


土木工程拓展署
Civil Engineering and Development Department

Environmental Monitoring and Audit for Contaminated Mud Pit at Sha Chau (2009-2013) – Investigation Agreement No. CE 4/2009(EP)

26th Monthly Progress Report for Contaminated Mud Pits at Sha Chau – August 2011

Revision 0

22 September 2011

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Client: Civil Engineering and Development Department (CEDD)		Project No: 0103262			
Summary: This document presents progress of monitoring works on contaminated mud pits at Sha Chau in August 2011 under Agreement No. CE 4/2009 (EP).		Date: 22 September 2011			
		Approved by: Dr Robin Kennish Director			
0	26 th Monthly Progress Report for CMP	JF	JT	RK	22/09/11
Revision	Description	By	Checked	Approved	Date
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Agreement No. CE 4/2009 (EP)
Environmental Monitoring and Audit
for Contaminated Mud Pit at Sha Chau (2009-2013) - Investigation

26th MONTHLY PROGRESS REPORT
FOR CONTAMINATED MUD PITS AT SHA CHAU

August 2011

1.1 BACKGROUND

Since 1992, the East of Sha Chau area has been the site of a series of dredged contaminated mud pits (CMPs) designed to provide confined marine disposal capacity for contaminated mud arising from the HKSAR's dredging and reclamation projects. CMP IVc is presently in operation for backfilling by contaminated mud and is anticipated to reach its capacity in 2011. A series of four newly constructed seabed pits at the East of Sha Chau area, CMP Va-d, will be provided for the disposal of contaminated mud after CMP IVc is full. Dredging operations were completed for the construction of CMP Va-b and are now taking place to construct CMP Vc. The environmental monitoring and audit (EM&A) programme for the CMPs at the East of Sha Chau area presently covers disposal and capping operations at CMP IV and dredging operations at CMP Vc.

1.2 REPORTING PERIOD

This *Monthly Progress Report* covers the monitoring period of August 2011.

1.3 DETAILS OF SAMPLING AND LABORATORY TESTING ACTIVITIES

Field sampling activities conducted in this monthly period for CMP IV are listed below:

- *Routine Water Quality Monitoring* was conducted on 5 August;
- *Water Quality Monitoring during Capping* was conducted on 11 August;
- *Demersal Trawling* was conducted on 11 and 12 August;
- *Benthic Recolonisation Monitoring* was conducted on 18 August;
- *Cumulative Impact Sediment Chemistry Monitoring* and *Sediment Toxicity Monitoring* were conducted on 23 August; and
- *Pit Specific Sediment Chemistry Monitoring* was conducted on 25 August.

For CMP V, sampling for *Impact Water Quality Monitoring during Dredging Operations* was conducted on 9 August 2011. A summary of field activities are presented in *Annex A*.

A summary of monitoring data submitted by the Contractor in this reporting month is presented in *Table 1.1*.

Table 1.1 *Summary of monitoring data submitted by the Contractor during the reporting month*

Key Task	Monitoring Component	Results Received from the Contractor
CMP IV		
Water Column Profiling	Water Quality	July 2011 sampling: 19 August 2011
CMP V		
Impact Monitoring during Dredging Operations	Water Quality	July 2011 sampling: 19 August 2011

1.4 **DETAILS OF OUTSTANDING SAMPLING AND/OR ANALYSIS**

No outstanding sampling and laboratory analysis remained from August 2011. However, monitoring data were not collected for *Water Column Profiling* of CMP IVc since contaminated mud disposal operations were not undertaken during the surveys on 5 and 11 August 2011.

1.5 **BRIEF DISCUSSION OF THE MONITORING RESULTS**

Results of *Impact Water Quality Monitoring during Dredging Operations of CMP V* are presented for August 2011. Detailed results will be discussed in the 9th *Quarterly Report*.

1.5.1 **CMP V**

Impact Water Quality Monitoring during Dredging Operations of CMP V – August 2011

Impact Water Quality Monitoring during Dredging Operations of CMP V was conducted on 9 August 2011. On the survey day, sampling was conducted during both mid-ebb and mid-flood tides at two Reference (Upstream) stations upstream and five Impact (Downstream) stations downstream of the dredging operations at CMP V. Monitoring was also conducted at the Ma Wan station. At each station, *in-situ* measurements of water quality parameters as well as water samples were taken from three depths in the water column (ie surface: 1 m below sea surface, mid-depth and bottom: 1 m above the seabed).

