

Sustainable re-use solutions for dredged sediments

Dr Philip Studds¹ & Zoe Miller¹

¹Ramboll, 46 The Calls, Leeds LS2 7EY, UK

Phone: +44-(0)-113-245 8812

E-mail: phil.studds@ramboll.co.uk

Introduction:

Ramboll carried out a detailed assessment to demonstrate that sediments dredged from British Waterways canals were not hazardous and in fact were a valuable resource which could be used as a construction fill within a canal stabilisation works scheme.

This **saved** the client approximately **£1,000,000** in **landfill tipping fees** and **£500,000** by avoiding the requirement for virgin **construction materials**.

Also, significant space in a hazardous landfill was saved and transporting the dredgings using the waterway network saved 10,000 vehicle movements on a 24 mile journey on largely congested roads.

Methods:

In order to re-use the material it had to be established that the sediments were classified as non-hazardous.

Initially the sediments were classified by the EA as hazardous but Ramboll challenged this assessment by carrying a detailed literature review to understand the chemical form that contaminants would have in the sediments.

Based this assessment Ramboll presented a likely chemical form for the contaminants and supported the data by carrying out detailed chemical analysis (X-ray diffraction and X-ray fluorescence) and assessment using specialist software (Phreeque C, Siroquant and SedNorm).

Ramboll also carried out detailed human health and controlled waters risk assessment and modelling to demonstrate the suitability of this material to be used as a structural fill.



Fig. 1: Sediment re-used as structural fill.

Results:

The material currently in the Long Sandall lagoons was excavated, thus creating space in the deposit for the proposed dredging programme, and the lagoon material reused as part of canal stabilisation works proposed at Whitley Lock.



Fig. 2: Long sandal Lock.

Discussion:

Now accepted by the Regulators, this innovative approach to waste classification has been spread throughout British Waterways 3,000km of canals.

This saved British Waterway's Yorkshire Business Unit potential disposal and material construction costs in the region £1,500,000.

This project illustrates that when regulators and operators work together constructively, sensible, efficient and sustainable solutions can be found with regards to the classification of a waste stream in order to conserve valuable energy and resources.

This project won the Ground Engineering Sustainability Project Award 2009.



Fig. 3: Award presentation.

Acknowledgements:

The authors would like to thank British Waterways for their continued support and assistance.