

BLR 7570

**REVIEW OF SEA DISPOSAL TRIAL OF CONTAMINATED TYNE ESTUARY SEDIMENT:
REQUIRED CAP THICKNESS FEB 2007 rep no: 11548J
MCMS Licence 31995/04/1**

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The aim of this minute is to provide our comments on the report from Port of Tyne (PoT) on the 'sea disposal trials contaminated Tyne estuary sediment: Required Cap Thickness' report No: 11548J produced by their consultants Envirocentre.

Summary

1. The report has not added to our level of knowledge and has not improved what was previously known.
2. It is essential that the PoT consider how to address the issue of cap thickness and provide a plan of action for the shortcomings observed before the next survey.
3. The action plan is to include; a description of what the cap is likely to be at present (i.e. Histogram and updated figures), what the optimum cap thickness and percentage area coverage should be, a definition of the extent of the area. The survey plan should include research on alternative available methods and any recommendations for their use in the next survey to ensure better data.

Review

4. Following a meeting with PoT and their consultants in September 2006 it was agreed that the applicants would produce a calculation of cap thickness using the same method that was used in the Cefas risk assessment of the cap (Jon Rees_29/11/2005). The PoT was to derive a mean for the cap with suggestions for acceptable tolerance and threshold/trigger for topping up of the cap. Cefas opinion (minute dated 14/9/07) was that the cap should be a minimum of 0.6 m with a higher trigger value to initiate replenishment of the cap.
5. Considering the aims of this report and the discussions at the meeting this report does not adequately describe the cap or measures to trigger cap replenishment.
6. The introduction of the report suggests that the cap design was to 'adequately isolate the contaminated material from the benthic environment'. It is worthy of note that the cap is also to isolate the CDM from the physical activity of storms and seabed transport mechanisms and human activities e.g. trawling.

7. At the September meeting Cefas had expressed their concern for use of maintenance dredge material as top up for the cap. It was pointed out that although some maintenance dredge material may be considered acceptable for sea disposal, in some cases the levels of contaminants were higher than those used for the cap and could potentially interfere with current cap surveys. Therefore even though the material had been consented for disposal to sea, only material specifically approved for use on the cap would be allowed for top up purposes. A licence condition should be included that requires all areas dredged that are to be used for capping require written consent from the licensing authority prior to topping up the cap. On completion of the trial and dependent on the monitoring required at that time, this condition may or may not apply in future.
8. The use of 60cm as an optimum value of cap thickness is incorrect. 60 cm was proposed as a minimum value of any part of the cap. The aim should be to “over Stock” the cap in order to provide time for the cap to erode from wave and tidal forces.
9. The degree to which the cap has consolidated is very important and will assist with the determination of the trigger level for replenishment. This should be possible to model as it is linear to start with and then approaches an asymptote. Sand also consolidates to a small extent.
10. The cores should have provided a reasonable indication of cap thickness. Cefas have used vibrocores to penetrate and retrieve cores of sandy sediments (>1.5m), and BGS have considerable experience with even longer cores. It brings into question whether the core catcher was working properly. A full description of the techniques and equipment used is required together with suggestions for a successful future survey.
11. The report claims that the inherent error of bathymetry surveys can result in an accumulated error of 40 cm, and even worse of 50 cm for sub bottom profiling. The latest survey in May 2006 was poor due to bad weather. This survey should have been repeated to provide an adequate data set. It is paramount that if the survey data generated from the next or future surveys are poor it should be repeated.
12. Bathymetry is not the only means for determination of cap thickness. Considering the failure of the coring and the poor survey data available additional or alternative techniques should have been sourced to provide evidence of the cap thickness.
13. We would wish to see consideration of alternative methods that could be used to provide evidence of cap thickness, like pore-pressure measurement or ‘probe densimeters’.
(http://www.civil.eng.ox.ac.uk/research/envsoils/environmental_soils_group.html)
Although some techniques have similar problems of interference additional methods like probe densimeters may at least provide calibration for the sub-bottom profiling.
14. Section 2.2.2 in the third paragraph is factually incorrect. The Cefas risk assessment showed that 3 moderate storms could move 45 cm not 45 cm per year.
15. Figure 2 is meaningless, without the outline of the CDM and licensed boundaries. This figure should be re-drawn.
16. Confirmation of the units used in the histogram in Figure 5 is required. The assumption is that the counts are meters squared.

Summary of issues

Requirement	Reason
A model of the consolidation curve of the CDM and the cap material.	To be able to realistically apply the trigger level for replenishment
An evidenced optimum median target value for cap thickness with trigger points of which 0.6m must be a minimum. Percentile range which has to be covered by cap i.e. >95%	The reason for choice of the optimum is to be explained. A trigger value should be provided at which cap replenishment is initiated. The area to be covered by the minimum cap at all time needs to be described.
Suggestions of other techniques and potential suitability i.e. use of in-situ measurements of density, probe densimeters.	For consideration of potential use in forth coming survey work.
Figure 2 should be re-drawn including boundaries of the CDM and original licence boundaries.	The figure shows the modelled CDM surface but does not have where the expected boundary of the CDM over the original licence area.
Further description of the coring survey both technique and equipment. Discussion regarding how the survey plan will be changed to assist with a successful core survey in future.	Coring should have been possible, Cefas have experience of successful cores of sandy sediments greater than >1.5m and BGS have considerable experience with even longer cores.
Confirmation of units used in figure 5	It is assumed that the counts are meters squared but it might not be.



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