Gammon Construction Limited

Contract No. HY/2003/04

Improvement to Castle Peak Road between Ka Loon Tsuen and Siu Lam

Final EM&A Review Report

September 2008

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Subject	**Improvement to Castle Peak Road between Ka Loon Tsuen and Siu Lam Final EM&A Report**		

We refer to the Final EM&A Report (rev. 1) that we received through email on 5 September 2008 and are pleased to confirm we have no comment on the report.

Should you require further information, please feel free to contact us.

Best regards,

Joseph Poon
Independent Environmental Checker

JP/cy

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EXECUTIVE SUMMARY

Introduction

Maunsell Environmental Management Consultants Limited (MEMCL), which changed the name to ENSR Asia (HK) Ltd. (ENSR) on 1 May 2007 is the designated Environmental Team (ET) for "Improvement to Castle Peak Road between Ka Loon Tsuen and Siu Lam" (The Project). This is the Final Environmental Monitoring and Audit (EM&A) Review Report prepared by ENSR for the Project. This report summarises the EM&A work performed throughout the construction stage of the Project from July 2004 to March 2008 and the post-project water quality monitoring during operational phase of the Project.

The construction works commenced in July 2004. The major works of the Project was substantially completed in March 2007 and the construction phase EM&A programme was terminated on 20 March 2008. The post-project monitoring of water quality was carried out in April 2008 and the operational phase noise monitoring was conducted in July 2008.

Environmental Monitoring Works

Air Quality

1-hr TSP Monitoring

There was no action / limit level exceedance recorded throughout the construction period.

24-hr TSP Monitoring

There were a total of 22 action level and 3 limit level exceedances recorded throughout the construction period.

One exceedance was considered due to the construction activities of the Project, while 7 exceedances were concluded due to cumulative impacts, including poor ambient air quality, nearby traffic dust and construction activities of other contract and the Project, and 17 exceedances were concluded not related to the Project.

Noise

Construction Noise

There were 3 monitoring stations, NMC1 to NMC3, required to carry out noise monitoring during the construction of the Project.

There was no action / limit level exceedance recorded throughout the construction period.

Operational Noise

3 sessions of 30-mins operational noise monitoring were carried out within the first year of operation of the Project and measurement was taken during the AM and PM peak hour. The measured and normalized noise level at G/F and 2/F of NMO4 and measured noise level at G/F of NMO1 comply with the noise standard, but the normalized noise levels at G/F of NMO1 and measured and normalized noise level G/F of NMO2 and 2/F of NMO3 exceed the noise standard.

Water Quality

Water quality monitoring was carried out from August 2004 to July 2005 and from October 2005 to November 2005. Since the commencement of the Project, there were 337 marine water quality exceedances recorded.

All exceedances were concluded not related to the marine construction activities of the Project.

The post-project marine water quality monitoring was carried out between 1 and 25 April 2008.

Complaints

During the construction phase of the Project, there were a total of 3 complaints received, in which 2 were air quality related and 1 was water quality related.

No summons and prosecution was received during the construction of the Project.

1. INTRODUCTION

Background

1.1 Maunsell Environmental Management Consultants Limited (MEMCL), which changed the name to ENSR Asia (HK) Ltd. (ENSR) on 1 May 2007 (hereinafter called the "ET") was appointed by Gammon Construction Limited (GCL) (hereinafter called the "Contractor") to undertake Environmental Monitoring and Audit for "Improvement to Castle Peak Road between Ka Loon Tsuen and Siu Lam" (hereinafter called the "Project"). Under the requirements of Section 4 of Environmental Permit EP-171/2003/B and Further Environmental Permit EP-01/171/2004/A, EM&A programme as set out in the approved EM&A Manual is required to be implemented. In accordance with the approved EM&A Manual, environmental monitoring of air quality, noise and water quality and environmental site inspections are required during the construction phase of the Project.

1.2 Baseline air quality, noise and water quality monitoring works were carried out in May and June 2004; Action and Limit levels were set up based on the baseline monitoring results. The Supplementary Baseline Monitoring Report had been submitted to the EPD, SOR, IEC and the Contractor in June 2004.

Scope of Report

1.3 This is the Final Environmental Monitoring and Audit (EM&A) Review Report under Contract HY/2003/04 – Improvement to Castle Peak Road between Ka Loon Tsuen and Siu Lam. This report presents a summary of the environmental monitoring and inspection works, list of activities, mitigation measures carried out by the ET for the Project throughout the construction stage from July 2004 to March 2008 and the results of post-project water quality and operational phase noise monitoring carried out in April 2008 and July 2008 respectively.

Project Organisation

1.4 The organisation of the environmental management team is shown in Figure 1.1. Key personnel contacts are presented in Appendix A.

Summary of Construction Works

1.5 The construction works under the Project commenced in July 2004, the major construction activities of the projects are as follows:

- Improvement to Castle Peak Road from Ka Loon Tsuen to Tai Lam Kok Roundabout and Tai Lam Kok Roundabout
- Provision of pedestrian facilities in the form of footpaths, subways, footbridges and crossings
- Road junction and signal design and re-provisioning of access roads and connections to existing road networks
- Construction of associated drainage and landscaping works
- Environmental mitigation measures

1.6 The project commenced in July 2004 and substantially completed in March 2007. The only outstanding works is the landscape softworks and establishment works which is anticipated that insignificant environmental impacts will be generated. The construction programme are presented in Appendix B. Layout plan of the Project work site is provided in Figure 1.2 a to e.

2. ENVIRONMENTAL MONITORING AND AUDIT REQUIREMENTS

Monitoring Parameters

2.1 The EM&A Manual designates several locations representative of the identified sensitive receivers for the ET to monitor environmental impacts in terms of air quality, noise and water quality due to the Project.

2.2 Air quality and noise monitoring has been carried out at 2 and 3 designated monitoring stations respectively. For marine water quality monitoring, 5 monitoring stations, of which 2 are control and 3 are receiver locations, have been set up for the monitoring program.

Table 2.1 Monitoring Parameters and Frequency

	Parameters	Frequency
Air Quality	1-hr TSP	Three times per every six days
	24-hr TSP	Once every six days
Noise	Daytime noise	Once every week
Water Quality	Dissolved Oxygen (Surface & Middle)	Three times per week
	Dissolved Oxygen (Bottom)	
	Turbidity	
	Suspended Solid	

2.3 The EM&A programme including air quality and noise monitoring commenced in July 2004, while the water quality monitoring commenced in August 2004 when the marine construction activities started.

2.4 The Project area, monitoring locations and sensitive receivers during construction phase are depicted in Figures 2.1 to 2.3. Appendix C gives details of monitoring requirements.

Monitoring Methodology and Calibration Details

2.5 All monitoring works were conducted and monitoring equipment was regularly calibrated in accordance with the EM&A Manual.

Environmental Quality Performance Limits (Action and Limit Levels)

2.6 The environmental quality performance limits, i.e. Action and Limit Levels (AL Levels) were derived from the baseline monitoring result. Should the measured environmental quality parameters exceed the AL Levels, the respective action plan will be implemented. The AL Levels for each environmental parameter are given in Appendix D.

Environmental Mitigation Measures

2.7 Relevant mitigation measures were recommended in the EM&A Manual for the Contractor to implement. A list of mitigation measures is given in Appendix E.

Termination of the EM&A Programme

2.8 As the major works of the Project has been substantially completed in March 2007 and agreed by the IEC and SOR, the EM&A programme was terminated on 20 March 2008.

2.9 Moreover, EPD had also been notified for the termination of EM&A programme on 19 March 2008.

3. MONITORING RESULTS

Air Quality

3.1 Air quality monitoring, including 24-hr TSP and 1-hr TSP monitoring, was conducted at 2 monitoring stations throughout the construction phase of the Project. The monitoring was carried out between July 2004 and March 2008.

3.2 For 1-hour TSP, there was no action / limit level exceedance recorded throughout the construction phase of the Project.

3.3 For 24-hour TSP, there were a total of 22 action level and 3 limit level exceedances recorded throughout the construction phase of the Project.

3.4 Table 3.1 summarizes the air quality exceedances during the construction period. The graphical presentation of the monitoring data of air quality over the construction period is provided in Appendix F.

Table 3.1 Summary of Air Quality Exceedances during Construction Phase

Date	Location	Parameter	Results ($\mu g/m^3$)	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/m^3$)	Exceedance Status
15/09/2004	AM1	24-hr TSP	181.4	177.4	260	Action
20/10/2004	AM2	24-hr TSP	207.9	205.0	260	Action
06/12/2004	AM2	24-hr TSP	217.7	205.0	260	Action
04/01/2005	AM1	24-hr TSP	256.0	177.4	260	Action
	AM2	24-hr TSP	334.0	205.0	260	Limit
10/01/2005	AM2	24-hr TSP	219.6	205.0	260	Action
15/01/2005	AM1	24-hr TSP	185.4	177.4	260	Action
	AM2	24-hr TSP	232.2	205.0	260	Action
08/02/2005	AM2	24-hr TSP	304.5	205.0	260	Limit
09/03/2005	AM2	24-hr TSP	216.4	205.0	260	Action
21/03/2005	AM2	24-hr TSP	232.4	205.0	260	Action
20/12/2005	AM1	24-hr TSP	228.9	177.4	260	Action
	AM2	24-hr TSP	212.2	205.0	260	Action
31/12/2005	AM2	24-hr TSP	248.3	205.0	260	Action
10/02/2006	AM1	24-hr TSP	194.7	177.4	260	Action
06/03/2006	AM1	24-hr TSP	188.3	177.4	260	Action
21/04/2006	AM1	24-hr TSP	202.7	177.4	260	Action
	AM2	24-hr TSP	212.2	205.0	260	Action
22/08/2006	AM1	24-hr TSP	189.4	177.4	260	Action
28/12/2006	AM1	24-hr TSP	180.0	177.4	260	Action
	AM2	24-hr TSP	925.1	205.0	260	Limit
26/01/2007	AM1	24-hr TSP	180.4	177.4	260	Action

Date	Location	Parameter	Results ($\mu g/m^3$)	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/m^3$)	Exceedance Status
15/09/2007	AM1	24-hr TSP	181.5	177.4	260	Action
06/12/2007	AM1	24-hr TSP	258.5	177.4	260	Action
22/01/2008	AM1	24-hr TSP	224.0	177.4	260	Action

3.5 Investigations were carried out by the Environmental Team for all exceedances recorded during the construction phase of the Project.

3.6 For the 24-hour TSP exceedances recorded before February 2005 and after April 2006, all exceedances were considered not related to the Project.

3.7 For the 24-hour TSP exceedances recorded between February 2005 and April 2006, all exceedances were considered due to cumulative impacts from poor ambient air quality, nearby traffic dust and construction activities of other contract and the Project except for exceedances recorded at AM1 on 6 March 2006 and at AM2 on 21 April 2006 which were considered not related to the Project and except for exceedance recorded at AM2 on 31 December 2005 which was considered mainly due to joss stick burning in and in front of the temple near AM2.

3.8 Recommendations were provided to the Contractor on all non-compliances of the air quality recorded for the Project. No further non-compliance of air quality was recorded after the implementation of appropriate mitigation measures by the Contractor.

3.9 Table 3.2 and Table 3.3 present the baseline monitoring results and the averaged, maximum and minimum impact air quality monitoring results of 1-hr TSP and 24-hr TSP throughout the construction period.

Table 3.2 Comparison of Baseline and Impact Monitoring Results of 1-hr TSP Concentration

Location	Baseline Average (ug/m^3)	July 2004 – March 2008		
		Average ($\mu g/m^3$)	Minimum ($\mu g/m^3$)	Maximum ($\mu g/m^3$)
AM1	94.1	113.6	21.2	298.5
AM2	182.4	123.4	24.9	307.5

Table 3.3 Comparison of Baseline and Impact Monitoring Results of 24-hr TSP Concentration

Location	Baseline Average (ug/m^3)	July 2004 – March 2008		
		Average ($\mu g/m^3$)	Minimum ($\mu g/m^3$)	Maximum ($\mu g/m^3$)
AM1	72.9	90.0	11.6	258.5
AM2	115.4	99.3	8.8	925.1

Construction Noise

3.10 Construction noise monitoring was required to be carried out at 3 locations. The construction noise monitoring was carried out from July 2004 to March 2008.

3.11 There were no action / limit level exceedance recorded throughout the construction period.

3.12 Table 3.4 presents the baseline monitoring results, maximum and minimum impact noise monitoring results for daytime period throughout the construction period. The graphical presentation of the monitoring data of construction noise over the construction period is provided in Appendix G.

Table 3.4 Comparison of Baseline and Impact Monitoring Results of Noise Monitoring

Location	Baseline Average (Leq, dB(A))	July 2004 – March 2008	
		Minimum (Leq, dB(A))	Maximum (Leq, dB(A))
MN1	72.1	62.8	73.5
MN2	70.7	60.2	72.3
MN3	67.5	59.0	68.9

3.13 The other noise sources also included other construction activities nearby, community noise, traffic noise along Tuen Mun Road and Castle Peak Road.

Water Quality

3.14 In accordance with the EM&A Manual, impact water quality monitoring is required to be conducted during the course of marine works and the post-monitoring period. Impact water quality monitoring was conducted three days per week. Measurements were taken at both mid-ebb and mid-flood tides at three depths (i.e. 1m below surface, mid depth and 1m from seabed). The AL levels are included in Appendix D.

3.15 The water quality monitoring programme was carried out from 9 August 2004 to 29 July 2005 and from 10 October 2005 to 29 November 2005.

3.16 There were a total of 337 exceedances of water quality recorded during the construction phase of the Project. Among the exceedances, there were 167 exceedances of dissolved oxygen (surface & middle), 159 exceedances of dissolved oxygen (bottom), 6 exceedances of turbidity and 5 exceedances of suspended solids.

3.17 Table 3.5 presents the summary of water quality exceedances recorded during the construction stage of the Project. The monitoring results and graphical presentation of the monitoring data of water quality over the construction period is provided in Appendix H.

3.18 In accordance with the EM&A Manual, a four week post-project water quality monitoring was carried out from 1 to 25 April 2008. Detailed discussion is provided in Section 8 of this report.

Table 3.5 Summary of Water Quality Exceedances

Month	DO (S&M)	DO (B)	Turbidity	SS	Total
Aug-04	19	31	0	2	52
Sep-04	42	54	2	0	98
Oct-04	34	11	2	1	48
Nov-04	4	3	0	1	8
Dec-04	6	6	2	1	15
Jan-05	1	0	0	0	1
Feb-05	15	7	0	0	22
Mar-05	6	6	0	0	12
May-05	9	7	0	0	16

Month	DO (S&M)	DO (B)	Turbidity	SS	Total
Jun-05	2	2	0	0	4
Jul-05	9	18	0	0	27
Oct-05	20	14	0	0	34
Total	**167**	**159**	**6**	**5**	**337**

3.19 During the monitoring events, no visible sediment plume was noted from the site. The exceedances were considered not related to the Project.

3.20 Table 3.6 and Table 3.7 present the baseline monitoring results and the averaged impact water quality monitoring results of DO (S&M), DO (B), Turbidity and SS throughout the construction period.

Table 3.6 Comparison of Baseline and Impact Water Quality Monitoring Results at Mid-Ebb Tide

Location	DO (S&M) Average (mg/L)		DO (B) Average (mg/L)		Turbidity Average (NTU)		SS Average (mg/L)	
	Baseline	Impact	Baseline	Impact	Baseline	Impact	Baseline	Impact
M1	6.7	6.5	6.3	6.4	5.4	4.3	7.9	7.1
M2	6.7	6.5	6.2	6.3	6.5	4.5	8.9	7.2
M3	6.6	6.4	6.1	6.2	6.8	4.8	9.6	7.3
C1	6.8	6.6	6.5	6.5	7.1	4.4	11.2	7.3
C2	6.4	6.4	5.9	6.1	6.1	4.9	10	7.6

Table 3.7 Comparison of Baseline and Impact Water Quality Monitoring Results at Mid-Flood Tide

Location	DO (S&M) Average (mg/L)		DO (B) Average (mg/L)		Turbidity Average (NTU)		SS Average (mg/L)	
	Baseline	Impact	Baseline	Impact	Baseline	Impact	Baseline	Impact
M1	6.3	6.5	5.9	6.3	6.0	4.7	8.8	7.5
M2	6.2	6.4	5.8	6.2	6.0	4.8	9.8	7.7
M3	6.2	6.4	5.8	6.1	5.9	5.0	9.0	7.7
C1	6.5	6.5	6.1	6.4	6.4	4.5	9.1	7.5
C2	6.0	6.4	5.7	6.1	5.6	6.2	9.0	7.6

4. Implementation Status of Environmental Mitigation Measures

Implementation Status of Environmental Mitigation Measures

4.1 Throughout this project, the Contractor had implemented the necessary environmental mitigation measures as stipulated in the EIA report, Environmental Permit and the EM&A Manual.

4.2 The updated implementation status of environmental mitigation measures (EMIS) is given in Appendix E.

Advice on Waste Management Status

4.3 The actual quantities of uncontaminated sediment, contaminated sediment, inert C&D materials and C&D wastes generated by activities of the Project during construction period, from July 2004 to March 2008 are provided in Table 4.1. Trip ticket system was implemented for all offsite waste disposal.

Table 4.1 Summary of Waste Disposal in During Construction Period of the Project

Type of Waste Material		Disposed Quantity	Destination
Uncontaminated sediments		125,747 m^3	South Cheung Chau Disposal Ground
Contaminated sediments		10,290 m^3	East Sha Chau Contaminated Mud Pits
Inert C&D materials		20,210 m^3	Tuen Mun Area 38
Non-inert C&D waste	Metals	678,682 kg	Recycling companies
	Paper/cardboard packaging	322 kg	Recycling companies
	Plastics	5 kg	Recycling companies
	Chemical waste	0	Not Applicable
	Others, e.g. general refuse	3,409 m^3	WENT Landfill

5. Non-compliance (exceedances) of the Environmental Quality Performance Limits (Action and Limit Levels)

Summary of Exceedances

5.1 Throughout the construction stage, there were 25 24-hr TSP and 337 water quality exceedances recorded. Table 5.1 summarizes the number of exceedance in each month during construction phase.

Table 5.1 Number of Exceedances Throughout the Construction Phase

Month	Air Quality		Noise (Limit Level)	Water Quality	Total
	1-hr TSP	24-hr TSP			
Jul-04	0	0	0	0	0
Aug-04	0	0	0	52	52
Sep-04	0	1	0	98	99
Oct-04	0	1	0	48	49
Nov-04	0	0	0	8	8
Dec-04	0	1	0	15	16
Jan-05	0	5	0	1	5
Feb-05	0	1	0	22	23
Mar-05	0	2	0	12	14
Apr-05	0	0	0	0	0
May-05	0	0	0	16	16
Jun-05	0	0	0	4	4
Jul-05	0	0	0	27	27
Aug-05	0	0	0	0	0
Sep-05	0	0	0	0	0
Oct-05	0	0	0	34	34
Nov-05	0	0	0	0	0
Dec-05	0	3	0	0	3
Jan-06	0	0	0	0	0
Feb-06	0	1	0	0	1
Mar-06	0	1	0	0	1
Apr-06	0	2	0	0	2
May-06	0	0	0	0	0
Jun-06	0	0	0	0	0
Jul-06	0	0	0	0	0
Aug-06	0	1	0	0	1
Sep-06	0	0	0	0	0
Oct-06	0	0	0	0	0
Nov-06	0	0	0	0	0

Month	Air Quality		Noise (Limit Level)	Water Quality	Total
	1-hr TSP	24-hr TSP			
Dec-06	0	2	0	0	2
Jan-07	0	1	0	0	1
Feb-07	0	0	0	0	0
Mar-07	0	0	0	0	0
Apr-07	0	0	0	0	0
May-07	0	0	0	0	0
Jun-07	0	0	0	0	0
Jul-07	0	0	0	0	0
Aug-07	0	0	0	0	0
Sep-07	0	1	0	0	1
Oct-07	0	0	0	0	0
Nov-07	0	0	0	0	0
Dec-07	0	1	0	0	1
Jan-08	0	1	0	0	1
Feb-08	0	0	0	0	0
Mar-08	0	0	0	0	0
Total	**0**	**25**	**0**	**337**	**362**

Review of the Reasons for and the Implications of Non-compliance

5.2 As the Contractor generally implemented sufficient mitigation measures to suppress dust emission, the air quality impact was considered minimal from the Project and was not considered to be the major reasons for the 24-hr TSP exceedances. Upon investigation on each exceedance event, except for 1 project-related exceedance, the reasons for all the exceedances were generally cumulative impact of poor ambient air quality, traffic emissions and dust emissions from the Project or other nearby construction activities.

5.3 All water quality exceedances were considered not related to the Project.

Summary of Actions Taken

5.4 Interim notifications had been issued for all the exceedances during the construction phase of the Project to inform the EPD, SOR, IEC and Contractor about the incidents. For the valid exceedances, recommendations were provided in the notifications and the Contractor generally followed up the exceedances to prevent similar non-compliance from happening again.

6. Environmental Complaints, Notification of Summons and Successful Prosecutions

6.1 There were a total of 3 complaints received during the construction phase of the Project, in which 2 of them were concerning potential dust emission and 1 of them was related to muddy water discharge.

6.2 Complaint investigation was carried out for each of the complaint received. All the complaint cases had been closed.

6.3 A summary of environmental complaints is provided in Appendix L.

6.4 No notification of summons and successful prosecution was recorded since the commencement of Project.

7. OPERATIONAL PHASE NOISE MONITORING

Introduction

7.1 According to the EM&A Manual, operational phase noise monitoring was recommended during the first year of operation of the road. The measured noise levels should be compared with the predicted noise levels in the Final EIA report using the counted traffic data at the time of measurement.

Measurement Time

7.2 Traffic noise measurements were conducted on normal weekdays during AM and PM peak traffic hour from 07:00 to 08:30 and 16:00 to 17:30 respectively.

Noise Monitoring Locations (Noise Sensitive Receivers)

7.3 Noise measurements were conducted at four designated monitoring locations according to the EM&A Manual which was shown in Figure 7.1. Table 7.1 describes these monitoring stations.

Table 7.1 Traffic Noise Monitoring Locations

Monitoring Station	NSR ID in EIA	Location (Description)	Monitoring Floors
NMO1	N3H	Block H of Correctional Services Department Married Staff Quarters	G/F
NMO2	N2A	Siu Lam Hospital (Library)	G/F
NMO3	VTC3	Seamen's Training Centre	2/F
NMO4	N4H	Block J of Correctional Services Department Married Staff Quarters	G/F
			2/F

Noise Monitoring Equipment

7.4 The Sound Level Meters to be used for the monitoring will comply with the International Electrotechnical Commission Publications 651:1979 (Type 1) and 804:1985 (Type 1). Any other noise measuring and analysis instrument used will be of comparable professional quality. The instrumentation to be used for the noise monitoring is given Table 7.2.

Table 7.2 Traffic Noise Monitoring Equipment

Manufacturer	Description
Integrating Sound Level Meter	B&K 2238
Calibrator	B&K 4231

Maintenance and Calibration

7.5 The sound level meter was calibrated using a Bruel and Kjaer Sound Level Calibrator Type 4231 for 94dB at 1kHz, prior to and after each set of measurements. The results of the calibration were recorded on the field data sheet. Measurement results was discarded if the calibration before and after does not agree to within 1dB(A) and measurement was taken until this condition is fulfilled.

Noise Measurement Methodology

7.6 The noise measurements were conducted to obtain three sets of A-weighted $L_{10\ (30\ mins)}$ sound pressure level during the AM and PM peak traffic hour in one and half hour monitoring period at each designated sensitive receiver.

7.7 The noise measurement point was at a point 1m from the exterior of the sensitive receiver building facades and was at a position at least 1.2m above ground of the sensitive receiver level.

7.8 Noise measurements were made in accordance with Section III of the "Calculation of Road Traffic Noise (CRTN), 1998".

7.9 As recommended in CRTN, a façade effect correction factor of 2.5 dB(A) will be further added to the measured noise level if the monitoring is carried out in a free field condition.

7.10 Statistical results such as L_{max}, L_{min}, L_{eq} and L_{90} were also obtained for reference purpose.

7.11 The wind speed was frequently checked with a portable wind meter.

7.12 Observations were recorded when intrusive noise was unavoidable.

7.13 Traffic surveys were conducted concurrently with the noise measurement for the road sections in the vicinity of the monitoring stations and these road sections are summarized in Table 7.3 and shown in Figure 7.1.

Table 7.3 Road Sections Classification

Road Section	Description
CP1	Castle Peak Road – Siu Lam Interchange to Tuen Mun
CP2	Slip road – Siu Lam Interchange and Tuen Mun Road
CP3	Castle Peak Road – Siu Lam Interchange to Hong Fai Road
CP4	Castle Peak Road – Siu Lam Interchange to Tai Lam Chung Interchange
CP5	Castle Peak Road – Hong Fai Road to Slip road from Tuen Mun Road
CP6	Slip road – Castle Peak Road and Tuen Mun Road

Road Section	Description
CP7	Castle Peak Road – Tai Lam Chung Road to Tai Lam Chung Interchange
CP8	Castle Peak Road – Tai Lam Chung Interchange to Sham Tseng
TMR1, TMR2, TMR3	Tuen Mun Road
HFR	Hong Fai Road

Results and Observation

7.14 Traffic noise measurements were conducted on two weekdays during AM and PM peak traffic hour from 07:00 – 08:30 and 16:00 – 17:30 respectively on 18 and 23 July 2008. Random check of wind speed at the monitoring station showed that it was below 5 m/s.

7.15 The noise level measured during 07:30 – 08:30 and 16:30 – 17:30 were taken as the representative AM and PM peak hour noise level. Detailed noise monitoring results are provided in Appendix J.

7.16 Details of the traffic flow, percentage of heavy vehicle and estimated traffic speed are shown in Appendix K.

Predicted Noise Levels under the Traffic Flow Condition in 2022

7.17 According to the Environmental Impact Assessment Final Report for the Project, "Agreement No. CE 88/98 - Improvement to Castle Peak Road between Ka Loon Tsuen and Siu Lam", for the worst case scenario, the traffic noise levels was predicted to occur in year 2022.

7.18 In the EIA Report, Route 10 North Lantau to Yuen Long Highway's Siu Lam Link Road (Route 10 NLYLH's SLLR) was taken into account to predict the mitigated noise levels in Year 2022. However, Route 10 NLYLH's SLLR does not exist during the traffic noise measurement and the traffic noise mitigation measures (i.e. noise barriers on Castle Peak Road) proposed in the EIA Report was not constructed yet. However, according to Section 3.5 of Environmental Permit EP-171/2003/B and Further Environmental Permit EP-01/171/2004/A, low noise road surfacing was provided on the viaduct, road section CP4.

7.19 The CRTN model utilized in EIA Report was obtained from the design consultant, Maunsell Consultants Asia Ltd., to predict the mitigated noise levels in Year 2022 (N_{2022}) without Route 10 NLYLH's SLLR and noise barriers on Castle Peak Road using the traffic forecast as stipulated in the EIA Report.

7.20 The traffic flow, vehicular speed and percentage heavy vehicle obtained during the course of traffic noise measurement were applied to the CRTN model used in the EIA Report to obtain a single traffic noise level (N_p), i.e. the predicted traffic noise in current situation. Based on the difference of the N_p and N_{2022}, the difference obtained could be used to make adjustment of the measured noise levels (N_m) to obtain a normalized traffic noise results.

7.21 Measured and normalized traffic noise levels was summarized and compared against the noise standard of 70 dB(A) for residential development, 65 dB(A) for educational institution and 55 dB(A) for hospital. Table 7.4 shows the measured and normalized traffic noise levels in comparison with the noise standard.

Table 7.4 Measured and Normalized Noise Level and Comparison with Noise Standard

Monitoring Station (Floor)	Period	Predicted Noise Level (Mitigated), L_{10} dB(A) in Current Situation (N_p)	Predicted Noise Level (Mitigated), L_{10} dB(A) in Year 2022 (N_{2022})	Correction Factor	Measured Noise Level (Mitigated), L_{10} dB(A) (N_m)	Normalized Noise Level, L_{10} dB(A)	Noise Standard L_{10} dB(A)
NMO1 (G/F)	AM	76.1	79.9	3.8	69.9	73.7	70
	PM	76.5		3.4	70.0	73.4	
NMO2 (G/F)	AM	68.7	72.5	3.8	65.6	69.4	55
	PM	69.6		2.9	65.9	68.8	
NMO3 (2/F)	AM	76.0	79.0	3.0	73.8	76.8	65
	PM	76.5		2.5	73.7	76.2	
NMO4 (G/F)	AM	67.8	72.2	4.4	59.2	63.6	70
	PM	68.7		3.5	59.8	63.3	
NMO4 (2/F)	AM	67.7	72.4	4.7	61.9	66.6	70
	PM	68.6		3.8	61.9	65.7	

7.22 The measured and normalized noise level at G/F and 2/F of NMO4 and measured noise level at G/F of NMO1 comply with the noise standard, but the normalized noise levels at G/F of NMO1 and measured and normalized noise level G/F of NMO2 and 2/F of NMO3 exceed the noise standard.

7.23 Based on the on-site observation, Tuen Mun Road is major noise source for NMO1, NMO2 and NMO3 during both AM and PM peak hour. Before the construction and operation of the Project, baseline noise monitoring at NMO1 and NMO3 were conducted. The monitoring results showed the measured average $L_{10(30mins)}$ were 73.6 dB(A) and 72.9 dB(A) respectively which was higher than the noise standard. This demonstrated that traffic noise from Tuen Mun road is the major noise source contributed to the NSRs before and after the commencement of the Project.

7.24 Also, the traffic noise mitigation measure (low noise road surfacing) stipulated in the Environmental Permit EP-171/2003/B and Further Environmental Permit EP-01/171/2004/A has been fully implemented.

8. POST-PROJECT WATER QUALITY MONITORING

Monitoring Requirements

8.1 According to the EM&A Manual, a four-week post-project water quality monitoring is required to be undertaken after the completion of all marine construction activities of the Project.

8.2 Dissolved oxygen (surface & middle), dissolve oxygen (bottom), turbidity and suspended solids (SS) were required to be monitored during the post-project monitoring programme. A four-week post-project water quality monitoring exercise was carried out in the same manner as the impact monitoring during construction phase of the Project.

8.3 The post-project water quality monitoring was carried out according to the EM&A Manual between 1 and 25 April 2008. The monitoring results and graphical presentation are presented in Appendix I.

8.4 Table 8.1 and Table 8.2 present the baseline monitoring results and the averaged post-project water quality monitoring results of DO (S&M), DO (B), Turbidity and SS throughout the construction period.

Table 8.1 Comparison of Baseline and Post-project Water Quality Monitoring Results at Mid-Ebb Tide

Location	DO (S&M) Average (mg/L)		DO (B) Average (mg/L)		Turbidity Average (NTU)		SS Average (mg/L)	
	Baseline	Post-project	Baseline	Post-project	Baseline	Post-project	Baseline	Post-project
M1	6.7	6.7	6.3	6.9	5.4	7.7	7.9	8.6
M2	6.7	6.6	6.2	6.7	6.5	7.4	8.9	8.8
M3	6.6	6.4	6.1	6.5	6.8	6.9	9.6	7.2
C1	6.8	6.8	6.5	7.0	7.1	7.3	11.2	8.4
C2	6.4	6.5	5.9	6.7	6.1	6.1	10.0	7.9

Table 8.2 Comparison of Baseline and Post-project Water Quality Monitoring Results at Mid-Flood Tide

Location	DO (S&M) Average (mg/L)		DO (B) Average (mg/L)		Turbidity Average (NTU)		SS Average (mg/L)	
	Baseline	Post-project	Baseline	Post-project	Baseline	Post-project	Baseline	Post-project
M1	6.3	6.0	5.9	6.2	6.0	7.7	8.8	8.1
M2	6.2	6.2	5.8	6.3	6.0	7.3	9.8	8.1
M3	6.2	6.6	5.8	6.8	5.9	7.3	9.0	8.2
C1	6.5	6.0	6.1	6.1	6.4	7.9	9.1	8.4
C2	6.0	7.2	5.7	7.3	5.6	7.3	9.0	8.0

9. OVERALL SUMMARY

Review of EM&A Program

9.1 The impact air quality, noise and water quality monitoring was properly conducted in accordance with the EM&A Manual. The monitoring events were sufficient to justify the respective environmental impacts on the nearby sensitive receivers.

9.2 Site audits were carried out weekly to monitor the Contractor's performance on the air quality, noise, water quality and waste management issues. The audit programme confirmed that the mitigation measures were properly implemented by the Contractor.

Comparison of the EM&A Data with the EIA Predictions

9.3 Despite occasional air quality and water quality exceedances occurred during the construction phase, the environmental monitoring data (i.e. air quality and water quality) collected in the construction period were generally in line with the prediction of the EIA Report as the monitoring results were within the acceptable levels as stipulated in the EIA Report.

Review of the Monitoring Methodology and EM&A Programme

9.4 ET regularly reviewed the monitoring methodology as recommended in the EM&A Manual. There was no amendment on the monitoring methodology during the construction phase of the Project.

9.5 The EM&A programme and the effectiveness and efficiency of the mitigation measures were successful during the construction period.

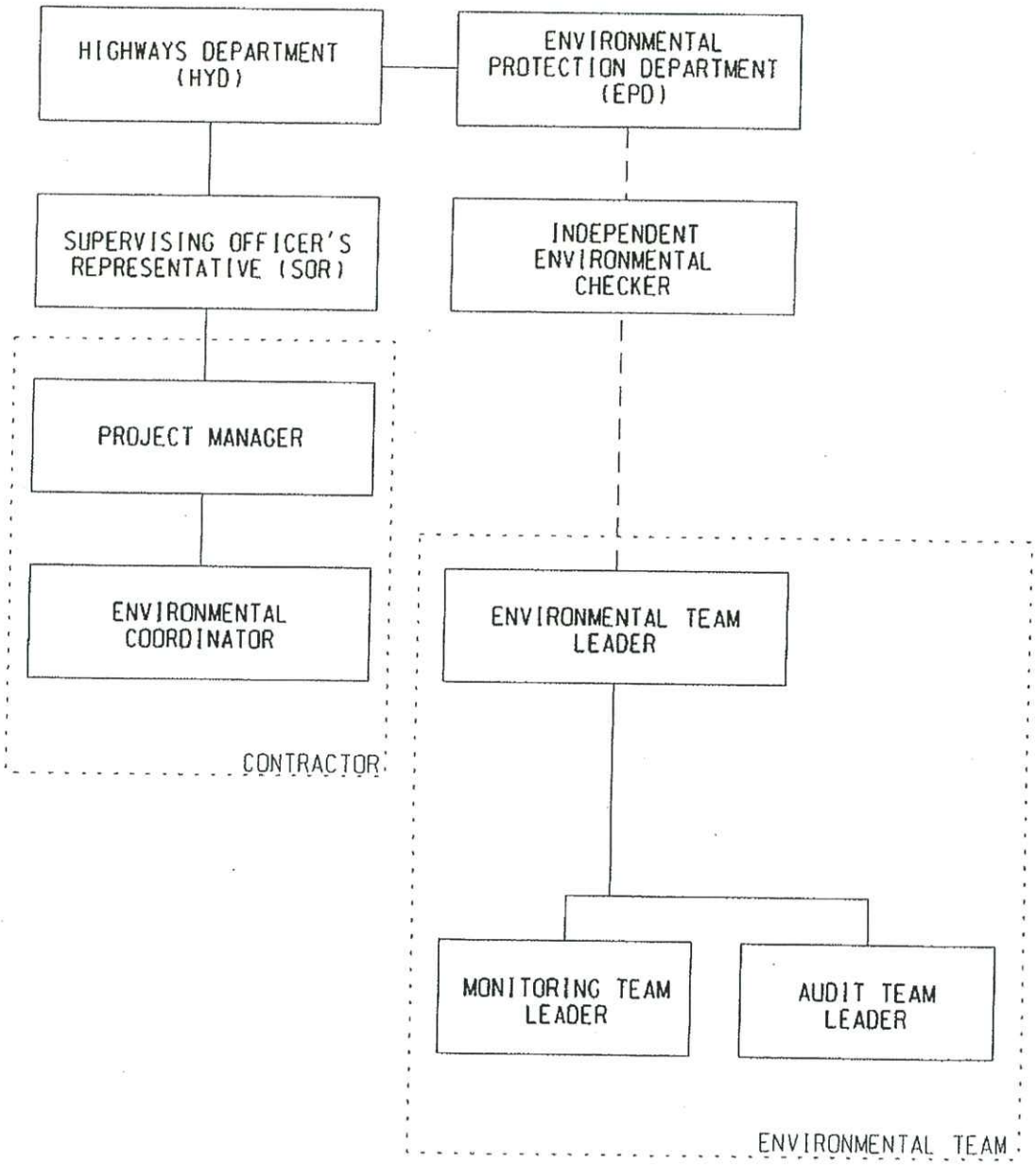
Environmental Acceptability of the Project

9.6 Even though a few exceedances of air quality and water quality results were recorded, the environmental monitoring results indicated that the construction activities in general complied with the relevant environmental requirements.

