

 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)

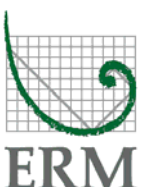
### 22<sup>nd</sup> Monthly Progress Report for Contaminated Mud Pits at Sha Chau – April 2011

Revision 0

17 June 2011

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# Environmental Monitoring and Audit for Contaminated Mud Pit at Sha Chau (2009-2013) – Investigation

## 22<sup>nd</sup> Monthly Progress Report for Contaminated Mud Pits at Sha Chau – April 2011

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 April 2011 under Agreement No. CE 4/2009 (EP).		Date: 17 June 2011			
		Approved by:   Dr Robin Kennish Director			
0	22 <sup>nd</sup> Monthly Progress Report for CMP – Draft	NZ	CAR	RK	17/06/11
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

22<sup>nd</sup> MONTHLY PROGRESS REPORT  
FOR CONTAMINATED MUD PITS AT SHA CHAU  
(for APRIL 2011)

June 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 and are now taking place to construct CMP Vb. 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 Vb.

**1.2 REPORTING PERIOD**

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

**1.3 DETAILS OF SAMPLING AND LABORATORY TESTING ACTIVITIES**

For CMP IVc, sampling for *Pit Specific Sediment Chemistry Monitoring* was conducted on 11 April 2011. For CMP V, sampling for *Impact Monitoring during Dredging Operations* was conducted on 12 April 2011. A summary of field activities are presented in *Annex A*.

A summary of laboratory analysis results submitted by the Contractor in this reporting month is presented on *Table 1.1*.

**Table 1.1** *Summary of laboratory analysis results submitted by the Contractor during the reporting month*

Key Task	Monitoring Component	Results Received from the Contractor
<b>CMP IV</b>		
Biomonitoring of Contaminants	Marine Biota	December 2010, January 2011 and February 2011 sampling: 11 April 2011
<b>CMP V</b>		
Impact Monitoring during Dredging Operations	Water Quality	March's sampling: 19 April 2011

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

No outstanding sampling and laboratory analysis remained from April 2011.

**1.5** *BRIEF DISCUSSION OF THE MONITORING RESULTS*

Results of *Impact Monitoring during Dredging Operations* for April 2011 are presented for CMP V. Detailed results will be discussed in the *8<sup>th</sup> Quarterly Report*. Results of *Biomonitoring of Contaminants* will also be discussed in the *8<sup>th</sup> Quarterly Report*.

**1.5.1** *CMP V*

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

*Impact Water Quality Monitoring during Dredging Operations of CMP V* was conducted on 12 April 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* <sup>(1)</sup>. Therefore, there appears to be no evidence of any unacceptable adverse water quality impacts arising from the dredging operations of CMP V at ESC.

(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.

**1.6**                    *ACTIVITIES SCHEDULED FOR THE NEXT MONTH*

No monitoring activity will be conducted for CMP IVc. *Impact Monitoring during Dredging Operations* for CMP V are scheduled in the next monthly period of May 2011. 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

