Rhyl Harbour Maintenance Dredging
Sampling Plan

Project:	Rhyl Harbour		
Our reference:	100	**Your reference:**	DML 2164
Prepared by:	C Williams	**Date:**	November 2021

1 Introduction

Rhyl Harbour is subject to maintenance dredging annually to remove accumulations of sediment from the access channel and mooring areas. Sediment is removed via a long reach excavator located on the adjacent wharf. Sediment is loaded into dumpers which access the foreshore along the edge of the harbour at low tide via the slipway. All dredging activity is undertaken at low tide.

Dredged sediment is removed from the site by lorry by the contractor and is reused as secondary aggregate in the construction industry. There is no sea disposal of dredged material.

Sediment sampling has been undertaken periodically since maintenance dredging commenced in 2014. This Note sets out the sampling regime to be followed in future.

2 Previous Sampling

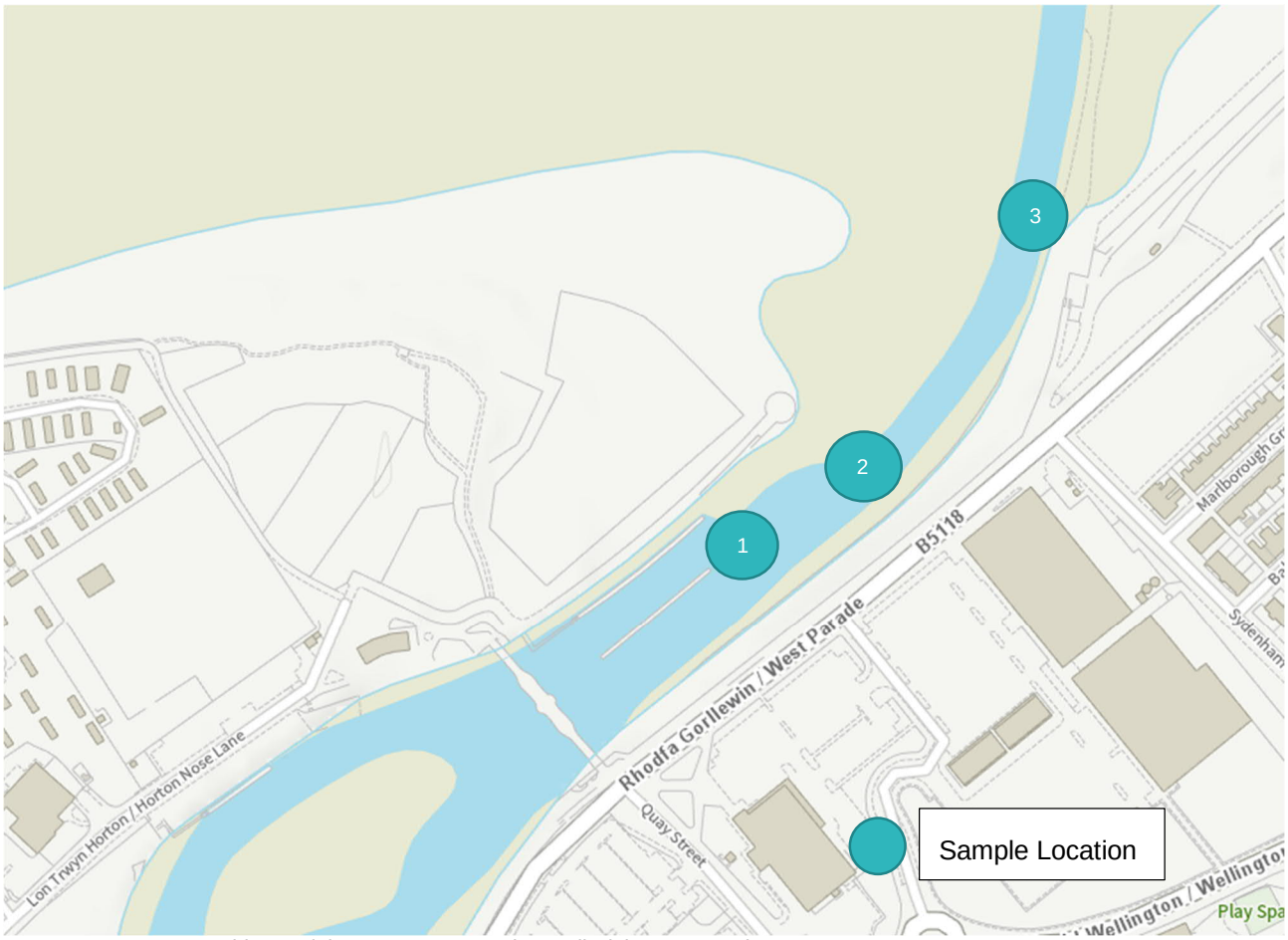
Samples of sediment have been obtained from the locations shown in Figure 2.1. Test data for samples taken in 2018 from these locations is included in Appendix C of the Environmental Report. Concentrations of contaminants are less than the CEFAS Action Level 1 thresholds[1].