Monitoring results are presented in *Table B1* of *Annex B*. Levels of Dissolved Oxygen (DO), Turbidity and Total Suspended Solids (TSS) complied with the Action and Limit Levels set in the *Baseline Monitoring Report* ⁽¹⁾. Therefore,

(1) ERM (2009) *Baseline Monitoring Report. Environmental Monitoring and Audit for Contaminated Mud Pit at Sha Chau (2009-2013) – Investigation. Agreement No. CE 4/2009(EP)*. Submitted to EPD in September 2009.

there appears to be no evidence of any unacceptable adverse water quality impacts arising from the dredging operations of CMP V at ESC.

1.6 *ACTIVITIES SCHEDULED FOR THE NEXT MONTH*

Impact Water Quality Monitoring during Dredging Operations will be undertaken for CMP V in September 2011. No monitoring activities are scheduled for CMP IV in the next reporting month.

The sampling schedule is presented in *Annex A*.

1.7 *STUDY PROGRAMME*

A summary of the Study Programme is presented in *Annex C*.

Annex A

Sampling Schedule

			2009												2010												2011											
	Code	Frequency	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D						
Pit Specific Sediment Chemistry																																						
Active-Pit	NCA 1-8	3 times per year	*						*					*						*					*													
	NCB 1-8	3 times per year	*						*					*						*					*													
Pit-Edge	CPA 1-8	3 times per year	*						*					*						*					*													
	CPB 1-8	3 times per year	*						*					*						*					*													
Near-Pit	CNA 1-8	3 times per year	*						*					*						*					*													
	CNB 1-8	3 times per year	*						*					*						*					*													
Cumulative Impact Sediment Chemistry																																						
Near-field Stations	RNA 1-9	2 times per year	*						*					*						*					*													
	RNB 1-9	2 times per year	*						*					*						*					*													
Mid-field Stations	RMA 1-9	2 times per year	*						*					*						*					*													
	RMB 1-9	2 times per year	*						*					*						*					*													
Capped Pit Stations	RCA 1-9	2 times per year	*						*					*						*					*													
	RCB 1-9	2 times per year	*						*					*						*					*													
Far-Field Stations	RFA 1-9	2 times per year	*						*					*						*					*													
	RFB 1-9	2 times per year	*						*					*						*					*													
Sediment Toxicity Tests																																						
Near-Field Stations	TCA	2 times per year	3						3					3						3					3													
	TCB	2 times per year	3						3					3						3					3													
Reference Stations	TRA	2 times per year	3						3					3						3					3													
	TRB	2 times per year	3						3					3						3					3													
Tissue/Whole Body Sampling																																						
Near-Pit Stations	INA	2 times per year	*						*					*						*					*													
	INB	2 times per year	*						*					*						*					*													
Reference North	TNA	2 times per year	*						*					*						*					*													
	TNB	2 times per year	*						*					*						*					*													
Reference South	TSA	2 times per year	*						*					*						*					*													
	TSB	2 times per year	*						*					*						*					*													
Demersal Trawling																																						
Near Pit Stations	INA 1-5	4 times per year	5	5					5	5				5	5				5	5				5	5				5	5								
	INB 1-5	4 times per year	5	5					5	5				5	5				5	5				5	5				5	5								
Reference North	TNA 1-5	4 times per year	5	5					5	5				5	5				5	5				5	5				5	5								
	TNB 1-5	4 times per year	5	5					5	5				5	5				5	5				5	5				5	5								
Reference South	TSA 1-5	4 times per year	5	5					5	5				5	5				5	5				5	5				5	5								
	TSB 1-5	4 times per year	5	5					5	5				5	5				5	5				5	5				5	5								
Capping																																						
<i>Ebb Tide</i>																																						
Impact Station Downcurrent	IPE1	4 times per year	3						3	3				3	3				3	3				3	3				3	3								
	IPE2	4 times per year	3						3	3				3	3				3	3				3	3				3	3								
	IPE3	4 times per year	3						3	3				3	3				3	3				3	3				3	3								
	IPE4	4 times per year	3						3	3				3	3				3	3				3	3				3	3								
	IFC1	4 times per year	3						3	3				3	3				3	3				3	3				3	3								
Intermediate Station Downcurrent	INE1	4 times per year	3						3	3				3	3				3	3				3	3				3	3								
	INE2	4 times per year	3						3	3				3	3				3	3				3	3				3	3								
	INE3	4 times per year	3						3	3				3	3				3	3				3	3				3	3								
	INE4	4 times per year	3						3	3				3	3				3	3				3	3				3	3								
	INE5	4 times per year	3						3	3				3	3				3	3				3	3				3	3								
Reference Station Upcurrent	RFE1	4 times per year	3						3	3				3	3				3	3				3	3				3	3								
	RFE2	4 times per year	3						3	3				3	3				3	3				3	3				3	3								
	RFE3	4 times per year	3						3	3				3	3				3	3				3	3				3	3								
	RFE4	4 times per year	3						3	3				3	3				3	3				3	3				3	3								
	RFE5	4 times per year	3						3	3				3	3				3	3				3	3				3	3								
<i>Flood Tide</i>																																						
Impact Station Downcurrent	INF1	4 times per year	3						3	3				3	3				3	3				3	3				3	3								
	IFC2	4 times per year	3						3	3				3	3				3	3				3	3				3	3								
	INF3	4 times per year	3						3	3				3	3				3	3				3	3				3	3								
Intermediate Station Downcurrent	IPF1	4 times per year	3						3	3				3	3				3	3				3	3				3	3								
	IPF2	4 times per year	3						3	3				3	3				3	3				3	3				3	3								
	IPF3	4 times per year	3						3	3				3	3				3	3				3	3				3	3								
Reference Station Upcurrent	RFF1	4 times per year	3						3	3				3	3				3	3				3	3				3	3								
	RFF2	4 times per year	3						3	3				3	3				3	3				3	3				3	3								
	RFF3	4 times per year	3						3	3				3	3				3	3				3	3				3	3								
Routine Water Quality Monitoring																																						
<i>Ebb Tide</i>																																						
Impact Station Downcurrent	IPE1	2 times per year	*						*					*					*					*					*									
	IPE2	2 times per year	*						*					*					*					*					*									
	IPE3	2 times per year	*						*					*					*					*					*									
	IPE4	2 times per year	*						*					*					*					*					*									
	IPE5	2 times per year	*						*					*					*					*					*									
Intermediate Station Downcurrent	INE1	2 times per year	*						*					*					*					*					*									
	INE2	2 times per year	*						*					*					*					*					*									
	INE3	2 times per year	*						*					*					*					*					*									
	INE4	2 times per year	*						*					*					*					*					*									
	INE5	2 times per year	*						*					*					*					*					*									
Reference Station Upcurrent	RFE1	2 times per year	*						*					*					*					*					*									
	RFE2	2 times per year	*						*					*					*					*					*									
	RFE3	2 times per year	*						*					*					*					*					*									
	RFE4	2 times per year	*						*					*					*					*					*									
	RFE5	2 times per year	*						*					*					*					*					*									
<i>Flood Tide</i>																																						
Impact Station Downcurrent	INF1	2 times per year	*						*					*					*																			

