We will comment further on them in relation to Appendix I to the Detailed Response document. If we have not fully understood the method employed to produce the legal/environmental framework matrix and the environmental risk assessment, would PoT please provide an explanation.

10. Blyth Harbour - The Blyth case does modify the option considered in the framework matrix in that the materials were encapsulated in a clay-lined dock.

11. The 2<sup>nd</sup> paragraph is incorrect to state that no TBT decay was allowed for in the model. Also - TBT that moves into the water column will rapidly decay ??? MW. While modelling is not explicitly required by the Guidelines (Para. 3), that does not prevent us from requiring it. We do not accept the statement 'This suggestion further widens the scope of assessment which is not considered acceptable at this advanced stage of the decision making process'. We do not consider that we are at an advanced stage in the decision process as yet. Had PoT approached the licensing authority appropriately at an early stage in their consideration of their application, the assessment could have been appropriately scoped.

12, 13 & 14. The work in these paragraphs is not the basis for a programme of long-term research but the essential features of an assessment to determine the potential effects of disposing of the material concerned.

15. While this may be a one-off operation, it does not preclude the potential for cumulative impacts arising from interactions between this operation and other disposal activities off the Tyne. For example, the contaminant burdens from this operation would be in addition to those from on-going maintenance operations.

16. The CEFAS studies that you refer to were research studies that provided useful information but were clearly not designed as baseline studies with this proposed operation in mind. In addition, the CEFAS studies were carried out several years ago and are thus not suitable as baseline studies for this proposed operation.

17. There has been a misinterpretation of the Guidelines. Reference to paragraph 8.3 of the Guidelines makes it clear that the use of disposal management techniques is to reduce or control impacts not to increase the exposure to contaminants as in this proposal. We therefore consider that the approach mentioned in the 3<sup>rd</sup> paragraph of section 9.4 of the supporting information to the application is not a disposal management technique. As regards the interpretation of the Guidelines, that is the responsibility of the national licensing authorities of the OSPAR Contracting Parties.

18. It is not clear whether the strategy referred to is an industry wide one that was discussed at the meeting on 4 June 2003 or a Tyne specific strategy. In the letter to PoT from the MCEU, we were referring to the latter. It may be that both will be required once we have dealt with this application.

## **Appendix 1**

### **Response to MCEU Comments on Legal Framework Matrix for the Disposal of TBT Contaminated Sediments**

#### **Seabed disposal**

Pathways - Please explain how bio-magnification has been taken into account.

Probability - The half life of TBT in paint flakes of >20 years is in anaerobic sediment. The point is that much of the TBT in paint flakes in contaminated sediment when dumped is unlikely to be in an anaerobic situation and, therefore, it will persist for some considerable time. Paint flakes will only accumulate at the sediment surface if they are within the disturbed layer (of the order of a few centimetres). Therefore, the probability of occurrence would be **High**.

Consequence - The response indicates a misunderstanding of our previous comment. The scoring and text of the Magnitude of the Consequence is predicated on the effect of the proposed dumping operation being no greater than the current disposal operations. This is not credible given the contaminant loads involved and the movement of the material off the site. Thus, this item should be scored **Severe**.

Overall risk - This should now be **High**.

### **Confined disposal**

This option should have included appropriate lining and covering of the confined disposal facility.

Probability - This should be **Low** if appropriate lining is provided to contain the material and appropriate covering material is provided to prevent infiltration of surface water. The fact that the half-life of TBT in anaerobic sediments in a confined disposal facility would be >20 years is of minor significance.

Consequence - Given the above, this should be scored **mild or negligible**

Overall risk - This should be **Low**

### **Land reclamation**

This should be scored as confined disposal for the same reasons.

### **Landfill**

Probability - This should be **Low** as the transport impacts should be manageable.

Consequence - This should be **Low** as the impacts would be contained within the landfill.

