

 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)

31st Monthly Progress Report for Contaminated Mud Pits at Sha Chau – January 2012

Revision 0

21 March 2012

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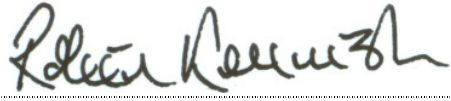



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Revision 0

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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 January 2012 under Agreement No. CE 4/2009 (EP).		Date: 21 March 2012			
		Approved by:  <i>Dr Robin Kennish</i> Director			
0	31 st Monthly Progress Report for CMP	CL	JT	RK	21/03/12
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

31st MONTHLY PROGRESS REPORT
FOR CONTAMINATED MUD PITS AT SHA CHAU
January 2012

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. In January 2012, CMP IVc was in operation for backfilling by contaminated mud and was anticipated to reach its capacity in February 2012. 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. The dredging of CMPs Va and Vb had been completed and that of CMP Vc was in progress. 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 January 2012.

1.3 DETAILS OF SAMPLING AND LABORATORY TESTING ACTIVITIES

The following monitoring activities have been undertaken for CMP IVc in January 2012:

- *Demersal Trawling* was conducted on 1 and 2 January; and
- *Water Column Profiling* was conducted on 16 January.

For CMP Vc, sampling for *Impact Water Quality Monitoring during Dredging Operations* was conducted on 12 January 2012. A summary of field activities is presented in *Annex A*.

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

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

Key Task	Monitoring Component	Date of Results Received from the Contractor
CMP Vc Impact Monitoring during Dredging Operations	Water Quality	1 March 2012

1.4 *DETAILS OF OUTSTANDING SAMPLING AND / OR ANALYSIS*

No outstanding sampling and laboratory analysis remained from January 2012

1.5 *BRIEF DISCUSSION OF THE MONITORING RESULTS*

1.5.1 *CMP V*

Impact Water Quality Monitoring during Dredging Operations of CMP V – January 2012

Impact Water Quality Monitoring during Dredging Operations of CMP V was conducted on 12 January 2012. 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 Vc (*Figure 1.1*). 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⁾. Overall, the results indicated that the dredging operations at CMP Vc did not appear to cause any unacceptable deterioration in water quality during this reporting period.

Therefore, no further mitigation measures, except for those recommended in the Environmental Permit (*EP-312/2008*), are considered required for the dredging operations of CMP Vc.

(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.

