








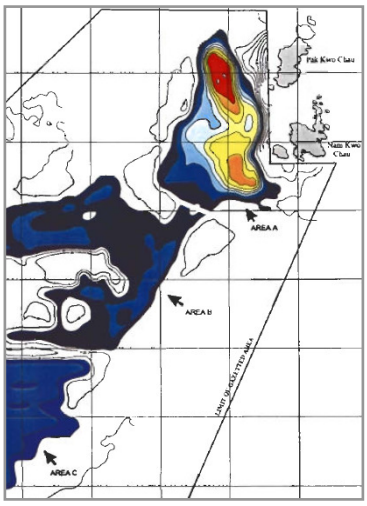

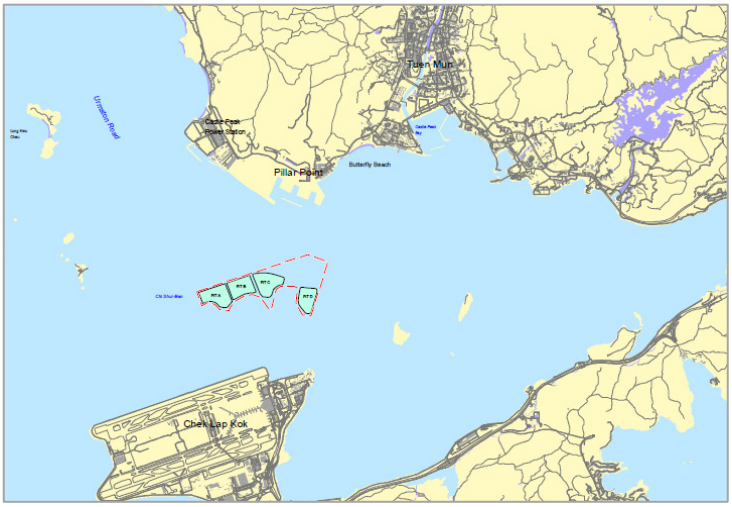

土木工程拓展署
Civil Engineering and Development Department

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

Agreement No. CE 4/2009(EP)

3rd Monthly Progress Report for Contaminated Mud Pits at Sha Chau – September 2009

Final (Revision 0)

9 December 2009

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Client:	Proposal No:
Civil Engineering and Development Department (CEDD)	0103262
Summary: This document presents progress of monitoring works on contaminated mud pits at Sha Chau in September 2009 under Agreement No. CE 4/2009 (EP).	Date: 9 December 2009 Approved by: *Dr Robin Kennish* *Director*

Revision	Description	By	Checked	Approved	Date
0	3rd Monthly Progress Report for CMP – Final (Revision 0)	EW	CAR	RK	9/12/09

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

3rd MONTHLY PROGRESS REPORT FOR CONTAMINATED MUD PITS AT SHA CHAU - September 2009

1.1 OVERVIEW OF STUDY ACTIVITIES

Study activities conducted during this monthly period are listed below:

- The *Final 1st Monthly Progress Reports for Contaminated Mud Pits (CMPs) at Sha Chau - July 2009* and *for East Tung Lung Chau (ETLC) Disposal Facility – July 2009* were submitted to CEDD on 10 September 2009;
- The *Draft 2nd Monthly Progress Reports CMPs at Sha Chau - August 2009* and *for ETLC Disposal Facility – August 2009* were submitted to CEDD on 22 September 2009;
- The *Final Operations Manual, Final Inception Report and Final 1st Review of the EM&A Manual* were submitted to CEDD on 29 September 2009; and,

1.2 DETAILS OF SAMPLING AND LABORATORY TESTING ACTIVITIES

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

- Sampling for *Sediment Chemistry Monitoring after a Major Storm Event* for CMP IV was conducted on 19 September 2009;
- Sampling for *Impact Monitoring during Dredging Operations of CMP V* was conducted on 14, 22 and 24 September 2009; and,
- *Water Column Profiling* for CMP V was conducted on 23 September 2009.

1.3 DETAILS OF OUTSTANDING SAMPLING AND / OR ANALYSIS

No outstanding sampling remained from September 2009. A summary of field activities are presented in *Annex A*.

1.4 BRIEF DISCUSSION OF THE MONITORING RESULTS

For CMP IV, there are no monitoring results to report during this monthly period. For CMP V, monitoring results for *Impact Monitoring during Dredging Operations of CMP V* are presented below. Detailed results will be discussed in the relevant *Quarterly Reports*.

1.4.1 Impact Monitoring during Dredging Operations of CMP V – September 2009

Impact Monitoring during Dredging Operations of CMP V was conducted on 14, 22 and 24 of September 2009. Monitoring was conducted during both mid-ebb and mid-flood tides (except for 14 September in which monitoring was conducted during mid-ebb tide only due to adverse sea conditions during mid-flood tide) at two Reference (Upstream) stations upstream and five Impact (Downstream) stations (except for 14 September during which one Impact station was not monitored as it was within the restriction zone of the Hong Kong International Airport) 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 and water samples were taken from three water depth levels of the water column which were surface (1m below sea surface), mid-depth and bottom (1m above the seabed).

Monitoring results are presented in *Figures 1* to *12* of *Annex B*. Levels of DO (bottom level and surface and mid depths), depth-average Turbidity and TSS compiled with the Action and Limit Levels set in the *Baseline Monitoring Report* [1] (*Tables B1* to *B5* of *Annex B)*.

Overall, the dredging operations conducted at CMP V did not appear to cause any adverse impacts to water quality during this reporting monthly period.

1.5 ACTIVITIES SCHEDULED FOR THE NEXT MONTH

Impact Monitoring during Dredging Operations will be conducted for CMP V in the next monthly period. No sampling works will be conducted for CMP IVc. The sampling schedule for the *Monitoring Contract* is presented in *Annex A*.

1.6 STUDY PROGRAMME

A summary of Study programme is presented in *Annex C*.

[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 CEDD.

Annex A

Sampling Schedule

Annex A1 - East of Sha Chau Environmental Monitoring and Audit Sampling Schedule for CMP IVc (July 2009 - February 2010)

			2009						2010	
Pit Specific Sediment Chemistry	**Code**	**Frequency**	**J**	**A**	**S**	**O**	**N**	**D**	**J**	**F**
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			**J**	**A**	**S**	**O**	**N**	**D**	**J**	**F**
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			**J**	**A**	**S**	**O**	**N**	**D**	**J**	**F**
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		

Tissue/ Whole Body Sampling			**J**	**A**	**S**	**O**	**N**	**D**	**J**	**F**
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			**J**	**A**	**S**	**O**	**N**	**D**	**J**	**F**
Near Pit Stations										
	INA 1-5	4 times per year	5	5					5	5
	INB 1-5	4 times per year	5	5					5	5
Reference North										
	TNA 1-5	4 times per year	5	5					5	5
	TNB 1-5	4 times per year	5	5					5	5
Reference South										
	TSA 1-5	4 times per year	5	5					5	5
	TSB 1-5	4 times per year	5	5					5	5

Capping			**J**	**A**	**S**	**O**	**N**	**D**	**J**	**F**
Ebb Tide										
Impact Station Downcurrent										
	IPE1	4 times per year	3	3				3		3
	IPE2	4 times per year	3	3				3		3
	IPE3	4 times per year	3	3				3		3
	IPE4	4 times per year	3	3				3		3
	PFC1	4 times per year	3	3				3		3
Intermediate Station Downcurrent										
	INE1	4 times per year	3	3				3		3
	INE2	4 times per year	3	3				3		3
	INE3	4 times per year	3	3				3		3
	INE4	4 times per year	3	3				3		3
	INE5	4 times per year	3	3				3		3
Reference Station Upcurrent										
	RFE1	4 times per year	3	3				3		3
	RFE2	4 times per year	3	3				3		3
	RFE3	4 times per year	3	3				3		3
	RFE4	4 times per year	3	3				3		3
	RFE5	4 times per year	3	3				3		3
Flood Tide										
Impact Station Downcurrent										
	INF1	4 times per year	3	3				3		3
	PFC2	4 times per year	3	3				3		3
	INF3	4 times per year	3	3				3		3
Intermediate Station Downcurrent										
	IPF1	4 times per year	3	3				3		3
	IPF2	4 times per year	3	3				3		3
	IPF3	4 times per year	3	3				3		3
Reference Station Upcurrent										
	RFF1	4 times per year	3	3				3		3
	RFF2	4 times per year	3	3				3		3
	RFF3	4 times per year	3	3				3		3