Overall risk - **Low**

## ANNEX 3

### **Specific Comments Upon the 'Supporting Information for Sea Disposal Permit Application for TBT Contaminated Tyne Estuary Sediments'**

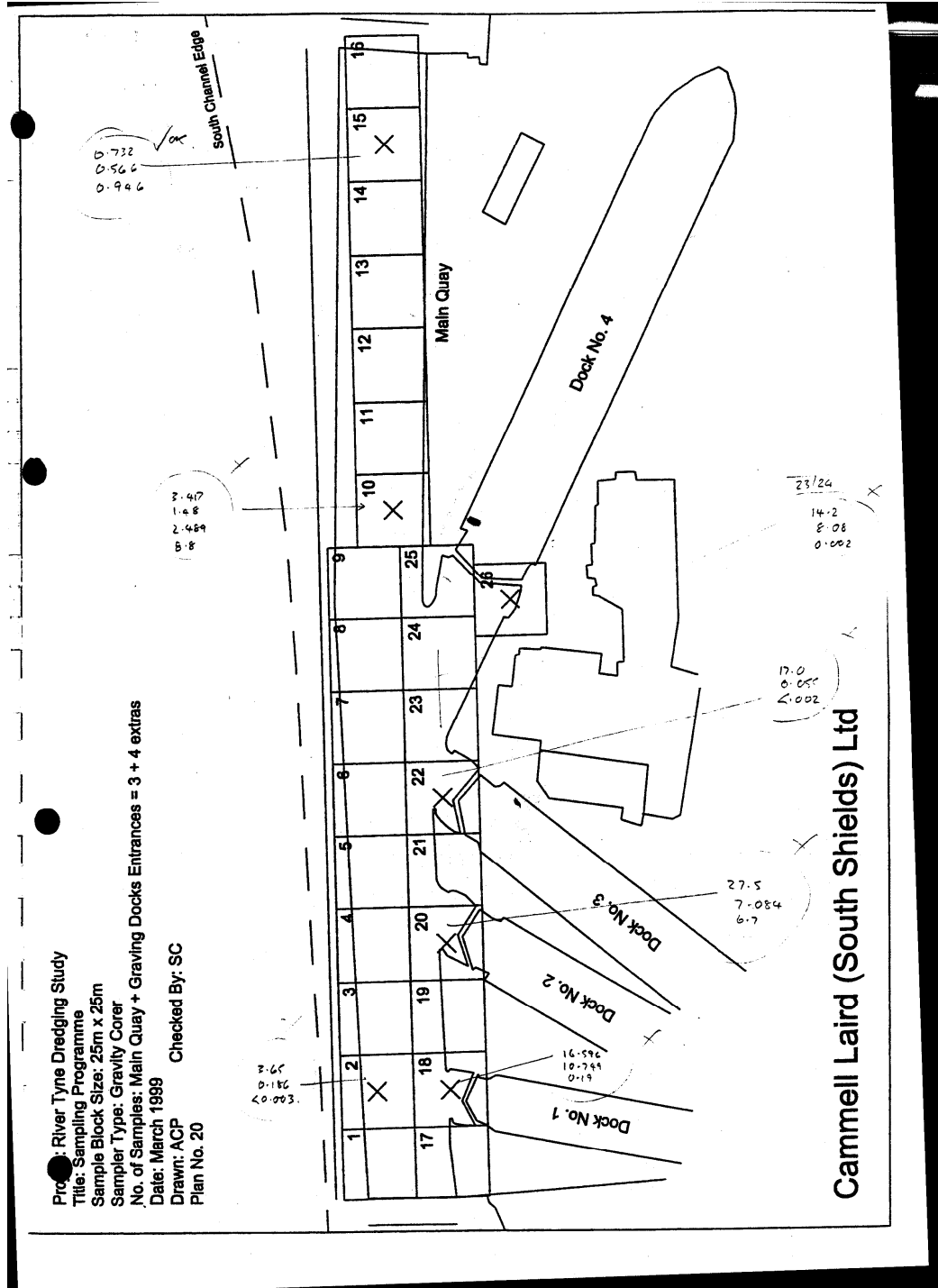
1. The title is not accurate as the Tyne Estuary sediments concerned are also highly contaminated with a number of trace metals.
2. Section 3 of the document misses the important reference to Annex II of the Convention in Article 4 given in paragraph 3.2 of the OSPAR Guidelines for the Management of Dredge Material (hereafter 'the Guidelines'). Annex II deals with dumping issues.
3. While Figure 1a calls the flow diagram a 'decision pathway', it has always been recognised in the Conventions that it should be used iteratively and not just in a step by step fashion.
4. While TBT does have a relatively short half-life of around 1 year (1<sup>st</sup> bullet of section 8.2 on page 6), it still means that concentrations significantly above 1 mg/Kg would be likely to persist at the disposal site for many years.
5. While the evidence is that the higher TBT concentrations in sediments have been limited to the disposal ground (2<sup>nd</sup> bullet of section 8.2 on page 6), that is only valid for current rates of input. It also does not rule out lesser impacts outside the disposal site from lower levels of TBT nor significant impacts at higher TBT input levels. This point is also relevant to the same point in section 9.2.1.
6. We believe from our monitoring and other data off the Tyne that contaminated sediments do move away from the disposal site with the TBT degrading under the probable aerobic conditions and becoming diluted by mixing with less contaminated sediments (3<sup>rd</sup> bullet of section 8.2 on page 6).
7. The text of the 4<sup>th</sup> bullet of section 8.2 on page 6 is not a valid argument for substantially increasing the TBT inputs to the disposal site as it seems to assume relatively little additional impacts in those circumstances.
8. Based on CEFAS monitoring data, we do not believe that there is evidence for the Souter Point site being a retentive site (section 9.2.1 and section 10.1).
9. In section 9.4, there has been a misinterpretation of the Guidelines. Reference to paragraph 8.3 of the Guidelines makes it clear that the use of disposal management techniques is to reduce or control impacts not to increase the exposure to TBT as in this proposal.
10. We therefore consider that the approach mentioned in the 3<sup>rd</sup> paragraph of section 9.4 is not a disposal management technique.
11. We do not accept that this approach '...has the significant advantage that it can be readily controlled..' (5<sup>th</sup> paragraph of section 9.4) since once the material was dumped you would have little or no control over it.
12. In relation to the final paragraph of section 9.4, the OSPAR Contracting Parties would not accept restoring one part of the marine environment at the expense of another. See also the comments in Annex 5.