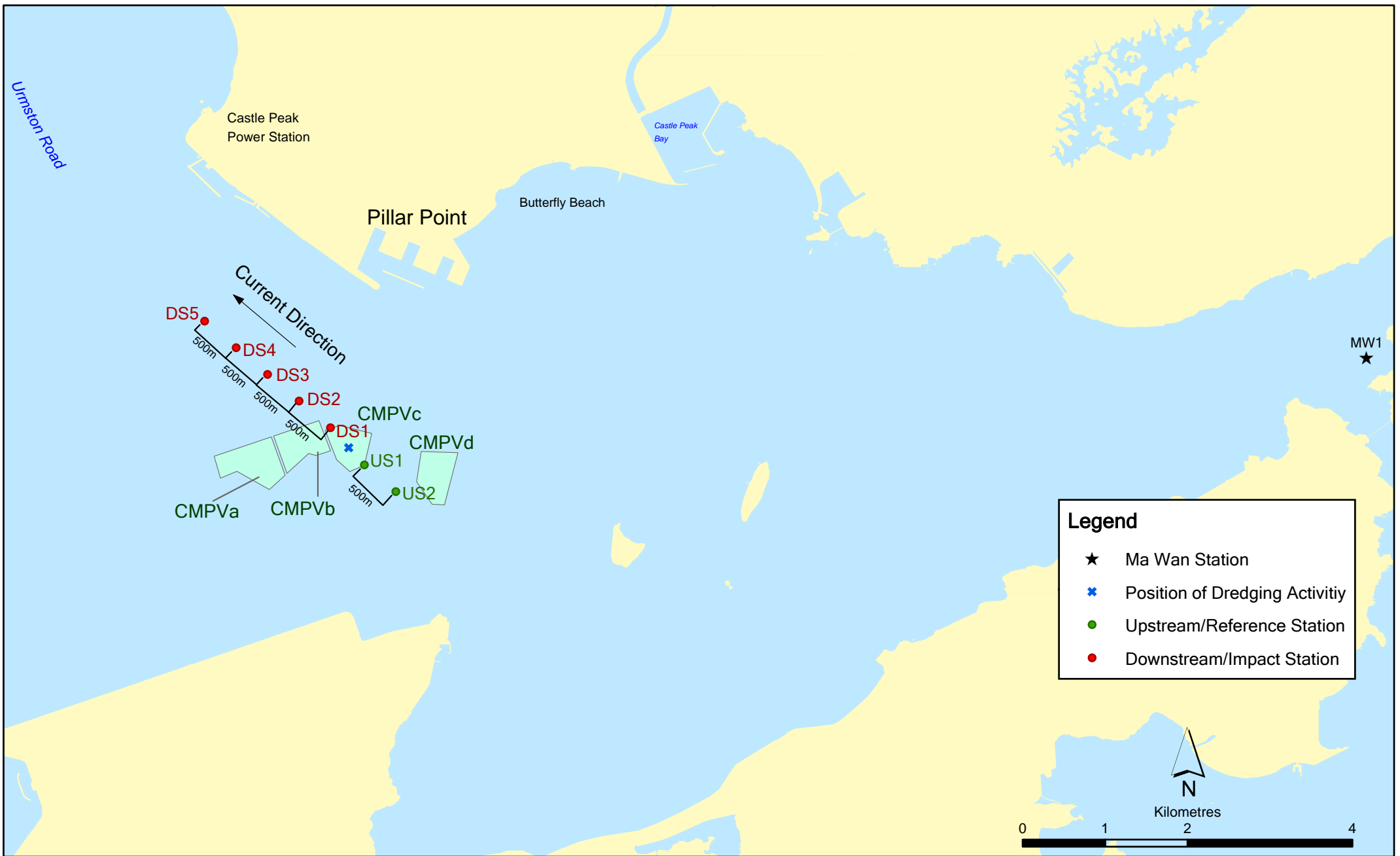


Figure 1.1

Indicative Dredging Impact Sampling Stations for CMPVc

Note: The locations of sampling stations will be determined on site based on current direction and position of dredging activities.

File: CMPV0103262_modelling stations2.mxd
Date: 27/03/2012

1.6

ACTIVITIES SCHEDULED FOR THE NEXT MONTH

The following monitoring programmes will be conducted in the next monthly period of February 2012:

CMP IV

- *Water Quality Monitoring during Capping* for CMP IVc;
- *Tissue/ Whole Body Sampling* for CMP IVc; and
- *Demersal Trawling* for CMP IVc.

CMP V

- *Cumulative Impact Sediment Chemistry* for CMP Va;
- *Sediment Toxicity Tests* for CMP Va;
- *Routine Water Quality Monitoring* for CMP Va;
- *Pit Specific Sediment Chemistry* for CMP Va;
- *Water Column Profiling* for CMP Vc; and
- *Impact Water Quality Monitoring during Dredging Operations* for CMP Vc.