Routine Water Quality Monitoring			**J**	**A**	**S**	**O**	**N**	**D**	**J**	**F**
Ebb Tide										
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		*						*
Flood Tide										
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		*						*

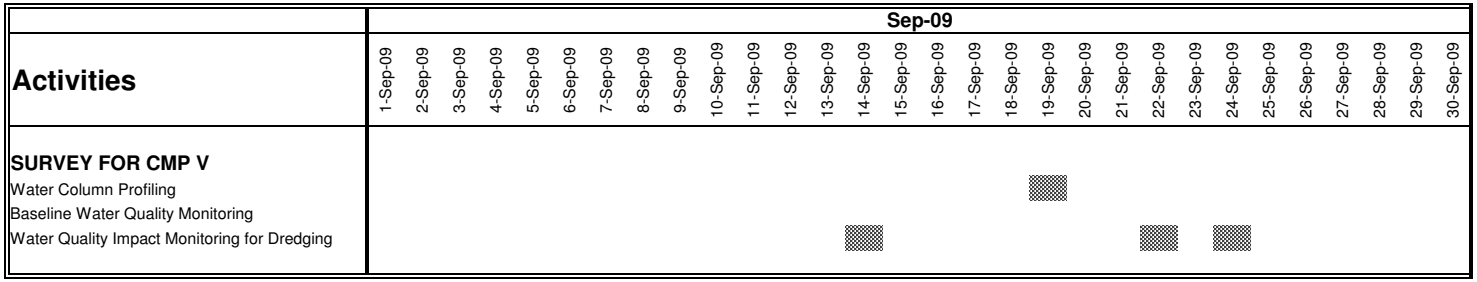
Water Column Profiling			**J**	**A**	**S**	**O**	**N**	**D**	**J**	**F**
Plume Stations	WCP1	6 times per year	2	2				2	2	2
	WCP2	6 times per year	2	2				2	2	2

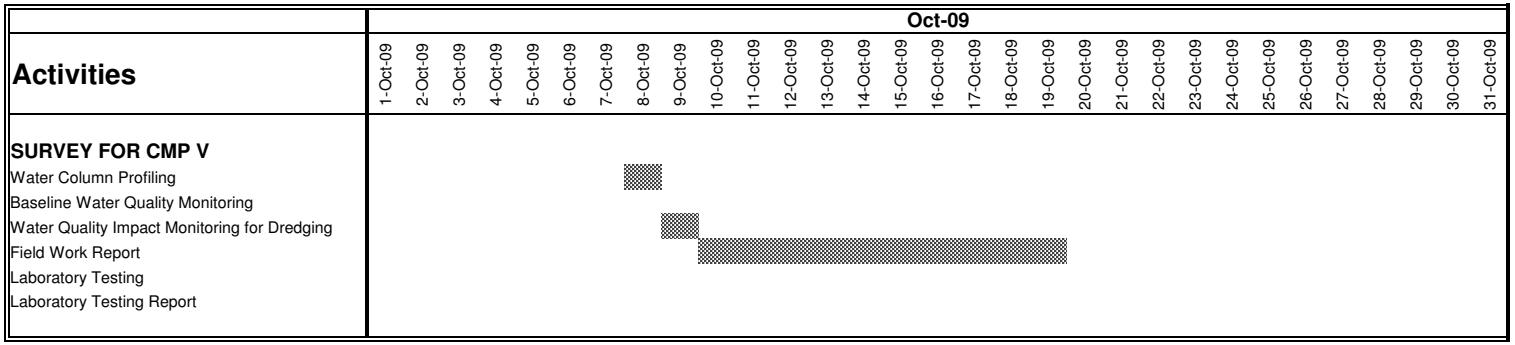
Benthic Recolonisation Studies			**J**	**A**	**S**	**O**	**N**	**D**	**J**	**F**
Capped Contaminated Mud Pits										
	CPA 1-3	2 times per year		3				3		
	CPB 1-3	2 times per year		3				3		
	CPC 1-3	2 times per year		3				3		
Reference Stations										
	RBA 1-3	2 times per year		3				3		
	RBB 1-3	2 times per year		3				3		
	RBC 1-3	2 times per year		3				3		

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

Annex A2 Contaminated Mud Pit V Sampling Schedule

Environmental Monitoring and Audit for Contaminated Mud Pit at Sha Chau (2009-2013) - Investigation Monitoring Schedule - September and October 2009





Annex B

Monitoring Results

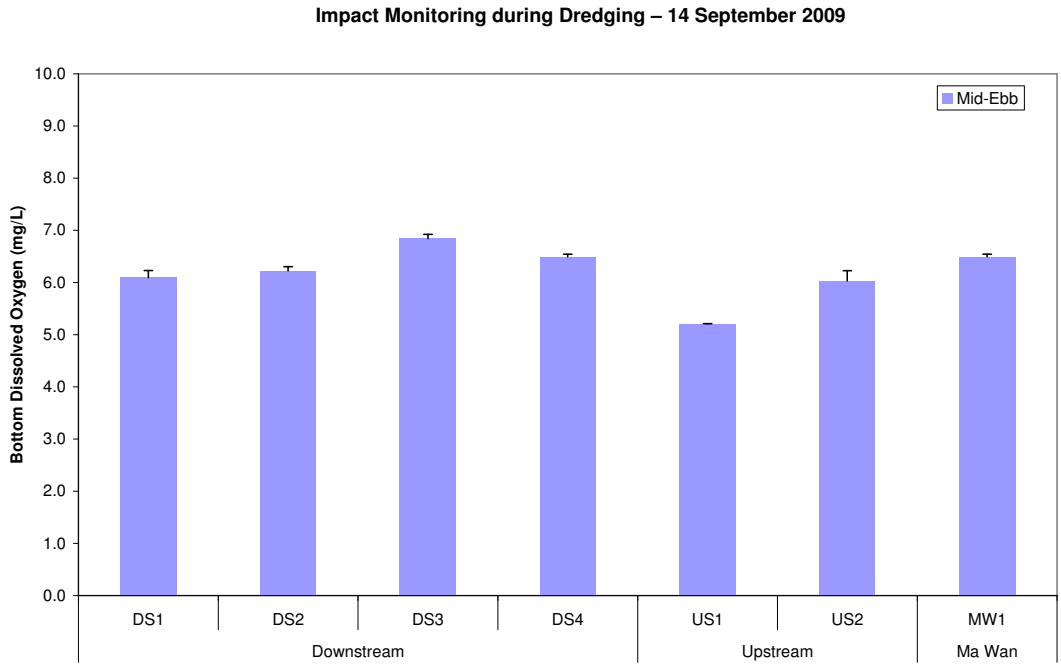


Figure 1: Bottom DO Level (mean ± SD) at Downstream (DS1, DS2, DS3, DS4 and DS5), Upstream (US1 and US2) and Ma Wan (MW1) stations during Impact Monitoring for Dredging on 14 September 2009.