Water Column Profiling			M	A	M	J	J	A	S	O	N	D
Plume Stations	WCP1	6 times per year				2	2	2				2
	WCP2	6 times per year				2	2	2				2
Routine Water Quality Monitoring			M	A	M	J	J	A	S	O	N	D
<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						*				
	INF2	2 times per year						*				
	INF3	2 times per year						*				
Intermediate Station Downcurrent	IPF1	2 times per year						*				
	IPF2	2 times per year						*				
	IPF3	2 times per year						*				
Reference Station Upcurrent	RFF1	2 times per year						*				
	RFF2	2 times per year						*				
	RFF3	2 times per year						*				
Pit Specific Sediment Chemistry			M	A	M	J	J	A	S	O	N	D
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			M	A	M	J	J	A	S	O	N	D
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			M	A	M	J	J	A	S	O	N	D
Near-Field Stations	TCA	2 times per year						3				3
	TCB	2 times per year						3				3
Reference Stations	TRA	2 times per year						3				3
	TRB	2 times per year						3				3
Benthic Recolonisation Studies			M	A	M	J	J	A	S	O	N	D
Capped Contaminated Mud Pits	CPA 1-3	2 times per year						3				3
	CPB 1-3	2 times per year						3				3
	CPC 1-3	2 times per year						3				3
Reference Stations	RBA 1-3	2 times per year						3				3
	RBB 1-3	2 times per year						3				3
	RBC 1-3	2 times per year						3				3
Demersal Trawling			M	A	M	J	J	A	S	O	N	D
Near Pit Stations	INA 1-5	4 times per year					5	5				
	INB 1-5	4 times per year					5	5				
Reference North	TNA 1-5	4 times per year					5	5				
	TNB 1-5	4 times per year					5	5				
Reference South	TSA 1-5	4 times per year					5	5				
	TSB 1-5	4 times per year					5	5				
Tissue/ Whole Body Sampling			M	A	M	J	J	A	S	O	N	D
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						*				
Capping			M	A	M	J	J	A	S	O	N	D
<i>Ebb Tide</i>												
Impact Station Downcurrent	IPE1	4 times per year				3		3				3
	IPE2	4 times per year				3		3				3
	IPE3	4 times per year				3		3				3
	IPE4	4 times per year				3		3				3
	PFC1	4 times per year				3		3				3
Intermediate Station Downcurrent	INE1	4 times per year				3		3				3
	INE2	4 times per year				3		3				3
	INE3	4 times per year				3		3				3
	INE4	4 times per year				3		3				3
	INE5	4 times per year				3		3				3
Reference Station Upcurrent	RFE1	4 times per year				3		3				3
	RFE2	4 times per year				3		3				3
	RFE3	4 times per year				3		3				3
	RFE4	4 times per year				3		3				3
	RFE5	4 times per year				3		3				3
<i>Flood Tide</i>												
Impact Station Downcurrent	INF1	4 times per year				3		3				3
	PFC2	4 times per year				3		3				3
	INF3	4 times per year				3		3				3
Intermediate Station Downcurrent	IPF1	4 times per year				3		3				3
	IPF2	4 times per year				3		3				3
	IPF3	4 times per year				3		3				3
Reference Station Upcurrent	RFF1	4 times per year				3		3				3
	RFF2	4 times per year				3		3				3
	RFF3	4 times per year				3		3				3



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

  Sampling completed



Annex A2 - East of Sha Chau Environmental Monitoring and Audit Sampling Schedule for CMP V until the end of 2011

		M	A	M	J	J	A	S	O	N	D
<b>Water Quality Impact Monitoring for Dredging</b>											
Downcurrent Impact Stations	DS1	*	*	*	*	*	*	*	*	*	*
	DS2	*	*	*	*	*	*	*	*	*	*
	DS3	*	*	*	*	*	*	*	*	*	*
	DS4	*	*	*	*	*	*	*	*	*	*
	DS5	*	*	*	*	*	*	*	*	*	*
Upcurrent Stations	US1	*	*	*	*	*	*	*	*	*	*
	US2	*	*	*	*	*	*	*	*	*	*
Ma Wan Station	MW1	*	*	*	*	*	*	*	*	*	*

 Sampling completed  
 Scheduled sampling

Annex B

## Monitoring Results

**Table B1** *Summary Table of DO, Turbidity and TSS Levels recorded in April 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		
2011/04/12	ME	DS1	9.53	11.22	3.10	5.67
		DS2	9.29	10.52	4.12	9.00
		DS3	9.29	10.52	3.29	8.50
		DS4	9.14	10.49	2.79	7.17
		DS5	9.15	10.71	2.46	6.00
		MW1	9.43	9.92	1.79	6.33
	MF	US1	10.02	11.33	2.09	5.50
		US2	9.22	11.20	3.12	9.67
		DS1	8.98	9.50	2.62	6.17
		DS2	9.22	9.52	2.41	5.00
		DS3	9.51	9.59	2.51	5.67
		DS4	9.73	9.74	2.54	5.33
		DS5	9.65	9.72	3.32	8.33
		MW1	8.81	9.14	1.96	4.83
		US1	9.22	9.56	2.77	7.50
		US2	9.46	9.56	2.67	6.67