Concentrations of other contaminants (petroleum hydrocarbons and polycyclic aromatic hydrocarbons which do not have CEFAS Actin thresholds were also reported to be at low concentrations, generally less than the laboratory method detection limit.

The results of this sampling indicate that the sediment to be dredged is not contaminated to any significant degree.

[1] Action Levels (publishing.service.gov.uk)

Figure 2.1: Previous Sample Locations



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3 Proposed Sampling Programme

Given the proposals to remove sediment from the marine environment with no sea disposal, sampling and analysis of sediment in accordance with OSPAR guidelines is not considered necessary.

The reuse of the dredged sand and gravel in construction requires demonstration that the material is suitable for use in accordance with the Environmental Permitting Regulations. A sample of material dredged in March 2019 has been tested and shown to have low concentrations of contaminants, results presented in Appendix A. The material would be suitable for disposal as inert waste based on these results.

Further dredging will be supported by similar sampling to demonstrate the material is suitable for reuse in construction. Given the historical low levels of contamination found and the homogeneity of the material it is proposed that samples are obtained at a frequency of 1 sample for 5000m^3 of material.

If visual inspection of the material indicates that the material is not homogenous the sampling frequency will be increased to 1 sample for 2000m^3 of material with samples taken of materials suspected of being dissimilar.

A. Sediment Analysis Results

KM Enviromental Ltd
Holywell Road
St Asaph
Denbighshire
LL17 ODS

Date: 12th March 2019

LABORATORY TEST REPORT

TEST REQUIREMENTS: To determine the Waste Acceptance Criteria, EA Landfill Directive Reg Note 2 in accordance with **Standard Methods for the Examination of Water and Wastewater: 19th Edition : 1995 and BS EN 12457:3:2002.**

SAMPLE DETAILS:

Certificate of sampling received:	**Yes**
Laboratory Ref. No:	**S78783**
Client Ref. No:	**Rhyl Harbour**
Date and Time of Sampling:	**Unknown**
Date of Receipt at Lab:	**27/02/2019**
Date of Start of Test.:	**12/03/2019**
Sampling Location:	**Rhyl Harbour**
Name of Source:	**Rhyl Harbour**
Method of Sampling:	**Unknown**
Sampled By:	**Client**
Material Type and Nominal Size:	**Sand & Gravel**
Target Specification:	**N/A**

RESULTS:

SEE ATTACHED

Comments:	Report checked and approved by:
The work was carried out by our accredited, competent, sub contracted laboratory.	 Sharon Parry-Didcote Aggregate Job Coordinator

REQUIREMENTS

Date of Requisition **12/03/19**

Client Sample Ref	Required Interpretation
S/N S78783 ***Waste Data*** **'Rhyl Harbour'**	**Chemical analytical data interpretation: Waste designation (WAC).**

Date of Completion **12/03/19**

Results: TOTAL WAC ANALYSIS – S78783

Parameter	S78783 ref 'Rhyl Harbour'
TOTAL ANALYSIS	
Total Moisture (%)	**4**
Total Organic Carbon (%)	**0.56**
Loss on Ignition (%)	**0.2**
BTEX (mg/kg)	**< 0.01**
PCBs 7 congeners (mg/kg)	**< 0.03**
Mineral Oil C10-C40 (mg/kg)	**< 5**
Total PAHs (EPA16) (mg/kg)	**< 2**
pH	**8.5**
ANC to pH 4 (mol/kg)	**< 0.1**