9.7 From the monitoring results, it is concluded that the overall environmental performance of the project is satisfactory.

FIGURES

PROJECT ORGANIZATION FOR ENVIRONMENTAL MANAGEMENT



LEGEND:

——— DIRECT COMMUNICATION

— — — LIAISON

ENSR | AECOM	CONTRACT NO. HY/2003/04 IMPROVEMENT TO CASTLE PEAK ROAD BETWEEN KA LOON TSUEN AND SIU LAM - ENVIRONMENTAL MONITORING AND AUDIT PROJECT ORGANIZATION FOR ENVIRONMENTAL MANAGEMENT	SCALE	N.T.S.	DATE	2005
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				REV	–

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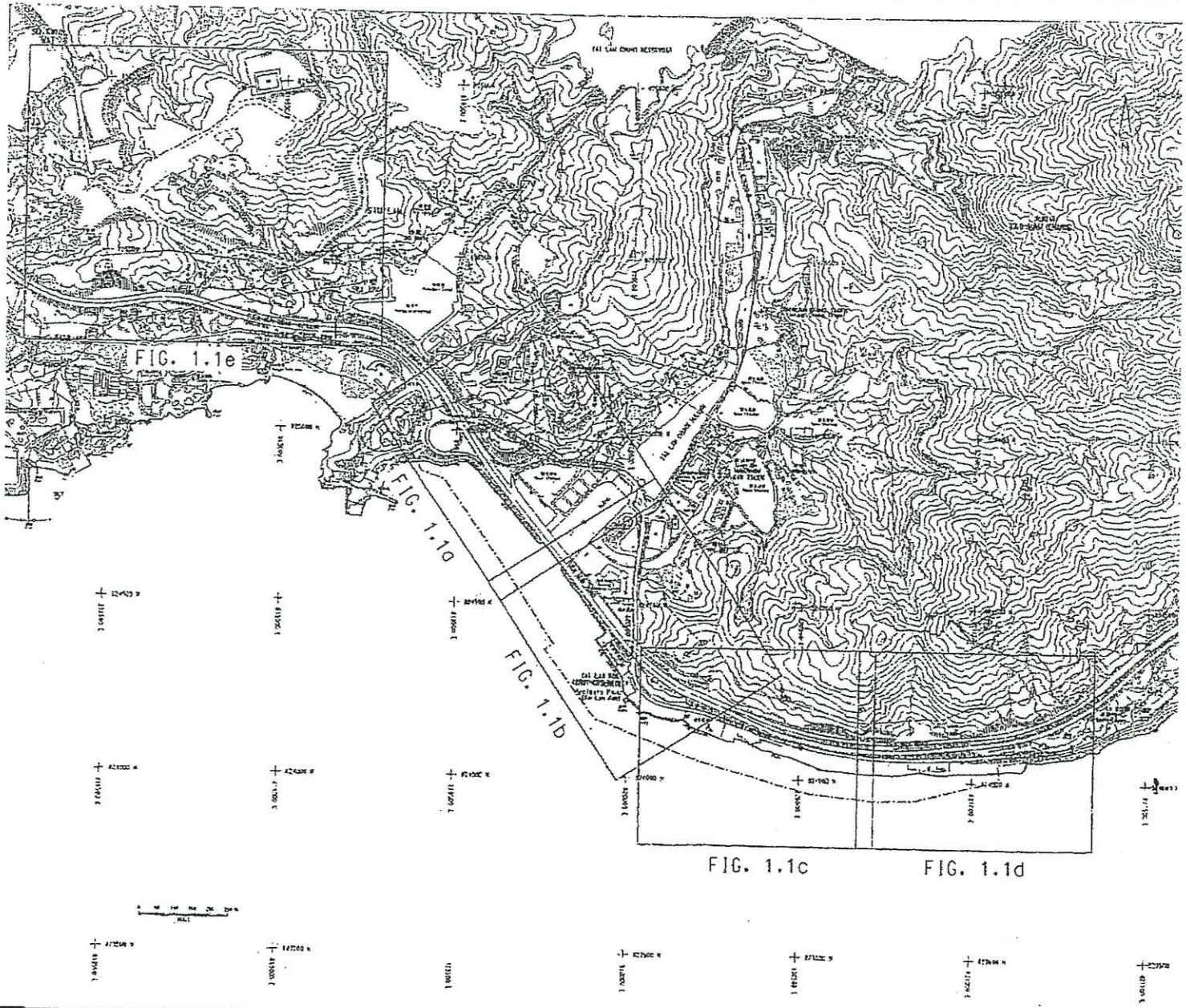

ENSR | AECOM

CONTRACT NO. HY/2003/04 - IMPROVEMENT TO CASTLE PEAK ROAD BETWEEN KA LOON TSUEN AND SIU LAM - ENVIRONMENTAL MONITORING AND AUDIT

KEY PLAN OF THE WORK SITE

SCALE	N.T.S.	DATE	2005
CHECK	FSYY	DRAWN	LLMC
JOB No.	60016763	DRAWING No.	1.2
		REV	–

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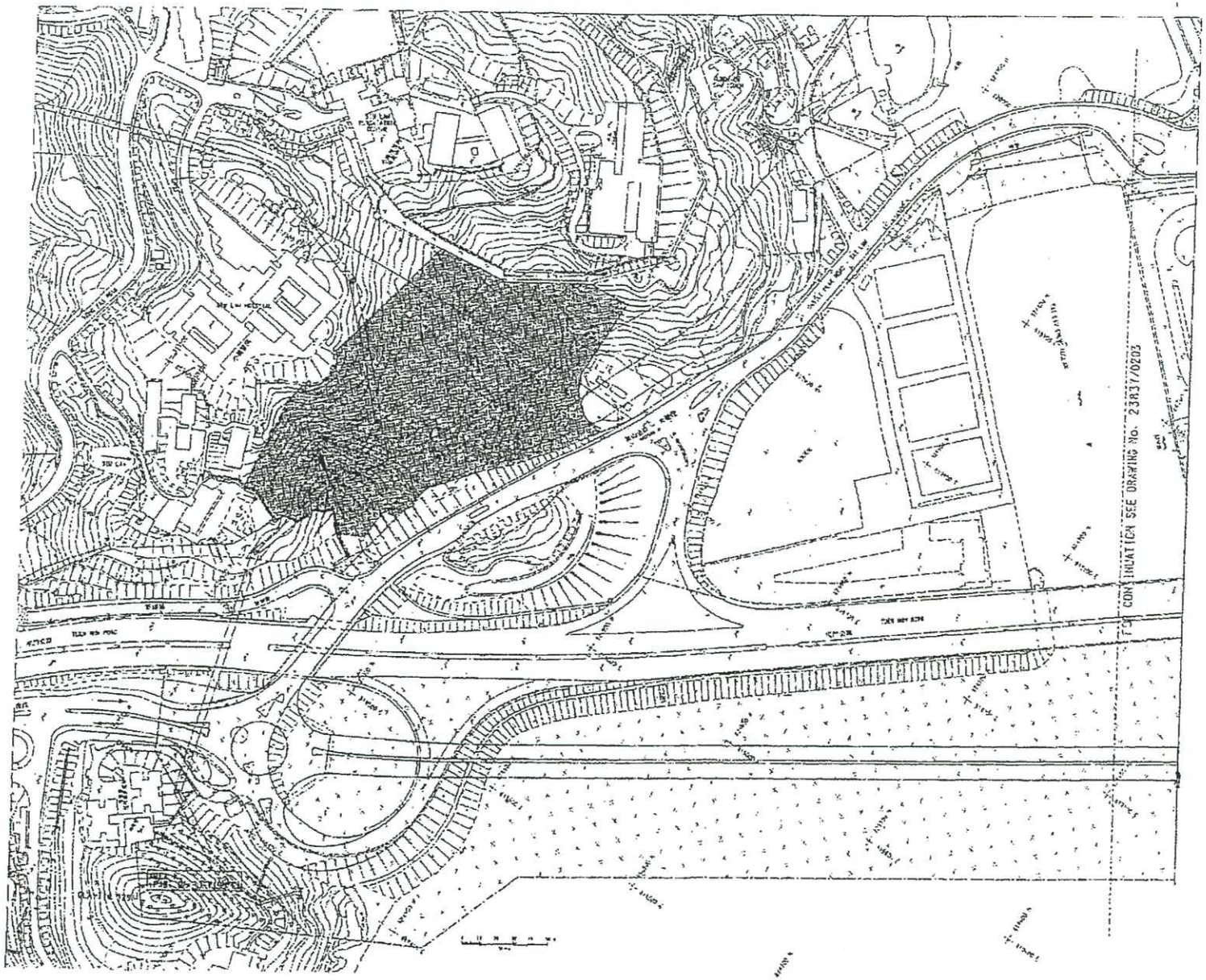

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CONTRACT NO. HY/2003/04 - IMPROVEMENT TO CASTLE PEAK ROAD BETWEEN KA LOON TSUEN AND SIU LAM - ENVIRONMENTAL MONITORING AND AUDIT

LAYOUT OF THE WORK SITE A

SCALE	N.T.S.	DATE	2005
CHECK	FSYY	DRAWN	LLMC
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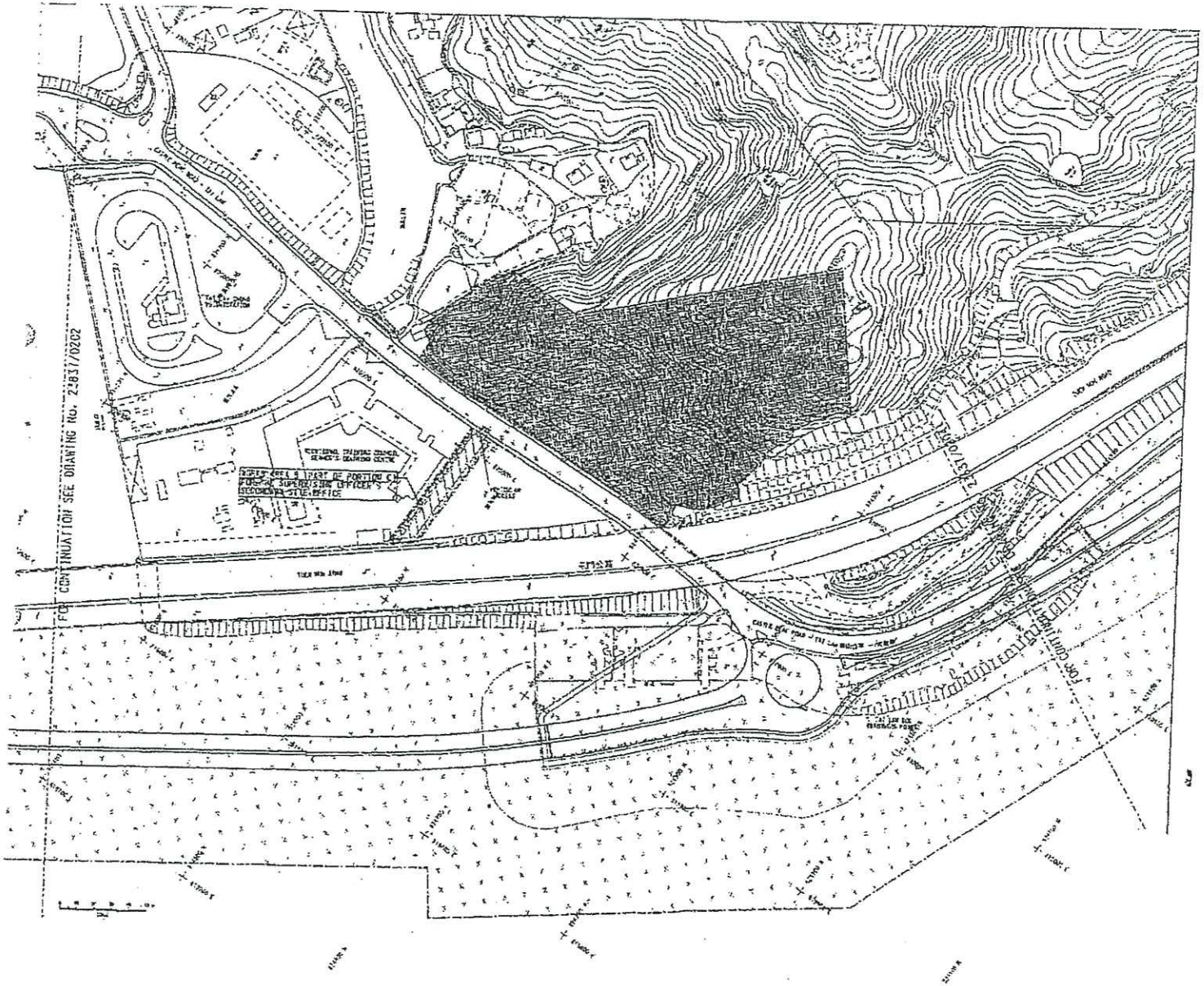
		REV	-



ENSR | AECOM

CONTRACT NO. HY/2003/04 – IMPROVEMENT TO CASTLE PEAK ROAD BETWEEN KA LOON TSUEN AND SIU LAM – ENVIRONMENTAL MONITORING AND AUDIT

LAYOUT OF THE WORK SITE B

SCALE	N.T.S.	DATE	2005
CHECK	FSYY	DRAWN	LLMC
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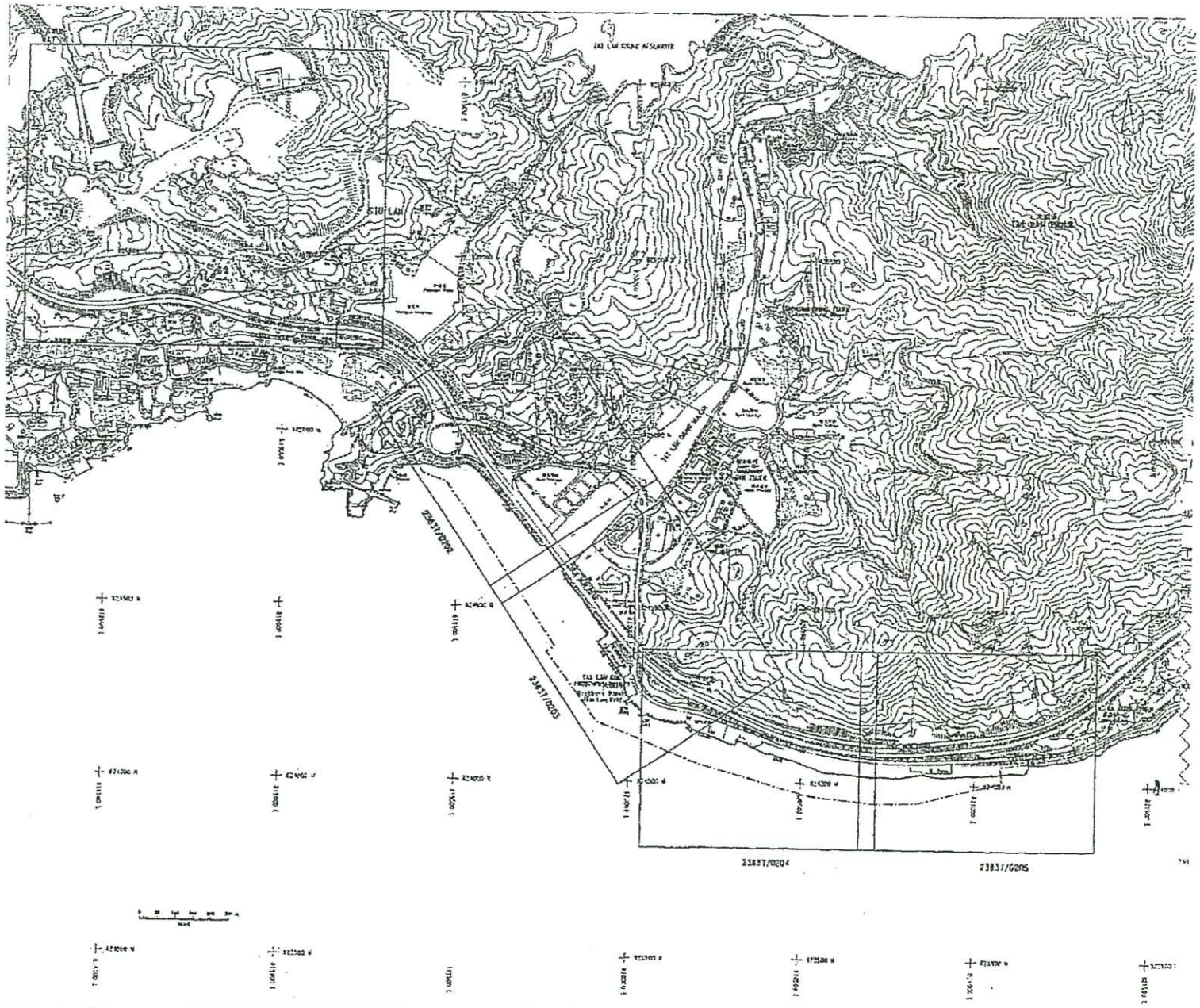

ENSR | AECOM

CONTRACT NO. HY/2003/04 - IMPROVEMENT TO CASTLE PEAK ROAD BETWEEN KA LOON TSUEN AND SIU LAM - ENVIRONMENTAL MONITORING AND AUDIT

LAYOUT OF THE WORK SITE C

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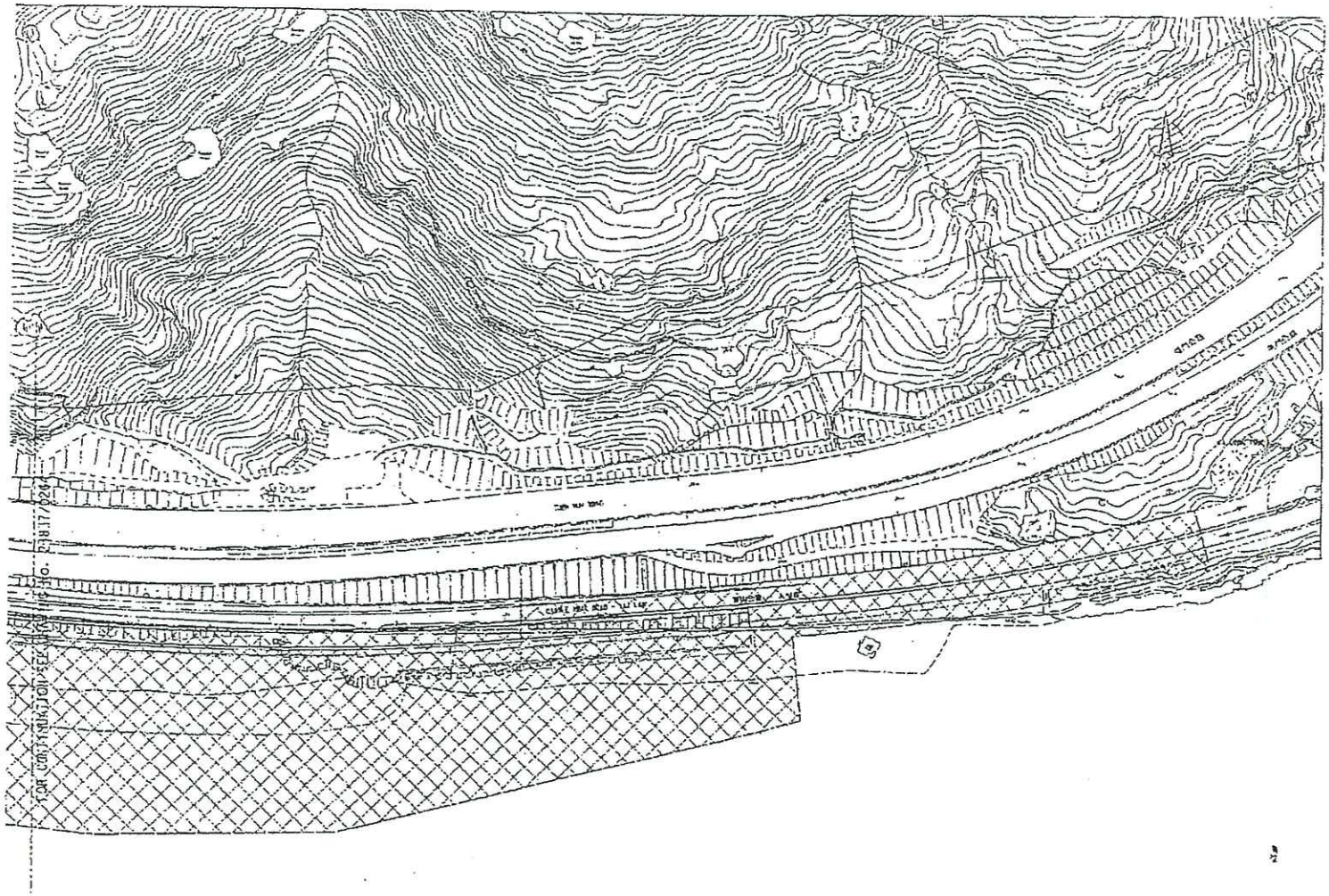

ENSR | AECOM

CONTRACT NO. HY/2003/04 - IMPROVEMENT TO CASTLE PEAK ROAD BETWEEN KA LOON TSUEN AND SIU LAM - ENVIRONMENTAL MONITORING AND AUDIT

LAYOUT OF THE WORK SITE D

SCALE	N.T.S.	DATE	2005
CHECK	FSYY	DRAWN	LLMC
JOB No.	60016763	DRAWING No.	1.2d
		REV	-

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CONTRACT NO. HY/2003/04 - IMPROVEMENT TO CASTLE PEAK ROAD BETWEEN KA LOON TSUEN AND SIU LAM - ENVIRONMENTAL MONITORING AND AUDIT

LAYOUT OF THE WORK SITE E

SCALE	N.T.S.	DATE	2005
CHECK	FSYY	DRAWN	LLMC
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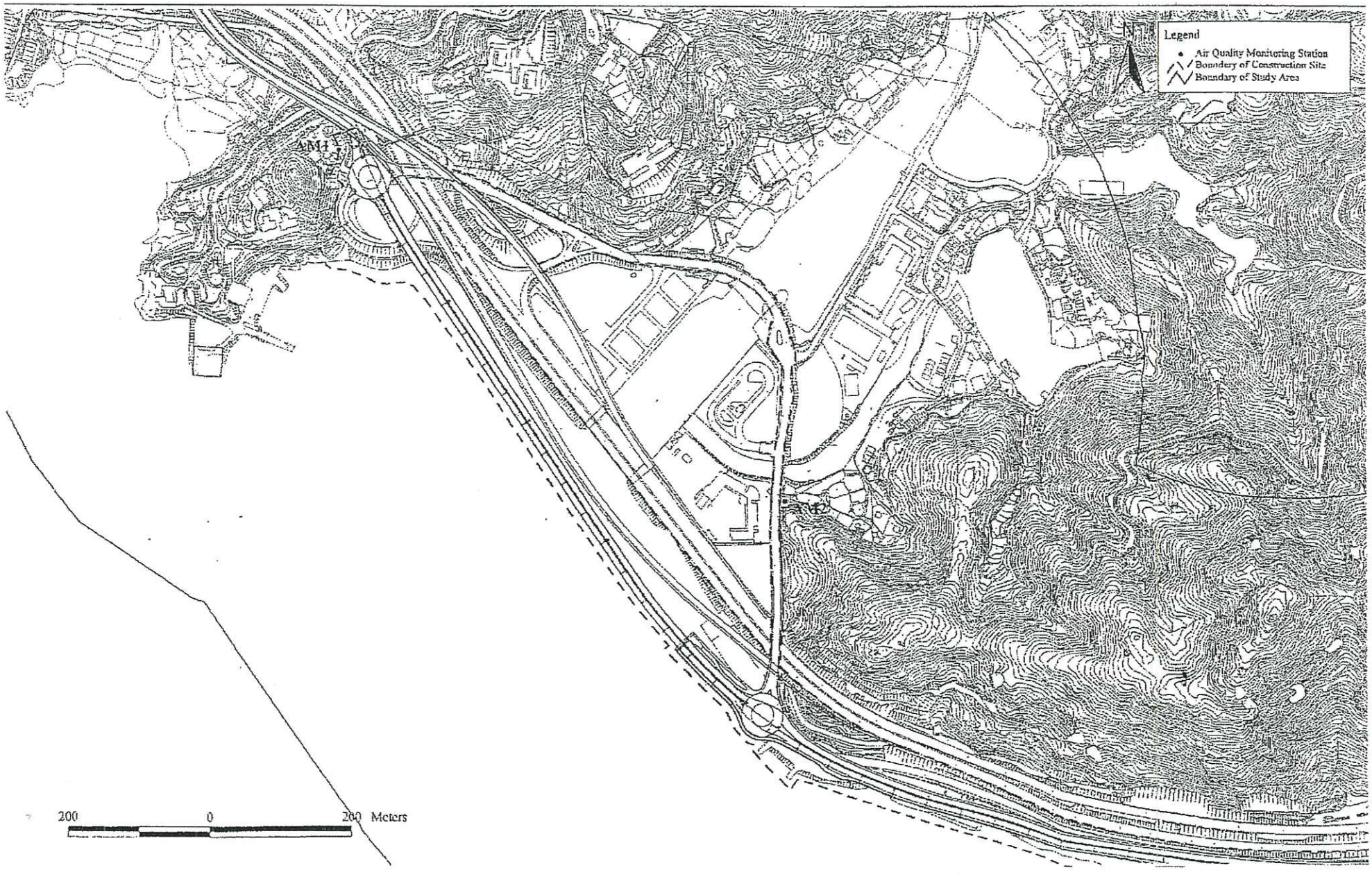

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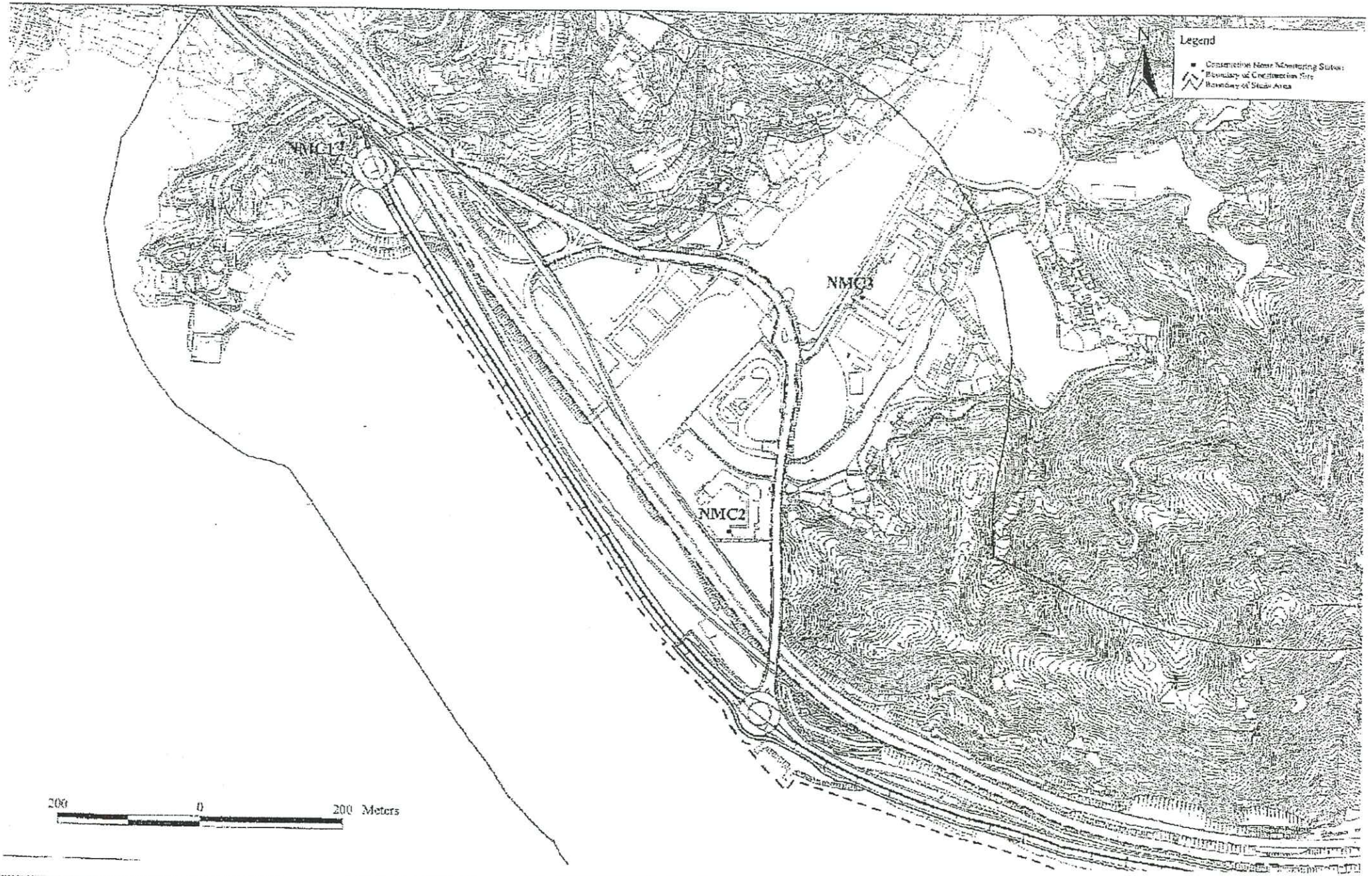
CONTRACT NO. HY/2003/04 – IMPROVEMENT TO CASTLE PEAK ROAD BETWEEN KA LOON TSUEN AND SIU LAM – ENVIRONMENTAL MONITORING AND AUDIT

LOCATIONS OF AIR QUALITY MONITORING STATIONS

SCALE	N.T.S.	DATE	2005
CHECK	FSYY	DRAWN	LLMC
JOB No.	60016763	DRAWING No.	2.1
		REV	–



ENSR | AECOM

CONTRACT NO. HY/2003/04 - IMPROVEMENT TO CASTLE PEAK ROAD BETWEEN KA LOON TSUEN AND SIU LAM - ENVIRONMENTAL MONITORING AND AUDIT

LOCATIONS OF CONSTRUCTION NOISE MONITORING STATIONS

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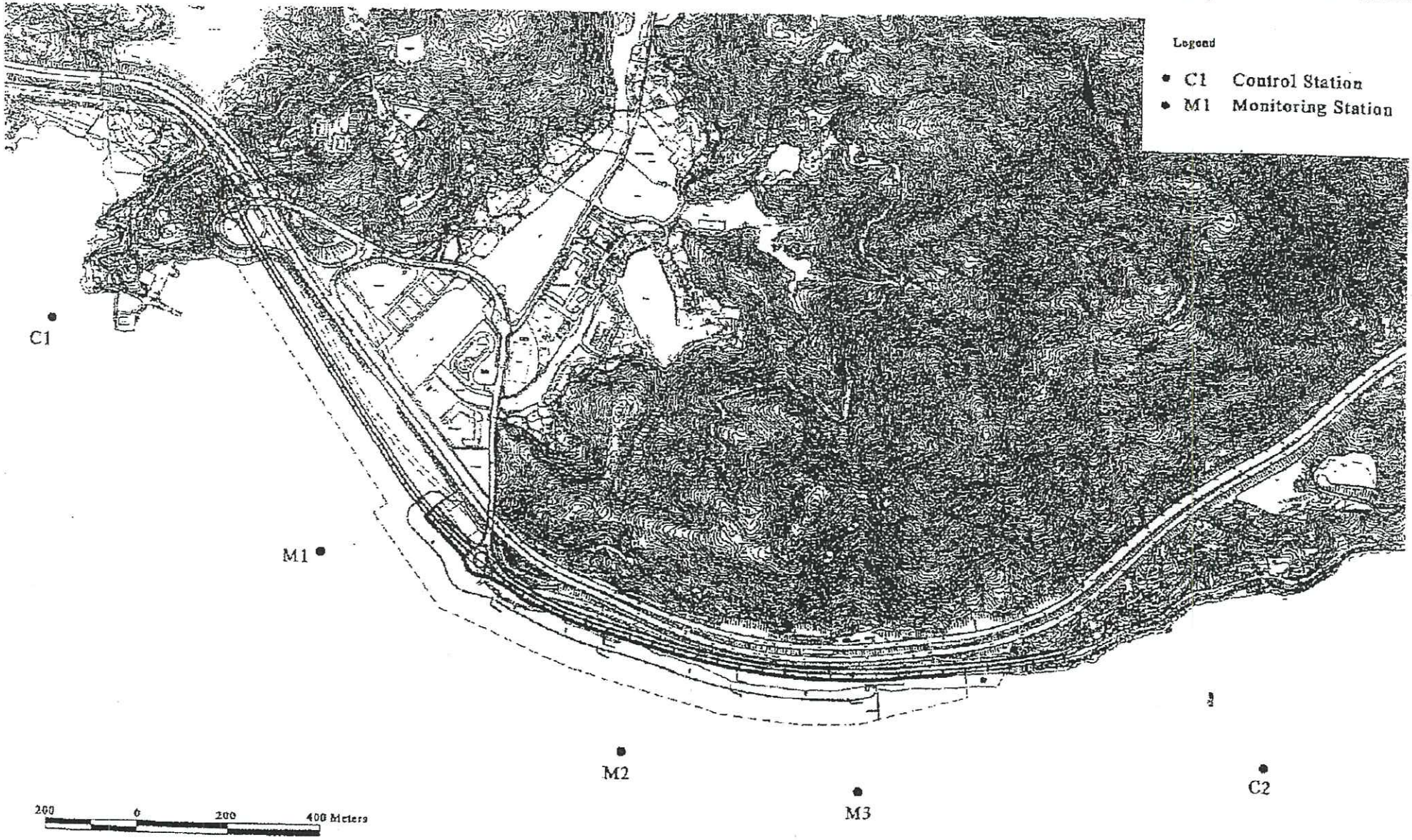
CHECK	FSYY	DRAWN	LLMC
JOB No.	60016763	DRAWING No.	2.2



ENSR | AECOM

CONTRACT NO. HY/2003/04 - IMPROVEMENT TO CASTLE PEAK ROAD BETWEEN KA LOON TSUEN AND SIU LAM - ENVIRONMENTAL MONITORING AND AUDIT

LOCATIONS OF WATER QUALITY MONITORING STATIONS

SCALE	N.T.S.	DATE	2005
CHECK	FSYY	DRAWN	LLMC
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		REV	-