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

Annex A1 - East of Sha Chau Environmental Monitoring and Audit Sampling Schedule for CMP IV (January 2012 - December 2012)

			2012											
			J	F	M	A	M	J	J	A	S	O	N	D
Tissue/ Whole Body Sampling														
Near-Pit Stations	INA		*											
	INB		*											
Reference North	TNA		*											
	TNB		*											
Reference South	TSA		*											
	TSB		*											
Demersal Trawling														
Near Pit Stations	INA 1-5		*	*										
	INB 1-5		*	*										
Reference North	TNA 1-5		*	*										
	TNB 1-5		*	*										
Reference South	TSA 1-5		*	*										
	TSB 1-5		*	*										
Capping														
<i>Ebb Tide</i>														
Impact Station Downcurrent	IPE1		*					*		*				*
	IPE2		*					*		*				*
	IPE3		*					*		*				*
	IPE4		*					*		*				*
	PFC1		*					*		*				*
Intermediate Station Downcurrent	INE1		*					*		*				*
	INE2		*					*		*				*
	INE3		*					*		*				*
	INE4		*					*		*				*
	INE5		*					*		*				*
Reference Station Upcurrent	RFE1		*					*		*				*
	RFE2		*					*		*				*
	RFE3		*					*		*				*
	RFE4		*					*		*				*
	RFE5		*					*		*				*
<i>Flood Tide</i>														
Impact Station Downcurrent	INF1		*					*		*				*
	PFC2		*					*		*				*
	INF3		*					*		*				*
Intermediate Station Downcurrent	IPF1		*					*		*				*
	IPF2		*					*		*				*
	IPF3		*					*		*				*
Reference Station Upcurrent	RFF1		*					*		*				*
	RFF2		*					*		*				*
	RFF3		*					*		*				*
Water Column Profiling														
Plume Stations	WCP1		*											
	WCP2		*											

"*" = Number of replicates depends on field catch or parameters

Sampling completed
 Sampling to be completed

Pit Specific Sediment Chemistry Code	2012												2013												2014	
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F
Active-Pit	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Pit-Edge	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Near-Pit	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

Cumulative Impact Sediment Chemistry		J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F
Near-field Stations	ESC-RNA ESC-RNB	*					*	*					*	*					*	*					*	*	*
Mid-field Stations	ESC-RMA ESC-RMB	*					*	*					*	*					*	*					*	*	*
Capped Pit Stations	ESC-RCA ESC-RCB	*					*	*					*	*					*	*					*	*	*
Far-Field Stations	ESC-RFA ESC-RFB	*					*	*					*	*					*	*					*	*	*
Ma Wan Station	MW1	*					*	*					*	*					*	*					*	*	*

Sediment Toxicity Tests		J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F
Near-Field Stations	ESC-TDA ESC-TDB	*					*	*					*	*					*	*					*	*	*
Reference Stations	ESC-TRA ESC-TRB	*					*	*					*	*					*	*					*	*	*
Ma Wan Station	MW1	*					*	*					*	*					*	*					*	*	*

Tissue/Whole Body Sampling		J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F
Impact Stations	ESC-INA ESC-INB							*	*				*						*	*				*			
Reference	ESC-TNA ESC-TNB							*	*				*						*	*				*			
	ESC-TSA ESC-TSB							*	*				*						*	*				*			

Demersal Trawling		J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F
Impact Stations	ESC-INA ESC-INB							*	*				*						*	*				*			
Reference Stations	ESC-TNA ESC-TNB							*	*				*						*	*				*			
	ESC-TSA ESC-TSB							*	*				*						*	*				*			

Capping		J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F
<i>Ebb Tide</i>																											
Impact Station	ESC-IP1 ESC-IP2 ESC-IP3 ESC-IP4 ESC-IP5												*						*	*				*			
Intermediate Station	ESC-INE1 ESC-INE2 ESC-INE3 ESC-INE4 ESC-INE5												*						*	*				*			
Reference Station	ESC-RFE1 ESC-RFE2 ESC-RFE3 ESC-RFE4 ESC-RFE5												*						*	*				*			
Ma Wan Station	MW1												*						*	*				*			
<i>Flood Tide</i>																											
Impact Station	ESC-IPF1 ESC-IPF2 ESC-IPF3												*						*	*				*			
Intermediate Station	ESC-INF1 ESC-INF2 ESC-INF3												*						*	*				*			
Reference Station	ESC-RFF1 ESC-RFF2 ESC-RFF3												*						*	*				*			
Ma Wan Station	MW1												*						*	*				*			