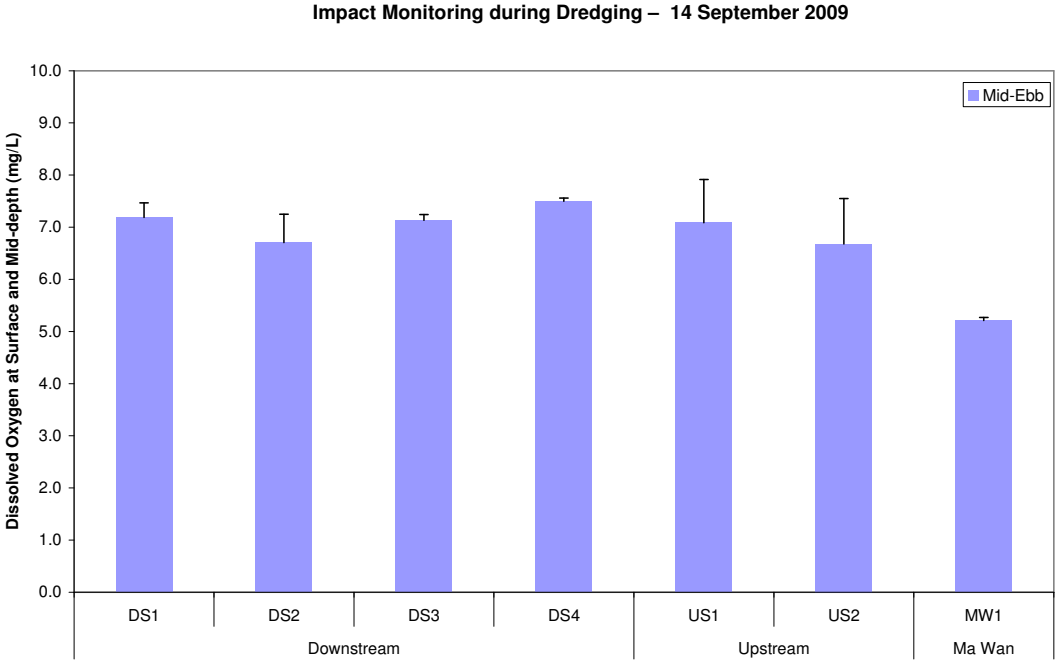


Figure 2: DO Level at Surface and Mid-depth (mean ± SD) at Downstream (DS1, DS2, DS3, DS4 and DS5), Upstream (US1 and US2) and Ma Wan (MW1) stations during Impact Monitoring for Dredging on 14 September 2009.

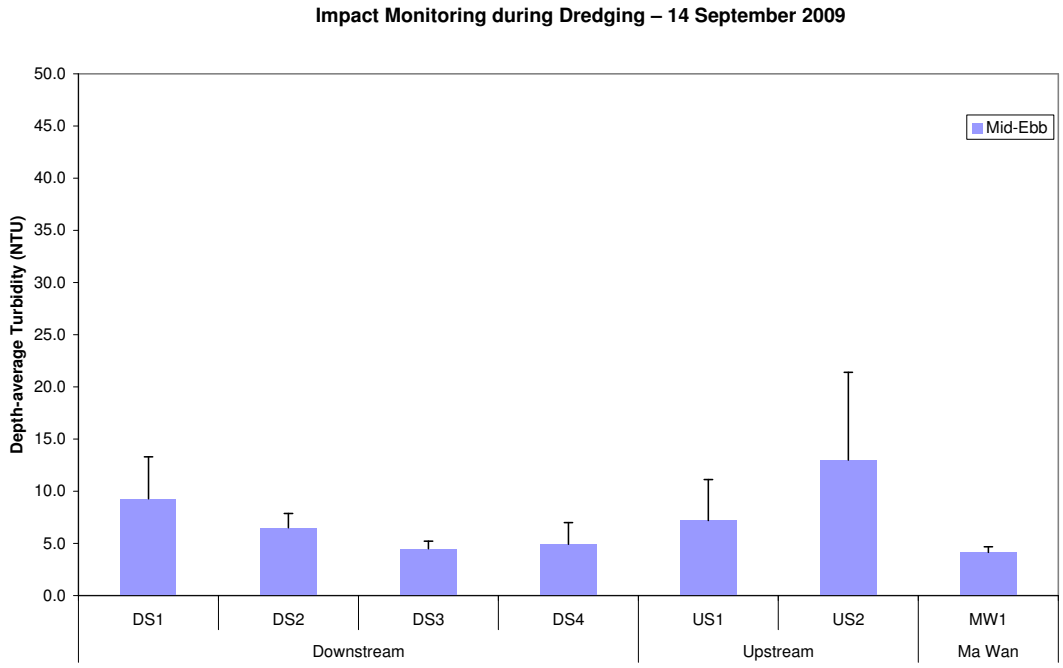


Figure 3: Depth-average Turbidity (mean ± SD) at Downstream (DS1, DS2, DS3, DS4 and DS5), Upstream (US1 and US2) and Ma Wan (MW1) stations during Impact Monitoring for Dredging on 14 September 2009.

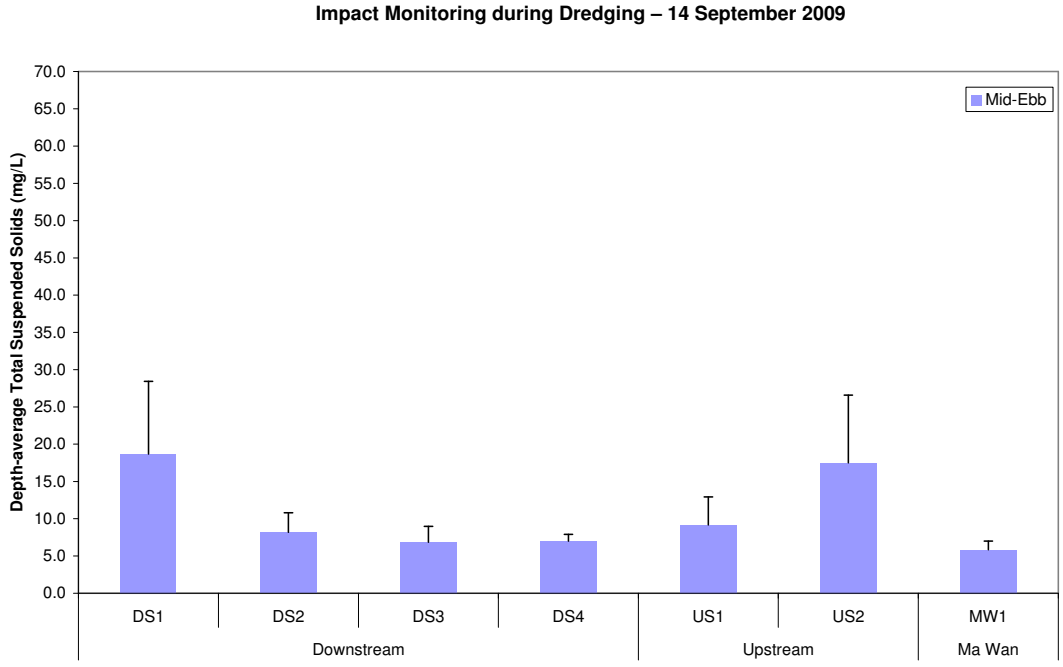


Figure 4: Depth-average Total Suspended Solids (mean ± SD) at Downstream (DS1, DS2, DS3, DS4 and DS5), Upstream (US1 and US2) and Ma Wan (MW1) stations during Impact Monitoring for Dredging on 14 September 2009.

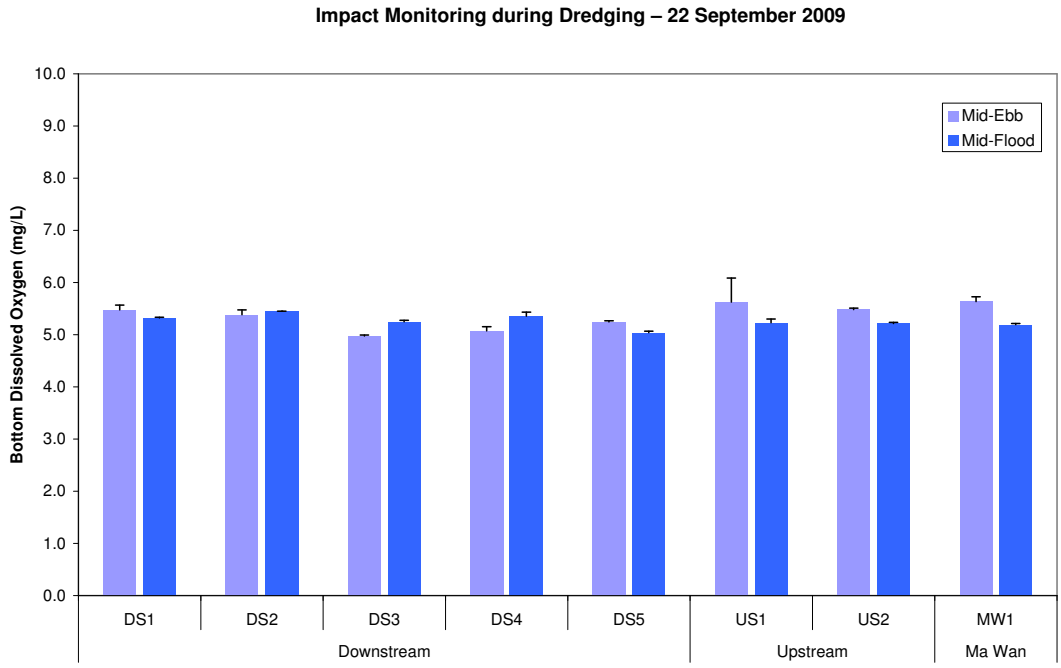


Figure 5: Bottom DO Level (mean ± SD) at Downstream (DS1, DS2, DS3, DS4 and DS5), Upstream (US1 and US2) and Ma Wan (MW1) stations during Impact Monitoring for Dredging on 22 September 2009.