13. Paint flakes will only accumulate at the sediment surface from sediment depths disturbed by hydrodynamic forces (5<sup>th</sup> bullet of section 10.2). Based on your arguments that the Souter Point site is a retentive one, this would suggest that this process would not be of great significance. However, we would expect it to be of some significance. If the contaminated sediments were to be dumped such that their thickness on the bottom was to be of the order of 10 cm or more, then it is likely that this process would not be significant for the bulk of the material for a considerable time.
14. If the 6<sup>th</sup> bullet of section 10.2 is not representative of the bulk of the material, why was it presented? A more relevant statement should replace it. The same applies to the next bullet.
15. We agree that long-term biological impacts would be expected while concentrations remain above 1 mg/Kg. However, scientific evidence suggests that biological impacts are likely to be significant at much lower concentrations as our Action Level 2 is high by most comparisons.
16. The assessment that '...impacts on human health will be minimal...' (10<sup>th</sup> bullet of section 10.2) is reliant upon the material being retained at the disposal site. In the circumstances of the dumping operation proposed by the PoT, we are not so sanguine. We would therefore require this aspect to be fully evaluated in the event that sea disposal were likely to be permitted.



# ANNEX 4

## Example Sample Plan from the Posford Duvivier Report



## **ANNEX 5**

### **OSPAR AGREEMENT ON THE REDUCTION OF INPUTS OF HAZARDOUS SUBSTANCES TO THE MARINE ENVIRONMENT**

#### **A. Extract from the OSPAR Strategy with regard to Hazardous Substances**

##### **Objective**

1.1 In accordance with the general objective, the objective of the Commission with regard to hazardous substances is to prevent pollution of the maritime area by continuously reducing discharges, emissions and losses of hazardous substances (as defined in Annex 1), with the ultimate aim of achieving concentrations in the marine environment near background values for naturally occurring substances and close to zero for man-made synthetic substances.

#### **B. Extract from the Sintra Statement**

##### **HAZARDOUS SUBSTANCES**

WE AGREE to prevent pollution of the maritime area by continuously reducing discharges, emissions and losses of hazardous substances (that is, substances which are toxic, persistent and liable to bioaccumulate or which give rise to an equivalent level of concern), with the ultimate aim of achieving concentrations in the environment near background values for naturally occurring substances and close to zero for man-made synthetic substances. WE SHALL MAKE every endeavour to move towards the target of cessation of discharges, emissions and losses of hazardous substances by the year 2020. WE EMPHASISE the importance of the precautionary principle in this work.