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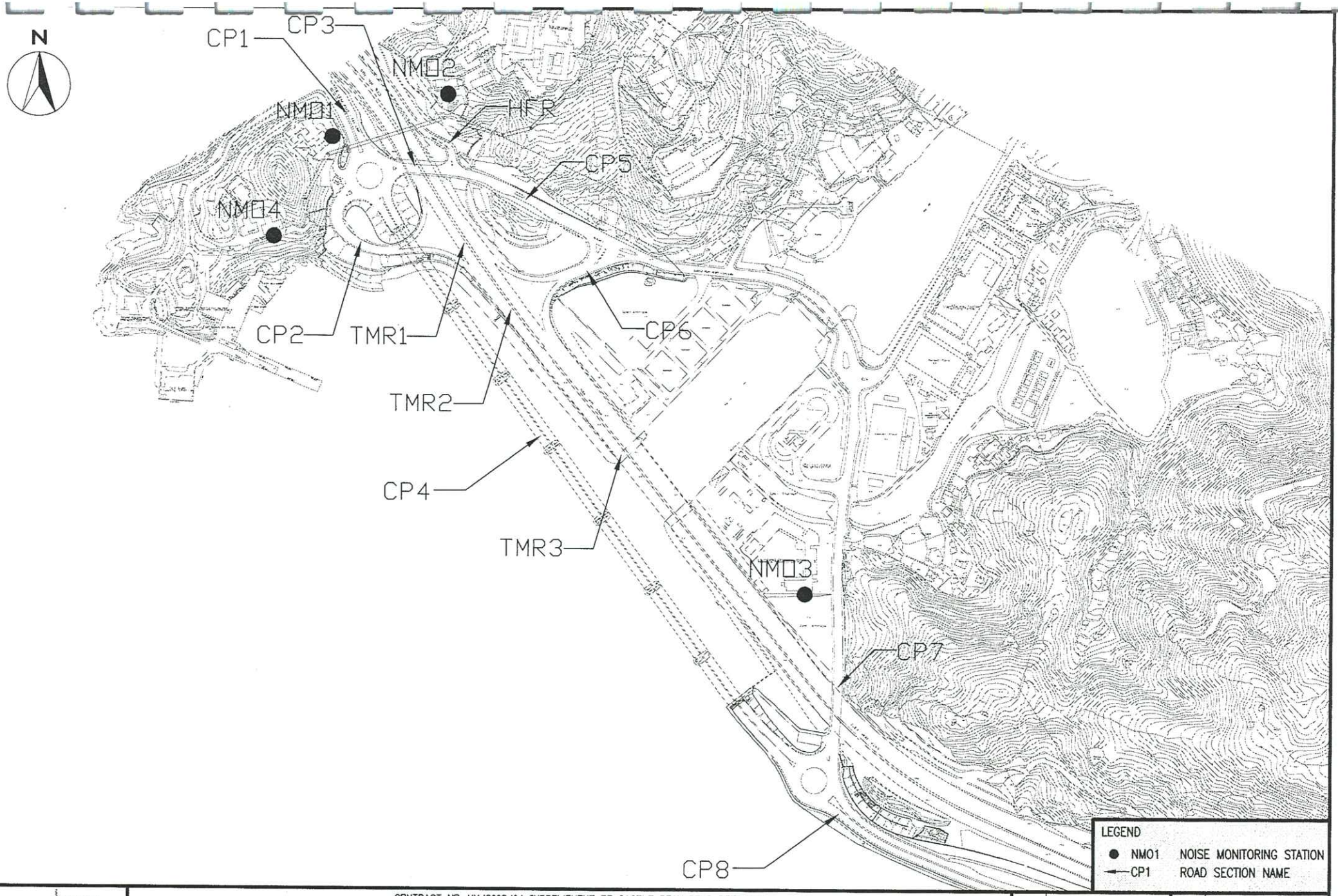

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MAUNSELL
ENSR Asia (HK) Ltd

CONTRACT NO. HY/2003/04 IMPROVEMENT TO CASTLE PEAK ROAD BETWEEN KA LOON TSUEN AND SIU LAM - ENVIONMENTAL MONITORING AND AUDIT

LAYOUT OF NOISE MONITORING STATION AND ROAD CLASSIFICATION

SCALE	A4 1:6000	DATE	AUG 2008
CHECK	JCHL	DRAWN	EWCM
JOB No.	60016763	DRAWING No.	7.1
		REV	-

APPENDIX A
KEY CONTACTS OF ENVIRONMENTAL PERSONNEL

Appendix A Key Contacts of Environmental Personnel

	Name	Telephone	Fax
Environmental Protection Department			
Senior Environmental Protection Officer	Lawrence Ngo	2835 1751	2591 0558
Environmental Protection Officer	Winnie Kwok	2835 1109	2591 0558
Environmental Protection Officer	Joseph Leung	2417 6123	2411 3073
Highways Department			
Engineer	Irene Tam	2762 3679	2714 5289
Supervising Officer Representative			
Ove Arup and Partners			
Resident Engineer	Humphrey Wu	3476 6400	2618 2434
Assistant Resident Engineer	Patrick Lai	3476 6400	2618 2434
Independent Environmental Checker			
Materialab Consultants Limited			
Independent Environmental Checker	Joseph Poon	2450 8238	2450 6138
Assistant to the IEC	Colin Yung	2450 8238	2450 6138
Contractor			
Gammon Construction Limited			
Deputy Project Manager	Niki Lui	2968 3600	2430 7990
Environmental Manager	Eddie Tse	2968 3600	2430 7990
Environmental Team			
ENSR Asia (HK) Ltd.			
Environmental Team Leader	Y T Tang	2893 1551	2891 0305
Environmental Scientist	Jackel Law	2893 1551	2891 0305

APPENDIX B
CONSTRUCTION PROGRAMME

ID	Description	Orig Dur	Early Start	Early Finish	% Comp	Total Float
CONTRACT KEY DATE						
CKD010	DATE OF TENDER ACCEPTANCE	0	23FEB04A		100	
CKD020	COMMENCEMENT OF WORKS(C.O.W.)	0	08MAR04A		100	
CKD030	CONTRACT PERIOD	1,433	08MAR04A	08FEB08	54	0
CKD050	COMPLETION PERIOD FOR SECTION IV OF THE WORKS	1,066	08MAR04A	05FEB07	72	0
CKD060	COMPLETION PERIOD FOR SECTION V OF THE WORKS	1,433	08MAR04A	08FEB08	54	0
CKD070	COMPLETION PERIOD FOR SECTION VI OF THE WORKS	1,068	08MAR04A	17NOV06	68	0
CKD080	COMPLETION PERIOD FOR SECTION VII OF THE WORKS	1,068	05MAR04A	08FEB07	72	0
CKD040	MAINTENANCE PERIOD EXCEPT ESTABLISHMENT	365	09FEB07	08FEB08	0	0
CKD120	COMPLETION OF WORKS	0		08FEB08*	0	0
COMMENCEMENT OF WORKS/POSSESSION OF SITE						
CKDPS060	POSSESSION OF PORTION C(AT C.O.W)	0	10MAR04A		100	
CKDPS010	SECT. I MAY BE ORDERED WITHIN 52 DAYS OF C.O.W.	0	29APR04A		100	
CKDPS020	SECT. II MAY BE ORDERED WITHIN 52 DAYS C.O.W.	0	29APR04A		100	
CKDPS030	SECT. III MAY BE ORDERED WITHIN 237 DAYS C.O.W.	0	31OCT04A		100	
CKDPS040	POSSESSION OF PORTION A(388 DAYS AFTER C.O.W.)	0	31MAR05A		100	
CKDPS050	POSSESSION OF PORTION B(388 DAYS AFTER C.O.W.)	0	31MAR05A		100	
COST CENTRE 1 PRELIMINARIES/GENERAL REQUIREMENTS						
MILESTONES						
CC1MS0010	1.1 Submit Contract Required Documents (30 Days)	0		30MAR04A	100	
CC1MS0020	1.2 Provide Transport & Survey Equipment	0		30MAY04A	100	
CC1MS0030	1.3 Complete Supervising Officer's Accommodation	0		05JUL04A	100	
CC1MS0040	1.4 183 Days After Commencement of The Works	0		06SEP04A	100	
CC1MS0050	1.5 365 Days After Commencement of The Works	0		08MAR05A	100	
CC1MS0060	1.6 548 Days After Commencement of The Works	0		07SEP05A	100	
CC1MS0070	1.7 730 Days After Commencement of The Works	0		14APR06	95	41
CC1MS0080	1.8 913 Days After Commencement of The Works	0		06SEP06	76	79
CC1MS0090	1.9 On Completion of The Works(ex Establishment)	0		08FEB07*	0	0
GENERAL REQUIREMENTS						
PG010	Submit Draft Works Programme (ER App 5A)	7	23FEB04A	19MAR04A	100	
PG015	Submit First Three Month Rolling Programme	14	23FEB04A	30MAR04A	100	
PG100	Submission of Waste Management Plan (ER 9.1)	21	23FEB04A	12MAR04A	100	
PG110	Submission of Draft Safety Plan (SCC13)	14	23FEB04A	12MAR04A	100	
PG160	Submission of Site Layout Plan for Work Area A,B	6	23FEB04A	15MAR04A	100	
PG150	Submission of Quality Plan(ER 6.1)	28	23FEB04A	23JUN04A	100	
PG050	Submit Contractor's Staffing Proposal (ER 1.6.1)	7	08MAR04A	15MAR04A	100	
PG070	Apply Permits & Approved By Relevants Parties	90	08MAR04A	31JUL04A	100	
PG080	Apply the Marine Department Notice (ER 2.5.2)	28	08MAR04A	22APR04A	100	
PG140	Submission of EM&A Manual (ER 8.2.2)	28	08MAR04A	28JUN04A	100	
PG170	Submission of Site Record Photo (ER 2.1.9)	7	08MAR04A	30MAR04A	100	
PG180	Submission of Survey Quality Plan(ER App 2A 1.9)	30	08MAR04A	17JUN04A	100	
PG112	Submission of Safety Plan (SCC35)	35	12MAR04A	22APR04A	100	
PG090	Submit Survey Reference Drawing (ER 2.1.8)	7	13MAR04A	07MAY04A	100	
PG020	SO Approval of Draft Works Programme	30	20MAR04A	05JUN04A	100	
PG200	Submit U/G Service Detection Equipment Details	7	10MAY04A	14MAY04A	100	
PG025	Submit Works Programme (SCC27 & ER5)	30	11MAY04A	04JUN04A	100	
PG120	Submit Traffic Arrangement & Control Scheme	14	31MAY04A	30JUN04A	100	
PG130	Submit Traffic Contingency Plan (ER14.1.31)	45	31MAY04A	21JUN04A	100	
PR000	Materials Submission & Approval	150	31MAY04A	28FEB05A	100	
PG030	SO Approval Works Programme (SSC27 & ER5)	14	04JUN04A	08JUL04A	100	
MANUFACTURING & DELIVERY						
PR110	Bearing joint procurement, testing & approval	60	11NOV04A	27JAN05A	100	
PR100	Fabrication & Delivery of Traveller Formworks	100	18NOV04A	09MAY05A	100	
PR120	Movement joint procurement, testing & approval	120	24MAR05A	12SEP05A	100	
METHODS COORDINATION & INTERFACE MANAGEMENT						
CO020	Subcontractor Management Plan	30	23FEB04A	23MAR04A	100	
CO100	Set up of Traffic Management Liaison Group(TMLG)	24	30MAR04A	22APR04A	100	
MT010	Method Statement Subm.: Pre-drilling	14	02APR04A	30APR04A	100	
MT030	Method Statement Subm.: Bored Piling	14	27APR04A	10MAY04A	100	
MT012	Method Statement: Pre-drilling - Eng R&A	14	30APR04A	30JUN04A	100	
MT032	Method Statement, Bored Piling - Eng. R&A	14	14MAY04A	02AUG04A	100	
MT080	Method Statement Subm.: Balanced Cantilever	28	01OCT04A	30MAR05A	100	
MT100	Method Statement Subm.: Bridge PileCaps/Dolphins	28	01OCT04A	25OCT04A	100	
MT110	Method Statement Subm.: Decking	28	16FEB05A	30MAR05A	100	
MT070	Method Statement Subm.: Piers	28	01MAR05A	10MAR05A	100	
SITE WORKS						
PSW010	Contractor Mobilization	19	08MAR04A	29MAR04A	100	
PSW060	Control Point Survey(ER 2.1 App. 2A)	21	08MAR04A	28MAR04A	100	

2004 2005 2006 2007
M A M J 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 J F M A M J

DATE OF TENDER ACCEPTANCE
COMMENCEMENT OF WORKS(C.O.W.)
COMPLET
COMPLETION PE
COMPLET
MAINTENANCE PERIOD EXCEPT ESTABLISHMENT WORKS
POSSESSION OF PORTION C(AT C.O.W)
SECT. I MAY BE ORDERED WITHIN 52 DAYS OF C.O.W.
SECT. II MAY BE ORDERED WITHIN 52 DAYS C.O.W.
SECT. III MAY BE ORDERED WITHIN 237 DAYS C.O.W.
POSSESSION OF PORTION A(388 DAYS AFTER C.O.W.)
POSSESSION OF PORTION B(388 DAYS AFTER C.O.W.)
1.1 Submit Contract Required Documents (30 Days)
1.2 Provide Transport & Survey Equipment
1.3 Complete Supervising Officer's Accommodation
1.4 183 Days After Commencement of The Works
1.5 365 Days After Commencement of The Works
1.6 548 Days After Commencement of The Works
1.7 730 Days After Commencement of The Works
1.8 913 Days After Commencement of The Works
1.9 On Completion of The Works(ex Establishment)
Submit Draft Works Programme (ER App 5A)
Submit First Three Month Rolling Programme
Submission of Waste Management Plan (ER 9.1)
Submission of Draft Safety Plan (SCC13)
Submission of Site Layout Plan for Work Area A,B
Submission of Quality Plan(ER 6.1)
Submit Contractor's Staffing Proposal (ER 1.6.1)
Apply Permits & Approved By Relevants Parties
Apply the Marine Department Notice (ER 2.5.2)
Submission of EM&A Manual (ER 8.2.2)
Submission of Site Record Photo (ER 2.1.9)
Submission of Survey Quality Plan(ER App 2A 1.9)
Submission of Safety Plan (SCC35)
Submit Survey Reference Drawing (ER 2.1.8)
SO Approval of Draft Works Programme
Submit U/G Service Detection Equipment Details
Submit Works Programme (SCC27 & ER5)
Submit Traffic Arrangement & Control Scheme
Submit Traffic Contingency Plan (ER14.1.31)
Materials Submission & Approval
SO Approval Works Programme (SSC27 & ER5)
Bearing joint procurement, testing & approval
Fabrication & Delivery of Traveller Formworks
Movement joint procurement, testing & approval
Subcontractor Management Plan
Set up of Traffic Management Liaison Group(TMLG)
Method Statement Subm.: Pre-drilling
Method Statement Subm.: Bored Piling
Method Statement: Pre-drilling - Eng R&A
Method Statement, Bored Piling - Eng. R&A
Method Statement Subm.: Balanced Cantilever
Method Statement Subm.: Bridge PileCaps/Dolphins
Method Statement Subm.: Decking
Method Statement Subm.: Piers
Contractor Mobilization
Control Point Survey(ER 2.1 App. 2A)

Data Date 23FEB04
Start Date 09FEB08
Finish Date 15APR08
Run Date 08MAY04 15:00

Early Bar
Progress Bar
Critical Activity

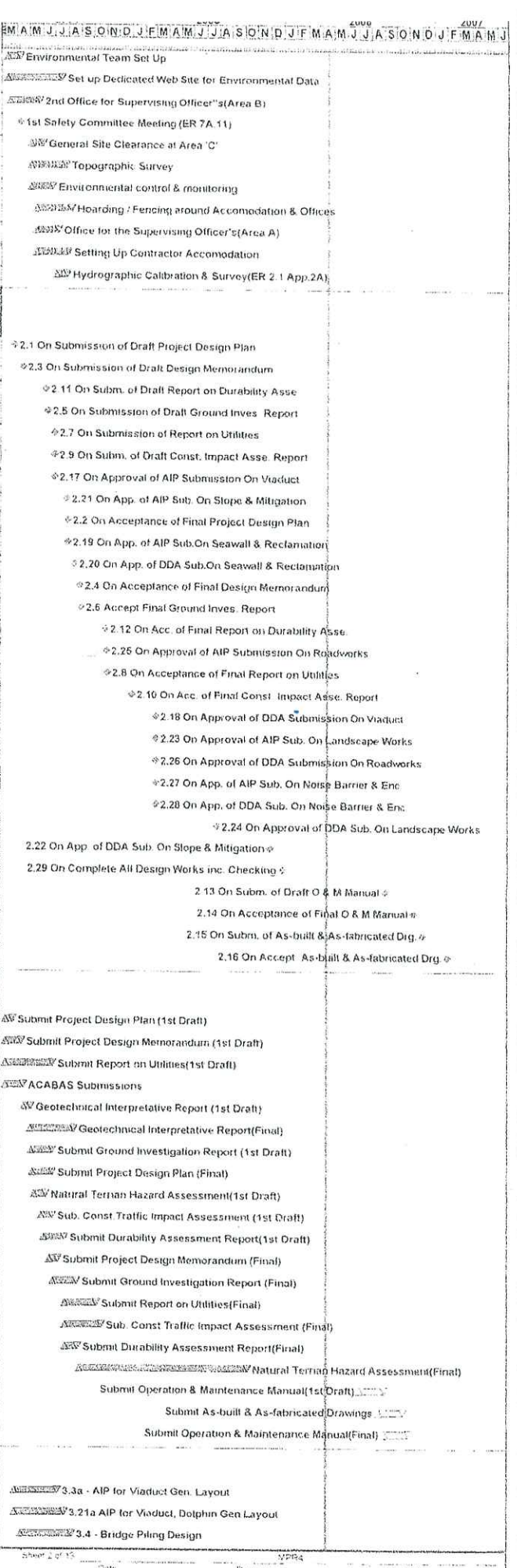
Gammon Construction Limited

MASTER PROGRAMME REV 03

Sheet 1 of 13

Date 08MAY04 | Revision MASTER PROGRAMME, REVISION 03 | Checked TCW | Approved

ID	Description	Orig Dur	Early Start	Early Finish	% Comp	Total Float
PSW160	Environmental Team Set Up	30	08MAR04A	06APR04A	100	
PSW020	Set up Dedicated Web Site for Environmental Data	30	08MAR04A	15JUL04A	100	
PSW120	2nd Office for Supervising Officer"s(Area B)	14	12MAR04A	24MAY04A	100	
PSW130	1st Safety Committee Meeting (ER 7A.11)	0		06APR04A	100	
PSW030	General Site Clearance at Area 'C'	120	04MAY04A	31MAY04A	100	
PSW080	Topographic Survey	21	04MAY04A	26JUL04A	100	
PSW100	Environmental control & monitoring	60	04MAY04A	25JUN04A	100	
PSW020	Hoarding / Fencing around Accomodation & Offices	60	17MAY04A	09AUG04A	100	
PSW040	Office for the Supervising Officer's(Area A)	40	17MAY04A	06JUL04A	100	
PSW050	Setting Up Contractor Accomodation	30	17MAY04A	31JUL04A	100	
PSW090	Hydrographic Calibration & Survey(ER 2.1 App.2A)	60	03JUL04A	26JUL04A	100	
COASTAL STRUCTURE & DESIGN OF PERMANENT WORKS						
MILESTONES						
CC2MS010	2.1 On Submission of Draft Project Design Plan	0		25MAR04A	100	
CC2MS030	2.3 On Submission of Draft Design Memorandum	0		14APR04A	100	
CC2MS110	2.11 On Subm. of Draft Report on Durability Asse	0		09JUN04A	100	
CC2MS050	2.5 On Submission of Draft Ground Inves. Report	0		15JUN04A	100	
CC2MS070	2.7 On Submission of Report on Utilities	0		30JUN04A	100	
CC2MS090	2.9 On Subm. of Draft Const. Impact Asse. Report	0		30JUN04A	100	
CC2MS170	2.17 On Approval of AIP Submission On Viaduct	0		30JUN04A	100	
CC2MS210	2.21 On App. of AIP Sub. On Slope & Mitigation	0		29JUL04A	100	
CC2MS020	2.2 On Acceptance of Final Project Design Plan	0		31JUL04A	100	
CC2MS190	2.19 On App. of AIP Sub.On Seawall & Reclamation	0		31JUL04A	100	
CC2MS200	2.20 On App. of DDA Sub.On Seawall & Reclamation	0		16AUG04A	100	
CC2MS040	2.4 On Acceptance of Final Design Memorandum	0		30AUG04A	100	
CC2MS060	2.6 Accept Final Ground Inves. Report	0		31AUG04A	100	
CC2MS120	2.12 On Acc. of Final Report on Durability Asse	0		30OCT04A	100	
CC2MS250	2.25 On Approval of AIP Submission On Roadworks	0		31OCT04A	100	
CC2MS080	2.8 On Acceptance of Final Report on Utilities	0		04NOV04A	100	
CC2MS100	2.10 On Acc. of Final Const. Impact Asse. Report	0		30DEC04A	100	
CC2MS180	2.18 On Approval of DDA Submission On Viaduct	0		28FEB05A	100	
CC2MS230	2.23 On Approval of AIP Sub. On Landscape Works	0		28FEB05A	100	
CC2MS260	2.26 On Approval of DDA Submission On Roadworks	0		28FEB05A	100	
CC2MS270	2.27 On App. of AIP Sub. On Noise Barrier & Enc	0		28FEB05A	100	
CC2MS280	2.28 On App. of DDA Sub. On Noise Barrier & Enc.	0		28FEB05A	100	
CC2MS240	2.24 On Approval of DDA Sub. On Landscape Works	0		28JUL05A	100	
CC2MS220	2.22 On App. of DDA Sub. On Slope & Mitigation	0		30NOV05A	100	
CC2MS290	2.29 On Complete All Design Works inc. Checking	0		30DEC05A	100	
CC2MS130	2.13 On Subm. of Draft O & M Manual	0		06SEP06	0	2
CC2MS140	2.14 On Acceptance of Final O & M Manual	0		15NOV06	0	2
CC2MS150	2.15 On Subm. of As-built & As-fabricated Drg	0		07DEC06	0	2
CC2MS160	2.16 On Accept. As-built & As-fabricated Drg	0		06FEB07	0	2
DESIGN WORKS						
SUBMISSION SCHEDULE						
CC2DSS010	Submit Project Design Plan (1st Draft)	14	08MAR04A	25MAR04A	100	
CC2DSS030	Submit Project Design Memorandum (1st Draft)	60	08MAR04A	14APR04A	100	
CC2DSS070	Submit Report on Utilities(1st Draft)	60	08MAR04A	30JUN04A	100	
CC2DSS170	ACABAS Submissions	60	08MAR04A	21APR04A	100	
CC2DSS190	Geotechnical Interpretative Report (1st Draft)	60	20APR04A	07MAY04A	100	
CC2DSS200	Geotechnical Interpretative Report(Final)	60	07MAY04A	20AUG04A	100	
CC2DSS050	Submit Ground Investigation Report (1st Draft)	90	10MAY04A	30JUN04A	100	
CC2DSS020	Submit Project Design Plan (Final)	60	12MAY04A	30JUN04A	100	
CC2DSS210	Natural Terrian Hazard Assessment(1st Draft)	90	17MAY04A	15JUN04A	100	
CC2DSS090	Sub. Const Traffic Impact Assessment (1st Draft)	60	01JUN04A	30JUN04A	100	
CC2DSS120	Submit Durability Assessment Report(1st Draft)	60	09JUN04A	30JUL04A	100	
CC2DSS040	Submit Project Design Memorandum (Final)	60	23JUN04A	14JUL04A	100	
CC2DSS060	Submit Ground Investigation Report (Final)	60	01JUL04A	26AUG04A	100	
CC2DSS080	Submit Report on Utilities(Final)	60	31JUL04A	12OCT04A	100	
CC2DSS100	Sub. Const Traffic Impact Assessment (Final)	60	31JUL04A	25OCT04A	100	
CC2DSS130	Submit Durability Assessment Report(Final)	60	31JUL04A	29AUG04A	100	
CC2DSS220	Natural Terrian Hazard Assessment(Final)	60	01SEP04A	12OCT05A	100	
CC2DSS140	Submit Operation & Maintenance Manual(1st Draft)	60	09JUL06	06SEP06	0	2
CC2DSS160	Submit As-built & As-fabricated Drawings	60	25AUG06	23OCT06	0	2
CC2DSS150	Submit Operation & Maintenance Manual(Final)	60	07SEP06	05NOV06	0	12
VIADUCT						
VIADUCT SUBSTRUCTURE						
DCS100	3.3a - AIP for Viaduct Gen. Layout	30	31MAR04A	14JUL04A	100	
DCS120	3.21a AIP for Viaduct, Dolphin Gen Layout	30	31MAR04A	28JUL04A	100	
DCS140	3.4 - Bridge Piling Design	75	15APR04A	17AUG04A	100	



Start Date 25FEB04 | Early Bar | MPR4 | Gammon Construction Limited | Sheet 2 of 15 | Date 09MAY06 | Revision MASTER PROGRAMME REVISION 03 | Checked TCW | Approved

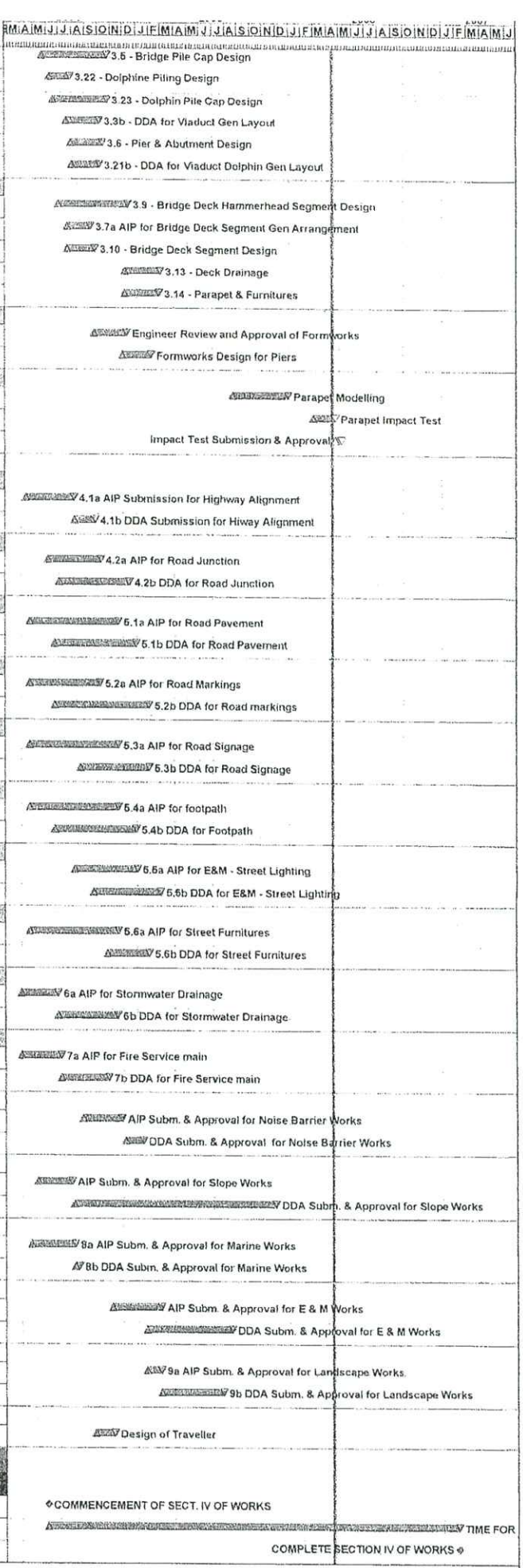
Finish Date 09FEB07 | Progress Bar

Data Date 15APR04 | Critical Activity

Run Date 09MAY06 14:29

MASTER PROGRAMME REV 03

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	% Comp	Total Float
DCS150	3.5 - Bridge Pile Cap Design	55	22MAY04A	25OCT04A	100	
DCS160	3.22 - Dolphine Piling Design	35	09JUN04A	28JUL04A	100	
DCS170	3.23 - Dolphin Pile Cap Design	36	16JUN04A	25OCT04A	100	
DCS110	3.3b - DDA for Viaduct Gen Layout	45	20JUL04A	06OCT04A	100	
DCS180	3.6 - Pier & Abutment Design	60	31JUL04A	14OCT04A	100	
DCS130	3.21b - DDA for Viaduct Dolphin Gen Layout	45	01AUG04A	06OCT04A	100	
VIADUCT SUPERSTRUCTURE						
DCS230	3.9 - Bridge Deck Hammerhead Segment Design	60	30JUN04A	13DEC04A	100	
DCS200	3.7a AIP for Bridge Deck Segment Gen Arrangement	60	22JUL04A	14SEP04A	100	
DCS240	3.10 - Bridge Deck Segment Design	105	22JUL04A	25SEP04A	100	
DCS270	3.13 - Deck Drainage	45	06DEC04A	28FEB05A	100	
DCS280	3.14 - Parapet & Furnitures	45	06DEC04A	25FEB05A	100	
VIADUCT FORMWORKS						
DCS410	Engineer Review and Approval of Formworks	14	23SEP04A	10DEC04A	100	
DCS400	Formworks Design for Piers	40	01DEC04A	05FEB05A	100	
VIADUCT PARAPET						
DCS510	Parapet Modelling	60	20AUG05A	31DEC05A	100	
DCS520	Parapet Impact Test	45	01MAR06A	22APR06	90	3
DCS530	Impact Test Submission & Approval	14	23APR06	06MAY06	0	3
ROADWORKS						
4.1 HIGHWAY ALIGNMENT						
CC2RD010	4.1a AIP Submission for Highway Alignment	90	14APR04A	06AUG04A	100	
CC2RD020	4.1b DDA Submission for Hiway Alignment	50	07AUG04A	24SEP04A	100	
4.2 ROAD JUNCTION						
CC2RD030	4.2a AIP for Road Junction	80	05JUN04A	09OCT04A	100	
CC2RD040	4.2b DDA for Road Junction	30	30JUN04A	16DEC04A	100	
5.1 PAVEMENT						
CC2RD050	5.1a AIP for Road Pavement	90	21APR04A	18NOV04A	100	
CC2RD060	5.1b DDA for Road Pavement	30	21JUN04A	30DEC04A	100	
5.2 ROAD MARKINGS						
CC2RD070	5.2a AIP for Road Markings	90	21APR04A	06OCT04A	100	
CC2RD080	5.2b DDA for Road markings	30	21JUN04A	02FEB05A	100	
5.3 ROAD SIGNAGE						
CC2RD090	5.3a AIP for Road Signage	90	21APR04A	19NOV04A	100	
CC2RD100	5.3b DDA for Road Signage	30	21AUG04A	02FEB05A	100	
5.4 FOOTPATH						
CC2RD110	5.4a AIP for footpath	90	21APR04A	18NOV04A	100	
CC2RD120	5.4b DDA for Footpath	30	21JUN04A	30DEC04A	100	
5.5 ROAD LIGHTING						
CC2RD130	5.5a AIP for E&M - Street Lighting	90	06AUG04A	03JAN05A	100	
CC2RD140	5.5b DDA for E&M - Street Lighting	30	21SEP04A	28FEB05A	100	
5.6 STREET FURNITURES						
CC2RD150	5.6a AIP for Street Furnitures	90	21APR04A	19NOV04A	100	
CC2RD160	5.6b DDA for Street Furnitures	30	21OCT04A	02FEB05A	100	
6.1 STORMWATER DRAINAGE						
CC2RD170	6a AIP for Stormwater Drainage	90	31MAR04A	28JUN04A	100	
CC2RD180	6b DDA for Stormwater Drainage	30	29JUN04A	16NOV04A	100	
7.1 FIRE SERVICE MAIN						
CC2RD190	7a AIP for Fire Service main	90	31MAR04A	06JUL04A	100	
CC2RD200	7b DDA for Fire Service main	30	07JUL04A	26OCT04A	100	
NOISE BARRIER/ENCLOUSER						
CC2NBD010	AIP Subm. & Approval for Noise Barrier Works	60	25AUG04A	26NOV04A	100	
CC2NBD020	DDA Subm. & Approval for Noise Barrier Works	30	06DEC04A	15JAN05A	100	
SLOPEWORKS						
CC2SD010	AIP Subm. & Approval for Slope Works	90	10MAY04A	29JUL04A	100	
CC2SD020	DDA Subm. & Approval for Slope Works	30	03AUG04A	30NOV05A	100	
MARINE WORKS						
CC2MWD010	8a AIP Subm. & Approval for Marine Works	90	23APR04A	05AUG04A	100	
CC2MWD020	8b DDA Subm. & Approval for Marine Works	30	07AUG04A	16AUG04A	100	
E & M WORKS						
CC2EMD010	AIP Subm. & Approval for E & M Works	90	04NOV04A	26FEB05A	100	
CC2EMD020	DDA Subm. & Approval for E & M Works	30	24JAN05A	17AUG05A	100	
LANDSCAPE WORKS						
CC2LWD010	9a AIP Subm. & Approval for Landscape Works	90	25JAN05A	28FEB05A	100	
CC2LWD020	9b DDA Subm. & Approval for Landscape Works	30	01MAR05A	28JUL05A	100	
GENERAL						
DS160	Design of Traveller	60	22SEP04A	08NOV04A	100	
C CENTRE 6-SEC IV SLOPE/ NTH UPGRADE & MITIGATE						
KEY DATE						
CC6KD010	COMMENCEMENT OF SECT. IV OF WORKS	0	01JUN04A		100	
CC6KD020	TIME FOR COMPLETION SECT IV OF WORKS	983	01JUN04A	08FEB07	70	0
CC6KD030	COMPLETE SECTION IV OF WORKS	0		08FEB07*	0	0