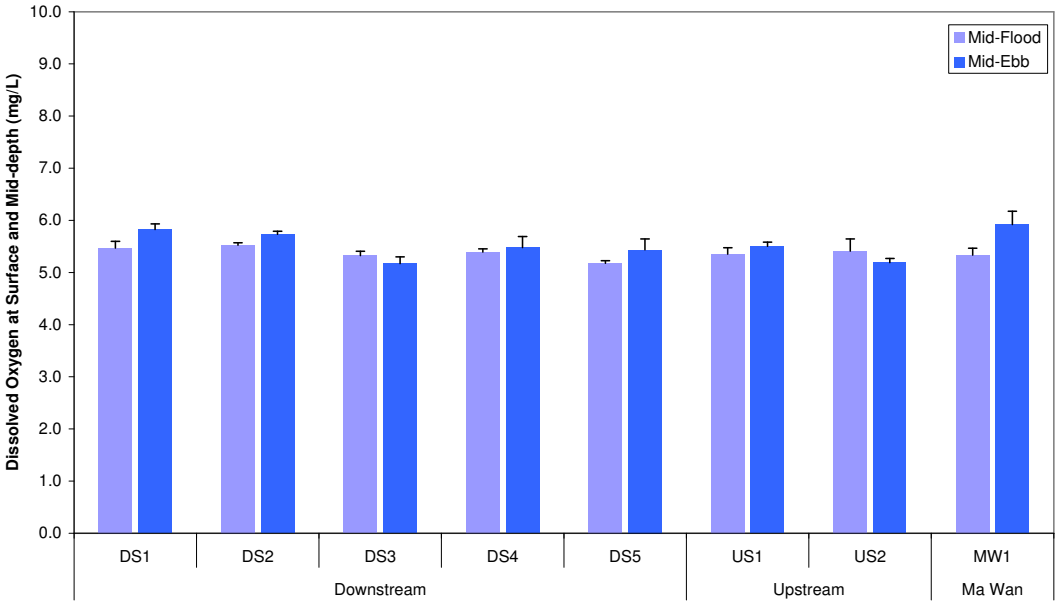


Figure 6: DO Level at Surface and Mid-depth (mean ± SD) at Downstream (DS1, DS2, DS3, DS4 and DS5), Upstream (US1 and US2) and Ma Wan (MW1) stations during Impact Monitoring for Dredging on 22 September 2009.

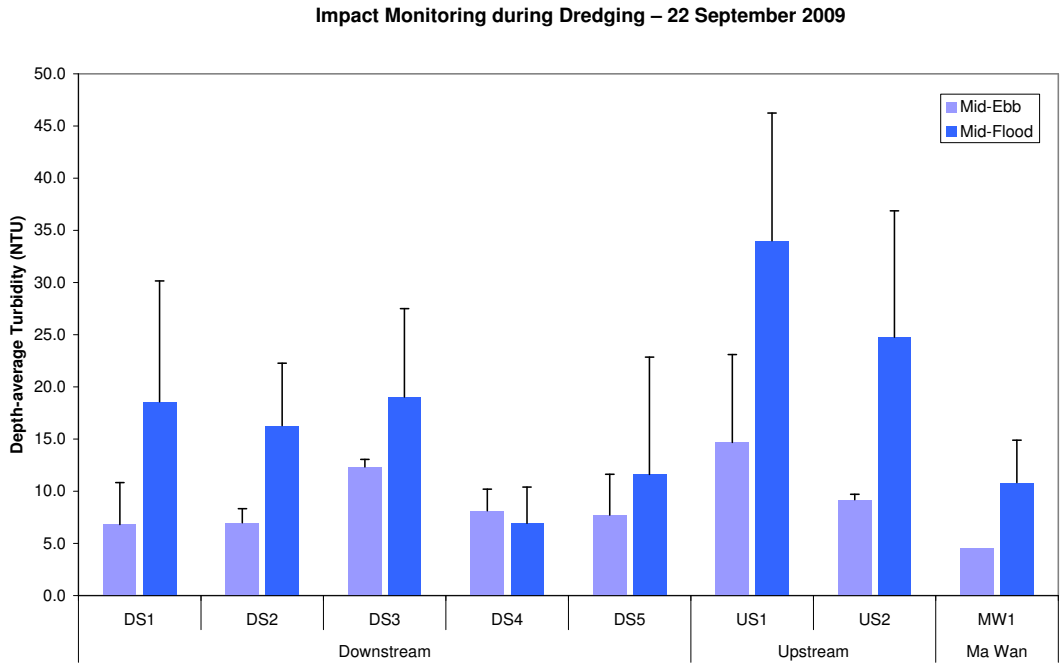


Figure 7: Depth-average Turbidity (mean ± SD) at Downstream (DS1, DS2, DS3, DS4 and DS5), Upstream (US1 and US2) and Ma Wan (MW1) stations during Impact Monitoring for Dredging on 22 September 2009.

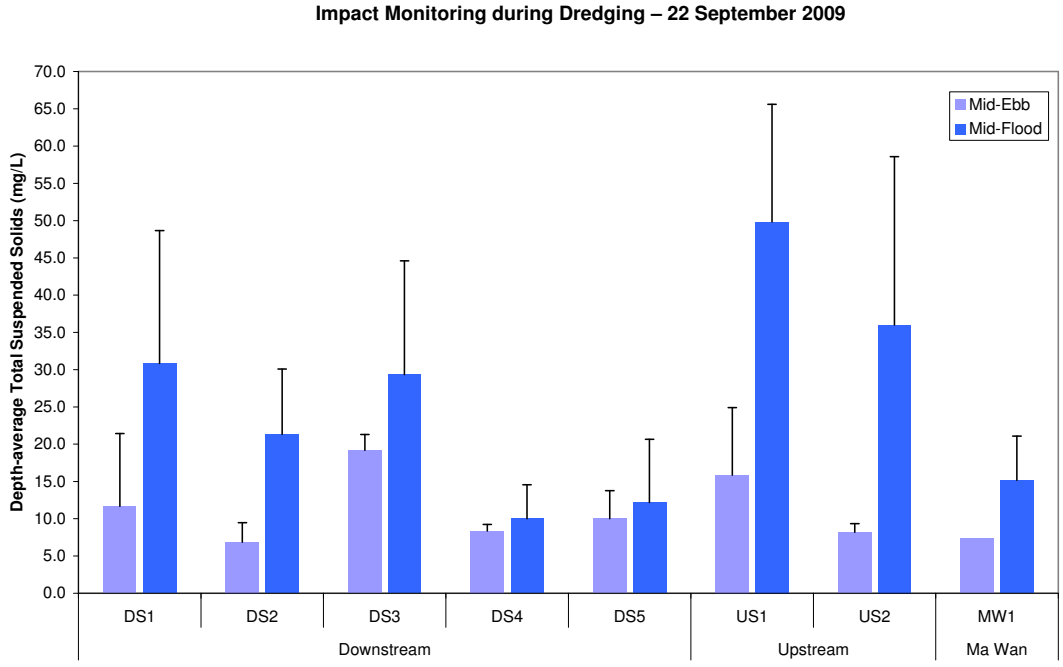


Figure 8: Depth-average Total Suspended Solids (mean ± SD) at Downstream (DS1, DS2, DS3, DS4 and DS5), Upstream (US1 and US2) and Ma Wan (MW1) stations during Impact Monitoring for Dredging on 22 September 2009.