Baseline Water Quality Monitoring			2009												2010												2011											
			J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D						
Near Field	ESC-WNAA		*	*																																		
	ESC-WNAB		*	*																																		
	ESC-WNAC		*	*																																		
	ESC-WNAD	To be surveyed 24 times (3 days per week during mid-flood and mid-ebb tide of each day) in the month prior to commencement of marine works	*	*																																		
	ESC-WNBA		*	*																																		
	ESC-WNBB		*	*																																		
	ESC-WNBC		*	*																																		
ESC-WNBD	*		*																																			
Mid Field	ESC-WMB	To be surveyed 24 times (3 days per week during mid-flood and mid-ebb tide of each day) in the month prior to commencement of marine works	*	*																																		
	ESC-WMA		*	*																																		
Far Field	ESC-WFA	To be surveyed 24 times (3 days per week during mid-flood and mid-ebb tide of each day) in the month prior to commencement of marine works	*	*																																		
	ESC-WFB		*	*																																		
	MW1		*	*																																		
Reference Stations	NM1		*	*																																		
	NM2		*	*																																		
	NM3	To be surveyed 24 times (3 days per week during mid-flood and mid-ebb tide of each day) in the month prior to commencement of marine works	*	*																																		
	NM5		*	*																																		
	NM6		*	*																																		
Water Column Profiling			J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D						
Plume Stations	Upstream			2	2	2	2	2	2	2																												
	Downstream			2	2	2	2	2	2	2																												
Water Quality Impact Monitoring for Dredging			J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D						
Downcurrent Impact Stations	1			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*						
	2			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*						
	3			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*						
	4			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*						
	5			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*						
Upcurrent Stations	1			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*						
	2			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*						
	MW1			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*						