Annex C

## Study Programme

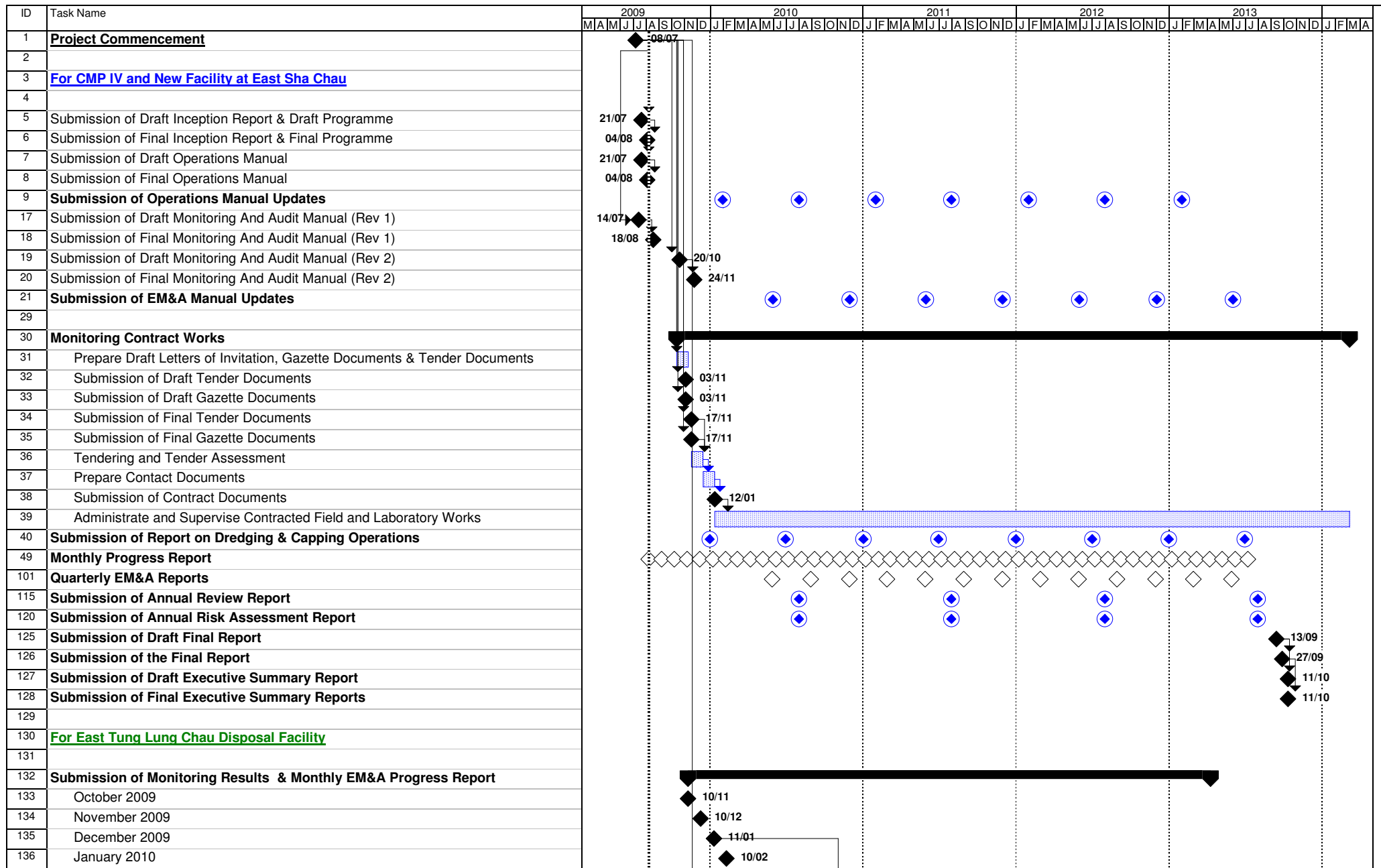


Figure 4.1 - Study