Start Date	23FEB04
Finish Date	08FEB08
Data Date	15APR06
Run Date	08MAY06 15:03

Early Bar
Progress Bar
Critical Activity

MPR4

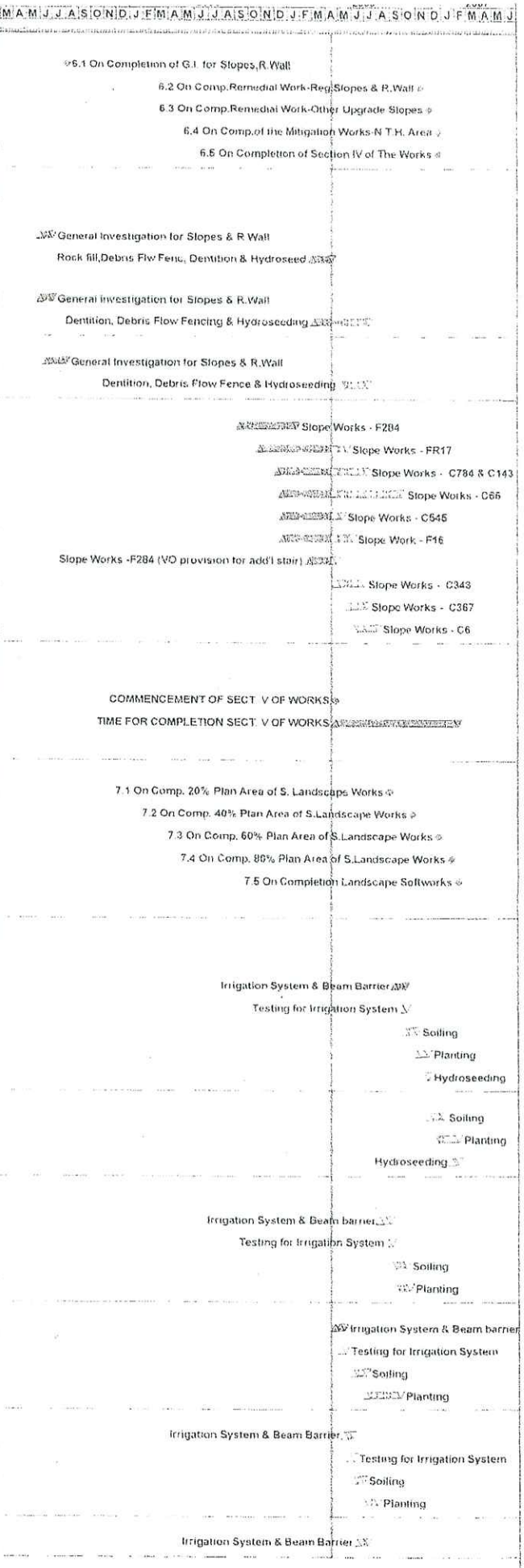
Gammon Construction Limited

MASTER PROGRAMME, REV. 03

MPR4

Date	Revision	Checked	Approved
08MAY06	MASTER PROGRAMME REVISION 03	TOW NL	

ID	Description	Orig Dur	Early Start	Early Finish	% Comp	Total Float
MILESTONES						
CC6MS010	6.1 On Completion of G.I. for Slopes R Wall	0		02AUG04A	100	
CC6MS020	6.2 On Comp Remedial Work-Reg Slopes & R Wall	0		11NOV06	0	46
CC6MS030	6.3 On Comp Remedial Work-Other Upgrade Slopes	0		02DEC06	0	46
CC6MS040	6.4 On Comp of the Mitigation Works-N.T.H. Area	0		23DEC06	0	46
CC6MS050	6.5 On Completion of Section IV of The Works	0		23DEC06	0	46
SITE WORKS						
N.T.H MITIGATION WORKS						
SIU LAM INTERCHANGE STUDY AREA						
CC6SSI010	General Investigation for Slopes & R Wall	30	01JUN04A	30JUN04A	100	
CC6SSI020	Rock fill,Debris Flw Fenc, Dentition & Hydroseed	60	01MAR06A	15APR06A	100	
SIU LAM LINK ROAD STUDY AREA						
CC6SSL010	General Investigation for Slopes & R Wall	30	01JUN04A	30JUN04A	100	
CC6SSL020	Dentition, Debris Flow Fencing & Hydroseeding	60	06MAR06A	12JUL06	80	162
TAI LAM KOK DISTRIBUTOR STUDY AREA						
CC6SSK010	General Investigation for Slopes & R Wall	30	15JUN04A	31JUL04A	100	
CC6SSK030	Dentition, Debris Flow Fence & Hydroseeding	45	10MAY06	10JUL06	0	164
SLOPE WORKS						
CC6SLW005	Slope Works - F284	50	12SEP05A	21JAN06A	100	
CC6SLW040	Slope Works - FR17	60	27OCT05A	20MAY06	80	19
CC6SLW030	Slope Works - C784 & C143	60	09DEC05A	06JUL06	20	129
CC6SLW020	Slope Works - C66	60	19DEC05A	30SEP06	20	36
CC6SLW010	Slope Works - C545	60	20DEC05A	10MAY06	85	126
CC6SLW050	Slope Work - F16	75	20DEC05A	03JUN06	40	126
CC6SLW035	Slope Works -F284 (VO provision for add'l stair)	21	20FEB06A	27APR06	50	180
CC6SLW015	Slope Works - C343	45	29APR06	29JUN06	0	129
CC6SLW025	Slope Works - C367	35	23MAY06	06JUL06	0	129
CC6SLW060	Slope Works - C6	45	05JUN06	03AUG06	0	128
S. CENTRE 2 SECT V LANDSCAPE & ESTABLISHMENT WORKS						
KEY DATE						
CC7KD010	COMMENCEMENT OF SECT V OF WORKS	0	26APR06		0	0
CC7KD020	TIME FOR COMPLETION SECT V OF WORKS	286	26APR06	08FEB07	0	0
CC7KD030	COMPLETE SECTION V OF WORKS	0		09FEB08*	0	0
MILESTONES						
CC7MS010	7.1 On Comp. 20% Plan Area of S. Landscape Works	0		28AUG06	0	3
CC7MS020	7.2 On Comp. 40% Plan Area of S.Landscape Works	0		22OCT06	0	3
CC7MS030	7.3 On Comp. 60% Plan Area of S.Landscape Works	0		21DEC06	0	3
CC7MS040	7.4 On Comp. 80% Plan Area of S.Landscape Works	0		21JAN07	0	3
CC7MS050	7.5 On Completion Landscape Softworks	0		08FEB07*	0	0
CC7MS060	7.6 On Completion Establishment Works	0		08FEB08*	0	0
SITE WORKS						
SIU LAM R/A						
SIU LAM R/A						
CC7SLS010	Irrigation System & Beam Barrier	18	12SEP06	06OCT06	0	0
CC7SLS020	Testing for Irrigation System	6	30SEP06	10OCT06	0	0
CC7SLS030	Soiling	18	09OCT06	01NOV06	0	1
CC7SLS040	Planting	24	02NOV06	29NOV06	0	1
CC7SLS050	Hydroseeding	6	23NOV06	29NOV06	0	1
SLOPE F17						
CC7SLS070	Soiling	24	02DEC06	03JAN07	0	1
CC7SLS080	Planting	42	16DEC06	07FEB07	0	1
CC7SLS090	Hydroseeding	14	23JAN07	07FEB07	0	1
ROAD WIDENING SECTION						
CH. 1800 ~ CH. 2000						
CC7RWS140	Irrigation System & Beam barrier	21	09AUG06	01SEP06	0	101
CC7RWS150	Testing for Irrigation System	6	29AUG06	06SEP06	0	93
CC7RWS155	Soiling	24	07SEP06	10OCT06	0	93
CC7RWS165	Planting	25	13SEP06	18OCT06	0	91
SEAWARD INCL. CENTRAL BARRIER, CH. 2600 ~ 3076						
CC7RWS100	Irrigation System & Beam barrier	15	26APR06	15MAY06	0	0
CC7RWS110	Testing for Irrigation System	6	11MAY06	18MAY06	0	118
CC7RWS130	Soiling	24	05JUN06	06JUL06	0	107
CC7RWS120	Planting	60	07JUL06	25SEP06	0	107
SEAWARD INCL. CENTRAL BARRIER, CH. 2000 ~ 2200						
CC7RWRS150	Irrigation System & Beam Barrier	15	16MAY06	02JUN06	0	101
CC7RWS160	Testing for Irrigation System	6	29MAY06	06JUN06	0	86
CC7RWS170	Soiling	18	07JUN06	28JUN06	0	147
CC7RWS180	Planting	24	29JUN06	02AUG06	0	147
LANDWARD, CH. 2200 ~ 2600						
CC7RWS200	Irrigation System & Beam Barrier	23	13JUN06	10JUL06	0	101



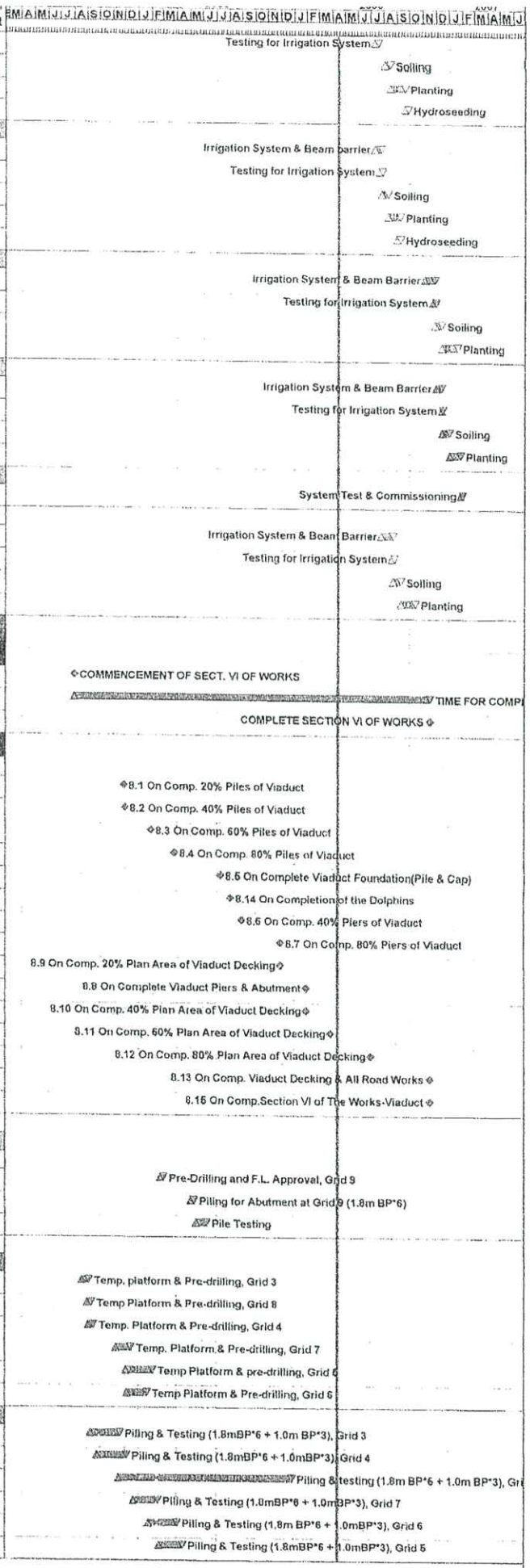
Start Date 23FEB04 | Early Bar | MSRA | Sheet 4 of 13 | MPS#

Finish Date 08FEB08 | Progress Bar | Gammon Construction Limited | Date | Revision | Checked | Approved

Data Date 26APR06 | Critical Activity | MASTER PROGRAMME REV 03 | 09MAY06 | MASTER PROGRAMME REVISION 03 | TSK

Print Date 09MAY06 10:03

ID	Description	Dur	Start	Finish	Comp	Float
CC7RWS210	Testing for Irrigation System	6	11JUL06	18JUL06	0	117
CC7RWS220	Soiling	12	02AUG06	15AUG06	0	105
CC7RWS230	Planting	25	17AUG06	19SEP06	0	105
CC7RWS240	Hydroseeding	6	20SEP06	26SEP06	0	110
LANDWARD, CH. 2000 ~ 2200						
CC7RWS300	Irrigation System & Beam barrier	14	11JUL06	26JUL06	0	101
CC7RWS310	Testing for Irrigation System	6	22JUL06	28JUL06	0	109
CC7RWS320	Soiling	12	26JUL06	10AUG06	0	109
CC7RWS330	Planting	21	11AUG06	08SEP06	0	109
CC7RWS340	Hydroseeding	6	02SEP06	08SEP06	0	125
SEAWARD INCL. CENTRAL BARRIER, CH. 2200 ~ 2600						
CC7RWS400	Irrigation System & Beam Barrier	21	06NOV06	29NOV06	0	0
CC7RWS410	Testing for Irrigation System	6	25NOV06	01DEC06	0	0
CC7RWS420	Soiling	14	29NOV06	14DEC06	0	6
CC7RWS430	Planting	28	15DEC06	20JAN07	0	6
LANDWARD, CH. 2600 ~ 3076						
CC7RWS500	Irrigation System & Beam Barrier	12	02DEC06	15DEC06	0	0
CC7RWS510	Testing for Irrigation System	4	14DEC06	18DEC06	0	0
CC7RWS520	Soiling	12	15DEC06	02JAN07	0	0
CC7RWS530	Planting	22	03JAN07	27JAN07	0	0
TESTING & COMMISSIONINGH						
CC7RWS540	System Test & Commissioning	7	28JAN07	03FEB07	0	0
TAI LAM KOK R/A						
CC7TLK200	Irrigation System & Beam Barrier	24	27JUL06	23AUG06	0	101
CC7TLK210	Testing for Irrigation System	4	22AUG06	26AUG06	0	93
CC7TLK220	Soiling	14	24AUG06	11SEP06	0	93
CC7TLK230	Planting	24	12SEP06	14OCT06	0	93
C CENTRE 8,9,10-SEC VI VIADUCT & NEW ROAD						
KEY DATE						
CC810KD010	COMMENCEMENT OF SECT. VI OF WORKS	0	01AUG04A		100	
CC810KD020	TIME FOR COMPLETION SECT. VI OF WORKS	832	01AUG04A	17NOV06	74	0
CC810KD030	COMPLETE SECTION VI OF WORKS	0		17NOV06*	0	0
COST CENTRE 8 - VIADUCT						
MILESTONES						
CC8MS010	8.1 On Comp. 20% Piles of Viaduct	0		27NOV04A	100	
CC8MS020	8.2 On Comp. 40% Piles of Viaduct	0		30NOV04A	100	
CC8MS030	8.3 On Comp. 60% Piles of Viaduct	0		30JAN05A	100	
CC8MS040	8.4 On Comp. 80% Piles of Viaduct	0		25MAR05A	100	
CC8MS050	8.5 On Complete Viaduct Foundation(Pile & Cap)	0		10JUL05A	100	
CC8MS140	8.14 On Completion of the Dolphins	0		03AUG05A	100	
CC8MS060	8.6 On Comp. 40% Piers of Viaduct	0		30AUG05A	100	
CC8MS070	8.7 On Comp. 80% Piers of Viaduct	0		30NOV05A	100	
CC8MS090	8.9 On Comp. 20% Plan Area of Viaduct Decking	0		30NOV05A	100	
CC8MS080	8.8 On Complete Viaduct Piers & Abutment	0		31JAN06A	100	
CC8MS100	8.10 On Comp. 40% Plan Area of Viaduct Decking	0		31JAN06A	100	
CC8MS110	8.11 On Comp. 60% Plan Area of Viaduct Decking	0		30MAR06A	100	
CC8MS120	8.12 On Comp. 80% Plan Area of Viaduct Decking	0		01JUL06	0	139
CC8MS130	8.13 On Comp. Viaduct Decking & All Road Works	0		17NOV06	0	0
CC8MS150	8.15 On Comp.Section VI of The Works-Viaduct	0		17NOV06	0	0
SITE WORKS						
VIADUCT FOUNDATION(Inc Dolphin)						
SOUTH SECTION						
CC8SVFS900	Pre-Drilling and F.I. Approval, Grid 9	45	24FEB05A	02MAR05A	100	
CC8SVFS910	Piling for Abutment at Grid 9 (1.8m BP*6)	65	04MAY05A	11MAY05A	100	
CC8SVFS060	Pile Testing	15	18MAY05A	09JUN05A	100	
LONG SPAN SECTION						
TEMPORARY WORKING PLATFORM						
CC8SVFL300	Temp. platform & Pre-drilling, Grid 3	34	19AUG04A	06SEP04A	100	
CC8SVFL800	Temp Platform & Pre-drilling, Grid 8	35	01SEP04A	11SEP04A	100	
CC8SVFL400	Temp. Platform & Pre-drilling, Grid 4	31	06SEP04A	16SEP04A	100	
CC8SVFL700	Temp. Platform & Pre-drilling, Grid 7	37	10NOV04A	16DEC04A	100	
CC8SVFL500	Temp Platform & pre-drilling, Grid 5	36	02DEC04A	03FEB05A	100	
CC8SVFL600	Temp Platform & Pre-drilling, Grid 6	29	06DEC04A	20JAN05A	100	
PILING & TESTING						
CC8SVFN040	Piling & Testing (1.8mBP*6 + 1.0m BP*3), Grid 3	47	09SEP04A	20NOV04A	100	
CC8SVFL030	Piling & Testing (1.8mBP*6 + 1.0mBP*3), Grid 4	45	25SEP04A	06DEC04A	100	
CC8SVFS030	Piling & testing (1.8m BP*6 + 1.0m BP*3), Grid 8	47	16NOV04A	30DEC05A	100	
CC8SVFL060	Piling & Testing (1.8mBP*6 + 1.0mBP*3), Grid 7	40	22DEC04A	17FEB05A	100	
CC8SVFL050	Piling & Testing (1.8m BP*6 + 1.0mBP*3), Grid 6	45	24JAN05A	01APR05A	100	
CC8SVFL040	Piling & Testing (1.8mBP*6 + 1.0mBP*3), Grid 5	43	20FEB05A	15APR05A	100	



Start Date	23FEB04
Finish Date	09FEB06
Data Date	15APR05
Run Date	08MAY06 15:03

Early Bar
Progress Bar
Critical Activity

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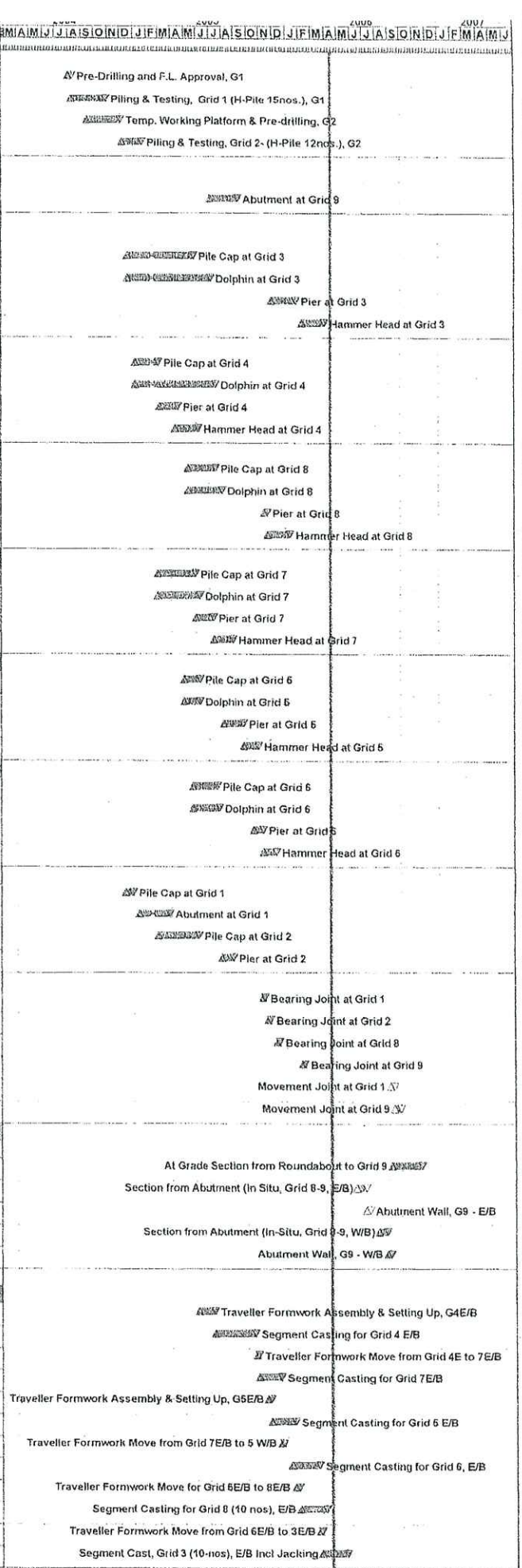
Gammon Construction Limited

MASTER PROGRAMME, REV. 03

MPR4

Date	Revision	Checked	Approved
09MAY06	MASTER PROGRAMME, REVISION 03	TOW	
		NL	

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	% Comp	Total Float
NORTH SECTION						
CC8SVFN010	Pre-Drilling and F.L. Approval, G1	45	01AUG04A	12AUG04A	100	
CC8SVFN050	Piling & Testing, Grid 1 (H-Pile 15nos.), G1	60	09AUG04A	28OCT04A	100	
CC8SVFN035	Temp. Working Platform & Pre-drilling, G2	30	16SEP04A	03DEC04A	100	
CC8SVFN030	Piling & Testing, Grid 2- (H-Pile 12nos.), G2	40	06DEC04A	20JAN05A	100	
VIADUCT CAPS,PIERS,ABUTMENTS & DOLPHINS						
SOUTH SECTION						
CC8SVCSU20	Abutment at Grid 9	55	04JUL05A	09SEP05A	100	
LONG SPAN SECTION						
PILE CAP,DOLPHIN,PIER & HAMMER HEAD - GRID 3						
CC8SVCNC30	Pile Cap at Grid 3	36	20DEC04A	26MAY05A	100	
CC8SVCNP10	Dolphin at Grid 3	33	20DEC04A	07JUL05A	100	
CC8SVCNE20	Pier at Grid 3	26	28NOV05A	24JAN06A	100	
CC8SVCNR10	Hammer Head at Grid 3	30	08FEB06A	31MAR06A	100	
PILE CAP,DOLPHIN,PIER & HAMMER HEAD - GRID 4						
CC8SVCLC10	Pile Cap at Grid 4	33	07JAN05A	01MAR05A	100	
CC8SVCLP10	Dolphin at Grid 4	31	07JAN05A	18JUL05A	100	
CC8SVCLE10	Pier at Grid 4	26	05MAR05A	19APR05A	100	
CC8SVCLR01	Hammer Head at Grid 4	25	12APR05A	06JUN05A	100	
PILE CAP,DOLPHIN,PIER & HAMMER HEAD - GRID 8						
CC8SVCSC10	Pile Cap at Grid 8	29	13MAY05A	18JUL05A	100	
CC8SVCSP10	Dolphin at Grid 8	35	13MAY05A	03AUG05A	100	
CC8SVCSE10	Pier at Grid 8	35	12NOV05A	19NOV05A	100	
CC8SVCSH10	Hammer Head at Grid 8	45	21NOV05A	11JAN06A	100	
PILE CAP,DOLPHIN,PIER & HAMMER HEAD - GRID 7						
CC8SVCLC40	Pile Cap at Grid 7	32	01MAR05A	31MAY05A	100	
CC8SVCLP40	Dolphin at Grid 7	25	01MAR05A	09JUN05A	100	
CC8SVCLE40	Pier at Grid 7	28	01JUN05A	13JUL05A	100	
CC8SVCLR31	Hammer Head at Grid 7	30	14JUL05A	29AUG05A	100	
PILE CAP,DOLPHIN,PIER & HAMMER HEAD - GRID 5						
CC8SVCLC20	Pile Cap at Grid 5	31	03MAY05A	10JUN05A	100	
CC8SVCLP20	Dolphin at Grid 5	32	03MAY05A	10JUN05A	100	
CC8SVCLE20	Pier at Grid 5	28	08AUG05A	23SEP05A	100	
CC8SVCLR11	Hammer Head at Grid 5	35	24SEP05A	29OCT05A	100	
PILE CAP,DOLPHIN,PIER & HAMMER HEAD - GRID 6						
CC8SVCLC30	Pile Cap at Grid 6	30	23MAY05A	23JUL05A	100	
CC8SVCLP30	Dolphin at Grid 6	25	23MAY05A	28JUL05A	100	
CC8SVCLE30	Pier at Grid 6	30	17OCT05A	08NOV05A	100	
CC8SVCLR21	Hammer Head at Grid 6	30	09NOV05A	10DEC05A	100	
NORTH SECTION						
CC8SVCNU40	Pile Cap at Grid 1	20	14DEC04A	30DEC04A	100	
CC8SVCNU35	Abutment at Grid 1	35	14JAN05A	29MAR05A	100	
CC8SVCNC10	Pile Cap at Grid 2	20	28FEB05A	06JUN05A	100	
CC8SVCNE10	Pier at Grid 2	21	02AUG05A	30AUG05A	100	
BEARINGS & MOVEMENT JOINTS						
CC8SVBJS10	Bearing Joint at Grid 1	10	07NOV05A	12NOV05A	100	
CC8SVBJS20	Bearing Joint at Grid 2	10	22NOV05A	26NOV05A	100	
CC8SVBJN20	Bearing Joint at Grid 8	10	12DEC05A	17DEC05A	100	
CC8SVBJN10	Bearing Joint at Grid 9	10	08FEB06A	11FEB06A	100	
CC8SVMJN10	Movement Joint at Grid 1	10	04SEP06	14SEP06	0	9
CC8SVMJS10	Movement Joint at Grid 9	10	15SEP06	28SEP06	0	9
VIADUCT DECKING(BALANCED CANTILEVER/CAST INSITU)						
SOUTH SECTION						
CC8SVDS025	At Grade Section from Roundabout to Grid 9	90	05SEP06A	17NOV06	60	0
CC8SVDS035	Section from Abutment (In Situ, Grid 8-9, E/B)	16	15JUN06	07JUL06	0	9
CC8SVDS055	Abutment Wall, G9 - E/B	7	08JUL06	15JUL06	0	38
CC8SVDS045	Section from Abutment (In-Situ, Grid 8-9, W/B)	16	07AUG06	26AUG06	0	0
CC8SVDS065	Abutment Wall, G9 - W/B	7	28AUG06	06SEP06	0	0
LONG SPAN SECTION						
LONG SPAN E/B						
CC8SVDL025	Traveller Formwork Assembly & Setting Up, G4E/B	59	06JUN05A	15JUL05A	100	
CC8SVDL030	Segment Casting for Grid 4 E/B	63	16JUL05A	19OCT05A	100	
CC8SVDL035	Traveller Formwork Move from Grid 4E to 7E/B	7	22OCT05A	27OCT05A	100	
CC8SVDL060	Segment Casting for Grid 7E/B	60	28OCT05A	18DEC05A	100	
CC8SVDL140	Traveller Formwork Assembly & Setting Up, G5E/B	10	18NOV05A	26NOV05A	100	
CC8SVDL040	Segment Casting for Grid 5 E/B	60	27NOV05A	19JAN06A	100	
CC8SVDL065	Traveller Formwork Move from Grid 7E/B to 5 W/B	7	19DEC05A	24DEC05A	100	
CC8SVDL050	Segment Casting for Grid 6, E/B	60	13JAN06A	16MAR06A	100	
CC8SVDL042	Traveller Formwork Move for Grid 5E/B to 8E/B	7	20JAN06A	26JAN06A	100	
CC8SVDS020	Segment Casting for Grid 8 (10 nos), E/B	58	31JAN06A	01APR06A	100	
CC8SVDL045	Traveller Formwork Move from Grid 6E/B to 3E/B	7	17MAR06A	22MAR06A	100	
CC8SVDL020	Segment Cast, Grid 3 (10-nos), E/B Incl Jacking	58	23MAR06A	21MAY06	40	0



Start Date 23FEB04
Finish Date 08FEB06
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Early Bar
Progress Bar
Critical Activity

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MASTER PROGRAMME, REV. 03

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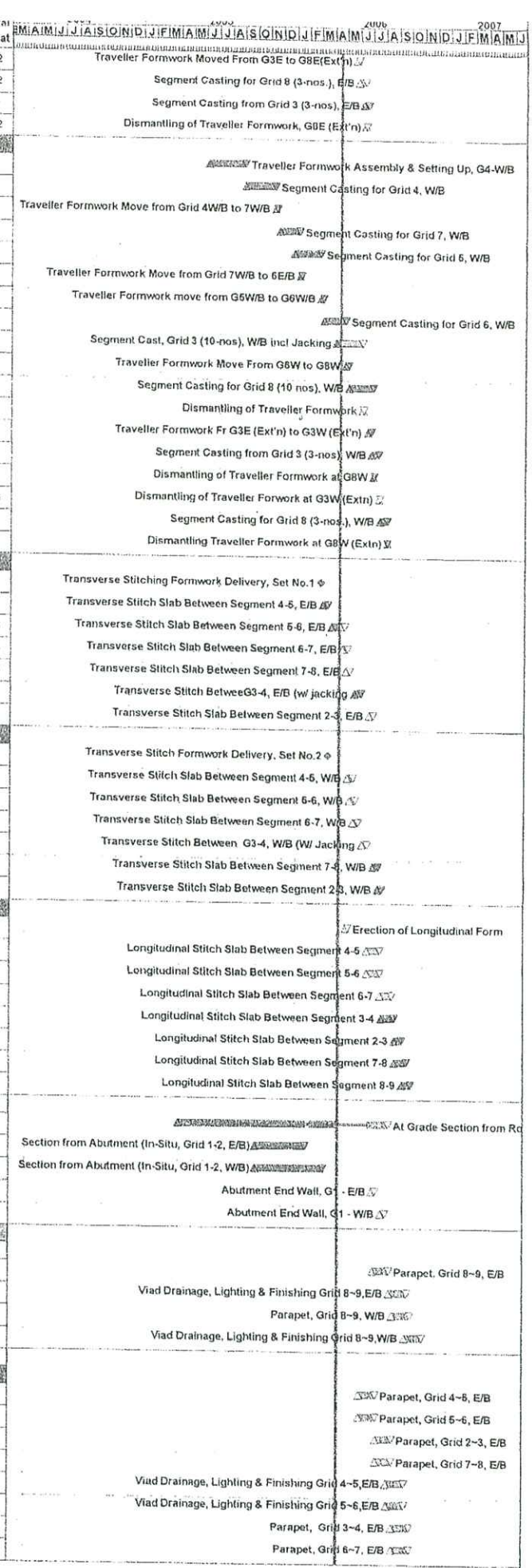
Date	Revision	Checked	Approved
09MAY05	MASTER PROGRAMME, REVISION 05	TOW	
		NL	

ID	Description	Orig Dur	Early Start	Early Finish	% Comp	Total Float
CC8SVDL028	Traveller Formwork Moved From G3E to G8E(Ext'n)	4	22MAY06	25MAY06	0	12
CC8SVDL130	Segment Casting for Grid 8 (3-nos.), E/B	16	26MAY06	10JUN06	0	12
CC8SVDL150	Segment Casting from Grid 3 (3-nos), E/B	15	05JUN06	19JUN06	0	0
CC8SVDL260	Dismantling of Traveller Formwork, G8E (Ext'n)	4	11JUN06	14JUN06	0	12
LONG SPAN W/B						
CC8SVDL031	Traveller Formwork Assembly & Setting Up, G4-W/B	55	06JUN05A	31AUG05A	100	
CC8SVDL032	Segment Casting for Grid 4, W/B	84	01SEP05A	08NOV05A	100	
CC8SDL037	Traveller Formwork Move from Grid 4W/B to 7W/B	7	09NOV05A	14NOV05A	100	
CC8SVDL062	Segment Casting for Grid 7, W/B	60	20NOV05A	06JAN06A	100	
CC8SVDL044	Segment Casting for Grid 5, W/B	58	26DEC05A	25FEB06A	100	
CC8SVDL067	Traveller Formwork Move from Grid 7W/B to 6E/B	7	07JAN06A	12JAN06A	100	
CC8SVDL122	Traveller Formwork move from G5W/B to G6W/B	7	26FEB06A	04MAR06A	100	
CC8SVDL052	Segment Casting for Grid 6, W/B	58	05MAR06A	28APR06	80	0
CC8SVDL022	Segment Cast, Grid 3 (10-nos), W/B incl Jacking	55	03APR06A	04JUN06	20	4
CC8SVDL021	Traveller Formwork Move From G6W to G8W	7	29APR06	05MAY06	0	0
CC8SVDS022	Segment Casting for Grid 8 (10 nos), W/B	57	06MAY06	01JUL06	0	0
CC8SVDL072	Dismantling of Traveller Formwork	4	05JUN06	08JUN06	0	4
CC8SVDS032	Traveller Formwork Fr G3E (Ext'n) to G3W (Ext'n)	7	20JUN06	26JUN06	0	0
CC8SVDL152	Segment Casting from Grid 3 (3-nos), W/B	18	27JUN06	14JUL06	0	0
CC8SVDS042	Dismantling of Traveller Formwork at G8W	4	02JUL06	05JUL06	0	0
CC8SVDL162	Dismantling of Traveller Forwork at G3W (Extn)	2	15JUL06	16JUL06	0	28
CC8SVDL132	Segment Casting for Grid 8 (3-nos.), W/B	18	18JUL06	04AUG06	0	0
CC8SVDL142	Dismantling Traveller Formwork at G8W (Extn)	2	05AUG06	06AUG06	0	0
TRANSVERSE STITCH - E/B						
CC8SVDL078	Transverse Stitching Formwork Delivery, Set No.1	0	28FEB06A		100	
CC8SVDL080	Transverse Stitch Slab Between Segment 4-5, E/B	14	06MAR06A	18MAR06A	100	
CC8SVDL090	Transverse Stitch Slab Between Segment 5-6, E/B	14	27MAR06A	26APR06	80	13
CC8SVDL100	Transverse Stitch Slab Between Segment 6-7, E/B	12	23APR06	04MAY06	0	13
CC8SVDL112	Transverse Stitch Slab Between Segment 7-8, E/B	12	30APR06	11MAY06	0	15
CC8SVDL070	Transverse Stitch BetweeG3-4, E/B (w/ jacking	14	22MAY06	04JUN06	0	0
CC8SVDL230	Transverse Stitch Slab Between Segment 2-3, E/B	12	24JUN06	05JUL06	0	21
TRANSVERSE STITCH - W/B						
CC8SVDL075	Transverse Stitch Formwork Delivery, Set No.2	0	20MAR06A		100	
CC8SVDL082	Transverse Stitch Slab Between Segment 4-5, W/B	14	05MAY06	18MAY06	0	13
CC8SVDL092	Transverse Stitch Slab Between Segment 5-6, W/B	12	12MAY06	23MAY06	0	15
CC8SVDL102	Transverse Stitch Slab Between Segment 6-7, W/B	12	19MAY06	30MAY06	0	13
CC8SVDL074	Transverse Stitch Between G3-4, W/B (W/ Jacking	14	09JUN06	22JUN06	0	4
CC8SVDL110	Transverse Stitch Slab Between Segment 7-8, W/B	12	06JUL06	17JUL06	0	0
CC8SVDL232	Transverse Stitch Slab Between Segment 2-3, W/B	12	15JUL06	26JUL06	0	0
LONGITUDINAL STITCH						
CC8SVDL250	Erection of Longitudinal Form	5	02MAY06*	06MAY06	0	69
CC8SVDL180	Longitudinal Stitch Slab Between Segment 4-5	30	23JUN06	22JUL06	0	4
CC8SVDL190	Longtudinal Stitch Slab Between Segment 5-6	30	23JUN06	22JUL06	0	22
CC8SVDL200	Longitudinal Stitch Slab Between Segment 6-7	30	23JUL06	21AUG06	0	22
CC8SVDL170	Longitudinal Stitch Slab Between Segment 3-4	30	27JUL06	25AUG06	0	0
CC8SVDL160	Longitudinal Stitch Slab Between Segment 2-3	20	26AUG06	14SEP06	0	0
CC8SVDL210	Longitudinal Stitch Slab Between Segment 7-8	30	27AUG06	25SEP06	0	0
CC8SVDL220	Longitudinal Stitch Slab Between Segment 8-9	20	15SEP06	04OCT06	0	0
NORTH SECTION						
CC8SVDN020	At Grade Section from Roundabout to Grid 1	90	01APR05A	12AUG05	70	36
CC8SVDN030	Section from Abutment (In-Situ, Grid 1-2, E/B)	90	01OCT05A	26JAN06A	100	
CC8SVDN040	Section from Abutment (In-Situ, Grid 1-2, W/B)	90	01OCT05A	11MAR06A	100	
CC8SVDN050	Abutment End Wall, G1 - E/B	7	06JUL06	13JUL06	0	53
CC8SVDN060	Abutment End Wall, G1 - W/B	7	27JUL06	05AUG06	0	36
VIADUCT PARPET, DRAINAGE, LIGHTING & FINISHING						
SOUTH SECTION - PARAPET, DRAINAGE,LIGHTING & FIN						
CC8SVPSA10	Parapet, Grid 8~9, E/B	30	08JUL06	15AUG06	0	9
CC8SVPSF10	Viad Drainage, Lighting & Finishing Grid 8~9,E/B	30	17AUG06	26SEP06	0	39
CC8SVPLA14	Parapet, Grid 8~9, W/B	30	24AUG06	04OCT06	0	12
CC8SVPSF12	Viad Drainage, Lighting & Finishing Grid 8~9,W/B	30	22SEP06	03NOV06	0	12
LONG SPAN SECTION-PARAPET,DRAINAGE,LIGHTING & FIN						
PARAPET DRAINAGE, LIGHTING & FINISH, EAST BOUND						
CC8SVPLA30	Parapet, Grid 4~5, E/B	30	06JUN06	14JUL06	0	3
CC8SVPLA40	Parapet, Grid 5~6, E/B	30	06JUN06	14JUL06	0	5
CC8SVPLA10	Parapet, Grid 2~3, E/B	30	15JUL06	24AUG06	0	5
CC8SVPLA60	Parapet, Grid 7~8, E/B	30	15JUL06	24AUG06	0	3
CC8SVPLF30	Viad Drainage, Lighting & Finishing Grid 4~5,E/B	30	12AUG06	21SEP06	0	42
CC8SVPLF40	Viad Drainage, Lighting & Finishing Grid 5~6,E/B	30	12AUG06	21SEP06	0	42
CC8SVPLA20	Parapet, Grid 3~4, E/B	30	25AUG06	05OCT06	0	5
CC8SVPLA50	Parapet, Grid 6~7, E/B	30	25AUG06	05OCT06	0	3