Routine Water Quality Monitoring		J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F
<i>Ebb Tide</i>																											
Impact Station	ESC-IP1 ESC-IP2 ESC-IP3 ESC-IP4 ESC-IP5	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Intermediate Station	ESC-INE1 ESC-INE2 ESC-INE3 ESC-INE4 ESC-INE5	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Reference Station	ESC-RFE1 ESC-RFE2 ESC-RFE3 ESC-RFE4 ESC-RFE5	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Ma Wan Station	MW1	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
<i>Flood Tide</i>																											
Impact Station	ESC-IPF1 ESC-IPF2 ESC-IPF3	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Intermediate Station	ESC-INF1 ESC-INF2 ESC-INF3	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Reference Station	ESC-RFF1 ESC-RFF2 ESC-RFF3	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Ma Wan Station	MW1	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

Water Column Profiling		J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F
Plume Stations	WCP1 WCP2	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

Benthic Recolonisation Studies		J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F
Capped Contaminated Mud Pits IVa-c	ESC-CPA ESC-CPB ESC-CPC							*	*				*						*	*				*			
Reference Stations	ESC-RBA ESC-RBB ESC-RBC							*	*				*						*	*				*			

Impact Monitoring for Dredging		J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F
Upstream/Reference Stations	US1 US2	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Downstream/Impact Stations	DS1 DS2 DS3 DS4 DS5	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Ma Wan Station	MW1	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

 Sampling completed
 Sampling to be completed

Annex B

Monitoring Results

Table B1 *Summary Table of DO, Turbidity and TSS Levels Recorded in January 2012*

Sampling Date	Tidal Period	Station	Average DO Levels (mg/L)		Average Turbidity Level (NTU)	Average TSS Level (mg/L)
			Bottom	Surface and Mid Depth		
2012/01/12	ME	DS1	7.98	7.99	7.64	7.00
		DS2	7.95	8.02	7.05	6.17
		DS3	8.04	8.06	7.09	5.83
		DS4	8.04	8.07	11.30	9.50
		DS5	8.09	8.10	12.39	10.33
		MW1	7.82	7.86	5.79	4.83
		US1	7.89	7.91	14.55	13.83
	MF	US2	7.93	7.91	10.09	9.67
		DS1	7.84	7.83	23.76	22.83
		DS2	7.86	7.86	16.56	19.17
		DS3	7.87	7.88	10.22	10.17
		DS4	7.88	7.90	12.67	11.50
		DS5	7.91	7.87	11.42	12.83
		MW1	7.72	7.73	12.64	15.83
		US1	7.86	7.84	31.50	31.33
		US2	7.83	7.82	7.83	23.17

Notes:

1. Cell shaded yellow indicated value exceeding the Action Level criteria.
2. Cell shaded red indicated value exceeding the Limit Level criteria.
3. Please refer to *Section 1.5* for any actions taken regarding the exceedance noted.
4. DO for Surface and Mid-depth: less than 3.76 mg L⁻¹ (Action Level); less than 3.11 mg L⁻¹ (Limit Level)
 DO for Bottom: less than 2.96 mg L⁻¹ (Action Level); less than 2 mg L⁻¹ (Limit Level)
 Depth-average Turbidity: greater than 28.14 (Action Level); greater than 38.32 (Limit Level)
 Depth-average SS: greater than 37.88 mg L⁻¹ (Action Level); greater than 61.92 mg L⁻¹ (Limit Level)