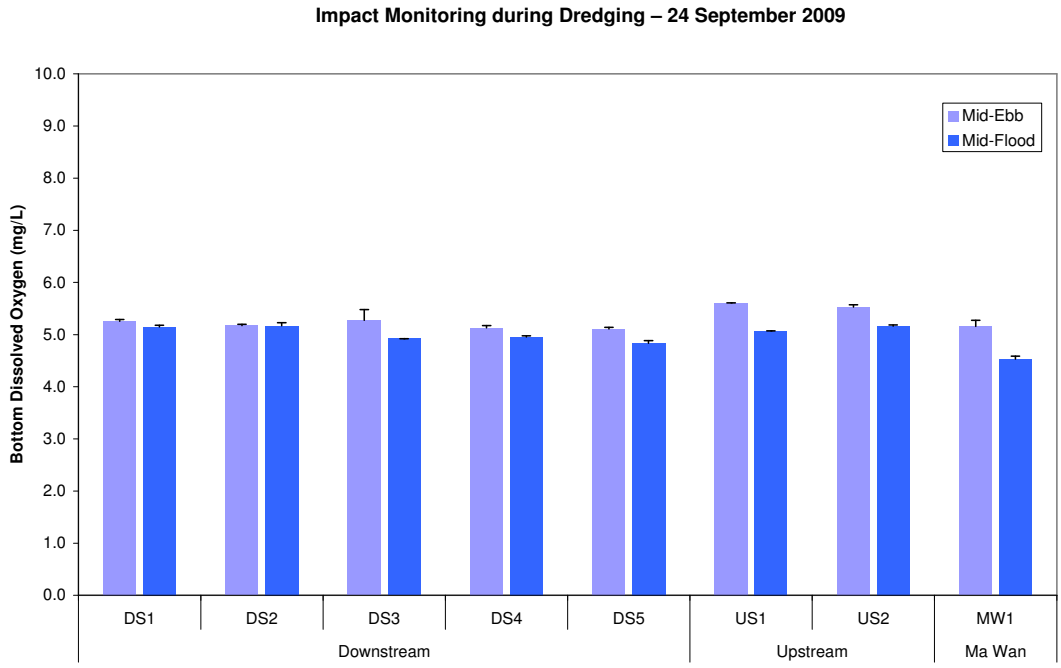


Figure 9: Bottom DO Level (mean ± SD) at Downstream (DS1, DS2, DS3, DS4 and DS5), Upstream (US1 and US2) and Ma Wan (MW1) stations during Impact Monitoring for Dredging on 24 September 2009.

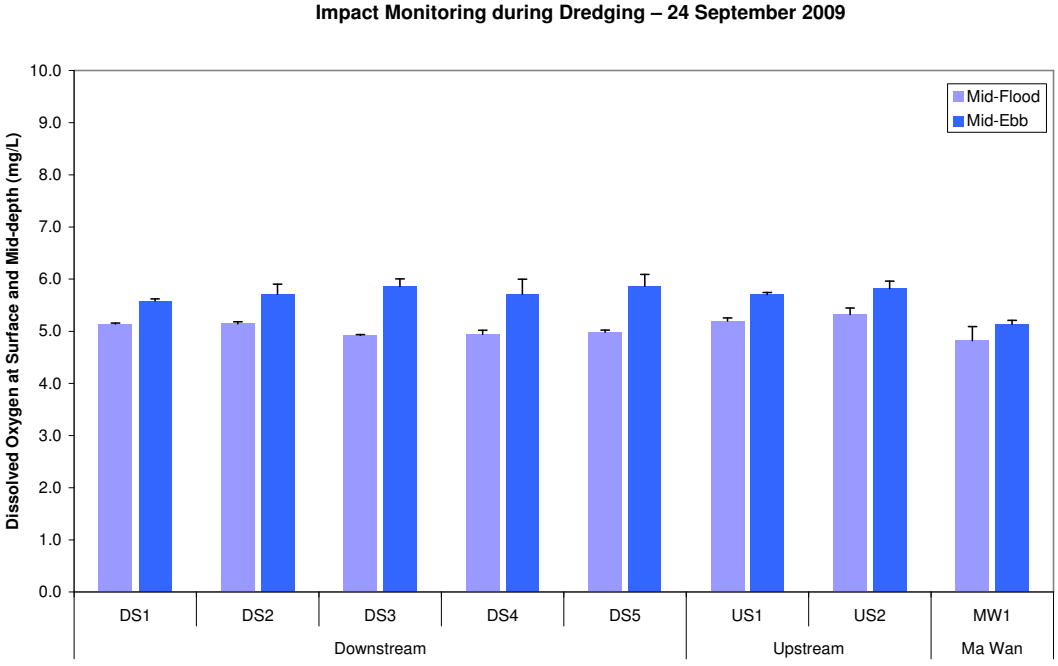


Figure 10: DO Level at Surface and Mid-depth (mean ± SD) at Downstream (DS1, DS2, DS3, DS4 and DS5), Upstream (US1 and US2) and Ma Wan (MW1) stations during Impact Monitoring for Dredging on 24 September 2009.

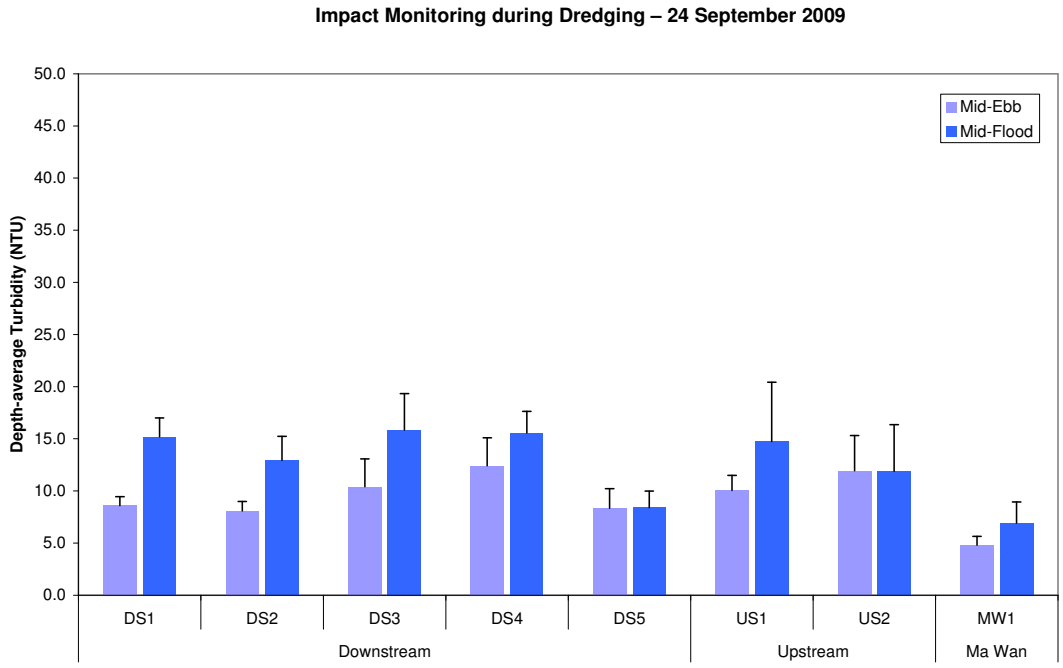


Figure 11: Depth-average Turbidity (mean ± SD) at Downstream (DS1, DS2, DS3, DS4 and DS5), Upstream (US1 and US2) and Ma Wan (MW1) stations during Impact Monitoring for Dredging on 24 September 2009.