Start Date 23FEB04
Finish Date 09FEB08
Data Date 15APR06
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Early Bar
Progress Bar
Critical Activity

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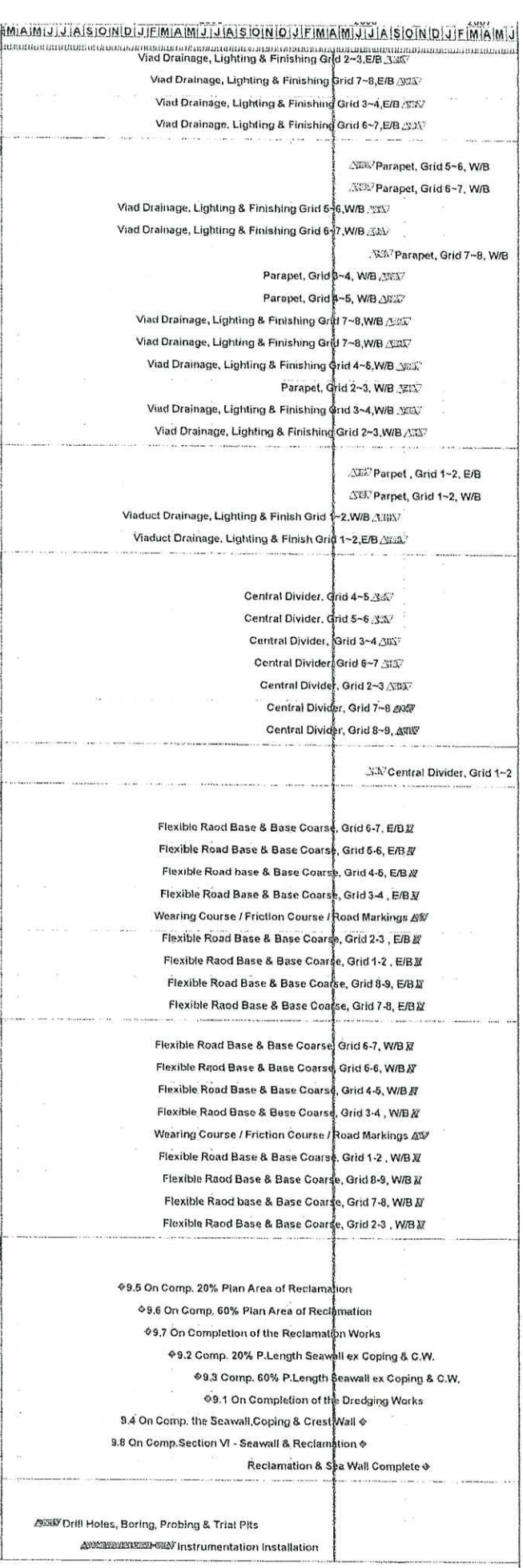
MASTER PROGRAMME, REV. 03

MPR4

Date	Revision	Checked	Approved
09MAY06	MASTER PROGRAMME, REVISION 03	TOW	
		NL	

ID	Description	Orig Dur	Early Start	Early Finish	% Comp	Total Float
CC8SVPLF10	Viad Drainage, Lighting & Finishing Grid 2~3,E/B	30	25AUG06	05OCT06	0	33
CC8SVPLF60	Viad Drainage, Lighting & Finishing Grid 7~8,E/B	30	22SEP06	03NOV06	0	12
CC8SVPLF20	Viad Drainage, Lighting & Finishing Grid 3~4,E/B	30	04OCT06	11NOV06	0	5
CC8SVPLF50	Viad Drainage, Lighting & Finishing Grid 6~7,E/B	30	06OCT06	14NOV06	0	3
PARAPET, DRAINAGE, LIGHTING & FINISH WEST BOUND						
CC8SVPPA42	Parapet, Grid 5~6, W/B	30	02JUN06	11JUL06	0	5
CC8SVPPA52	Parapet, Grid 6~7, W/B	30	02JUN06	11JUL06	0	24
CC8SVPPF42	Viad Drainage, Lighting & Finishing Grid 5~6,W/B	30	12JUL06	19AUG06	0	66
CC8SVPLF52	Viad Drainage, Lighting & Finishing Grid 6~7,W/B	30	12JUL06	19AUG06	0	66
CC8SVPLA62	Parapet, Grid 7~8, W/B	30	18JUL06	25AUG06	0	1
CC8SVPLA22	Parapet, Grid 3~4, W/B	30	11AUG06	20SEP06	0	1
CC8SVPLA32	Parapet, Grid 4~5, W/B	30	11AUG06	20SEP06	0	1
CC8SVPPF12	Viad Drainage, Lighting & Finishing Grid 7~8,W/B	30	26AUG06	06OCT06	0	32
CC8SVPLF62	Viad Drainage, Lighting & Finishing Grid 7~8,W/B	30	26AUG06	06OCT06	0	32
CC8SVPPF32	Viad Drainage, Lighting & Finishing Grid 4~5,W/B	30	21SEP06	02NOV06	0	13
CC8SVPLA12	Parapet, Grid 2~3, W/B	30	21SEP06	02NOV06	0	1
CC8SVPLF22	Viad Drainage, Lighting & Finishing Grid 3~4,W/B	30	21SEP06	02NOV06	0	13
CC8SVPLF12	Viad Drainage, Lighting & Finishing Grid 2~3,W/B	30	10OCT06	16NOV06	0	1
NORTH SECTION- PARAPET, DRAINAGE, LIGHTING & FIN						
CC8SVPNA20	Parpet , Grid 1~2, E/B	28	02JUN06	08JUL06	0	42
CC8SVPNA30	Parpet, Grid 1~2, W/B	28	02JUN06	08JUL06	0	26
CC8SVPNF30	Viaduct Drainage, Lighting & Finish Grid 1~2,W/B	35	27JUL06	12SEP06	0	49
CC8SVPNF20	Viaduct Drainage, Lighting & Finish Grid 1~2,E/B	35	14AUG06	29SEP06	0	36
VIADUCT CENTRAL DIVIDER						
LONG SPAN SECTION						
CC8SVLCD30	Central Divider, Grid 4~5	25	24JUL06	25AUG06	0	40
CC8SVLCD40	Central Divider, Grid 5~6	25	24JUL06	25AUG06	0	36
CC8SVLCD20	Central Divider, Grid 3~4	25	10AUG06	12SEP06	0	30
CC8SVLCD50	Central Divider, Grid 6~7	25	17AUG06	19SEP06	0	16
CC8SVLCD10	Central Divider, Grid 2~3	30	29AUG06	10OCT06	0	2
CC8SVLCD60	Central Divider, Grid 7~8	25	13SEP06	18OCT06	0	0
CC8SVSCD10	Central Divider, Grid 8~9,	30	19SEP06	28OCT06	0	0
NORTH SECTION						
CC8SVNCD10	Central Divider, Grid 1~2	25	10JUL06	10AUG06	0	58
VIADUCT CARRIAGE SURFACE FINISH						
CARRIAGE SURFACE FINISH, E/B						
CC8SURE080	Flexible Raod Base & Base Coarse, Grid 6-7, E/B	4	13OCT06	16OCT06	0	0
CC8SURE070	Flexible Road Base & Base Coarse, Grid 5-6, E/B	4	17OCT06	20OCT06	0	0
CC8SURE060	Flexible Road base & Base Coarse, Grid 4-5, E/B	4	21OCT06	24OCT06	0	0
CC8SURE050	Flexible Road Base & Base Coarse, Grid 3-4 , E/B	4	25OCT06	28OCT06	0	0
CC8SURE120	Wearing Course / Friction Course / Road Markings	24	25OCT06	17NOV06	0	0
CC8SURE040	Flexible Road Base & Base Coarse, Grid 2-3 , E/B	4	29OCT06	01NOV06	0	0
CC8SURE030	Flexible Raod Base & Base Coarse, Grid 1-2 , E/B	3	02NOV06	04NOV06	0	0
CC8SURE100	Flexible Road Base & Base Coarse, Grid 8-9, E/B	3	05NOV06	07NOV06	0	0
CC8SURE090	Flexible Raod Base & Base Coarse, Grid 7-8, E/B	4	08NOV06	11NOV06	0	0
CARRIAGE SURFACE FINISH, W/B						
CC8SURW080	Flexible Road Base & Base Coarse, Grid 6-7, W/B	4	13OCT06	16OCT06	0	0
CC8SURW070	Flexible Raod Base & Base Coarse, Grid 5-6, W/B	4	17OCT06	20OCT06	0	0
CC8SURW060	Flexible Road Base & Base Coarse, Grid 4-5, W/B	4	21OCT06	24OCT06	0	0
CC8SURW050	Flexible Raod Base & Base Coarse, Grid 3-4 , W/B	4	25OCT06	28OCT06	0	0
CC8SURW120	Wearing Course / Friction Course / Road Markings	24	25OCT06	17NOV06	0	0
CC8SURW130	Flexible Road Base & Base Coarse, Grid 1-2 , W/B	3	29OCT06	31OCT06	0	0
CC8SURW100	Flexible Raod Base & Base Coarse, Grid 8-9, W/B	3	01NOV06	03NOV06	0	0
CC8SURW090	Flexible Raod base & Base Coarse, Grid 7-8, W/B	4	04NOV06	07NOV06	0	0
CC8SURW040	Flexible Raod Base & Base Coarse, Grid 2-3 , W/B	4	08NOV06	11NOV06	0	0
COST CENTRE 9 - RECLAMATION & SEAWALL						
MILESTONES						
CC9MS050	9.5 On Comp. 20% Plan Area of Reclamation	0		30NOV04A	100	
CC9MS060	9.6 On Comp. 60% Plan Area of Reclamation	0		17JAN05A	100	
CC9MS070	9.7 On Completion of the Reclamation Works	0		31JAN05A	100	
CC9MS020	9.2 Comp. 20% P.Length Seawall ex Coping & C.W.	0		30MAR05A	100	
CC9MS030	9.3 Comp. 60% P.Length Seawall ex Coping & C.W.	0		30MAY05A	100	
CC9MS010	9.1 On Completion of the Dredging Works	0		24JUN05A	100	
CC9MS040	9.4 On Comp. the Seawall,Coping & Crest Wall	0		20JUN06	0	150
CC9MS080	9.8 On Comp.Section VI - Seawall & Reclamation	0		20JUN06	0	150
CC9MS090	Reclamation & Sea Wall Complete	0		17NOV06*	0	0
SITE WORKS						
GROUND INVESTIGATION WORKS & SILT CURTAIN						
CC9SGI020	Drill Holes, Boring, Probing & Trial Pits	60	17MAY04A	29JUN04A	100	
CC9SGI030	Instrumentation Installation	45	01SEP04A	31MAR05A	100	



Start Date 23FEB04
Finish Date 08FEB06
Data Date 15APR05
Run Date 08MAY06 15:03

Early Bar
Progress Bar
Critical Activity

MPR4

Gammon Construction Limited

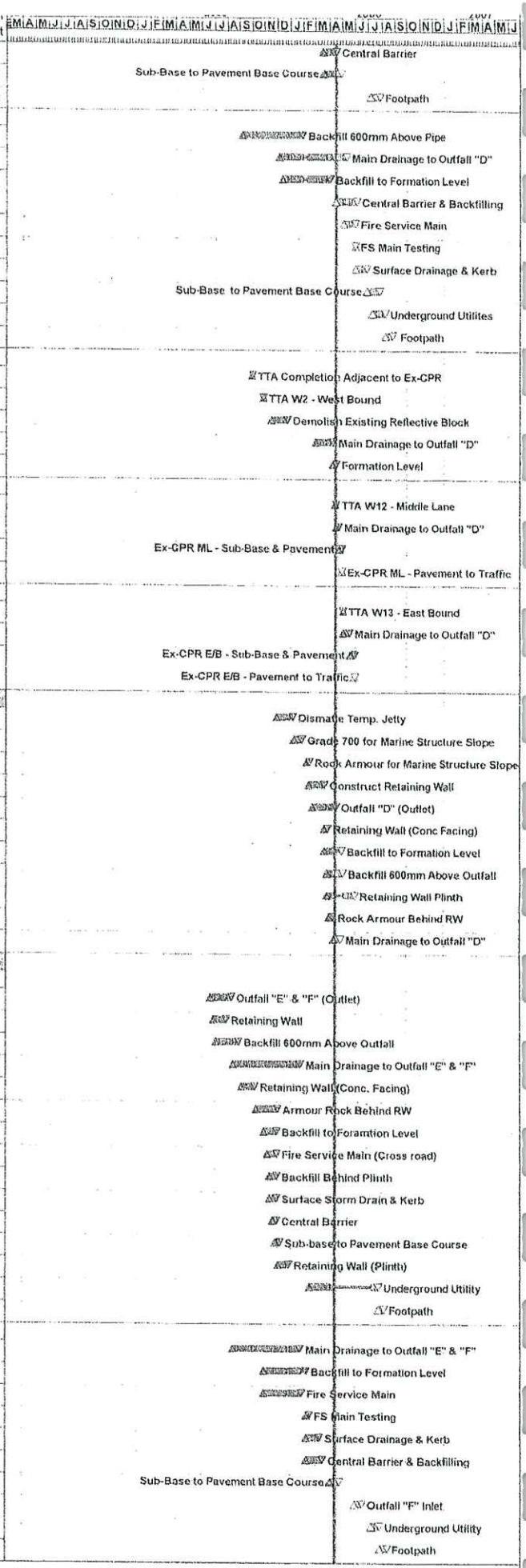
MASTER PROGRAMME, REV. 03

MPR4

Date	Revision	Checked	Approved
08MAY06	MASTER PROGRAMME REVISION 03	TOW	
		NL	

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	% Comp	Total Float
CC9SGI050	Instrumentation Monitoring	605	01SEP04A	07OCT06	62	41
MARINE WORKS & SEA WALL CONSTRUCTION						
CC9SM200	Dredge to Req. Level - El -13	60	04AUG04A	02NOV04A	100	
CC9SM220	Grade 400 Rockfill	60	15OCT04A	20FEB05A	100	
CC9SM210	Grade 700 Rock for Marine Structure (slope)	60	17JAN05A	14MAR05A	100	
CC9SM230	Rock Armour for Marine Structure (Slope)	60	27JAN05A	28MAY05A	100	
CC9SM260	Dredge to Req. Level - El -13	50	03NOV04A	30MAR05A	100	
CC9SM320	Grade 700 Rock for Marine Structure (Slope)	50	29MAR05A	19MAY05A	100	
CC9SM310	Rock Armour for Marine Structure (Slope)	50	16APR05A	31MAY05A	100	
CC9SM350	Dredge to Req. Level - El -13	45	14AUG04A	06NOV04A	100	
CC9SM390	Grade 700 Rock for Marine Structure (slope)	45	06DEC04A	31DEC04A	100	
CC9SM380	Rock Armour for Marine Structure (Slope)	45	14JAN05A	31JAN05A	100	
CC9SM430	Dredge to Req. Level for Seawall/Reclam. -El -13	45	30APR05A	23JUN05A	100	
CC9SM470	Grade 700 Rock for Marine Structure (slope)	50	13MAY05A	04OCT05A	100	
CC9SM480	Rock Armour for Marine Structure (Slope)	50	10AUG05A	16NOV05A	100	
EARTH WORKS (–) +2.5mPD						
CC9SE0010	Sea Reclamation	140	06DEC04A	24FEB05A	100	
COST CENTRE 10 - ROAD WIDENING						
MILESTONES						
CC10MS030	10.3 On Comp. 20% Plan Area of Road Widening	0		30NOV05A	100	
CC10MS040	10.4 On Comp. 40% Plan Area of Road Widening	0		28FEB06A	100	
CC10MS050	10.5 On Comp. 60% Plan Area of Road Widening	0		15MAY06	0	174
CC10MS060	10.6 On Comp. 80% Plan Area of Road Widening	0		26JUL06	0	114
CC10MS070	10.7 On Completion of 50% of the Outfalls	0		26JUL06	0	92
CC10MS080	10.8 On Completion of Outfalls	0		20OCT06	0	6
CC10MS010	10.1 On Completion of Tai Lam Kok R/A Roadworks	0		17NOV06	0	0
CC10MS020	10.2 On Completion of Siu Lam R/A Roadworks	0		17NOV06	0	0
CC10MS090	10.9 On Comp Section VI-Roadworks on Reclamation	0		17NOV06	0	0
SITE WORKS						
CH 1800 - TLK R/A (135m)						
CC10RW180	Retaining Wall	75	05MAY05A	06AUG05A	100	
CC10RW190	Settlement of Reclamation	180	01AUG05A	30JUL06	70	56
CC10RW200	Retaining Wall, Concrete Facing	14	22SEP05A	15DEC05A	100	
CC10RW210	Rock Armour Behind RW	21	21OCT05A	18JAN06A	100	
CC10RW230	Backfill to Formation Level	20	12DEC05A	28JUN06	80	32
CC10RW220	Retaining Wall RW Plinth	21	29JUN06	10AUG06	15	32
CC10RW250	Fire Service Main (Cross Road)	7	29JUN06	10JUL06	0	41
CC10RW290	Backfill Behind Plinth	7	29JUN06	10JUL06	0	56
CC10RW260	FS Main Hydrotest	1	11JUL06	11JUL06	0	125
CC10RW270	Central Barrier	15	11JUL06	26JUL06	0	41
CC10RW280	Surface Drainage & Kerb	28	12JUL06	17AUG06	0	92
CC10RW300	Underground Utility	21	12JUL06	08AUG06	0	92
CC10RW320	Footpath	21	09AUG06	06SEP06	0	96
CC10RW240	Sub-Base to Pavement Base Course	14	11AUG06	29AUG06	0	32
CC10SRW270	Backfill 600mm Above Pipe	30	06SEP05A	26JAN06A	100	
CC10SRW280	Backfill to Formation Level	20	12DEC05A	28JUN06	80	22
CC10SRW313	Fire Service Main	21	29JUN06	27JUL06	0	22
CC10SRW323	FS Main Testing	1	28JUL06	28JUL06	0	31
CC10SRW303	Central Barrier & Backfilling	15	29JUL06	18AUG06	0	22
CC10SRW333	Surface Drainage & Kerb	18	02AUG06	24AUG06	0	22
CC10SRW343	Sub-Base to Pavement Base Course	14	25AUG06	12SEP06	0	22
CC10SRW353	Underground Utility	14	25AUG06	12SEP06	0	91
CC10SRW363	Footpath	21	13SEP06	03OCT06	0	119
TLK R/A - CH. 2150 (150m)						
CC10RW100	Retaining Wall	75	08JUN05A	14JUL05A	100	
CC10RW105	Retaining Wall, Concrete Facing	14	22SEP05A	15DEC05A	100	
CC10RW115	Rock Armour Behind RW	21	21OCT05A	18JAN06A	100	
CC10RW145	Retaining Wall RW Plinth	38	31DEC05A	25JAN06A	100	
CC10RW135	Backfill to Formation Level	20	26JAN06A	31MAR06A	100	
CC10RW155	Backfill Behind Plinth	18	26JAN06A	15FEB06A	100	
CC10RW130	Fire Service Main (Cross Road)	10	08FEB06A	14FEB06A	100	
CC10RW132	FS Main Hydrotest	1	16FEB06A	16FEB06A	100	
CC10RW170	Underground Utility	21	01MAR06A	10JUL06	60	59
CC10RW140	Surface Drainage & Kerb	24	16MAR06A	14APR06A	100	

ID	Description	Dur	Start	Finish	% Comp	Total Float
CC10RW150	Central Barrier	35	16MAR06A	15APR06A	100	
CC10RW160	Sub-Base to Pavement Base Course	21	20MAR06A	28APR06	90	121
CC10RW330	Footpath	21	05JUL06	25JUL06	0	166
E/B, TLK R/A - CH 2160						
CC10SRW110	Backfill 600mm Above Pipe	30	06SEP05A	26JAN06A	100	
CC10SRW125	Main Drainage to Outfall "D"	20	05DEC05A	11MAY06	0	57
CC10SRW135	Backfill to Formation Level	20	12DEC05A	31MAR06A	100	
CC10SRW150	Central Barrier & Backfilling	35	15APR06	02JUN06	0	70
CC10SRW130	Fire Service Main	21	03MAY06	30MAY06	0	57
CC10SRW132	FS Main Testing	1	31MAY06	31MAY06	0	77
CC10SRW140	Surface Drainage & Kerb	21	02JUN06	27JUN06	0	57
CC10SRW160	Sub-Base to Pavement Base Course	21	28JUN06	26JUL06	0	57
CC10SRW142	Underground Utilites	21	11JUL06	07AUG06	0	71
CC10SRW170	Footpath	14	08AUG06	25AUG06	0	112
EX-CPR, WEST BOUND						
CC10SRW175	TTA Completion Adjacent to Ex-CPR	1	30SEP05A	30SEP05A	100	
CC10SRW180	TTA W2 - West Bound	1	27OCT05A	27OCT05A	100	
CC10SRW185	Demolish Existing Reflective Block	30	15NOV05A	24DEC05A	100	
CC10SRW190	Main Drainage to Outfall "D"	30	02MAR06A	08APR06A	100	
CC10SRW200	Formation Level	12	10APR06A	15APR06A	100	
EX-CPR, MIDDLE LANE						
CC10SRW205	TTA W12 - Middle Lane	1	15APR06	15APR06	0	0
CC10SRW210	Main Drainage to Outfall "D"	6	17APR06	22APR06	0	0
CC10SRW220	Ex-CPR ML - Sub-Base & Pavement	6	24APR06	29APR06	0	0
CC10SRW290	Ex-CPR ML - Pavement to Traffic	1	30APR06	30APR06	0	2
EX-CPR, EAST BOUND						
CC10SRW230	TTA W13 - East Bound	1	03MAY06	03MAY06	0	0
CC10SRW240	Main Drainage to Outfall "D"	10	04MAY06	17MAY06	0	0
CC10SRW260	Ex-CPR E/B - Sub-Base & Pavement	10	18MAY06	30MAY06	0	0
CC10SRW390	Ex-CPR E/B - Pavement to Traffic	1	30MAY06	30MAY06	0	69
TEMPORARY JETTY LOCATION						
CC10TJT100	Dismatle Temp. Jetty	14	30NOV05A	07JAN06A	100	
CC10TJT110	Grade 700 for Marine Structure Slope	7	09JAN06A	26JAN06A	100	
CC10TJT120	Rock Armour for Marine Structure Slope	7	08FEB06A	14FEB06A	100	
CC10TJT130	Construct Retaining Wall	21	14FEB06A	22MAR06A	100	
CC10TJT150	Outfall "D" (Outlet)	7	22FEB06A	15APR06A	100	
CC10TJT140	Retaining Wall (Conc Facing)	7	23MAR06A	28MAR06A	100	
CC10TJT200	Backfill to Formation Level	14	23MAR06A	29APR06	50	66
CC10TJT170	Backfill 600mm Above Outfall	18	28MAR06A	03MAY06	80	67
CC10TJT230	Retaining Wall Plinth	21	28MAR06A	30MAY06	50	66
CC10TJT160	Rock Armour Behind RW	7	01APR06A	08APR06A	100	
CC10TJT190	Main Drainage to Outfall "D"	30	12APR06A	28APR06	80	66
CH 2160 - CH 2460 (300m)						
W/B, CH 2160 - 2460						
CC10SRW505	Outfall "E" & "F" (Outlet)	21	21JUN05A	13AUG05A	100	
CC10SRW500	Retaining Wall	60	28JUN05A	30JUL05A	100	
CC10SRW525	Backfill 600mm Above Outfall	30	04JUL05A	30AUG05A	100	
CC10SRW530	Main Drainage to Outfall "E" & "F"	42	15AUG05A	25JAN06A	100	
CC10SRW510	Retaining Wall (Conc. Facing)	21	05SEP05A	10OCT05A	100	
CC10SRW515	Armour Rock Behind RW	21	12OCT05A	03DEC05A	100	
CC10SRW540	Backfill to Foramtion Level	21	01NOV05A	01DEC05A	100	
CC10SRW535	Fire Service Main (Cross road)	21	08NOV05A	30NOV05A	100	
CC10SRW560	Backfill Behind Plinth	14	14NOV05A	30NOV05A	100	
CC10SRW580	Surface Storm Drain & Kerb	21	14NOV05A	30NOV05A	100	
CC10SRW570	Central Barrier	21	21NOV05A	01DEC05A	100	
CC10SRW590	Sub-base to Pavement Base Course	21	25NOV05A	07DEC05A	100	
CC10SRW550	Retaining Wall (Plinth)	21	05DEC05A	30DEC05A	100	
CC10SRW605	Underground Utility	14	16FEB06A	24JUL06	20	59
CC10SRW615	Footpath	14	25JUL06	07AUG06	0	163
E/B, CH 2160 - 2460						
CC10RW618	Main Drainage to Outfall "E" & "F"	21	15AUG05A	25JAN06A	100	
CC10RW615	Backfill to Formation Level	21	01NOV05A	08FEB06A	100	
CC10RW620	Fire Service Main	18	01NOV05A	26JAN06A	100	
CC10RW622	FS Main Testing	6	08FEB06A	15FEB06A	100	
CC10RW625	Surface Drainage & Kerb	21	08FEB06A	10MAR06A	100	
CC10RW630	Central Barrier & Backfilling	21	08FEB06A	16MAR06A	100	
CC10RW635	Sub-Base to Pavement Base Course	21	03APR06A	24APR06	50	125
CC10RW628	Outfall "F" Inlet	14	02JUN06	19JUN06	0	66
CC10RW645	Underground Utility	14	11JUL06	27JUL06	0	71
CC10RW655	Footpath	14	26JUL06	15AUG06	0	105



Start Date 23FEB04
Finish Date 08FEB08
Data Date 15APR06
Run Date 08MAY06 15:03

Early Bar
Progress Bar
Critical Activity

MPR4

Sheet 10 of 13

Gammon Construction Limited

MASTER PROGRAMME, REV. 03

MPR4			
Date	Revision	Checked	Approved
08MAY06	MASTER PROGRAMME, REVISION 03	TOW	
		NL	

ID	Activity Description	Orig Dur	Early Start	Early Finish	% Comp	Total Float
CH. 2450 - CH. 2780						
CC10SRW300	Retaining Wall	35	12APR05A	30SEP05A	100	
CC10SRW340	Outfall 'H' (Outlet only)	1	30MAY05A	05JUN05A	100	
CC10SRW305	Outfall 'I' & 'J' (Outlet only)	21	02SEP05A	30NOV05A	100	
CC10SRW315	Backfill 600mm above Pipe	19	12SEP05A	31OCT05A	100	
CC10SRW355	Retaining Wall Plinth	35	12SEP05A	18FEB06A	100	
CC10SRW335	Main Drainge to Outfall 'I', 'J' & 'H'	40	02NOV05A	18JAN06A	100	
CC10SRW350	Backfill to Formation Level	28	07NOV05A	21JAN06A	100	
CC10SRW345	Fire Service Main (Cross Road)	28	03DEC05A	26JAN06A	100	
CC10SRW310	Retaining Wall, Concrete Face	14	05DEC05A	30DEC05A	100	
CC10SRW320	Armour Rock Behind RW	21	03JAN06A	25JAN06A	100	
CC10SRW360	Central Barrier	45	09JAN06A	08FEB06A	100	
CC10SRW365	Surface Storm Drainage & Kerb	14	09JAN06A	08FEB06A	100	
CC10SRW350	Backfill Behind Plinth	7	09JAN06A	21JAN06A	100	
CC10SRW370	Sub-base to Pavement Base course	21	09FEB06A	28FEB06A	100	
CC10RW385	Underground Utility	21	01APR06A	10JUN06	50	104
CC10RW415	Footpath	14	11JUN06	24JUN06	0	144
CH. 2780 - CH. 2450 (330m)						
CC10SRW325	TTA W3 - West Bound (For Demol. of Reflect Blk)	1	06JAN06A	06JAN06A	100	
CC10SRW330	Demolition of Reflective Block	40	07JAN06A	22FEB06A	100	
CC10RW395	Main Drainage to Outfall 'I', 'J' & 'H'	21	02JUN06	27JUN06	0	0
CC10RW400	Fire Service Main	21	02JUN06	27JUN06	0	0
CC10RW402	FS Main Testing	6	21JUN06	27JUN06	0	0
CC10RW405	Surface Storm Drainage & Kerb	14	26JUN06	14JUL06	0	0
CC10RW420	Central Barrier & Backfill	14	26JUN06	14JUL06	0	0
CC10RW425	Outfall "I", "J" & "H" Inlet	21	10JUL06	05AUG06	0	60
CC10RW410	Sub-base to Pavement Base Course	14	15JUL06	03AUG06	0	0
CC10RW430	Underground Utility	21	28JUL06	25AUG06	0	71
CC10RW440	Footpath	14	26AUG06	13SEP06	0	71
CH. 2780 - CH. 3075 (295m)						
W3 - CH. 2780 - 3075						
CC10SRW600	Relocation of Reflective Block	50	05SEP05A	25FEB06A	100	
CC10SRW620	Backfill to RW Foundation Level	30	08SEP05A	27JAN06A	100	
CC10SRW630	Retaining Wall	15	22SEP05A	26JAN06A	100	
CC10SRW610	Outfall "L" (Outlet)	14	12OCT05A	26OCT05A	100	
CC10SRW650	Backfill 600mm Above Storm Pipe	18	05DEC05A	21JAN06A	100	
CC10SRW608	Outfall "K" (Outlet)	21	15DEC05A	26JAN06A	100	
CC10SRW640	Retaining Wall, Concrete Face	8	01MAR06A	08MAR06A	100	
CC10SRW660	Rock Armour Behind RW	18	01MAR06A	15MAR06A	100	
CC10SRW385	Main Drainage to Outfall "K" & "L"	30	06MAR06A	12APR06A	100	
CC10SRW909	Backfill to Formation Level	21	01APR06A	15APR06A	100	
CC10SRW915	Backfill Behind Plinth	8	01APR06A	15APR06A	100	
CC10SRW690	Fire Service Main (Road Crossing)	12	03APR06A	15APR06A	100	
CC10SRW910	Surface Storm Drainage & Kerb	12	10APR06A	03MAY06	20	58
CC10SRW955	Central Barrier	21	10APR06A	12MAY06	20	0
CC10SRW905	Retaining Wall Plinth	12	15APR06	28APR06	0	60
CC10SRW920	Sub-Base to Pavement Base Course	12	15MAY06	30MAY06	0	50
CC10SRW940	Underground Utility	24	25MAY06	24JUN06	0	108
CC10SRW950	Footpath	14	26JUN06	14JUL06	0	108
E/B - CH. 2780 - 3075						
CC10RW1115	Form to Formation Level	7	04AUG06	11AUG06	0	3
CC10RW970	Main Drainage to Outfall "K" & "L"	14	12AUG06	31AUG06	0	3
CC10RW975	Fire Service Main	12	15AUG06	31AUG06	0	3
CC10RW978	FS Main Testing	6	02SEP06	08SEP06	0	11
CC10RW980	Surface Storm Drainage & Kerb	14	02SEP06	19SEP06	0	3
CC10RW990	Outfall "K & L" Inlet	21	02SEP06	26SEP06	0	5
CC10RW1000	Central Barrier & Backfill	14	09SEP06	27SEP06	0	11
CC10RW985	Sub-Base to Pavement Base Course	14	20SEP06	10OCT06	0	3
CC10RW995	Underground Utility	14	20SEP06	10OCT06	0	39
CC10RW1045	Footpath	14	11OCT06	27OCT06	0	39
ROAD FURNITURES, ROAD FINISHING & LANDSCAPE						
CC10RW1065	Street lighting	60	15APR06	06JUL06	0	100
CC10RW1085	Retaining Wall Granite Facing	140	15APR06	23OCT06	0	20
CC10RW1075	Road Sign Boards	60	20JUL06	10OCT06	0	30
CC10RW1055	Pavement Wearing Course and Road Markings	27	14OCT06	17NOV06	0	0
CH. 3075 - 3302 (VO for Central Barrier Ext'n)						
CC10RW1005	Central Barrier & Backfill	21	01JUN06	24JUN06	0	93
CC10RW1015	Irrigation Pipelins	7	26JUN06	04JUL06	0	93
CC10RW1025	Ducting & Pits	7	05JUL06	12JUL06	0	93

2004 2005 2006 2007
M A M J 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 J F M A M J

Retaining Wall
Outfall 'H' (Outlet only)
Outfall 'I' & 'J' (Outlet only)
Backfill 600mm above Pipe
Retaining Wall Plinth
Main Drainge to Outfall 'I', 'J' & 'H'
Backfill to Formation Level
Fire Service Main (Cross Road)
Retaining Wall, Concrete Face
Armour Rock Behind RW
Central Barrier
Surface Storm Drainage & Kerb
Backfill Behind Plinth
Sub-base to Pavement Base course
Underground Utility
Footpath
TTA W3 - West Bound (For Demol. of Reflect Blk)
Demolition of Reflective Block
Main Drainage to Outfall 'I', 'J' & 'H'
Fire Service Main
FS Main Testing
Surface Storm Drainage & Kerb
Central Barrier & Backfill
Outfall "I", "J" & "H" Inlet
Sub-base to Pavement Base Course
Underground Utility
Footpath
Relocation of Reflective Block
Backfill to RW Foundation Level
Retaining Wall
Outfall 'L' (Outlet)
Backfill 600mm Above Storm Pipe
Outfall "K" (Outlet)
Retaining Wall, Concrete Face
Rock Armour Behind RW
Main Drainage to Outfall "K" & "L"
Backfill to Formation Level
Backfill Behind Plinth
Fire Service Main (Road Crossing)
Surface Storm Drainage & Kerb
Central Barrier
Retaining Wall Plinth
Sub-Base to Pavement Base Course
Underground Utility
Footpath
Form to Formation Level
Main Drainage to Outfall "K" & "L"
Fire Service Main
FS Main Testing
Surface Storm Drainage & Kerb
Outfall "K & L" Inlet
Central Barrier & Backfill
Sub-Base to Pavement Base Course
Underground Utility
Footpath
Street lighting
Retaining Wall Granite Facing
Road Sign Boards
Pavement Wearing Course and Road Markings
Central Barrier & Backfill
Irrigation Pipeline
Ducting & Pits

Data Date 24FEB04
Print Date 24FEB04
Start Date 15APR04
Finish Date 09MAY06 15:03