Annex C

Study Programme

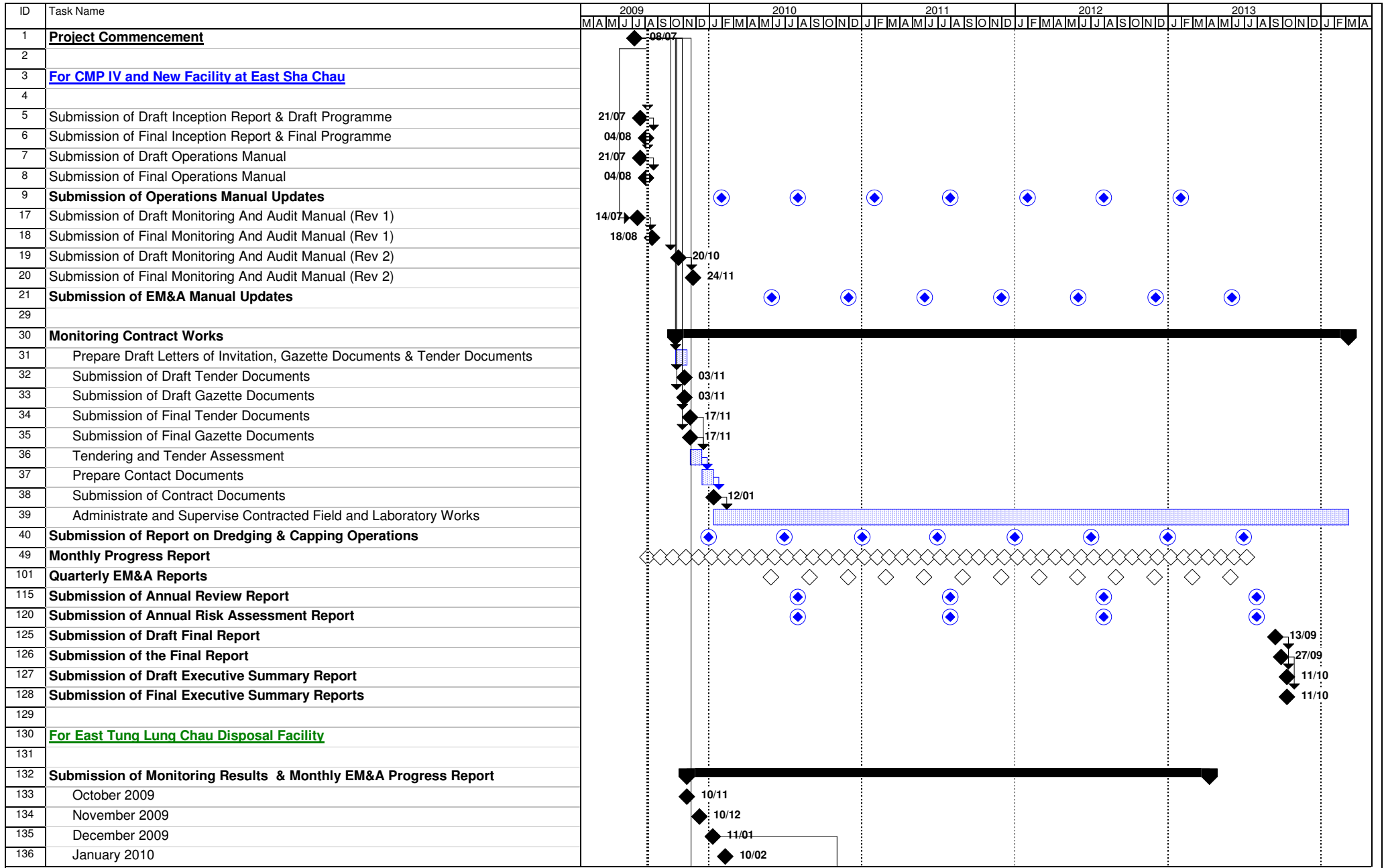


Figure 4.1 - Study Programme	Task		Milestone		Rolled Up Task	
	Progress		Summary		Rolled Up Milestone	