Results: LEACHATE WAC ANALYSIS – S78783

Parameter	S78783 ref 'Rhyl Harbour'
LEACHATE ANALYSIS	
Arsenic (mg/kg)	**< 0.05**
Barium (mg/kg)	**< 0.05**
Cadmium (mg/kg)	**< 0.01**
Chromium (mg/kg)	**< 0.05**
Copper (mg/kg)	**< 0.05**
Mercury (µg/kg)	**< 0.01**
Molybdenum (mg/kg)	**< 0.05**
Nickel (mg/kg)	**< 0.05**
Lead (mg/kg)	**< 0.05**
Antimony (mg/kg)	**< 0.05**
Selenium (mg/kg)	**< 0.05**
Zinc (mg/kg)	**< 0.05**
Chloride (mg/kg)	**564.00**
Fluoride (mg/kg)	**< 10**
Sulphate (mg/kg)	**86.30**
Total Dissolved Solids (mg/kg)	**1880.00**
Phenols index (mg/kg)	**< 0.10**
Dissolved organic carbon (mg/kg)	**64.00**

Interpretation: WASTE ACCEPTANCE CRITERIA ASSESSMENT

The results of assessment of the analytical parameters tested with respect to WAC status are tabulated below:

Sample Reference	WAC CLASSIFICATION STATUS
S78783 ref 'Rhyl Harbour'	**Inert Waste**

Conclusions

S78783 – WAC CLASSIFICATION : INERT WASTE.
The results of WAC analysis of sample referenced S78783 ref 'Rhyl Harbour' indicate that the relevant parameters comply with the inert waste landfill classification limits, where such exist; as such, the material is classified as suitable for disposal at an **INERT WASTE** licensed landfill.

Note that the WAC Waste classification is an indicator of the suitability of a landfill to receive such waste for disposal (in accordance with the appropriate licence). The results of WAC analysis do not determine whether a waste is hazardous or not, this is only achieved by following the procedures to be used in the determination of whether a waste is hazardous cited in The Environment Agency document "***Technical Guidance, WM3***".

WAC summary of results table appended.

SUMMARY OF RESULTS

Sample Reference	**S78783 ref 'Rhyl Harbour'**	***Landfill Waste Acceptance Criteria Limits***		
Sampling Date	**-**	***Inert Waste Landfill***	**Sampling Date**	**-**
Solid Waste Analysis			**Solid Waste Analysis**	
Total Organic Carbon (%)	**0.56**	*3*	Total Organic Carbon (%)	**0.56**
Loss on Ignition (%)	**0.2**	-	Loss on Ignition (%)	**0.2**
Sum of BTEX (mg/kg)	**< 0.01**	*6*	Sum of BTEX (mg/kg)	**< 0.01**
Sum of 7 PCBs (mg/kg)	**< 0.03**	*1*	Sum of 7 PCBs (mg/kg)	**< 0.03**
Mineral Oil (mg/kg)	**< 5**	*500*	Mineral Oil (mg/kg)	**< 5**
PAH Sum of 17 (mg/kg)	**< 2**	*100*	PAH Sum of 17 (mg/kg)	**< 2**
pH (pH Units)	**8.5**	-	pH (pH Units)	**8.5**
ANC to pH 4 (mol/kg)	**< 0.1**	-	ANC to pH 4 (mol/kg)	**< 0.1**
Eluate Analysis (mg/kg)	**Cumulative 10:1**	***Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg***		
Arsenic	**< 0.05**	*0.5*	Arsenic	**< 0.05**
Barium	**< 0.05**	*20*	Barium	**< 0.05**
Cadmium	**< 0.01**	*0.04*	Cadmium	**< 0.01**
Chromium	**< 0.05**	*0.5*	Chromium	**< 0.05**
Copper	**< 0.05**	*2*	Copper	**< 0.05**
Mercury	**< 0.01**	*0.01*	Mercury	**< 0.01**
Molybdenum	**< 0.05**	*0.5*	Molybdenum	**< 0.05**
Nickel	**< 0.05**	*0.4*	Nickel	**< 0.05**
Lead	**< 0.05**	*0.5*	Lead	**< 0.05**
Antimony	**< 0.05**	*0.06*	Antimony	**< 0.05**
Selenium	**< 0.05**	*0.1*	Selenium	**< 0.05**
Zinc	**< 0.05**	*4*	Zinc	**< 0.05**
Chloride	**564.00**	*800*	Chloride	**564.00**
Fluoride	**< 10**	*10*	Fluoride	**< 10**
Sulphate as SO_4	**86.30**	*1000*	Sulphate as SO_4	**86.30**
Total Dissolved Solids	**1880.00**	*4000*	Total Dissolved Solids	**1880.00**
Phenol Index	**< 0.10**	*1*	Phenol Index	**< 0.10**
Dissolved Organic Carbon	**64.00**	*500*	Dissolved Organic Carbon	**64.00**

END OF REPORT