Early Bar
Progress Bar
Critical Activity

Sheet 11 of 11

Gammon Construction Limited

MASTER PROGRAMME, REV. 03

MPR4

Date 09MAY06 MASTER PROGRAMME REVISION 03 Checked YDW Approved JE

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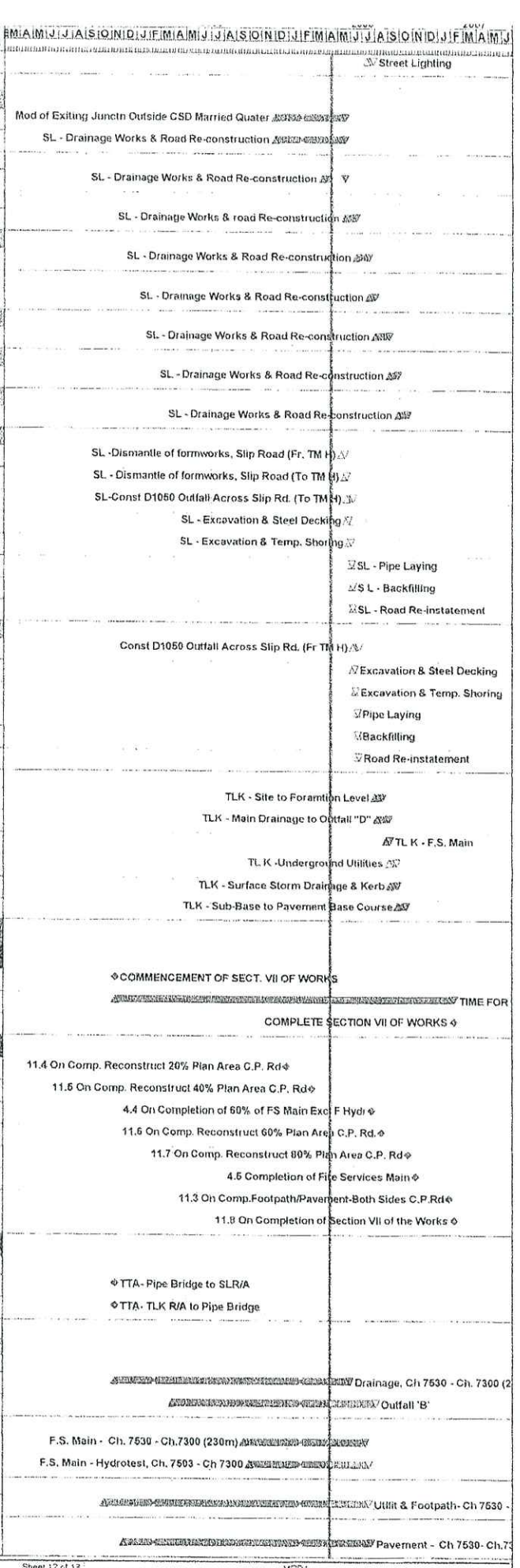
ID	Description	Dur	Start	Finish	Comp	Float
CC10RW1035	Street Lighting	14	13JUL06	28JUL06	0	93
SIU LAM ROUNDABOUT						
SLRA-TTA01 (Stage 1)						
CC10SL110	Mod of Exiting Junctn Outside CSD Married Quater	104	01DEC05A	17MAY06	90	0
CC10SL120	SL - Drainage Works & Road Re-construction	104	01DEC05A	17MAY06	90	0
SLRA-TTA01-1 (Stage 1-Sub-Stage 1)						
CC10SL140	SL - Drainage Works & Road Re-construction	23	25MAR06A	17MAY06	0	0
SLRA-TTA01-1 (Stage 1-Sub-Stage 2)						
CC10SL160	SL - Drainage Works & road Re-construction	22	18MAY06	15JUN06	0	0
SLRA-TTA02 (Stage 2)						
CC10SL180	SL - Drainage Works & Road Re-construction	23	17JUN06	18JUL06	0	0
SLRA-TTA02-1 (Stage 2-Sub-Stage 1)						
CC10SL200	SL - Drainage Works & Road Re-construction	12	19JUL06	03AUG06	0	0
SLRA-TTA03 (Stage 3)						
CC10SL220	SL - Drainage Works & Road Re-construction	23	04AUG06	04SEP06	0	0
SLRA-TTA04 (Stage 4)						
CC10SL240	SL - Drainage Works & Road Re-construction	17	05SEP06	26SEP06	0	0
SLRA-TTA05 (Stage 5)						
CC10SL260	SL - Drainage Works & Road Re-construction	17	27SEP06	20OCT06	0	0
SLIP ROAD (Stage 1) - OUTFALL 'A'						
CC10SL280	SL -Dismantle of formworks, Slip Road (Fr. TM H)	5	11MAY06	17MAY06	0	85
CC10SL290	SL - Dismantle of formworks, Slip Road (To TM H)	5	18MAY06	24MAY06	0	85
CC10SL300	SL-Const D1050 Outfall Across Slip Rd. (To TM H)	12*	25MAY06	09JUN06	0	85
CC10SL310	SL - Excavation & Steel Decking	3	25MAY06	27MAY06	0	85
CC10SL320	SL - Excavation & Temp. Shoring	3	29MAY06	02JUN06	0	85
CC10SL330	SL - Pipe Laying	2	03JUN06	05JUN06	0	85
CC10SL340	S L - Backfilling	2	06JUN06	07JUN06	0	85
CC10SL350	SL - Road Re-instatemont	2	08JUN06	09JUN06	0	85
SLIP ROAD (Stage 2) - OUTFALL 'A'						
CC10SL360	Const D1050 Outfall Across Slip Rd. (Fr TM H)	12*	10JUN06	24JUN06	0	85
CC10SL370	Excavation & Steel Decking	3	10JUN06	13JUN06	0	85
CC10SL380	Excavation & Temp. Shoring	3	14JUN06	17JUN06	0	85
CC10SL390	Pipe Laying	2	19JUN06	20JUN06	0	85
CC10SL400	Backfilling	2	21JUN06	22JUN06	0	85
CC10SL410	Road Re-instatemont	2	23JUN06	24JUN06	0	85
TAI LAM KOK ROUNDABOUT						
CC10TLK115	TLK - Site to Foramtion Level	14	04AUG06	21AUG06	0	0
CC10TLK120	TLK - Main Drainage to Outfall "D"	21	09AUG05	06SEP06	0	0
CC10TLK130	TL K - F.S. Main	7	29AUG06	07SEP06	0	0
CC10TLK140	TL K -Underground Utilities	14	07SEP06	25SEP06	0	3
CC10TLK160	TLK - Surface Storm Drainage & Kerb	14	08SEP06	26SEP06	0	0
CC10TLK170	TLK - Sub-Base to Pavement Base Course	14	27SEP06	17OCT06	0	0
C CENTRE 11 SEC VII RECONSTRUCT CASTLE PEAK ROAD						
KEY DATE						
CC11KD010	COMMENCEMENT OF SECT. VII OF WORKS	0	12NOV04A		100	
CC11KD020	TIME FOR COMPLETION SECT VII OF WORKS	819	12NOV04A	08FEB07	64	0
CC11KD030	COMPLETE SECTION VII OF WORKS	0		08FEB07	0	0
MILESTONES						
CC11MS040	11.4 On Comp. Reconstruct 20% Plan Area C.P. Rd	0		29DEC05A	100	
CC11MS050	11.5 On Comp. Reconstruct 40% Plan Area C.P. Rd	0		28FEB06A	100	
CC11MS110	4.4 On Completion of 60% of FS Main Excl F Hydr	0		26JUL06	0	196
CC11MS060	11.6 On Comp. Reconstruct 60% Plan Area C.P. Rd.	0		17AUG06	0	174
CC11MS070	11.7 On Comp. Reconstruct 80% Plan Area C.P. Rd	0		19OCT06	0	111
CC11MS120	4.5 Completion of Fire Services Main	0		08NOV06	0	91
CC11MS030	11.3 On Comp.Footpath/Pavement-Both Sides C.P.Rd	0		25JAN07	0	14
CC11MS100	11.8 On Completion of Section VII of the Works	0		08FEB07*	0	0
SITEWORKS						
TEMPORARY TRAFFIC ARRANGEMENT						
CC11TTA010	TTA- Pipe Bridge to SLR/A	0	12NOV04A		100	
CC11TTA020	TTA- TLK R/A to Pipe Bridge	0	12NOV04A		100	
EX. CASTLE PEAK ROAD RECONSTRUCTION						
NORTHWEST, FR. PIPE BRIDGE - TM SLIP ROAD JUNCT						
DRAINAGE						
CC11SDW010	Drainage, Ch 7530 - Ch. 7300 (230m)	350	12NOV04A	02JUN06	90	0
CC11SDW030	Outfall 'B'	45	01APR05A	05AUG06	95	144
FIRE SERVICE MAIN						
CC11FS080	F.S. Main - Ch. 7530 - Ch.7300 (230m)	350	20SEP05A	11JUL06	90	0
CC11FS090	F.S. Main - Hydrotest, Ch. 7503 - Ch 7300	350	05OCT05A	19JUL06	90	5
UTILITIES						
CC11SUW020	Utilit & Footpath- Ch 7530 - Ch 7300	375	20OCT04A	19JUL06	90	11
ROAD PAVEMENT						
CC11SRP050	Pavement - Ch 7530- Ch 7300 (230m)	375	02DEC04A	25JUL06	90	0



Start Date 23FEB04
Finish Date 08FEB08
Data Date 15APR06
Run Date 08MAY06 15:03

Early Bar
Progress Bar
Critical Activity

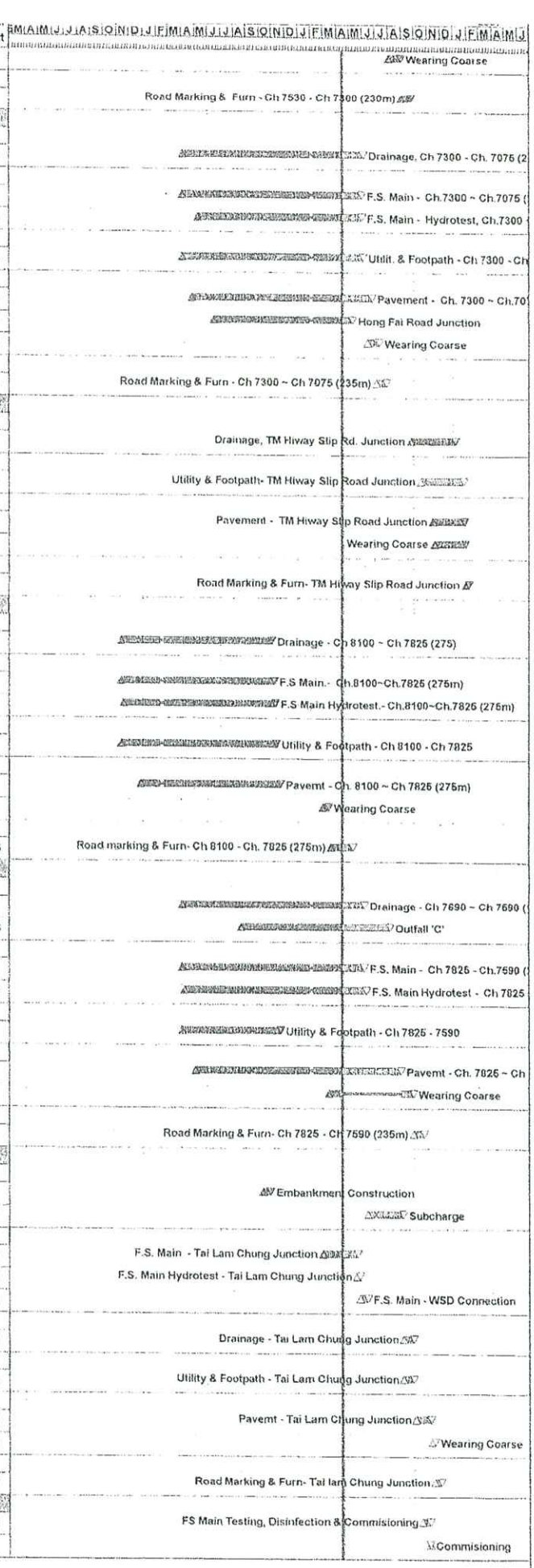
MPR4

Gammon Construction Limited

MASTER PROGRAMME, REV. 03

Date	Revision	Checked	Approved
08MAY06	MASTER PROGRAMME, REVISION 03	TOW	
		NL	

ID	Description	Dur	Start	Finish	Comp	Float
CC11SRP062	Wearing Coarse	21	04AUG06	31AUG06	0	0
ROAD MARKINGS & FURNITURES						
CC11RF050	Road Marking & Furn - Ch 7530 - Ch 7300 (230m)	18	02SEP06	25SEP06	0	0
NORTHWESTERN SIDE, TM SLIP ROAD JUNCT. - SL R/A						
DRAINAGE						
CC11SDW015	Drainage, Ch 7300 - Ch. 7075 (225m)	345	04APR05A	02JUN06	90	68
FIRE SERVICE MAIN						
CC11FS085	F.S. Main - Ch 7300 ~ Ch.7075 (235m)	340	04APR05A	30MAY06	90	68
CC11FS088	F.S. Main - Hydrotest, Ch.7300 ~ Ch 7075 (235m)	340	09MAY05A	30MAY06	90	68
UTILITIES						
CC11SUW025	Utilit. & Footpath - Ch 7300 - Ch7075 (235m)	345	04APR05A	02JUN06	90	68
ROAD PAVEMENT						
CC11SRP055	Pavement - Ch 7300 ~ Ch 7075 (235m)	345	26APR05A	23JUN06	85	68
CC11SRP040	Hong Fai Road Junction	120	15JUN05A	09MAY06	85	63
CC11SRP065	Wearing Coarse	21	15JUN06	13JUL06	0	90
ROAD MARKING & FURNITURES						
CC11RF055	Road Marking & Furn - Ch 7300 ~ Ch 7075 (235m)	18	06JUL06	27JUL06	0	90
NORTHWEST SIDE,TUEN MUN HIWAY SLIP ROAD JUNCTION						
DRAINAGE						
CC11SDW018	Drainage, TM Hiway Slip Rd. Junction	80	26SEP06	06JAN07	0	0
UTILITIES						
CC11SUW026	Utility & Footpath- TM Hiway Slip Road Junction	80	18OCT06	25JAN07	0	12
ROAD PAVEMENT						
CC11SRP058	Pavement - TM Hiway Slip Road Junction	60	16NOV06	29JAN07	0	0
CC11SRP068	Wearing Coarse	60	18NOV06	31JAN07	0	0
ROAD MARKING & FURNITURES						
CC11RF058	Road Marking & Furn- TM Hiway Slip Road Junction	7	01FEB07	08FEB07	0	0
SOUTHEAST SIDE, FR. TLK R/A - NULA						
DRAINAGE						
CC11SDW040	Drainage - Ch 8100 ~ Ch 7825 (275)	255	12NOV04A	02NOV05A	100	
FIRE SERVICE MAIN						
CC11FS130	F.S Main - Ch 8100~Ch 7825 (275m)	250	12NOV04A	07NOV05A	100	
CC11FS132	F.S Main Hydrotest - Ch 8100~Ch 7825 (275m)	245	18NOV04A	09NOV05A	100	
UTILITIES						
CC11SUW050	Utility & Footpath - Ch 8100 - Ch 7825	260	12NOV04A	12NOV05A	100	
ROAD PAVEMENT						
CC11SRP020	Pavemt - Ch 8100 ~ Ch 7825 (275m)	250	28DEC04A	22NOV05A	100	
CC11SRP030	Wearing Coarse	18	28FEB06A	14MAR06A	100	
ROAD MARKING & FURNITURES						
CC11RF010	Road marking & Furn- Ch 8100 - Ch 7825 (275m)	18	20MAR06A	09MAY06	50	176
SOUTHEAST SIDE, FR. NULAH - PIPE BRIDGE						
DRAINAGE						
CC11SDW045	Drainage - Ch 7690 ~ Ch 7590 (100m)	255	04APR05A	06JUN06	85	71
CC11SDW060	Outfall 'C'	40	22AUG05A	05AUG06	85	186
FIRE SERVICE MAIN						
CC11FS135	F.S. Main - Ch 7825 - Ch.7590 (235m)	250	04APR05A	06JUN06	85	71
CC11FS136	F.S. Main Hydrotest - Ch 7825 - Ch 7590 (235m)	245	08APR05A	10JUN06	85	131
UTILITIES						
CC11SUW055	Utility & Footpath - Ch 7825 - 7590	255	04APR05A	22NOV05A	100	
ROAD PAVEMENT						
CC11SRP025	Pavemt - Ch 7825 ~ Ch 7590 (235m)	255	04MAY05A	31AUG06	60	71
CC11SRP035	Wearing Coarse	21	15MAR06A	28SEP06	40	71
ROAD MARKING & FURNITURES						
CC11RF015	Road Marking & Furn- Ch 7825 - Ch 7590 (235m)	18	29SEP06	24OCT06	0	71
SOUTHEAST SIDE, TAI LAM CHUNG JUNCTION						
EMBANKMENT						
CC11SEM010	Embankment Construction	30	12OCT05A	31OCT05A	100	
CC11SEM020	Subcharge	60	14JUN06	04SEP06	0	52
FIRE SERVICE MAIN						
CC11FS140	F.S. Main - Tai Lam Chung Junction	21	01MAR06A	20MAY06	75	52
CC11FS150	F.S. Main Hydrotest - Tai Lam Chung Junction	6	18MAY06	25MAY06	0	52
CC11FS160	F.S. Main - WSD Connection	14	26MAY06	13JUN06	0	52
DRAINAGE						
CC11SDW048	Drainage - Tai Lam Chung Junction	21	05SEP06	30SEP06	0	52
UTILITIES						
CC11SUW058	Utility & Footpath - Tai Lam Chung Junction	21	05SEP06	30SEP06	0	52
ROAD PAVEMENT						
CC11SRP028	Pavemt - Tai Lam Chung Junction	30	04OCT06	11NOV06	0	52
CC11SRP038	Wearing Coarse	5	13NOV06	17NOV06	0	52
ROAD MARKING & FURNITURES						
CC11RF018	Road Marking & Furn- Tai lam Chung Junction	15	18NOV06	05DEC06	0	52
FIRE SERVICE MAIN TESTING & COMMISSIONING						
CC11FS500	FS Main Testing, Disinfection & Commisioning	14	21OCT06	07NOV06	0	76
CC11FS510	Commisioning	1	08NOV06	08NOV06	0	91



Start Date	23FEB04
Finish Date	08FEB08
Data Date	15APR05
Run Date	09MAY06 15:03

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Early Bar
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MPR4

Sheet 13 of 13

Gammon Construction Limited

MASTER PROGRAMME, REV 03

MPR4			
Date	Revision	Checked	Approved
09MAY06	MASTER PROGRAMME, REVISION 03	TOW	
		NL	

APPENDIX C
DETAILS OF MONITORING REQUIREMENTS

Appendix C Details of Monitoring Requirements

Table C1 Air Quality Monitoring Parameters and Frequency

Location	Parameter	Duration	Frequency
AM1 and 2	1-hour TSP	1 hour	3 times every six days
	24-hour TSP	24 hours	Once every six days

Table C2 Noise Monitoring Parameters, Period and Frequency

Location	Time Period	Parameters	Frequency
NMC1, 2 and 3	Daytime (0700 to 1900 on normal weekdays)	$L_{eq\ (30\text{-}min)}$	Once per week

Table C3 Water Quality Monitoring Parameters, Period and Frequency

Monitoring Stations	Parameter, unit	Frequency	No. of Depths
Control Stations: C1 & C2 *Impact Stations:* M1 – M3	Depth, m Temperature, °C Salinity, ppt DO, mg/L DO Saturation, % Turbidity, NTU SS, mg/L	Three times per week	Three (Surface, Mid-Depth and Bottom)

APPENDIX D
ENVIRONMENTAL QUALITY PERFORMANCE (ACTION/LIMIT) LEVELS AND EVENT ACTION PLANS

Appendix D Environmental Quality Performance (Action/Limit) Levels and Event Action Plans

Table D1 Action and Limit Levels for 24-hour TSP

Monitoring Station	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/m^3$)
AM1	177.4	260
AM2	205.0	260

Table D2 Action and Limit Levels for 1-hour TSP

Monitoring Station	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/m^3$)
AM1	311.2	500
AM2	368.6	500

Table D3 Action and Limit Levels (L_{eq}) for Construction Noise

Time Period	Action Level	Limit Level		
		NMC1	NMC2	NMC3
0700 – 1900 hours on normal weekdays	When one documented complaint is received from any one of the sensitive receivers	75	70/65*	70/65*
0700 – 2300 hours on public holidays including Sundays and 1900 – 2300 hours on all days		Subject to requirements stipulated in future Construction Noise Permits		
2300 – 0700 on all days				

*reduce to 70dB(A) for schools and 65dB(A) during school examination periods

Table D4 Action and Limit Levels for Water Quality

Parameters	Action	Limit
DO in mg/L (Surface & Middle, Bottom)	Surface & Middle **5.4** mg/L Bottom **5.2** mg/L	Surface & Middle **4.0** mg/L Bottom **2.0** mg/L
SS in mg/L (depth-averaged)	**17.7** mg/L and 120% of upstream control station's SS at the same tide of the same day	**20.5** mg/L and 130% of upstream control station's SS at the same tide of the same day
Turbidity in NTU (depth-averaged)	**9.6** NTU and 120% of upstream control station's Turbidity at the same tide of the same day	**10.8** NTU and 130% of upstream control station's Turbidity at the same tide of the same day

Notes:
1. "depth-averaged" is calculated by taking the arithmetic means of reading of all three depths.
2. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
3. For turbidity and SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.
4. All the figures given in the table are used for reference only and the EPD may amend the figures whenever it is considered as necessary.

Table D5 Event and Action Plan for Air Quality

EVENT	ACTION			
	ET	IEC	SOR	CONTRACTOR
ACTION LEVEL				
1. Exceedance for one sample	1. Identify source, investigate the cause of exceedance and propose remedial measures; 2. Inform IEC and SOR; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily, if ET assessment indicates that exceedance is due to contractor's construction works.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method.	1. Notify Contractor.	1. Rectify any unacceptable practice; 2. Amend working methods if appropriate.
2. Exceedance for two or more consecutive samples	1. Identify source, investigate the cause of exceedance and propose remedial measures; 2. Inform IEC and SOR; 3. Repeat measurements to confirm findings; 4. Increase monitoring frequency to daily, if ET assessment indicates that exceedance is due to contractor's construction works; 5. Discuss with IEC and Contractor on remedial actions required; 6. If exceedance continues, arrange meeting with IEC and SOR; 7. If exceedance stops, cease additional monitoring.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the SOR on the effectiveness of the proposed remedial measures; 5. Supervise Implementation of remedial measures.	1. Confirm receipt of notification of exceedance in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented.	1. Submit proposals for remedial actions to IEC within three working days of notification; 2. Implement the agreed proposals; 3. Amend proposal if appropriate.
LIMIT LEVEL				
1. Exceedance for one sample	1. Identify source, investigate the cause of exceedance and propose remedial measures; 2. Inform IEC, SOR and EPD; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily, if ET assessment indicates that exceedance is due to contractor's construction works; 5. Assess effectiveness of Contractor's remedial actions and keep IEC, SOR and EPD informed of the results.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the SOR on the effectiveness of the proposed remedial measures; 5. Supervise implementation of remedial measures.	1. Confirm receipt of notification of exceedance in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within three working days of notification; 3. Implement the agreed proposals; 4. Amend proposal if appropriate.
2. Exceedance for two or more consecutive samples	1. Notify Contractor, IEC, SOR and EPD; 2. Identify source, investigate the cause of exceedance and propose remedial measures; 3. Repeat measurement to confirm findings; 4. Increase monitoring frequency to daily, if ET assessment indicates that exceedance is due to contractor's construction works; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Arrange meeting with IEC and SOR to discuss the remedial actions to be taken; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, SOR and EPD informed of the results; 8. If exceedance stops, cease additional monitoring.	1. Discuss amongst SOR, ET, and Contractor on the potential remedial actions; 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the SOR accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of exceedance in writing; 2. Notify Contractor; 3. In consultation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Ensure remedial measures properly implemented; 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within three working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by the SOR until the exceedance is abated.

Table D6 Event and Action Plan for Construction Noise

EVENT	ACTION			
	ET	IEC	SOR	CONTRACTOR
Action Level	1. Notify Contractor and IEC; 2. Carry out investigation; 3. Report the results of investigation to the IEC and Contractor; 4. Discuss with the Contractor and formulate remedial measures; 5. Increase monitoring frequency to check mitigation effectiveness, if ET assessment indicates that exceedance is due to contractor's construction work.	1. Review the analysed results submitted by the ET; 2. Review the proposed remedial measures by the Contractor and advise the SOR accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of exceedance in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; 4. Ensure remedial measures are properly implemented.	1. Submit noise mitigation proposals to IEC; 2. Implement noise mitigation proposals.
Limit Level	1. Notify Contractor, IEC, SOR and EPD; 2. Identify source; 3. Repeat measurement to confirm findings; 4. Increase monitoring frequency, if ET assessment indicates that exceedance is due to contractor's construction work; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Inform IEC, SOR and EPD the causes and actions taken for the exceedances; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, SOR and EPD informed of the results; 8. If exceedance stops, cease additional monitoring.	1. Discuss amongst SOR, ET, and Contractor on the potential remedial actions; 2. Review Contractors remedial actions whenever necessary to assure their effectiveness and advise the SOR accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; 4. Ensure remedial measures properly implemented; 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by the SOR until the exceedance is abated.

Table D7 Event and Action Plan for Water Quality

EVENT	ACTION			
	ET	IEC	SOR	CONTRACTOR
Action level being exceeded by one sampling day	1. Repeat *in situ* measurement to confirm findings; 2. Identify source(s) of impact; 3. Inform IEC and Contractor; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC and Contractor; 6. Repeat measurement on next day of exceedance, if ET assessment indicates that exceedance is due to contractor's construction work.	1. Discuss with ET and Contractor on the mitigation measures; 2. Review proposals on mitigation measures submitted by Contractor and advise the SOR accordingly; 3. Assess the effectiveness of the implemented mitigation measures.	1. Discuss with IEC on the proposed mitigation measures; 2. Make agreement on the mitigation measures to be implemented.	1. Inform the SOR and confirm notification of exceedance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment; 4. Consider changes of working methods; 5. Discuss with ET and IEC and propose mitigation measures to IEC and SOR; 6. Implement the agreed mitigation measures.
Action level being exceeded by more than one consecutive sampling days	1. Repeat *in situ* measurement to confirm findings; 2. Identify source(s) of impact; 3. Inform IEC and Contractor; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC and Contractor; 6. Ensure mitigation measures are implemented; 7. Prepare to increase the monitoring frequency to daily; 8. Repeat measurement on next day of exceedance, if ET assessment indicates that exceedance is due to contractor's construction work.	1. Discuss with ET and Contractor on the mitigation measures; 2. Review proposals on mitigation measures submitted by Contractor and advise the SOR accordingly; 3. Assess the effectiveness of the implemented mitigation measures.	1. Discuss with IEC on the proposed mitigation measures; 2. Make agreement on the mitigation measures to be implemented; 3. Assess the effectiveness of the implemented mitigation measures.	1. Inform the SOR and confirm notification of exceedance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment; Consider changes of working methods; 4. Discuss with ET and IEC and propose mitigation measures to IEC and SOR within three working days; 5. Implement the agreed mitigation measures.

EVENT	ACTION			
	ET	IEC	SOR	CONTRACTOR
Limit level being exceeded by one sampling day	1. Repeat *in situ* measurement to confirm findings; 2. Identify source(s) of impact; 3. Inform IEC, Contractor and EPD; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC, SOR and Contractor; 6. Ensure mitigation measures are implemented; 7. Increase the monitoring frequency to daily until no exceedance of Limit level, if ET assessment indicates that exceedance is due to contractor's construction work.	1. Discuss with ET and Contractor on the mitigation measures; 2. Review proposals on mitigation measures submitted by Contractor and advise the SOR accordingly; 3. Assess the effectiveness of the implemented mitigation measures.	1. Discuss with IEC, ET and Contractor on the proposed mitigation measures; 2. Request Contractor to critically review the working methods; 3. Make agreement on the mitigation measures to be implemented; 4. Assess the effectiveness of the implemented mitigation measures.	1. Inform the SOR and confirm notification of exceedance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment; 4. Consider changes of working methods; 5. Discuss with ET and IEC and propose mitigation measures to IEC and SOR within three working days; 6. Implement the agreed mitigation measures.
Limit level being exceeded by more than one consecutive sampling days	1. Repeat *in situ* measurement to confirm findings; 2. Identify source(s) of impact; 3. Inform IEC, Contractor and EPD; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC, SOR and Contractor; 6. Ensure mitigation measures are implemented; 7. Increase the monitoring frequency to daily until no exceedance of Limit level for two consecutive days, if ET assessment indicates that exceedance is due to contractor's construction work.	1. Discuss with ET and Contractor on the mitigation measures; 2. Review proposals on mitigation measures submitted by Contractor and advise the SOR accordingly; 3. Assess the effectiveness of the implemented mitigation measures.	1. Discuss with IEC, ET and Contractor on the proposed mitigation measures; 2. Request Contractor to critically review the working methods; 3. Make agreement on the mitigation measures to be implemented; 4. Assess the effectiveness of the implemented mitigation measures; 5. Consider and instruct, if necessary, the Contractor to slow down or to stop all or part of the marine work until no exceedance of Limit level.	1. Inform the SOR and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment; 4. Consider changes of working methods; 5. Discuss with ET and IEC and propose mitigation measures to IEC and SOR within three working days; 6. Implement the agreed mitigation measures; 7. As directed by the SOR, to slow down or to stop all or part of the marine work or construction activities.

APPENDIX E
ENVIRONMENTAL MITIGATION IMPLEMENTATION SCHEDULE (EMIS)

Appendix E Environmental Mitigation Implementation Schedule

Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to Address	Location	Who to Implement?	When to Implement?	What Requirements or Standards to Achieve?	Status
Air Quality Mitigation Measures						
General Measures						
Site clearance and demolition of existing structure						
The working area for the uprooting of trees, shrubs, or vegetation or for the removal of boulders, poles, pillars or temporary or permanent structures should be sprayed with water or a dust suppression chemical immediately before, during and immediately after the operation	To maintain the entire surface wet	Construction site	Contractor	Construction stage	APCO (Cap.311); Air Pollution Control (Construction Dust) Regulation TM on EIAO	√
All demolished items (including trees, shrubs, vegetation, boulders, poles, pillars, structures, debris, rubbish and other items arising from site clearance) that may dislodge dust particles should be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides within a day of demolition	To minimize dust emission	Construction site	Contractor	Construction stage	APCO (Cap.311); Air Pollution Control (Construction Dust) Regulation TM on EIAO	√
Excavation and earth moving						
The working area of any excavation or earth moving operation should be sprayed with water or a dusty suppression chemical immediately before, during and immediately after the operation	To maintain the entire surface wet	Construction site	Contractor	Construction stage	APCO (Cap.311); Air Pollution Control (Construction Dust) Regulation TM on EIAO	√
Excavation or earthworks should be completed as quickly as practicable and exposed earth should be properly treated by compaction, turfing, hydroseeding, vegetation planting or sealing with	To minimize dust emission	Construction site	Contractor	Construction stage	APCO (Cap.311); Air Pollution Control (Construction	N/A

Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to Address	Location	Who to Implement?	When to Implement?	What Requirements or Standards to Achieve?	Status
latex, vinyl, bitumen, shotcrete or other suitable surface stabilizer immediately after the last construction activity					Dust) Regulation TM on EIAO	
Use of vehicle						
Any vehicle with an open load carrying area used for moving materials which have the potential to create dust shall have properly fitted side and tail boards. Materials having the potential to create dust shall not be loaded from a level higher than the side and tail boards, and shall be covered by a clean tarpaulin. The tarpaulin shall be properly secured and shall extend at least 300 mm over the edges of the side and tail boards. The materials shall also be dampened if necessary before transportation	To ensure that the dusty materials do not leak from the vehicle	Construction site	Contractor	Construction stage	APCO (Cap.311); Air Pollution Control (Construction Dust) Regulation TM on EIAO	√
Access road						
Every main haul roads with movement of vehicles exceeds 4 vehicles in any 30 minutes or as directed by the Supervising Officer shall be paved with concrete, bituminous materials, hardcores or metal plates, and kept clear of dusty materials; and sprayed with water or a dust suppression chemical	To maintain the entire road surface wet	Construction site	Contractor	Construction stage	APCO (Cap.311); Air Pollution Control (Construction Dust) Regulation TM on EIAO	√
The portion of any road leading only to a construction site that is within 30m of a discernible or designated vehicle entrance or exit should be kept clear of dusty materials	To minimize dust emissions	The portion of any road leading only to a construction site that is within 30m of a discernible or designated vehicle entrance or exit	Contractor	Construction stage	APCO (Cap.311); Air Pollution Control (Construction Dust) Regulation TM on EIAO	√

Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to Address	Location	Who to Implement?	When to Implement?	What Requirements or Standards to Achieve?	Status
Site boundary and entrance						
Wheel washing facilities including a high-pressure jet shall be installed at every discernible or designated exit points and used by all vehicles leaving the site. No earth, mud, debris, dust and the like shall be deposited on public roads. Water in the wheel cleaning facility shall be changed at frequent intervals and sediments shall be removed regularly.	To minimize dust emissions	Vehicle exit points	Contractor	Construction stage	APCO (Cap.311); Air Pollution Control (Construction Dust) Regulation TM on EIAO	√
The area where wheel washing takes place and the section of the road between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores	To minimize dust being raised	Area where vehicle washing takes place and the section of the road between the washing facilities and the exit point	Contractor	Construction stage	APCO (Cap.311); Air Pollution Control (Construction Dust) Regulation TM on EIAO	√
Where a portion of the Site boundary adjoins a road, street, service and or other area accessible to the public, hoarding of not less than 2.4m from ground level should be provided along the entire length of that portion of the Site boundary except for site entrance or exit	To minimize dust being raised	Site boundary	Contractor	Construction stage	APCO (Cap.311); Air Pollution Control (Construction Dust) Regulation TM on EIAO	√
Stockpiling of dusty materials						
Stockpiles of sand and aggregate greater than $20m^3$ shall be enclosed on three sides, with walls extending above the pile and 2 metres beyond the front of the pile; and all stockpiles shall be covered by a clean tarpaulin or sprayed with a dust suppression chemical	To maintain the entire surface wet	Construction site	Contractor	Construction stage	APCO (Cap.311); Air Pollution Control (Construction Dust) Regulation TM on EIAO	√
Specific Measure						
Water lorries shall be provided to water the site.	To minimize fugitive dust	Construction site	Contractor	Construction stage	ER Part 14 Clause 29.17(16)	√

Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to Address	Location	Who to Implement?	When to Implement?	What Requirements or Standards to Achieve?	Status
	emission					
Twice daily watering of the construction site where construction activities are conducted.	To suppress dust generated	Construction site	Contractor	Construction stage	APCO (Cap.311); Air Pollution Control (Construction Dust) Regulation TM on EIAO	√
Noise Mitigation Measures						
General Measures						
Good Site Practice						
Use of quiet construction equipment and/or employ the quietest practicable working methods when carrying out demolition works, and/or road opening works during restricted hours.	To reduce noise impacts	Construction site	Contractor	Construction stage	NCO (Cap.400); EIAO (cap.499); TM on EIAO;	√
All plant and equipment used on site should be properly maintained in good operating condition	To reduce noise impacts	Construction site	Contractor	Construction stage	NCO (Cap.400); EIAO (cap.499); TM on EIAO; PP-TM; GW-TM; DA-TM	√
Noisy construction activities shall be effectively sound reduced by means of silencers, mufflers, acoustic linings or shields, acoustic sheds or screens or other means to avoid disturbance to any nearby noise sensitive receivers	To reduce noise impacts	Construction site	Contractor	Construction stage	NCO (Cap.400); EIAO (cap.499); TM on EIAO; PP-TM; GW-TM; DA-TM	N/A
Intermittent noisy activities should be scheduled to minimize exposure of nearby NSRs to high levels of construction noise	To reduce noise impacts	Construction site	Contractor	Construction stage	NCO (Cap.400); EIAO (cap.499); TM on EIAO; PP-TM; GW-TM; DA-TM	N/A

Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to Address	Location	Who to Implement?	When to Implement?	What Requirements or Standards to Achieve?	Status
Noisy equipment and activities shall be sited as far from sensitive receivers as practical	To reduce noise impacts	Construction site	Contractor	Construction stage	NCO (Cap.400); EIAO (cap.499); TM on EIAO; PP-TM; GW-TM; DA-TM	√
Idle equipment should be turned off or throttled down. Noisy equipment should be properly maintained and used no more often than is necessary	To reduce noise impacts	Construction site	Contractor	Construction stage	NCO (Cap.400); EIAO (cap.499); TM on EIAO; PP-TM; GW-TM; DA-TM	√
Use of hydraulic concrete crusher whenever applicable	To reduce noise impacts	Construction site	Contractor	Construction stage	ER Part 14 Clause 29.15(14)	N/A
Using Temporary and Movable Noise Barriers						
Movable barriers of 3 to 5m height with a small cantilevered upper portion and skid footing can be located within a few metres of stationary plant and within about 5m or more of mobile equipment such as an excavator and mobile crane etc., such that the line of sight to the NSR is blocked by the barriers	To reduce noise impacts	Stationary plants on construction sites	Contractor	Construction stage	NCO (Cap.400); EIAO (cap.499); TM on EIAO; PP-TM; GW-TM; DA-TM	N/A
Purpose-built noise barriers or screens constructed of appropriate material (minimum superficial density of 15 kg/m^2) located close to operating PME shall be provided, in order to reduce the noise impact to the surrounding sensitive uses. Certain types of PME, such as generators and compressors, can be completely screened by portable barriers giving a total noise reduction of 10 dB(A) or more	To reduce noise impacts	Construction site	Contractor	Construction stage	NCO (Cap.400); EIAO (cap.499); TM on EIAO; PP-TM; GW-TM; DA-TM	N/A
Using Noise Screening Structures or Purpose-						

Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to Address	Location	Who to Implement?	When to Implement?	What Requirements or Standards to Achieve?	Status
built Noise Barriers along the Site Boundary						
Site buildings such as office and stores can be grouped together to form a substantial barrier separating site operations and nearby noise sensitive premises	To reduce noise impacts	Site buildings	Contractor	Construction stage	NCO (Cap.400); EIAO (cap.499); TM on EIAO; PP-TM; GW-TM; DA-TM	N/A
Stacks of certain materials such as bricks, aggregate, timber or top soil can be strategically placed to form a barrier	To reduce noise impacts	Construction site	Contractor	Construction stage	NCO (Cap.400); EIAO (cap.499); TM on EIAO; PP-TM; GW-TM; DA-TM	N/A
For adverse cases, purpose-built noise barriers or screens could be placed along the site boundary	To reduce noise impacts	Site boundary	Contractor	Construction stage	NCO (Cap.400); EIAO (cap.499); TM on EIAO; PP-TM; GW-TM; DA-TM	N/A
Specific Measures						
Use of movable noise barrier for the following construction activities: • construction of viaduct from Tai Lam Kok to Siu Lam including piling, pile cap, bridge piers and abutment, casting of bridge beams and lifting of bridge beams • construction works at Siu Lam Interchange including relocation of CLP power sub-station, bored pile wall construction, road embankment, realignment of access road, roundabout modification, road pavement, utilities, footpath and road furniture	To reduce noise impacts	Work sites of the viaduct from Tai Lam Kok to Siu Lam and Siu Lam Interchange	Contractor	Construction stage		N/A

Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to Address	Location	Who to Implement?	When to Implement?	What Requirements or Standards to Achieve?	Status
Restriction on the usage of operating PME for the following construction activities during the examination period of the schools: • Road reconstruction from Tai Lam Kok to Siu Lam: road construction (excavation of existing pavement, road pavement, footpath and road furniture), utilities, fill slopes recompaction, cut slopes stabilization (soil nailing to cut slopes). • Reclamation at Tai Lam Kok: dredging and sand filling.	To reduce noise impacts	Work sites of the road reconstruction from Tai Lam Kok to Siu Lam and reclamation at Tai Lam Kok	Contractor	Construction stage		N/A
Rescheduling of the following concurrent construction activities so as to avoid simultaneous operating during the examination period of the schools: Seamen's Training Centre • Piling works for viaduct from Tai Lam Kok to Siu Lam and dredging works at Tai Lam Kok • Piling works for viaduct from Tai Lam Kok to Siu Lam and seawall construction at Tai Lam Kok • Pile cap, bridge pier & abutment and filling works at Tai Lam Kok • Fill slope recompaction and soil nailing to cut slopes (cut slopes stabilization) for road reconstruction from Tai Lam Kok to Siu Lam Customs & Excise Training School • Fill slopes recompaction and soil nailing to cut slopes (cut slopes stabilization) along the existing Castle Peak Road from Tai Lam Kok to Siu Lam	To reduce noise impacts	Work sites of the road reconstruction from Tai Lam Kok to Siu Lam and viaduct construction from Tai Lam Kok to Siu Lam	Contractor	Construction stage		N/A

Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to Address	Location	Who to Implement?	When to Implement?	What Requirements or Standards to Achieve?	Status
Low noise road surfacing, using polymer modified friction course material or otherwise as agreed with EPD, on viaduct should be fully implemented.	To mitigate traffic noise impact	Construction site	Contractor	Construction stage	Condition 3.5 of EP-171/2003/A	√
Water Quality Mitigation Measures						
Sediment Dredging						
Dredging should be undertaken using closed grab dredgers with a maximum total production rate of 3,000 m^3 day^{-1}	To avoid water pollution	Construction site	Contractor	Construction stage	WBTC No. 34/2002	√
Deployment of silt curtain around the immediate dredging area while dredging works are in progress	To avoid water pollution	Construction site	Contractor	Construction stage	WBTC No. 34/2002	√
Filling should commence only after the completion of seawall construction and should be undertaken behind the seawalls	To avoid water pollution	Construction site	Contractor	Construction stage	WBTC No. 34/2002	√
Mechanical grabs should be designed and maintained to avoid spillage and seal tightly while being lifted	To avoid water pollution	Construction site	Contractor	Construction stage	WBTC No. 34/2002	√
All vessels should be sized so that adequate clearance is maintained between vessels and the seabed in all tide conditions, to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash	To avoid water pollution	Construction site	Contractor	Construction stage	WBTC No. 34/2002	√
All hopper barges and dredgers should be fitted with tight fitting seals to their bottom openings to prevent leakage of material	To avoid water pollution	Construction site	Contractor	Construction stage	WBTC No. 34/2002	√
Construction activities should not cause foam, oil, grease, scum, litter or other objectionable matter to be present on the water within the site or dumping grounds	To avoid water pollution	Construction site	Contractor	Construction stage	WBTC No. 34/2002	√
Loading of barges and hoppers should be controlled to prevent splashing of dredged	To avoid water pollution	Construction site	Contractor	Construction stage	WBTC No. 34/2002	√

Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to Address	Location	Who to Implement?	When to Implement?	What Requirements or Standards to Achieve?	Status
material into the surrounding water. Barges or hoppers should not be filled to a level that will cause the overflow of materials or polluted water during loading or transportation						
Construction Site Runoff and Drainage						
Before commencing any site formation work, all sewer and drainage connections shall be sealed to prevent debris, soil, sand etc. from entering public sewers/drains	To avoid water pollution	Construction site	Contractor	Construction stage	ProPECC PN 1/94	√
Provision of perimeter channels to intercept storm-runoff from outside the site. These shall be constructed in advance of site formation works and earthworks	To avoid water pollution	Construction site	Contractor	Construction stage	ProPECC PN 1/94	√
Temporary ditches such as channels, earth bunds or sand bag barriers shall be included to facilitate runoff discharge into the stormwater drain, via a sand/silt basin/trap	To avoid water pollution	Construction site	Contractor	Construction stage	ProPECC PN 1/94	√
Works programmes shall be designed to minimise works areas at any one time, thus minimising exposed soil areas and reducing the potential for increased siltation and runoff	To avoid water pollution	Construction site	Contractor	Construction stage	ProPECC PN 1/94	√
Sand/silt removal facilities such as sand traps, silt traps and sediment basins shall be provided to remove the sand/silt particles from run-off. These facilities shall be properly and regularly cleaned and maintained. These facilities shall be carefully planned to ensure that they would be installed at appropriate locations to capture all surface water generated on site	To avoid water pollution	Construction site	Contractor	Construction stage	ProPECC PN 1/94	√
Careful programming of the works to minimise excavation works during the rainy season	To avoid water pollution	Construction site	Contractor	Construction stage	ProPECC PN 1/94	√

Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to Address	Location	Who to Implement?	When to Implement?	What Requirements or Standards to Achieve?	Status
Temporary access roads shall be protected by crushed gravel and exposed slope surfaces shall be protected when rainstorms are likely	To avoid water pollution	Construction site	Contractor	Construction stage	ProPECC PN 1/94	√
Open stockpiles of construction materials on-site shall be covered with tarpaulin or similar fabric during rainstorms to prevent erosion	To avoid water pollution	Construction site	Contractor	Construction stage	ProPECC PN 1/94	√
General Construction Activities						
Debris and rubbish generated on-site should be collected, handled and disposed of properly to avoid entering the nearby coastal waters and stormwater drains	To avoid water pollution	Construction site	Contractor	Construction stage	ProPECC PN 1/94	√
All fuel tanks and store areas shall be provided with locks and be sited on sealed areas, within bunds of a capacity equal to 110% of the storage capacity	To avoid water pollution	Construction site	Contractor	Construction stage	ProPECC PN 1/94	√
Open drainage channels and culverts near the works areas should be covered to block the entrance of large debris and refuse	To avoid water pollution	Construction site	Contractor	Construction stage	ProPECC PN 1/94	N/A
Sewage from Workforce						
Portable toilets shall be provided by the Contractors, where necessary, to handle sewage from the workforce	To avoid water pollution	Construction site	Contractor	Construction stage	ProPECC PN 1/94	√
Road Drainage						
The silt traps should be regularly cleaned and maintained in good working condition	To avoid water pollution	Road drainage system	Highways Department	Operation stage	ProPECC PN 5/93	N/A
Waste Management Mitigation Measures						
Handling and Disposal of Dredged Materials						
In accordance with the WBTC No. 34/2002, the seriously contaminated material must be dredged and transported with great care. Mitigation measures, including the use of closed-grab	To ensure the wastes are adequately managed	Construction site	Contractor	Construction stage	WBTC No. 34/2002	√

Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to Address	Location	Who to Implement?	When to Implement?	What Requirements or Standards to Achieve?	Status
dredgers, shall be incorporated						
The dredged contaminated sediment must be effectively isolated from the environment upon final disposal and shall be disposed of at the East Sha Chau Contaminated Mud Pits	To ensure the wastes are adequately managed	Construction site	Contractor	Construction stage	WBTC No. 34/2002	√
During transportation and disposal of the dredged marine sediments, bottom opening of barges shall be fitted with tight fitting seals to prevent leakage of material. Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved	To ensure the wastes are adequately managed	Construction site	Contractor	Construction stage	WBTC No. 34/2002	√
During transportation and disposal of the dredged marine sediments, monitoring of the barge loading shall be conducted to ensure that loss of material does not take place during transportation. Transport barges or vessels shall be equipped with automatic self-monitoring devices as specified by the Director of Environmental Protection	To ensure the wastes are adequately managed	Construction site	Contractor	Construction stage	WBTC No. 34/2002	√
Good Site Practices and Waste Reduction Measures						
Use waste haulier authorized or licensed to collect specific category of waste	To ensure the wastes are adequately managed	Construction site	Contractor	Construction stage	WDO (Cap.54)	√
Obtain the necessary waste disposal permits from the appropriate authorities, if they are required, in accordance with the *Waste Disposal Ordinance (Cap 354, Waste Disposal (Chemical Waste) (General) Regulation (Cap 354), the Land (Miscellaneous Provision) Ordinance (Cap 28)*	To ensure the wastes are adequately managed	Construction site	Contractor	Construction stage	WDO (Cap.54)	√

Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to Address	Location	Who to Implement?	When to Implement?	What Requirements or Standards to Achieve?	Status
Nomination of an approved personnel, such as a site manager, to be responsible for good site practice, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site	To ensure the wastes are adequately managed	Construction site	Contractor	Construction stage	WDO (Cap.54)	√
Training of site personnel in proper waste management and chemical handling procedures	To ensure the wastes are adequately managed	Construction site	Contractor	Construction stage	WDO (Cap.54)	√
Provision of sufficient waste disposal points and regular collection for disposal	To ensure the wastes are adequately managed	Construction site	Contractor	Construction stage	WDO (Cap.54)	√
Appropriate measures to minimise windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers	To ensure the wastes are adequately managed	Construction site	Contractor	Construction stage	WDO (Cap.54)	N/A
Separation of chemical wastes for special handling and appropriate treatment at the CWTF	To ensure the wastes are adequately managed	Construction site	Contractor	Construction stage	WDO (Cap.54)	N/A
Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors	To ensure the wastes are adequately managed	Construction site	Contractor	Construction stage	WDO (Cap.54)	√
A recording system for the amount of wastes generated, recycled and disposed of (including the disposal sites)	To ensure the wastes are adequately managed	Construction site	Contractor	Construction stage	WDO (Cap.54)	√
In order to monitor the disposal of C&D and solid wastes at public filling facilities and landfills, and control fly-tipping, a trip-ticket system should be	To ensure the wastes are adequately	Construction site	Contractor	Construction stage	WDO (Cap.54)	√

Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to Address	Location	Who to Implement?	When to Implement?	What Requirements or Standards to Achieve?	Status
included as one of the contractual requirements and implemented by the Environmental Team. One may make reference to WBTC No. 5/99 for details	managed					
A Waste Management Plan (WMP) should be prepared and this WMP should be submitted to the SOR for approval. One may make reference to WBTC No. 15/2003 for details	To ensure the wastes are adequately managed	Construction site	Contractor	Construction stage	WDO (Cap.54)	√
Segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal	To ensure the wastes are adequately managed	Construction site	Contractor	Construction stage	WBTC No. 4/98	√
To encourage collection of aluminium cans by individual collectors, separate labelled bins shall be provided to segregate this waste from other general refuse generated by the work force	To ensure the wastes are adequately managed	Construction site	Contractor	Construction stage	WBTC No. 4/98	√
Any unused chemicals or those with remaining functional capacity shall be recycled	To ensure the wastes are adequately managed	Construction site	Contractor	Construction stage	WBTC No. 4/98	N/A
Use of reusable non-timber formwork to reduce the amount of C&D material	To ensure the wastes are adequately managed	Construction site	Contractor	Construction stage	WBTC No. 4/98	√
Prior to disposal of C&D waste, it is recommended that wood, steel and other metals shall be separated for re-use and / or recycling to minimise the quantity of waste to be disposed of to landfill	To ensure the wastes are adequately managed	Construction site	Contractor	Construction stage	WBTC No. 4/98	√
Proper storage and site practices to minimise the potential for damage or contamination of construction materials	To ensure the wastes are adequately	Construction site	Contractor	Construction stage	WBTC No. 4/98	√

Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to Address	Location	Who to Implement?	When to Implement?	What Requirements or Standards to Achieve?	Status
	managed					
Plan and stock construction materials carefully to minimize amount of waste generated and avoid unnecessary generation of waste	To ensure the wastes are adequately managed	Construction site	Contractor	Construction stage	WBTC No. 4/98	√
Construction and Demolition (C&D) Waste						
Careful design, planning and good site management can minimize over-ordering and generation of waste materials such as concrete, mortar and cement grouts. The design of formwork should maximize the use of standard wooden panels so that high reuse levels can be achieved. Alternatives such as steel formwork or plastic facing should be considered to increase the potential for reuse	To minimize over-ordering and generation of waste materials, and to increase the potential for reuse	Construction site	Contractor	Construction stage	TM on EIAO; WDO; Land (Miscellaneous Provision) Ordinance (Cap.28); Public Health and Municipal Services Ordinance (Cap.132); HKPSG; New Disposal Arrangements for Construction Waste; Various WBTC	√
The contractor should use as much of the C&D material as possible on-site. Proper segregation of waste types on site will increase the feasibility of certain components of the waste stream by recycling contractors	To increase the feasibility of certain components of the waste stream by recycling companies	Construction site	Contractor	Construction stage	TM on EIAO; WDO; Land (Miscellaneous Provision) Ordinance (Cap.28); Public Health	√

Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to Address	Location	Who to Implement?	When to Implement?	What Requirements or Standards to Achieve?	Status
					and Municipal Services Ordinance (Cap.132); HKPSG; New Disposal Arrangements for Construction Waste; Various WBTC	
Inert C&D material (public fill) are directed to reclamation areas, where they have the added benefit of offsetting the need for removal of materials from borrow areas for reclamation purposes, or to an approved public filling area (PFA)	To handle waste properly	Construction site	Contractor	Construction stage	TM on EIAO; WDO; Land (Miscellaneous Provision) Ordinance (Cap.28); Public Health and Municipal Services Ordinance (Cap.132); HKPSG; New Disposal Arrangements for Construction Waste; Various WBTC	N/A
Chemical Wastes						
After use, chemical wastes should be handled according to the Code of Practice on the Packaging, Labeling and Storage of Chemical	To ensure the wastes are adequately	Construction site	Contractor	Construction stage	Waste Disposal (Chemical Waste) (General)	N/A

Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to Address	Location	Who to Implement?	When to Implement?	What Requirements or Standards to Achieve?	Status
Wastes. Spent chemicals should be stored and collected by an approved operator for disposal at the Chemical Waste Treatment Facility or other licensed facility in accordance with the Chemical Waste (General) Regulation	managed				Regulation; Code of Practice on the Packaging Labelling and Storage of Chemical Wastes	
Containers used for the storage of chemical waste should: • Be suitable for the substance they are holding, resistant to corrosion, maintained in good condition, and securely closed; • Have a capacity of less than 450 litres unless the specifications have been approved by the EPD; and • Display a label in English and Chinese in accordance with instructions prescribed in Schedule 2 of the Regulations	To ensure the wastes are adequately managed	Construction site	Contractor	Construction stage	Waste Disposal (Chemical Waste) (General) Regulation; Code of Practice on the Packaging Labelling and Storage of Chemical Wastes	N/A
The storage area for chemical waste should: • Be clearly labeled and used solely for the storage of chemical waste; • Be enclosed on at least 3 sides; • Have an impermeable floor and bunding, of capacity to accommodate 110% of the volume of the largest container or 20% by volume of the chemical waste stored in that area, whichever is the greatest; • Have adequate ventilation; • Be covered to prevent rainfall entering (water collected within the bund must be tested and disposal as chemical waste if necessary);	To ensure the wastes are adequately managed	Construction site	Contractor	Construction stage	Waste Disposal (Chemical Waste) (General) Regulation; Code of Practice on the Packaging Labelling and Storage of Chemical Wastes	√

Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to Address	Location	Who to Implement?	When to Implement?	What Requirements or Standards to Achieve?	Status
and Be arranged so that incompatible materials are adequately separated.						
Disposal of chemical waste should: • Be via a licensed waste collector. • Be a facility licensed to receive chemical waste, such as the Chemical Waste Treatment Facility which offers a chemical waste collection service and can supply the necessary storage containers; or be a reuser of the waste, under approval from the EPD. Be a reuser of the waste, under approval from the EPD	To ensure the wastes are adequately managed	Construction site	Contractor	Construction stage	Waste Disposal (Chemical Waste) (General) Regulation; Code of Practice on the Packaging Labelling and Storage of Chemical Wastes	N/A
General Refuse						
General refuse should be stored in enclosed bins or compaction units separate from C&D and chemical wastes. A reputable waste collector should be employed by the contractor to remove general refuse from the site, separately from C&D and chemical wastes, on a daily or every second day basis to minimize odour, pest and litter impacts	To ensure the wastes are adequately managed	Construction site	Contractor	Construction stage	PHMSO; Air Pollution Control (Open Burning) Regulation	√
Office waste can be reduced through recycling of paper if volumes are large enough to warrant collection. Participation in a local collection scheme should be considered if one is available	To ensure the wastes are adequately managed	Construction site	Contractor	Construction stage	PHMSO; Air Pollution Control (Open Burning) Regulation	√
Ecology Mitigation Measures						
On-site planting should be provided if there are loss of vegetation due to construction activities	To restore vegetation	Construction site	Contractor	Construction stage		√

Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to Address	Location	Who to Implement?	When to Implement?	What Requirements or Standards to Achieve?	Status
Erect fences where practical along the boundary of construction sites	To protect vegetation	Construction site	Contractor	Construction stage		√
Check the work site boundaries regularly	To protect vegetation	Construction site	Contractor	Construction stage		√
Prohibit and prevent open fires within the site boundary and provide temporary fire fighting equipment	To protect vegetation	Construction site	Contractor	Construction stage		√
Reinstate temporary work sites / disturbed areas to its original condition immediately after completion of the construction	To restore vegetation	Construction site	Contractor	Construction stage		N/A
Landscape and Visual Mitigation Measures						
Construction programming and management						
The construction programme for the Project should be reduced to the shortest possible period, particularly in those locations where severe or high landscape and visual impacts are expected	To ensure landscape and visual amenities are properly managed	Construction site	Contractor	Construction stage		N/A
Keeping the periphery of the works areas at street level clean and tidy and attractive and convenient for pedestrians	To ensure landscape and visual amenities are properly managed	Construction site	Contractor	Construction stage		√
Use of colourful hoarding with interesting motifs	To ensure landscape and visual amenities are properly managed	Construction site	Contractor	Construction stage		N/A
Advanced planting and erosion control works						
Advance planting of trees and landscape areas	To ensure landscape and visual amenities are properly	Construction site	Contractor	Construction stage		√

Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to Address	Location	Who to Implement?	When to Implement?	What Requirements or Standards to Achieve?	Status
	managed					
Temporary hydroseeding of stockpiled topsoil to minimise erosion and improve the visual appearance	To ensure landscape and visual amenities are properly managed	Construction site	Contractor	Construction stage		N/A
Maintenance and Management of planting during operation	To ensure landscape and visual amenities are properly managed	Construction site	LCSD	Operation stage	WBTC 18/94 LU/GN001	√
Maximisation of amenity planting in road corridor						
Opportunities to incorporate significant amenity areas along the alignment should be maximised to provide visual relief in an otherwise congested traffic environment. Efforts to remove the footpath from the immediate road edge are to be incorporated whenever possible	To ensure landscape and visual amenities are properly managed	Construction site	HyD	Design stage		N/A
Substantial planting of amenity areas	To ensure landscape and visual amenities are properly managed	Construction site	Contractor	Construction stage		√
Maintenance of planting during operation	To ensure landscape and visual amenities are properly managed	Construction site	LCSD	Operation stage	WBTC 18/94 LU/GN001	√
Design, materials and finishes of engineering structures						
The quality of the design of all engineering structures, which will include viaducts, parapets,	To ensure landscape and	Construction site	Contractor	Design stage	ACABAS Submission HyD	√

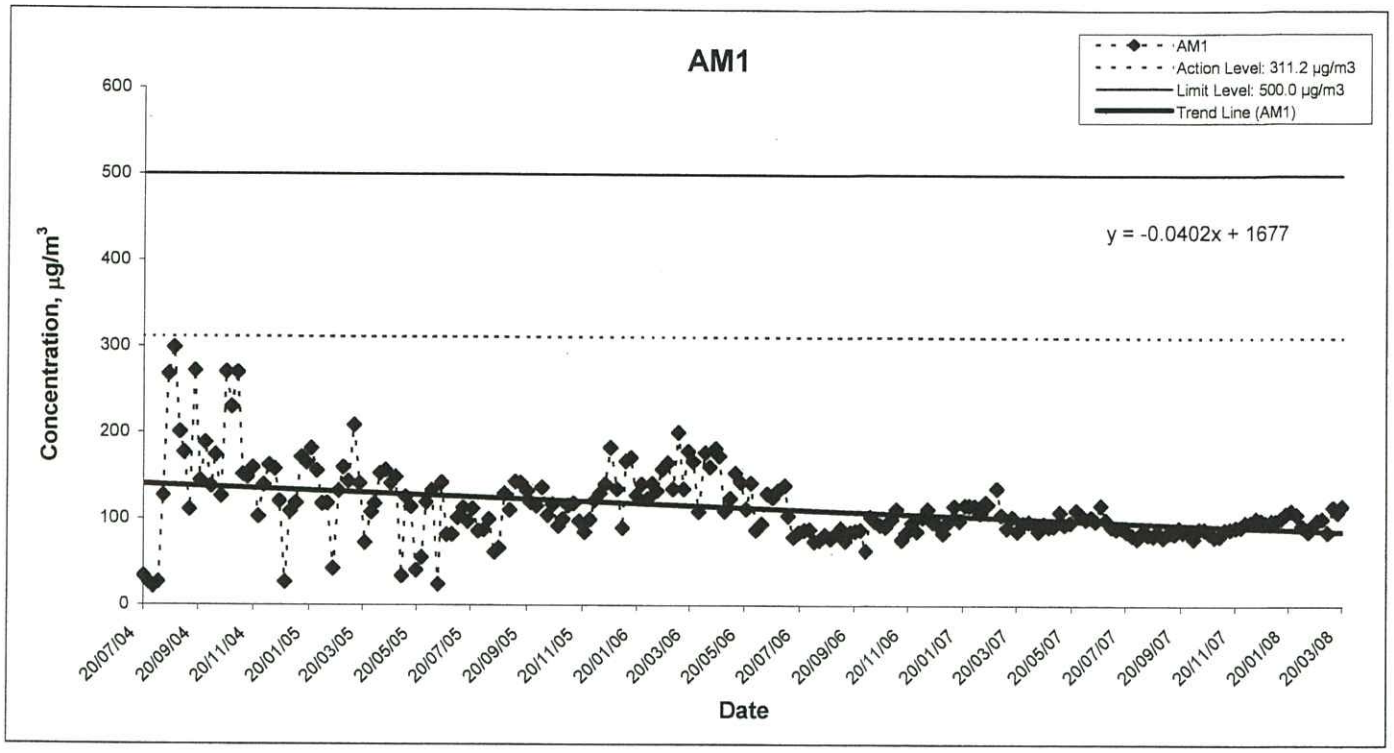
Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to Address	Location	Who to Implement?	When to Implement?	What Requirements or Standards to Achieve?	Status
piers, slip roads, noise barriers, noise enclosures and drainage systems. Attention should be given to design modern and attractive structures	visual amenities are properly managed				Standards	
High quality finishes to structural elements	To ensure landscape and visual amenities are properly managed	Construction site	Contractor	Construction stage		N/A
Maintenance and management during operation	To ensure landscape and visual amenities are properly managed	Construction site	HyD	Operation stage		√
Maximisation of woodland planting on disturbed land						
Compensatory planting	To ensure landscape and visual amenities are properly managed	Construction site	Contractor	Construction stage	WBTC 25/93	N/A
Maintenance and Management of planting during operation	To ensure landscape and visual amenities are properly managed	Construction site	LCSD	Operation stage	WBTC 18/94 LU/GN/001	√
Urban area under-viaduct hard and soft landscape works						
Where viaducts result in sterilised space under viaducts, extensive hard and soft landscape works should be provided to enhance and restore the function of the land, including creepers and climbers on retaining walls and supporting	To ensure landscape and visual amenities are properly managed	Construction site	Contractor	Construction stage		N/A

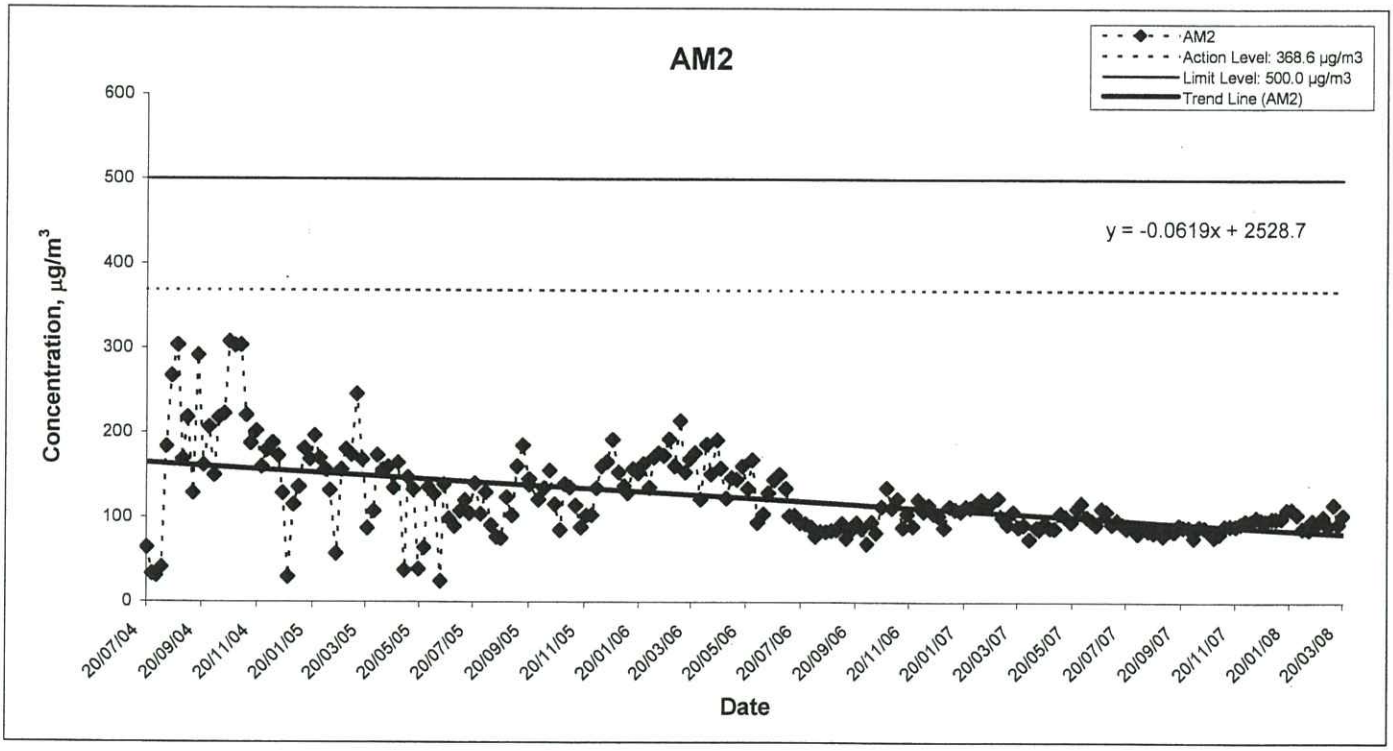
Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to Address	Location	Who to Implement?	When to Implement?	What Requirements or Standards to Achieve?	Status
columns						
Maintenance and management of during operation	To ensure landscape and visual amenities are properly managed	Construction site	ASD/LCSD/HyD	Operation stage	WBTC 18/94 LU/GN/001	√

Note:

√	Compliance of mitigation measure
×	Non-compliance of mitigation measures
•	Non-compliance but rectified by the contractor
N/A	Not applicable