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

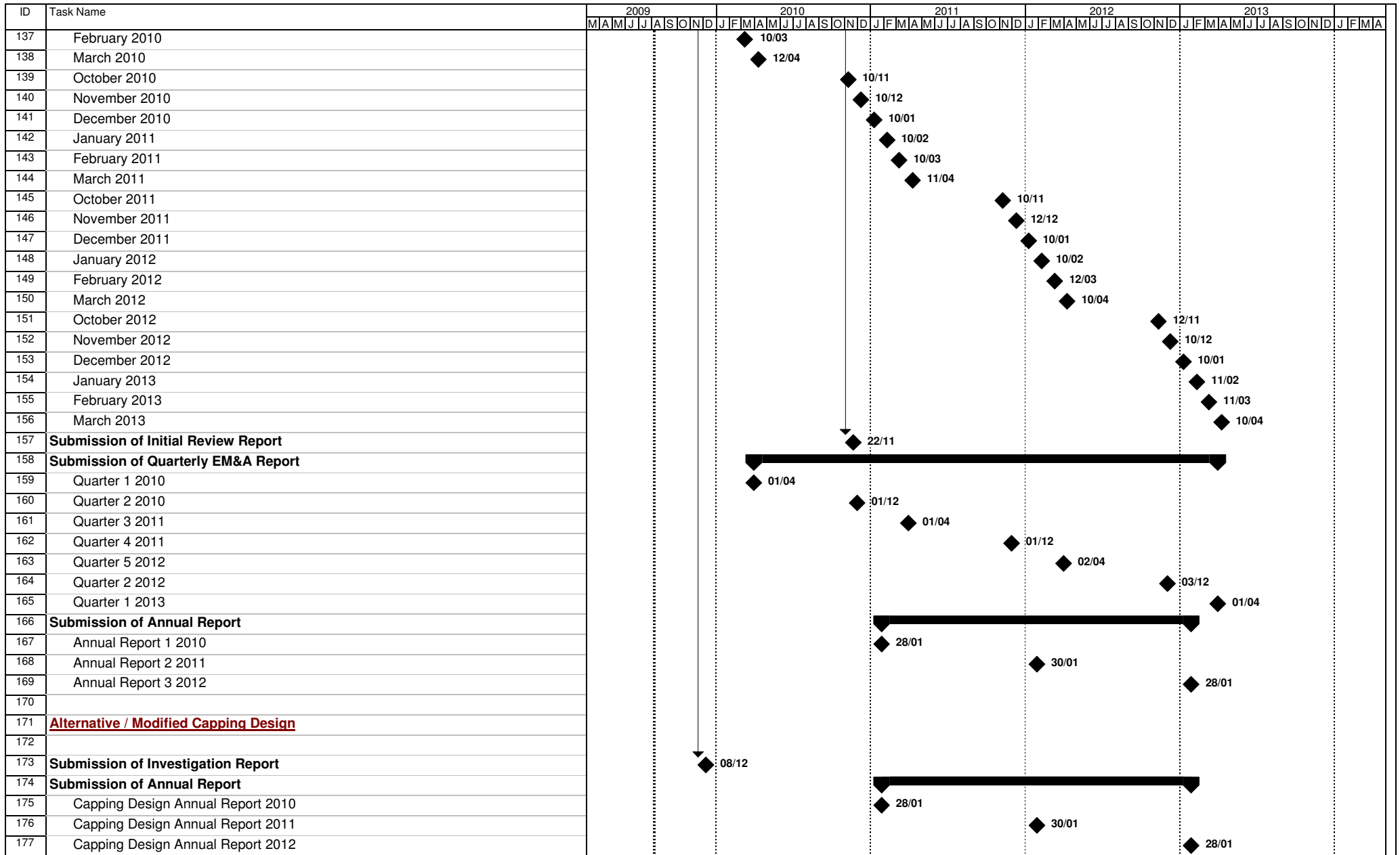


Figure 4.1 - Study Programme



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