

28 WATER AND SEDIMENT QUALITY

28.1 EXISTING ENVIRONMENT

28.1.1 Water quality

1. Mean background levels of suspended solids concentration are expected to be of the order of 50 to 100mg/l near the bed. Surface values would be expected to be considerably less than this (probably below 10mg/l).

28.1.2 Sediment quality

1. As shown on Figure 27.1.1, 8 samples were taken for analysis of sediment quality from a transect running from north to south through the proposed disposal site. The raw data are shown in Table 28.1.1.

28.2 POTENTIAL IMPACTS DURING THE DISPOSAL PHASE

28.2.1 Increased turbidity due to the disposal of clay

1. The disposal of clay has the potential to increase the turbidity of the water column. However, it is expected that there will be a loss of only 1% to 2% of the material from the clay into the water column. Therefore, in comparison with the existing disposal regime and background conditions, any increased turbidity associated with the disposal of capital material will be of **negligible significance**.

Mitigation and residual impact

2. No mitigation measures are required and the residual impact would be of **negligible significance**.

28.2.2 Potential elevation in sediment contaminants

1. There is the potential for elevation of metals concentrations within the sediments to occur should their concentration within the dredged material be higher than that currently on the seabed. However, the CEFAS licensing procedure involves consideration of the sediment quality of the dredged material in terms of its suitability for offshore disposal. It is assumed, therefore, that should disposal at the Inner Gabbard (East) be consented there would be **no impact** on the sediment quality of seabed sediments. This was found to be the case following the disposal of dredged material from the 1998/2000 approach channel deepening at the Roughs Tower where there was no significant enhancement of contaminant concentrations (Rees *et al.*, 2002).

Mitigation and residual impact

2. No mitigation measures are required. There would be **no residual impact**.

Table 28.1.1 Concentration of various heavy and trace metals throughout the survey area

Sampling site	Total concentration (mg/kg air dried)										
	As	Ba	Cd	Cr		Hg	Fe	Ni	Pb	V	Zn
<i>Detection limit</i>	1	5	1	5	5	0.01	10	5	1	5	5
1	101	59	<1	9	<5	0.13	22300	40	6	40	29
2	137	245	<1	39	9	0.16	58900	65	9	129	74
3	111	252	<1	50	12	0.18	58000	68	13	144	74
4	94	284	<1	69	20	0.36	58100	67	12	175	87
5	98	254	<1	58	16	0.41	52700	61	11	145	72
6	65	312	<1	69	23	0.30	55500	68	13	201	86
7	164	203	<1	42	12	0.05	49500	52	11	137	71
8	91	315	<1	41	8	0.18	46900	58	11	119	72
Max	164	315	<1	69	23	0.41	58900	68	13	201	87
Min	65	59	<1	9	<5	0.05	22300	40	6	40	29
Mean*	108	240	<1	47	13	0.22	50238	60	11	136	71

* Where the dataset includes a measurement below the detection limit, the detection level has been used in the calculation of the mean

28.3 POTENTIAL IMPACTS DURING THE POST-DISPOSAL PHASE

1. Following the capital disposal there will be no further disposal of any dredged material arising from the channel dredging. All capital silts and maintenance dredgings will be disposed of at the existing disposal ground at the Inner Gabbard. Therefore, there will be **no impacts** on either water or sediment quality during the post-disposal phase.

Mitigation and residual impact

2. No mitigation measures are required.



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