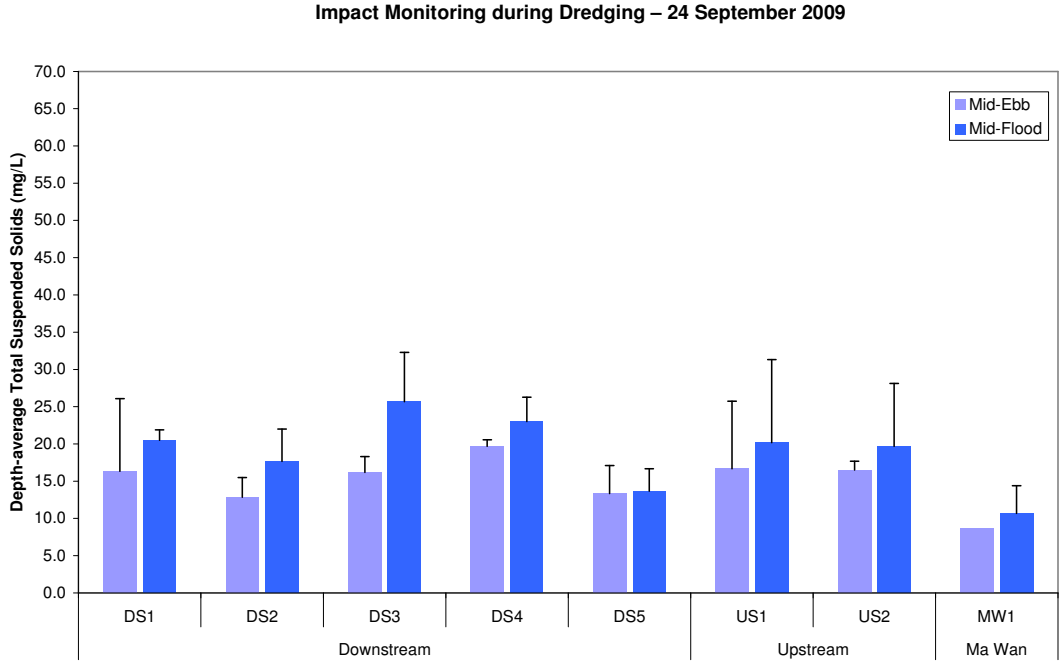


Figure 12: Depth-average Total Suspended Solids (mean ± SD) at Downstream (DS1, DS2, DS3, DS4 and DS5), Upstream (US1 and US2) and Ma Wan (MW1) stations during Impact Monitoring for Dredging on 24 September 2009.

Table B1: Impact Water Quality Monitoring for Dredging Activities during Mid-ebb Tide for 14 Sepetember 2009

Station	Downstream (Impact)		
Time (hh:mm)	07:20 - 10:16		
Monitoring Depth (m)	Depth Average	Surface and Middle	Bottom
D.O. (mg/L)	N/A	7.13	6.42
Turbidity (NTU)	6.30	N/A	N/A
SS (mg/L)	10.17	N/A	N/A
Remarks	Dredging works were observed.		

Station	Upstream (Reference)		
Time (hh:mm)	07:20 - 10:16		
Monitoring Depth (m)	Depth Average	Surface and Middle	Bottom
D.O. (mg/L)	N/A	6.88	5.9
Turbidity (NTU)	10.09	N/A	N/A
SS (mg/L)	13.33	N/A	N/A
Remarks	Dredging works were observed.		

Station	Ma Wan		
Time (hh:mm)	07:20 - 10:16		
Monitoring Depth (m)	Depth Average	Surface and Middle	Bottom
D.O. (mg/L)	N/A	5.21	5.21
Turbidity (NTU)	4.14	N/A	N/A
SS (mg/L)	5.83	N/A	N/A
Remarks			

Compliance with Action and Limit Levels

	Action Level		Limit Level					
Parameter	Mean Value at Impact Stations	Comparison between I and R [(a)]	Mean Value at Impact Stations	Comparison between I and R [(a)]	Mean Value at Impact Stations	Mean Value at Reference Stations	Compliance with Action level	Compliance with Limit Level
DO (Bottom)	< 2.96	R significantly greater than I (t-test, $p < 0.05$)	< 2.00	R significantly greater than I (t-test, $p < 0.05$)	6.42	5.9	Y	Y
DO (Surface and Mid Depth)	< 3.76	R significantly greater than I (t-test, $p < 0.05$)	< 3.11	R significantly greater than I (t-test, $p < 0.05$)	7.13	5.21	Y	Y
Turbidity (Depth-averaged)	> 28.14	I ≥ 1.2 R (12.11)	> 38.32	I ≥ 1.3 R (13.12)	6.30	10.09	Y	Y
SS (Depth-averaged)	> 37.88	I ≥ 1.2 R (16.00)	> 61.92	I ≥ 1.3 R (17.33)	10.17	13.33	Y	Y

Note: (a) I = Impact; R = Reference Stations

B2: Impact Water Quality Monitoring for Dredging Activities during Mid-ebb Tide for 22 Sepetember 2009

Station	Downstream (Impact)		
Time (hh:mm)	13:55 - 16:33		
Monitoring Depth (m)	Depth Average	Surface and Middle	Bottom
D.O. (mg/L)	N/A	5.53	5.23
Turbidity (NTU)	8.39	N/A	N/A
SS (mg/L)	11.20	N/A	N/A
Remarks	Dredging works were observed.		

Station	Upstream (Reference)		
Time (hh:mm)	13:55 - 16:33		
Monitoring Depth (m)	Depth Average	Surface and Middle	Bottom
D.O. (mg/L)	N/A	5.35	5.6
Turbidity (NTU)	11.93	N/A	N/A
SS (mg/L)	12.00	N/A	N/A
Remarks	Dredging works were observed.		

Station	Ma Wan		
Time (hh:mm)	13:55 - 16:33		
Monitoring Depth (m)	Depth Average	Surface and Middle	Bottom
D.O. (mg/L)	N/A	5.92	5.64
Turbidity (NTU)	4.50	N/A	N/A
SS (mg/L)	7.33	N/A	N/A
Remarks			

Compliance with Action and Limit Levels

	Action Level		Limit Level					
Parameter	**Mean Value at Impact Stations**	**Comparison between I and R [(a)]**	**Mean Value at Impact Stations**	**Comparison between I and R [(a)]**	**Mean Value at Impact Stations**	**Mean Value at Reference Stations**	**Compliance with Action level**	**Compliance with Limit Level**
DO (Bottom)	< 2.96	R significantly greater than I (t-test, $p < 0.05$)	< 2.00	R significantly greater than I (t-test, $p < 0.05$)	5.23	5.6	Y	Y
DO (Surface and Mid Depth)	< 3.76	R significantly greater than I (t-test, $p < 0.05$)	< 3.11	R significantly greater than I (t-test, $p < 0.05$)	5.53	5.35	Y	Y
Turbidity (Depth-averaged)	> 28.14	I ≥ 1.2 R (14.32)	> 38.32	I ≥ 1.3 R (15.51)	8.39	11.93	Y	Y
SS (Depth-averaged)	> 37.88	I ≥ 1.2 R (14.40)	> 61.92	I ≥ 1.3 R (15.60)	11.20	12.00	Y	Y

Note: (a) I = Impact; R = Reference Stations

B3: Impact Water Quality Monitoring for Dredging Activities during Mid-flood Tide for 22 Sepetember 2009

Station	Downstream (Impact)		
Time (hh:mm)	07:50 - 10:54		
Monitoring Depth (m)	Depth Average	Surface and Middle	Bottom
D.O. (mg/L)	N/A	5.38	5.28
Turbidity (NTU)	14.49	N/A	N/A
SS (mg/L)	20.73	N/A	N/A
Remarks	Dredging works were observed.		

Station	Upstream (Reference)		
Time (hh:mm)	07:50 - 10:54		
Monitoring Depth (m)	Depth Average	Surface and Middle	Bottom
D.O. (mg/L)	N/A	5.38	5.2
Turbidity (NTU)	29.39	N/A	N/A
SS (mg/L)	42.92	N/A	N/A
Remarks	Dredging works were observed.		