Sampling completed
 Sampling to be completed

Annex B

Monitoring Results

Table B1 *Summary Table of DO, Turbidity and TSS Levels Recorded in August 2011*

Sampling Date	Tidal Period	Station	Average DO Levels (mg/L)		Average Turbidity Level (NTU)	Average TSS Level (mg/L)
			Bottom	Surface and Mid Depth		
2011/08/09	ME	DS1	4.46	6.25	8.50	18.83
		DS2	4.33	5.96	4.82	8.17
		DS3	5.16	6.64	3.98	7.83
		DS4	6.05	7.07	2.04	5.67
		DS5	7.12	7.45	1.60	4.33
	MF	MW1	4.41	7.17	0.29	3.00
		US1	4.64	6.81	2.74	6.00
		US2	4.82	6.57	2.89	6.33
		DS1	5.48	7.98	4.90	11.83
		DS2	5.41	7.95	4.59	9.00
		DS3	5.24	7.59	4.15	12.00
		DS4	5.21	6.57	3.19	5.67
		DS5	4.99	6.34	2.94	6.67
		MW1	3.98	4.80	2.34	5.17
		US1	5.34	7.42	3.95	7.50
		US2	3.93	6.87	5.83	9.33

Annex C

Study Programme

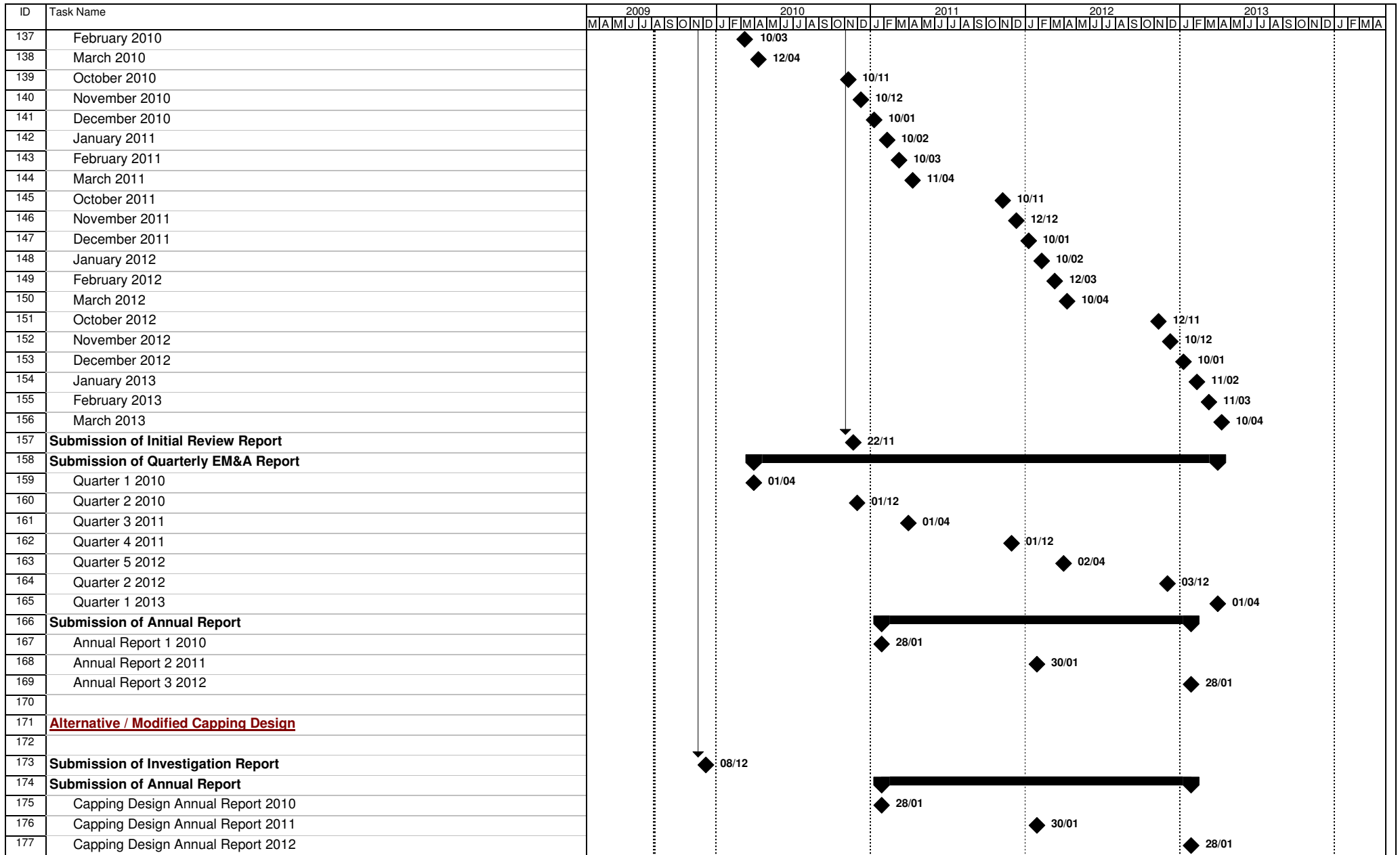


Figure 4.1 - Study Programme