Programme



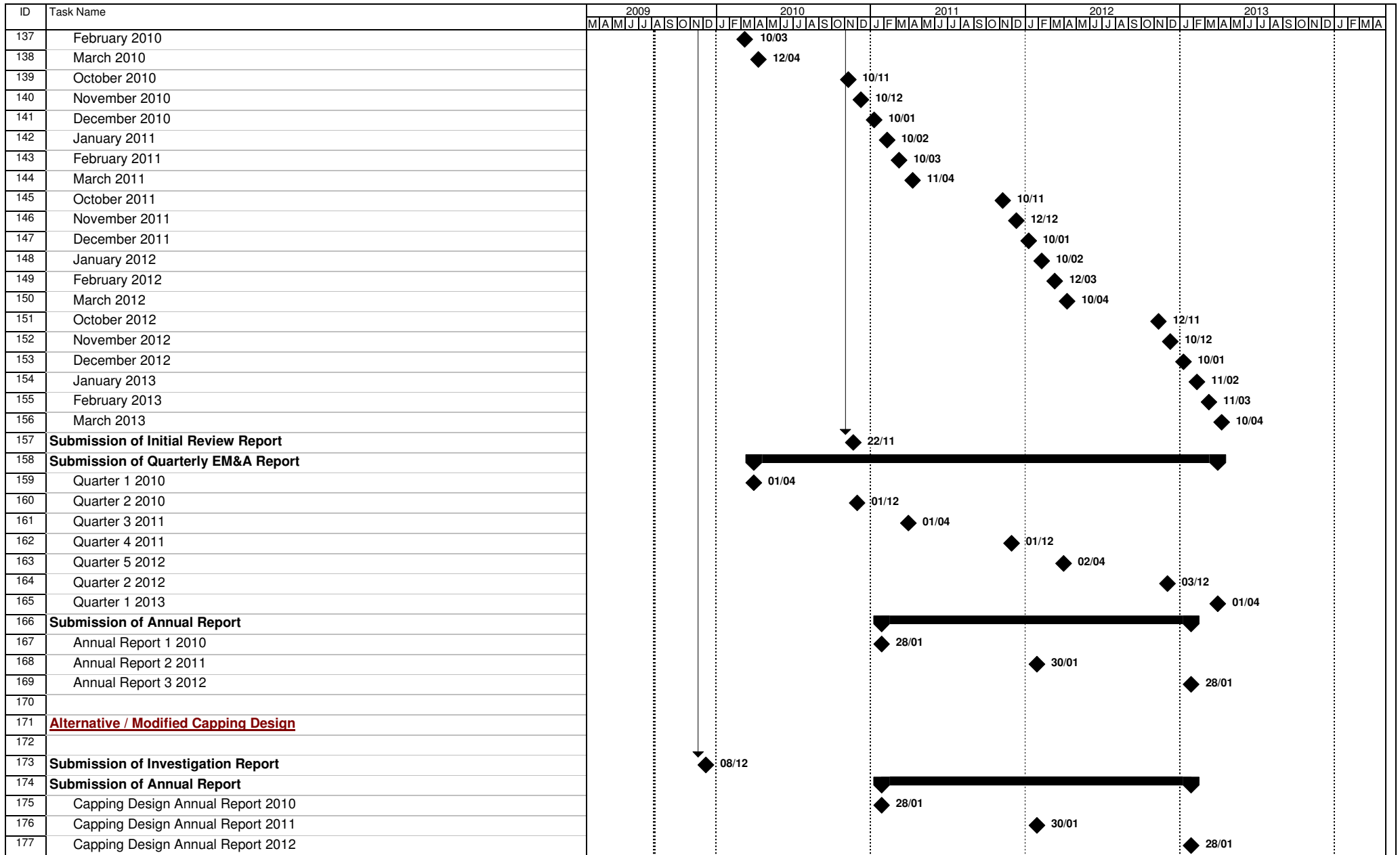


Figure 4.1 - Study Programme