Station	Ma Wan		
Time (hh:mm)	07:50 - 10:54		
Monitoring Depth (m)	Depth Average	Surface and Middle	Bottom
D.O. (mg/L)	N/A	5.34	5.20
Turbidity (NTU)	10.82	N/A	N/A
SS (mg/L)	15.17	N/A	N/A
Remarks			

Compliance with Action and Limit Levels

	Action Level		Limit Level					
Parameter	Mean Value at Impact Stations	Comparison between I and R [(a)]	Mean Value at Impact Stations	Comparison between I and R [(a)]	Mean Value at Impact Stations	Mean Value at Reference Stations	Compliance with Action level	Compliance with Limit Level
DO (Bottom)	< 2.96	R significantly greater than I (t-test, $p < 0.05$)	< 2.00	R significantly greater than I (t-test, $p < 0.05$)	5.28	5.2	Y	Y
DO (Surface and Mid Depth)	< 3.76	R significantly greater than I (t-test, $p < 0.05$)	< 3.11	R significantly greater than I (t-test, $p < 0.05$)	5.38	5.38	Y	Y
Turbidity (Depth-averaged)	> 28.14	I ≥ 1.2 R (35.27)	> 38.32	I ≥ 1.3 R (38.20)	14.49	29.39	Y	Y
SS (Depth-averaged)	> 37.88	I ≥ 1.2 R (51.50)	>61.92	I ≥ 1.3 R (55.79)	20.73	42.92	Y	Y

Note: (a) I = Impact; R = Reference Stations

Table B4: Impact Water Quality Monitoring for Dredging Activities during Mid-ebb Tide for 24 Sepetember 2009

Station	Downstream (Impact)		
Time (hh:mm)	15:25 - 17:50		
Monitoring Depth (m)	Depth Average	Surface and Middle	Bottom
D.O. (mg/L)	N/A	5.75	5.19
Turbidity (NTU)	9.57	N/A	N/A
SS (mg/L)	15.67	N/A	N/A
Remarks	Dredging works were observed.		

Station	Upstream (Reference)		
Time (hh:mm)	15:25 - 17:50		
Monitoring Depth (m)	Depth Average	Surface and Middle	Bottom
D.O. (mg/L)	N/A	5.76	5.6
Turbidity (NTU)	10.99	N/A	N/A
SS (mg/L)	16.58	N/A	N/A
Remarks	Dredging works were observed.		

Station	Ma Wan		
Time (hh:mm)	15:25 - 17:50		
Monitoring Depth (m)	Depth Average	Surface and Middle	Bottom
D.O. (mg/L)	N/A	5.14	5.16
Turbidity (NTU)	4.80	N/A	N/A
SS (mg/L)	8.67	N/A	N/A
Remarks			

Compliance with Action and Limit Levels

	Action Level		Limit Level					
Parameter	Mean Value at Impact Stations	Comparison between I and R [(a)]	Value at I	Comparison between I and R	Mean Value at Impact Stations	Mean Value at Reference Stations	Compliance with Action level	Compliance with Limit Level
DO (Bottom)	< 2.96	R significantly greater than I (t-test, $p < 0.05$)	< 2.00	R significantly greater than I (t-test, $p < 0.05$)	5.19	5.6	Y	Y
DO (Surface and Mid Depth)	< 3.76	R significantly greater than I (t-test, $p < 0.05$)	< 3.11	R significantly greater than I (t-test, $p < 0.05$)	5.75	5.76	Y	Y
Turbidity (Depth-averaged)	> 28.14	I ≥ 1.2 R (13.19)	> 38.32	I ≥ 1.3 R (14.28)	9.57	10.99	Y	Y
SS (Depth-averaged)	> 37.88	I ≥ 1.2 R (19.90)	> 61.92	I ≥ 1.3 R (21.56)	15.67	16.58	Y	Y

Note: (a) I = Impact; R = Reference Stations

Table B5: Impact Water Quality Monitoring for Dredging Activities during Mid-flood Tide for 24 Sepetember 2009

Station	Downstream (Impact)		
Time (hh:mm)	09:50 - 12:50		
Monitoring Depth (m)	Depth Average	Surface and Middle	Bottom
D.O. (mg/L)	N/A	5.03	5.01
Turbidity (NTU)	13.58	N/A	N/A
SS (mg/L)	20.10	N/A	N/A
Remarks	Dredging works were observed.		

Station	Upstream (Reference)		
Time (hh:mm)	09:50 - 12:50		
Monitoring Depth (m)	Depth Average	Surface and Middle	Bottom
D.O. (mg/L)	N/A	5.26	5.1
Turbidity (NTU)	13.31	N/A	N/A
SS (mg/L)	19.92	N/A	N/A
Remarks	Dredging works were observed.		

Station	Ma Wan		
Time (hh:mm)	09:50 - 12:50		
Monitoring Depth (m)	Depth Average	Surface and Middle	Bottom
D.O. (mg/L)	N/A	4.82	4.53
Turbidity (NTU)	6.91	N/A	N/A
SS (mg/L)	10.67	N/A	N/A
Remarks			

Compliance with Action and Limit Levels

	Action Level		Limit Level					
Parameter	Mean Value at Impact Stations	Comparison between I and R [(a)]	Mean Value at Impact Stations	Comparison between I and R [(a)]	Mean Value at Impact Stations	Mean Value at Reference Stations	Compliance with Action level	Compliance with Limit Level
DO (Bottom)	< 2.96	R significantly greater than I (t-test, $p < 0.05$)	< 2.00	R significantly greater than I (t-test, $p < 0.05$)	5.01	5.1	Y	Y
DO (Surface and Mid Depth)	< 3.76	R significantly greater than I (t-test, $p < 0.05$)	< 3.11	R significantly greater than I (t-test, $p < 0.05$)	5.03	5.26	Y	Y
Turbidity (Depth-averaged)	> 28.14	I ≥ 1.2 R (15.97)	> 38.32	I ≥ 1.3 R (17.30)	13.58	13.31	Y	Y
SS (Depth-averaged)	> 37.88	I ≥ 1.2 R (23.90)	> 61.92	I ≥ 1.3 R (25.89)	20.10	19.92	Y	Y

Note: (a) I = Impact; R = Reference Stations

Annex C

Study Programme

ID	Task Name
1	**Project Commencement**
2	
3	**For CMP IV and New Facility at East Sha Chau**
4	
5	Submission of Draft Inception Report & Draft Programme
6	Submission of Final Inception Report & Final Programme
7	Submission of Draft Operations Manual
8	Submission of Final Operations Manual
9	**Submission of Operations Manual Updates**
17	Submission of Draft Monitoring And Audit Manual (Rev 1)
18	Submission of Final Monitoring And Audit Manual (Rev 1)
19	Submission of Draft Monitoring And Audit Manual (Rev 2)
20	Submission of Final Monitoring And Audit Manual (Rev 2)
21	**Submission of EM&A Manual Updates**
29	
30	**Monitoring Contract Works**
31	Prepare Draft Letters of Invitation, Gazette Documents & Tender Documents
32	Submission of Draft Tender Documents
33	Submission of Draft Gazette Documents
34	Submission of Final Tender Documents
35	Submission of Final Gazette Documents
36	Tendering and Tender Assessment
37	Prepare Contact Documents
38	Submission of Contract Documents
39	Administrate and Supervise Contracted Field and Laboratory Works
40	**Submission of Report on Dredging & Capping Operations**
49	**Monthly Progress Report**
101	**Quarterly EM&A Reports**
115	**Submission of Annual Review Report**
120	**Submission of Annual Risk Assessment Report**
125	**Submission of Draft Final Report**
126	**Submission of the Final Report**
127	**Submission of Draft Executive Summary Report**
128	**Submission of Final Executive Summary Reports**
129	
130	**For East Tung Lung Chau Disposal Facility**
131	
132	**Submission of Monitoring Results & Monthly EM&A Progress Report**
133	October 2009
134	November 2009
135	December 2009
136	January 2010

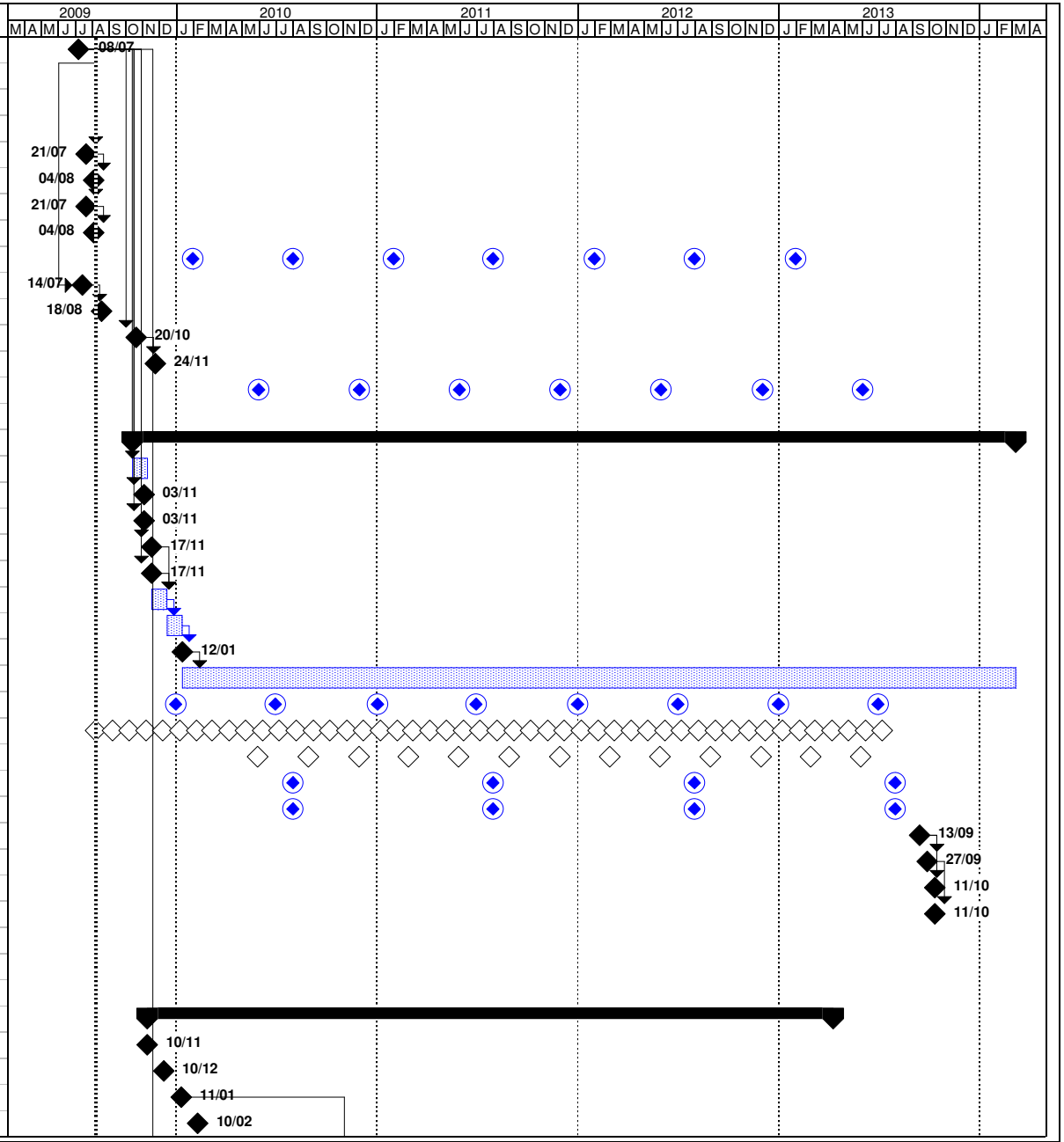


Figure 4.1 - Study Programme

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

ID	Task Name
137	February 2010
138	March 2010
139	October 2010
140	November 2010
141	December 2010
142	January 2011
143	February 2011
144	March 2011
145	October 2011
146	November 2011
147	December 2011
148	January 2012
149	February 2012
150	March 2012
151	October 2012
152	November 2012
153	December 2012
154	January 2013
155	February 2013
156	March 2013
157	**Submission of Initial Review Report**
158	**Submission of Quarterly EM&A Report**
159	Quarter 1 2010
160	Quarter 2 2010
161	Quarter 3 2011
162	Quarter 4 2011
163	Quarter 5 2012
164	Quarter 2 2012
165	Quarter 1 2013
166	**Submission of Annual Report**
167	Annual Report 1 2010
168	Annual Report 2 2011
169	Annual Report 3 2012
170	
171	**Alternative / Modified Capping Design**
172	
173	**Submission of Investigation Report**
174	**Submission of Annual Report**
175	Capping Design Annual Report 2010
176	Capping Design Annual Report 2011
177	Capping Design Annual Report 2012

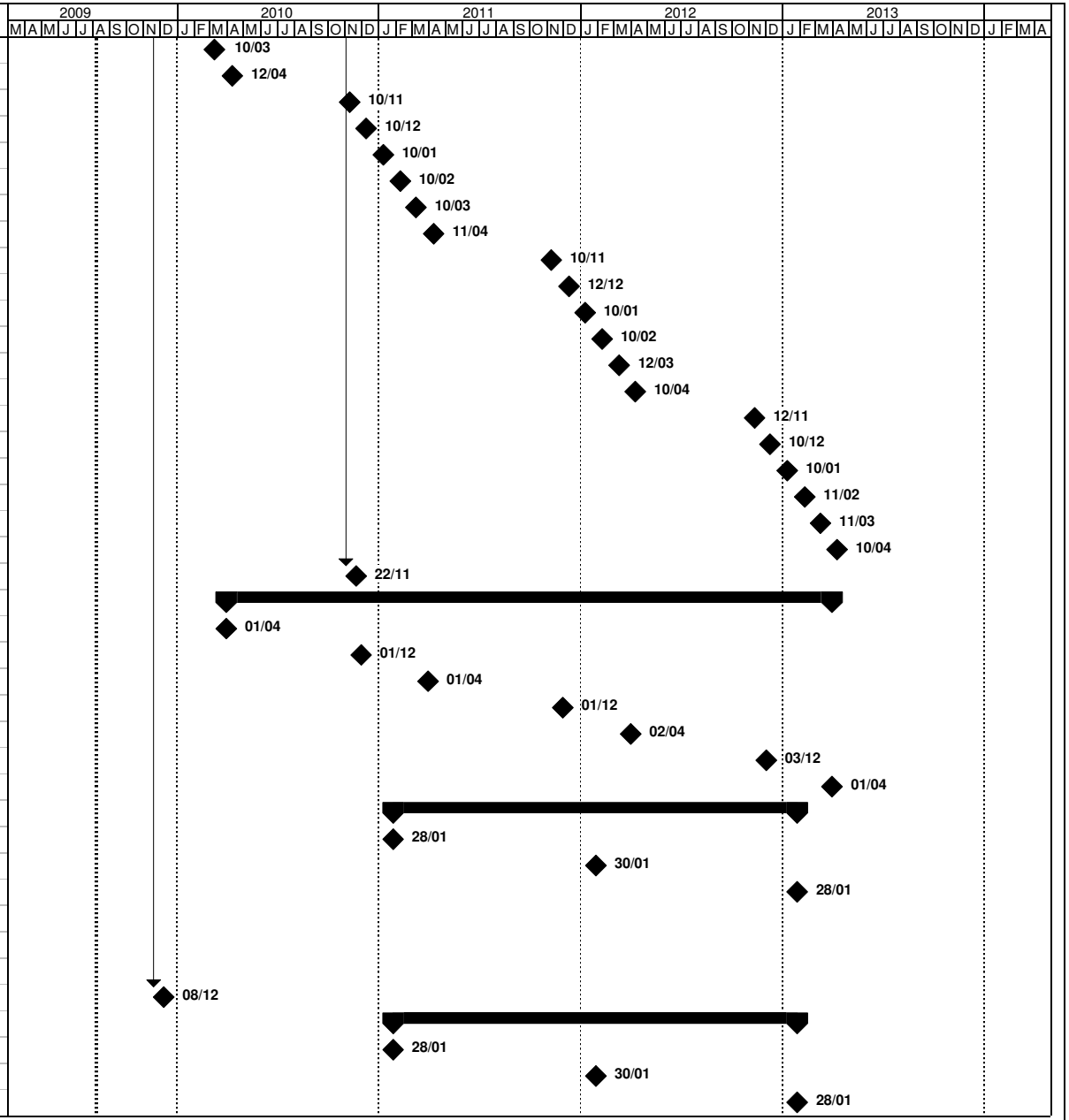


Figure 4.1 - Study Programme

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