APPENDIX F
GRAPHICAL PRESENTATION OF AIR QUALITY MONITORING RESULTS





ENSR | AECOM	HY/2003/04 Improvement to Castle Peak Road between Ka Loon Tsuen and Siu Lam **Graphical Presentation of 1-hour TSP Monitoring Results for Location AM1 and AM2**	SCALE	N.T.S.	DATE	2008
		CHECK	FLWY	DRAWN	LLMC
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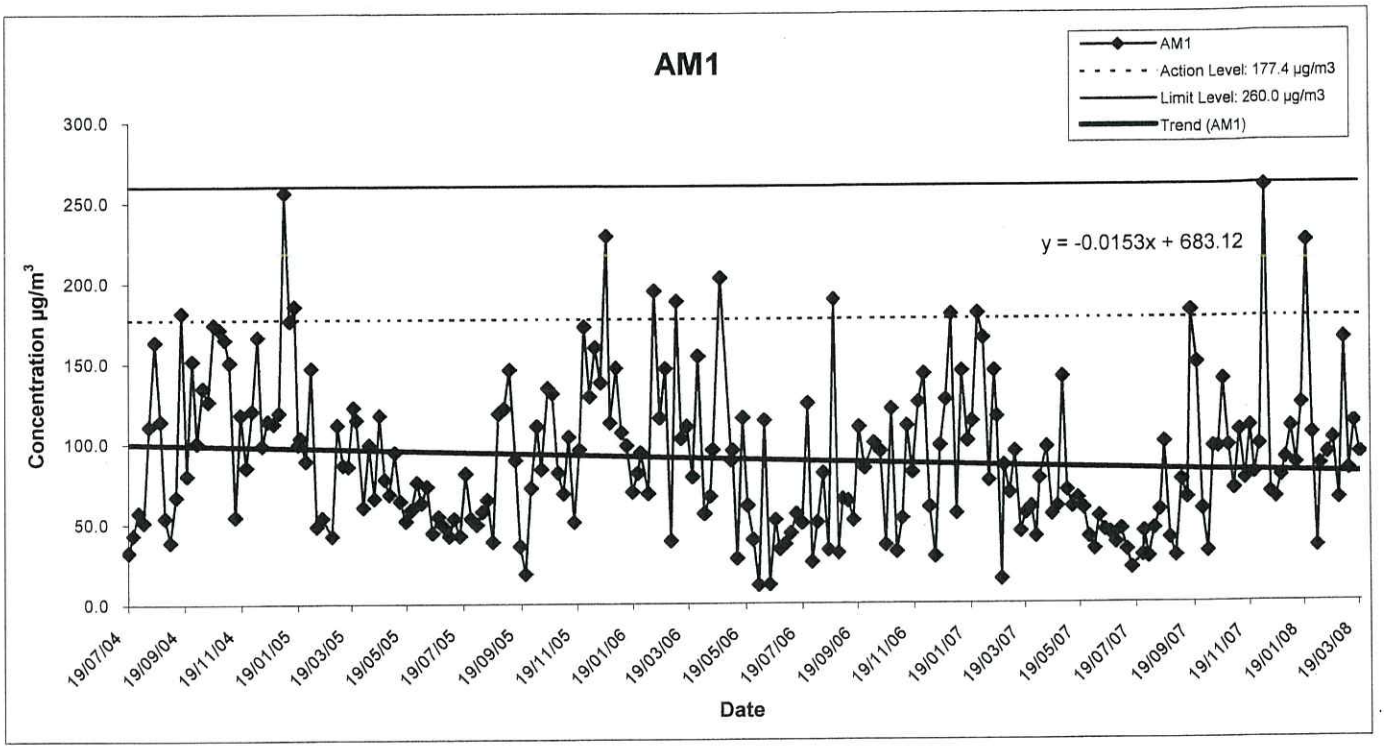
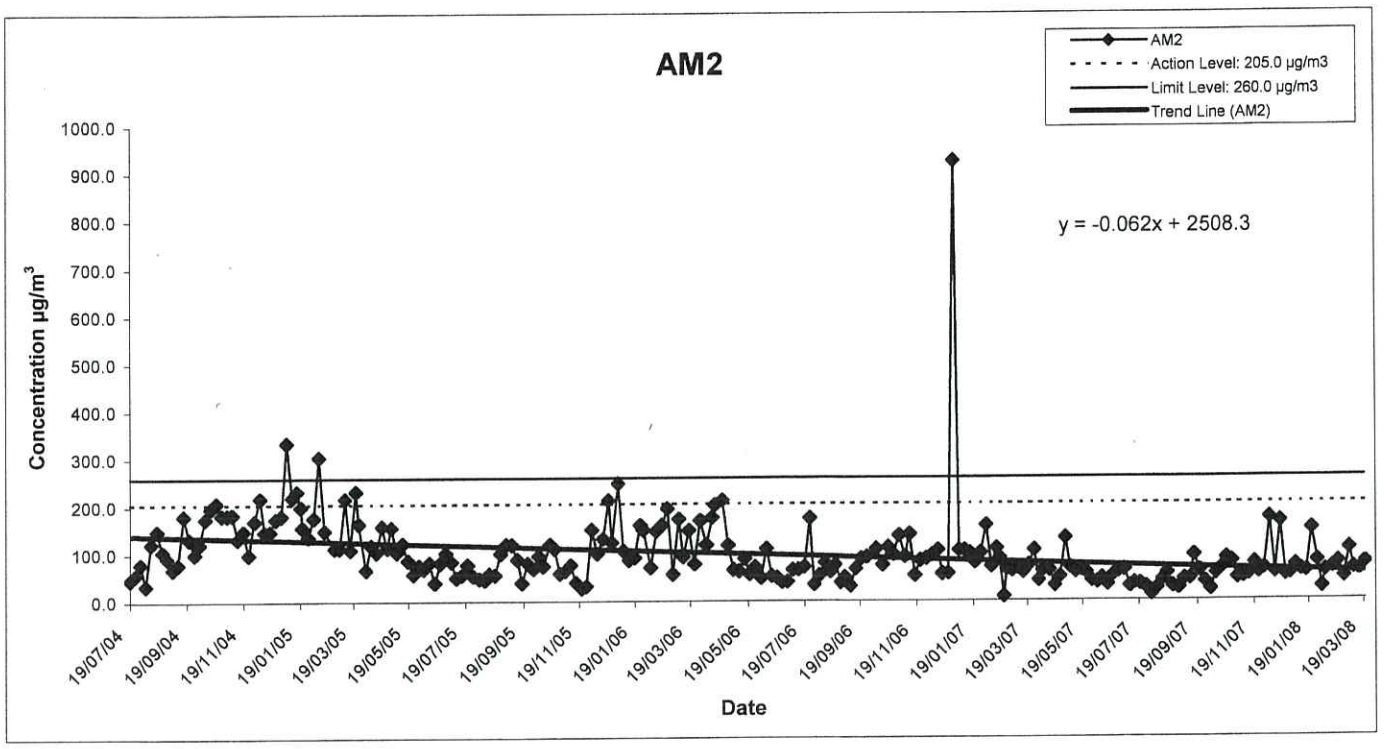
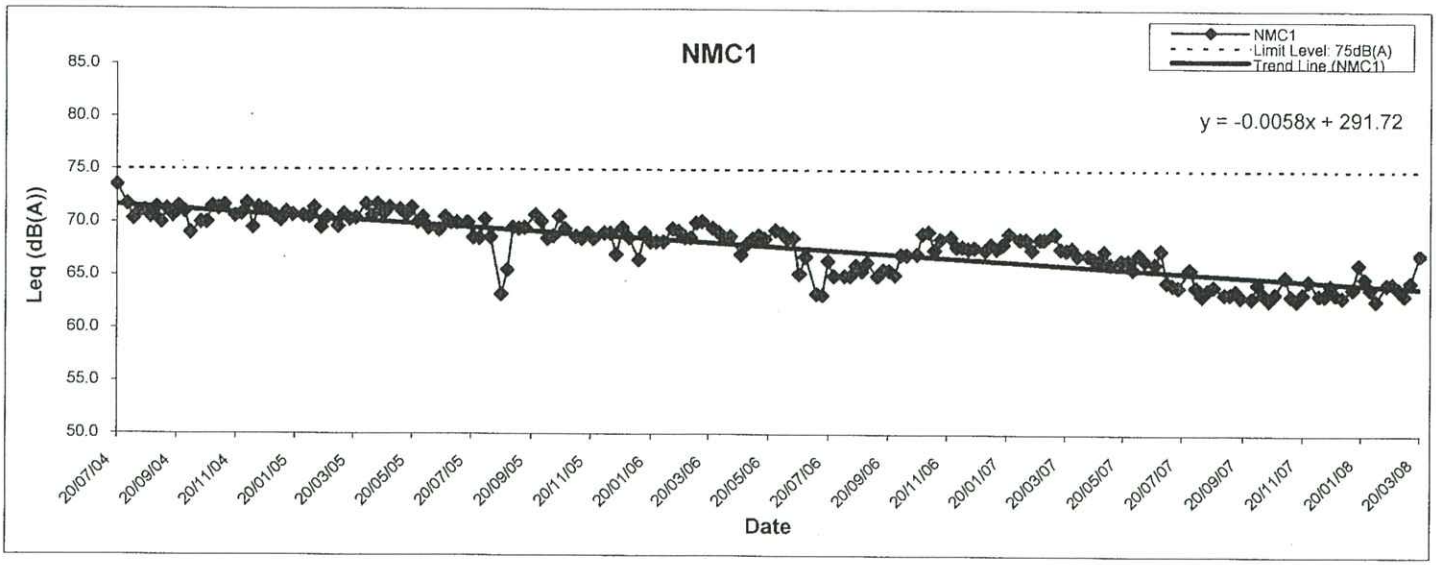
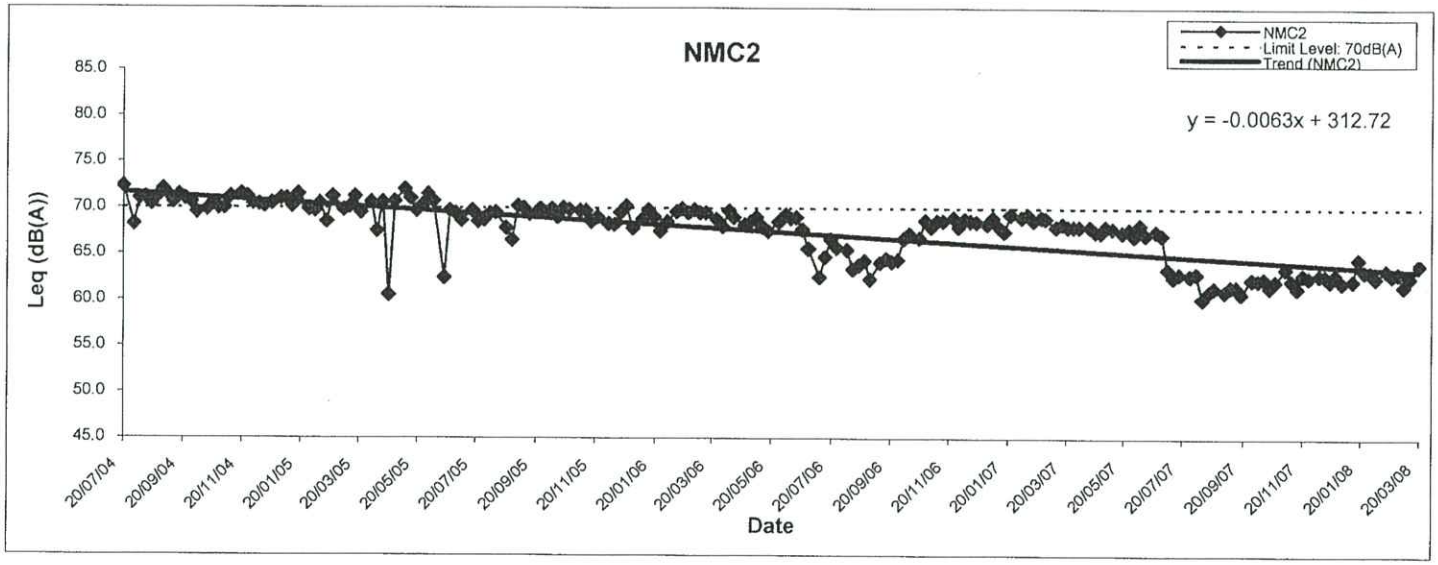


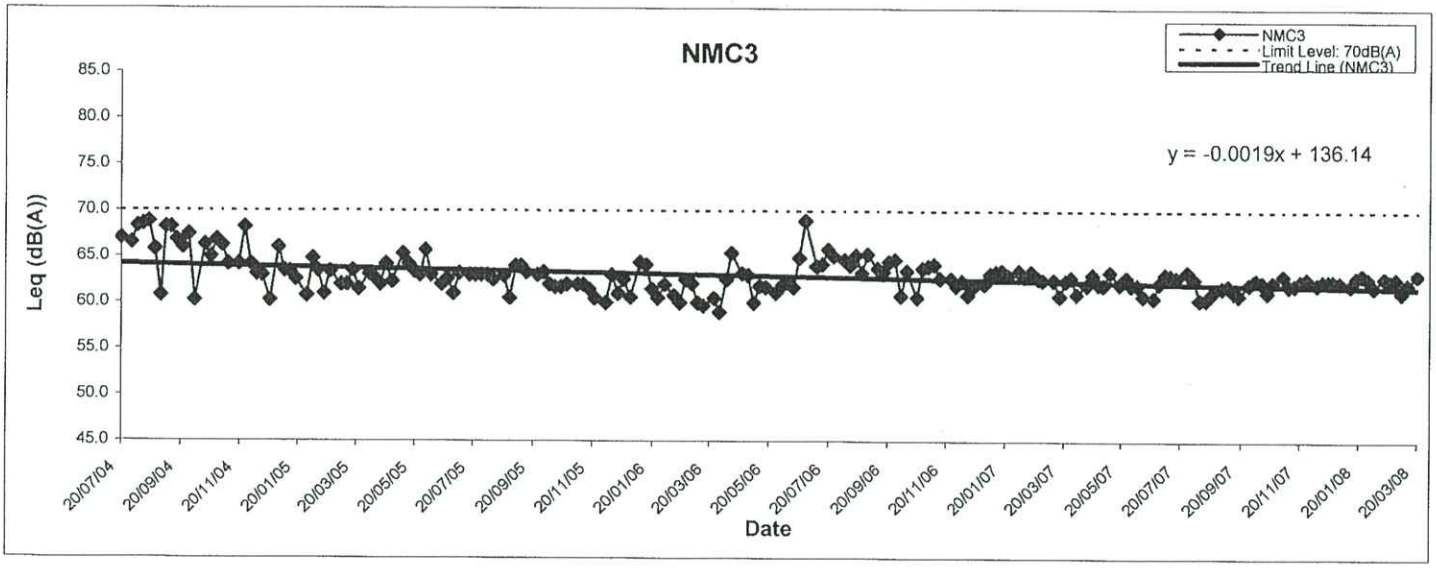


ENSR | AECOM	HY/2003/04 Improvement to Castle Peak Road between Ka Loon Tsuen and Siu Lam **Graphical Presentation of 24-hour TSP Monitoring Results for Location AM1 and AM2**	SCALE	N.T.S.	DATE	2008
		CHECK	FLWY	DRAWN	LLMC
		JOB NO.	60016763	APPENDIX F	Rev -

APPENDIX G
GRAPHICAL PRESENTATION OF NOISE MONITORING RESULTS







ENSR | AECOM

HY/2003/04 Improvement to Castle Peak Road between Ka Loon Tsuen and Siu Lam

Graphical Presentation of Noise Monitoring Results for Location NMC1, NMC2 and NMC3

SCALE	N.T.S.	DATE	2008
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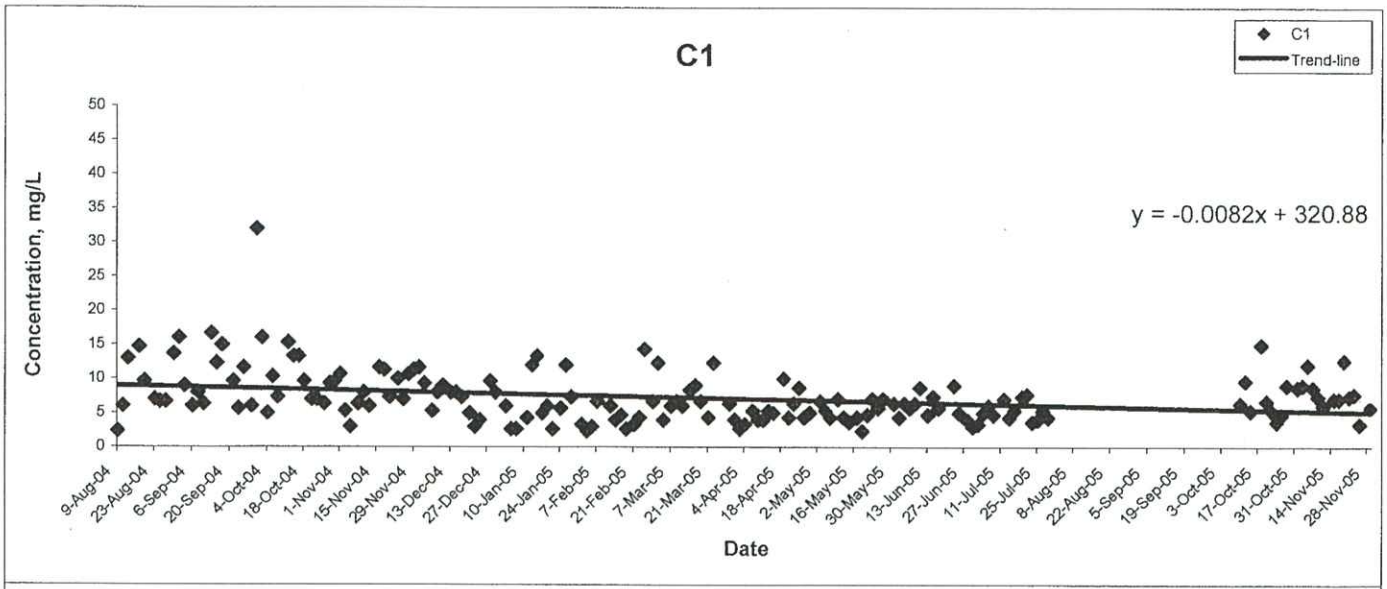
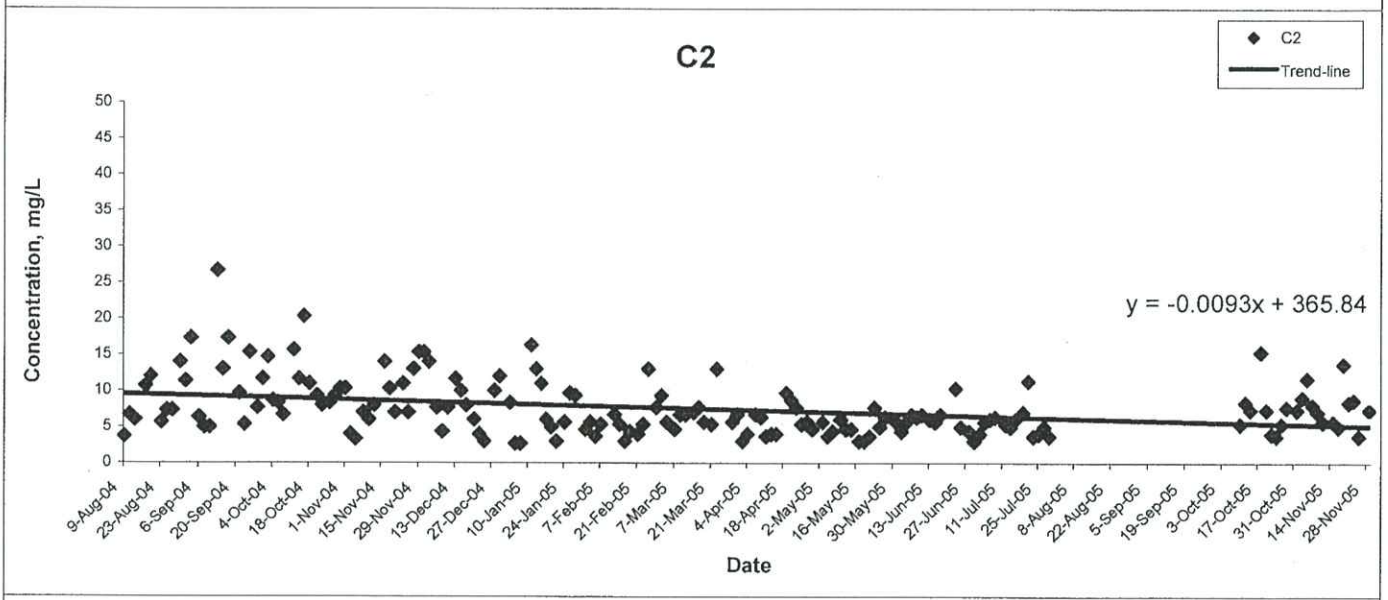
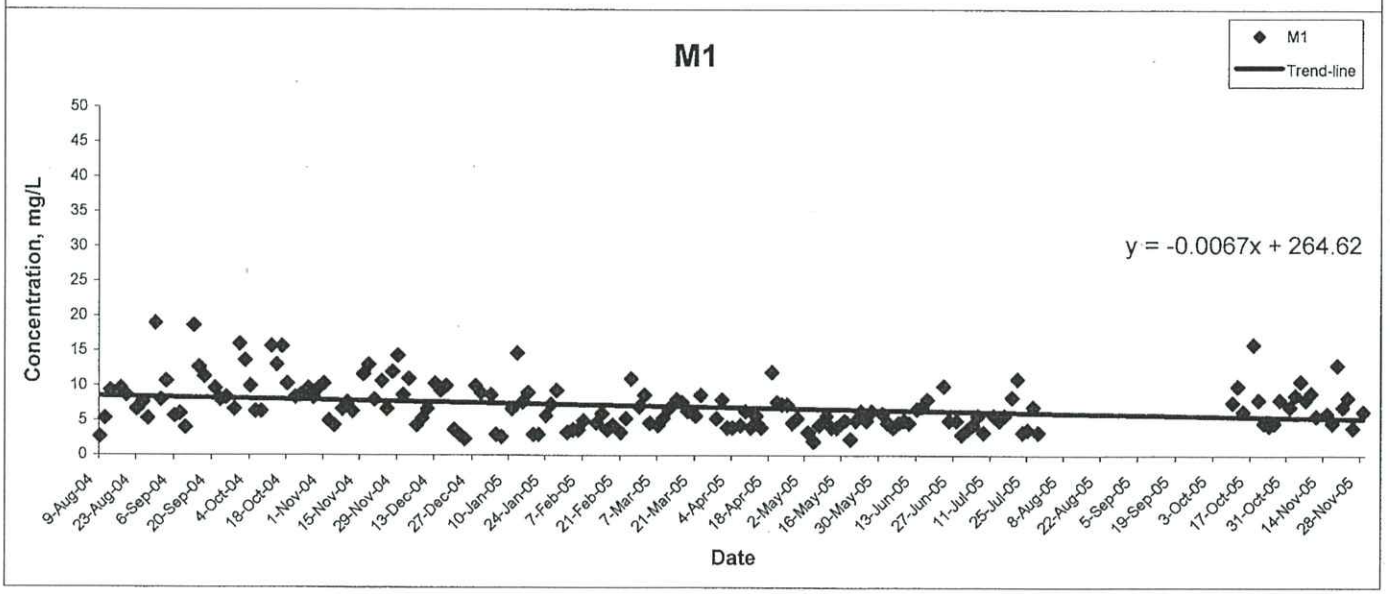
APPENDIX H
GRAPHICAL PRESENTATION OF WATER QUALITY MONITORING RESULTS

Suspended Solids at Mid-Ebb Tide







ENSR | AECOM	Contract No.HY/2003/04 - Improvement to Castle Peak Road between Ka Loon Tsuen and Siu Lam **Graphical Presentation of Water Quality Monitoring Results**	SCALE	N.T.S.	DATE	2008
		CHECK	EWCM	DRAWN	LLMC
		JOB NO.	60016763	APPENDIX	H
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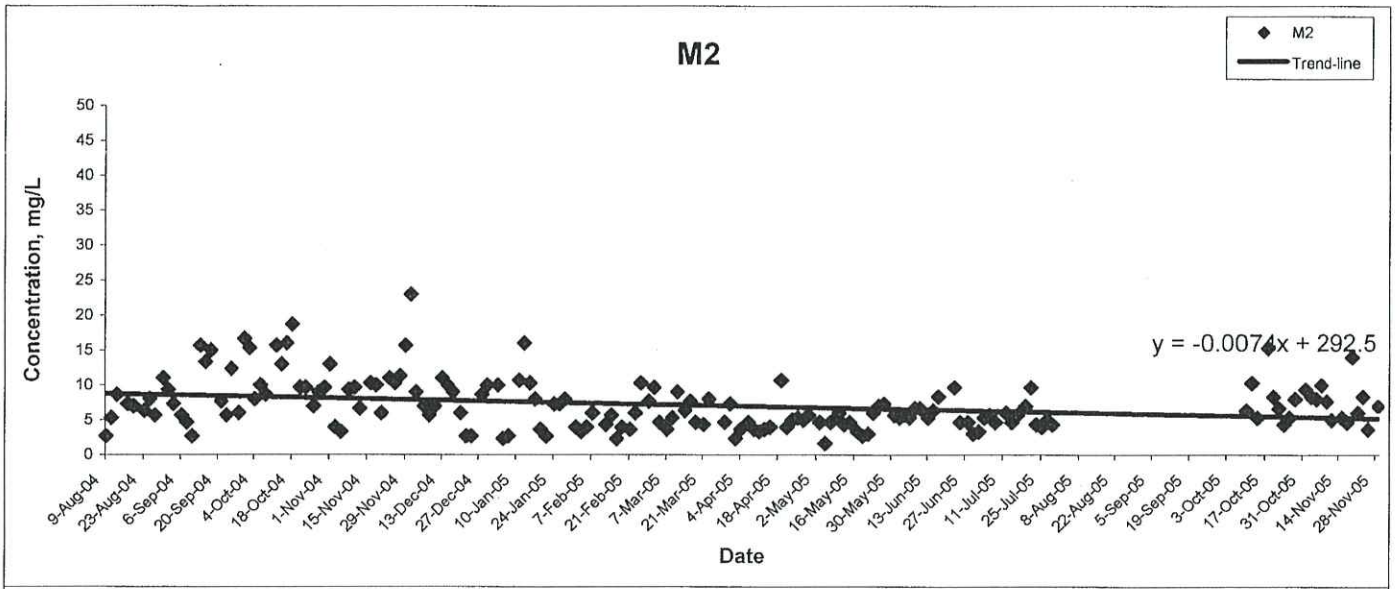
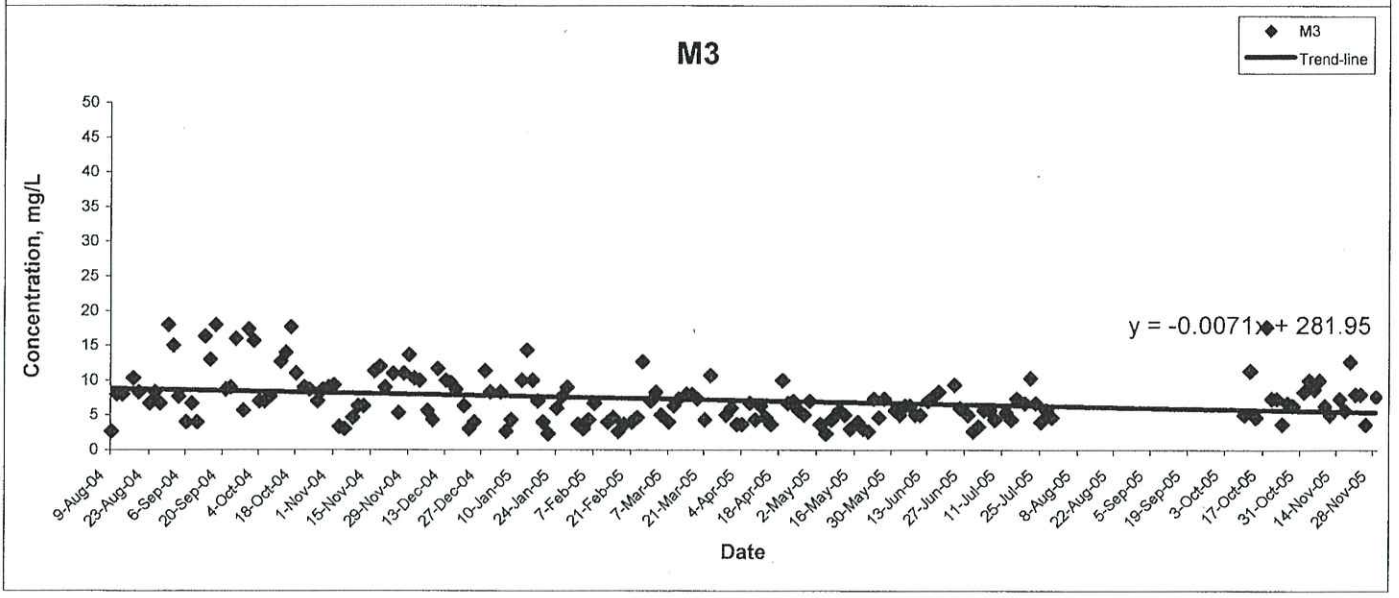
Suspended Solids at Mid-Ebb Tide





ENSR | AECOM	Contract No.HY/2003/04 - Improvement to Castle Peak Road between Ka Loon Tsuen and Siu Lam **Graphical Presentation of Water Quality Monitoring Results**	SCALE	N.T.S.	DATE	2008
		CHECK	EWCM	DRAWN	LLMC
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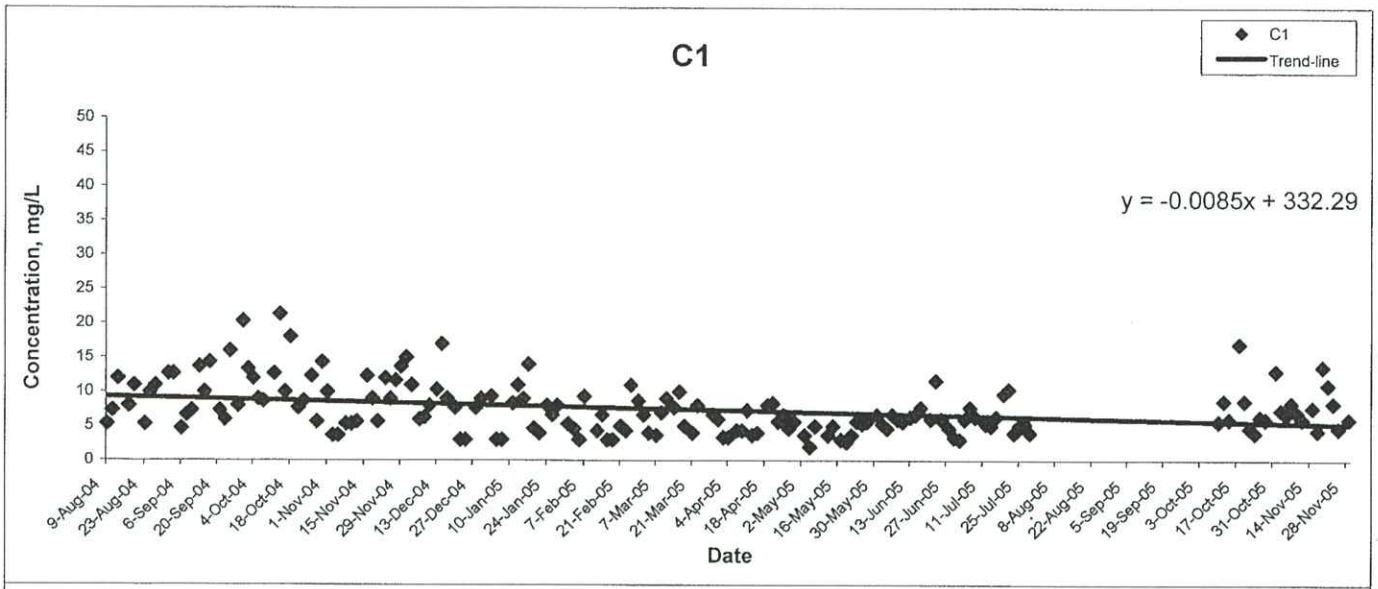
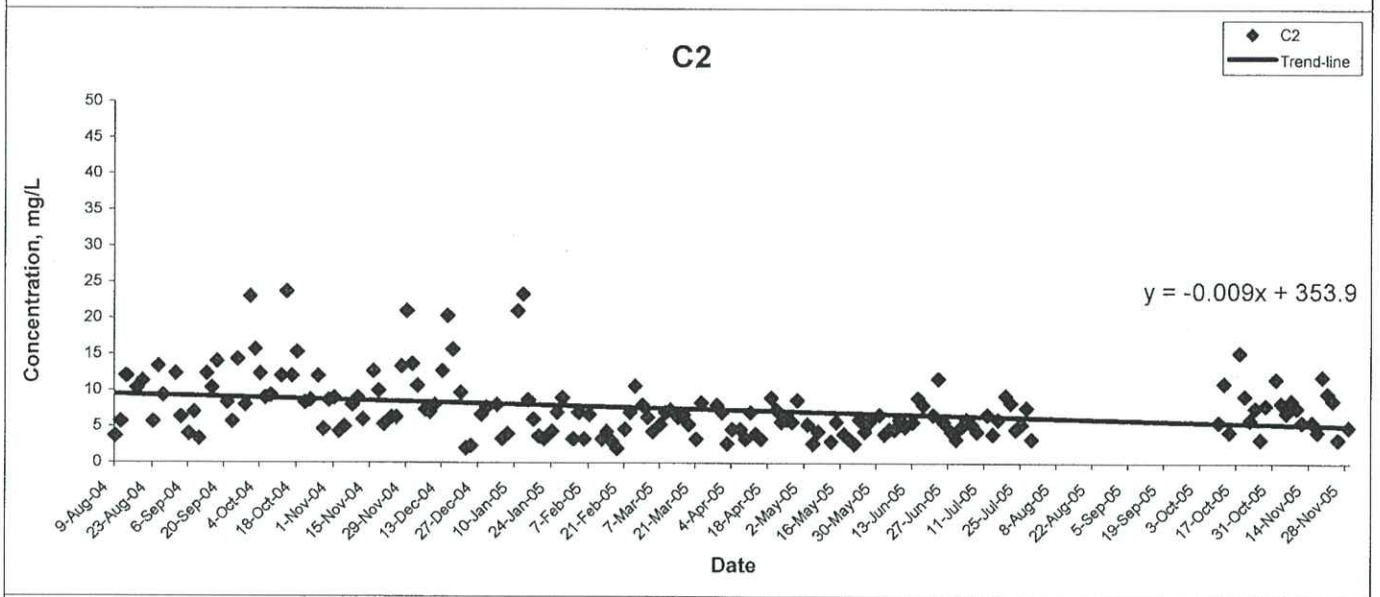
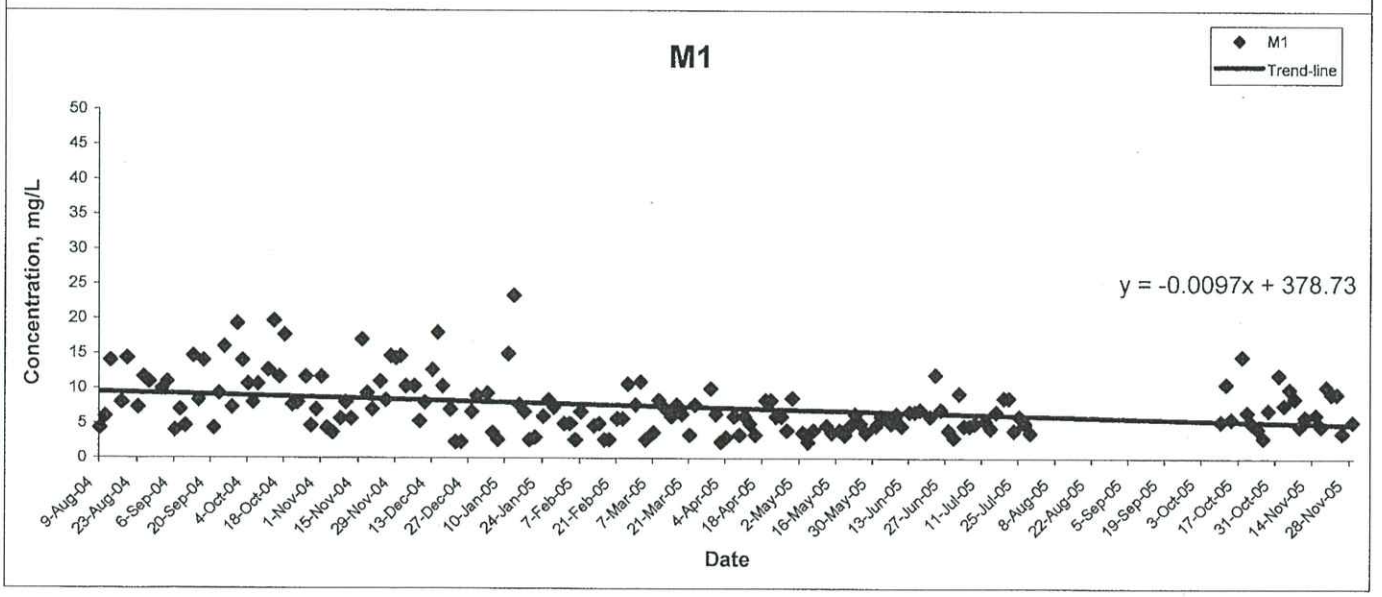
Suspended Solids at Mid-Flood Tide

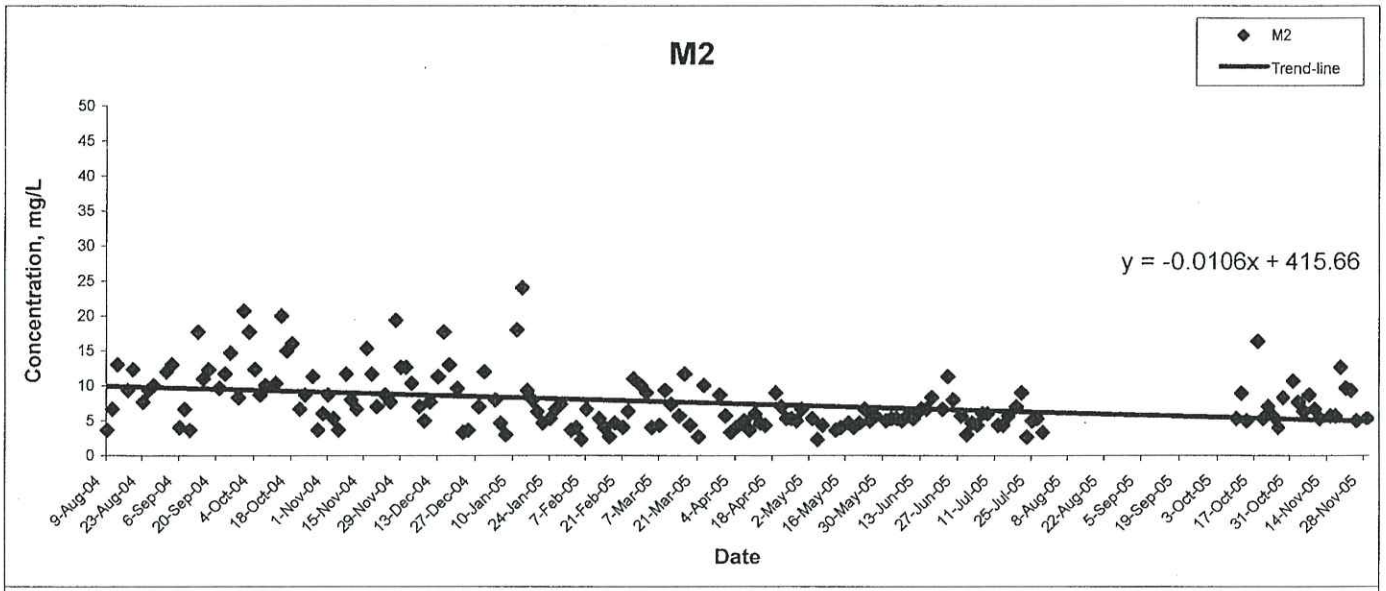


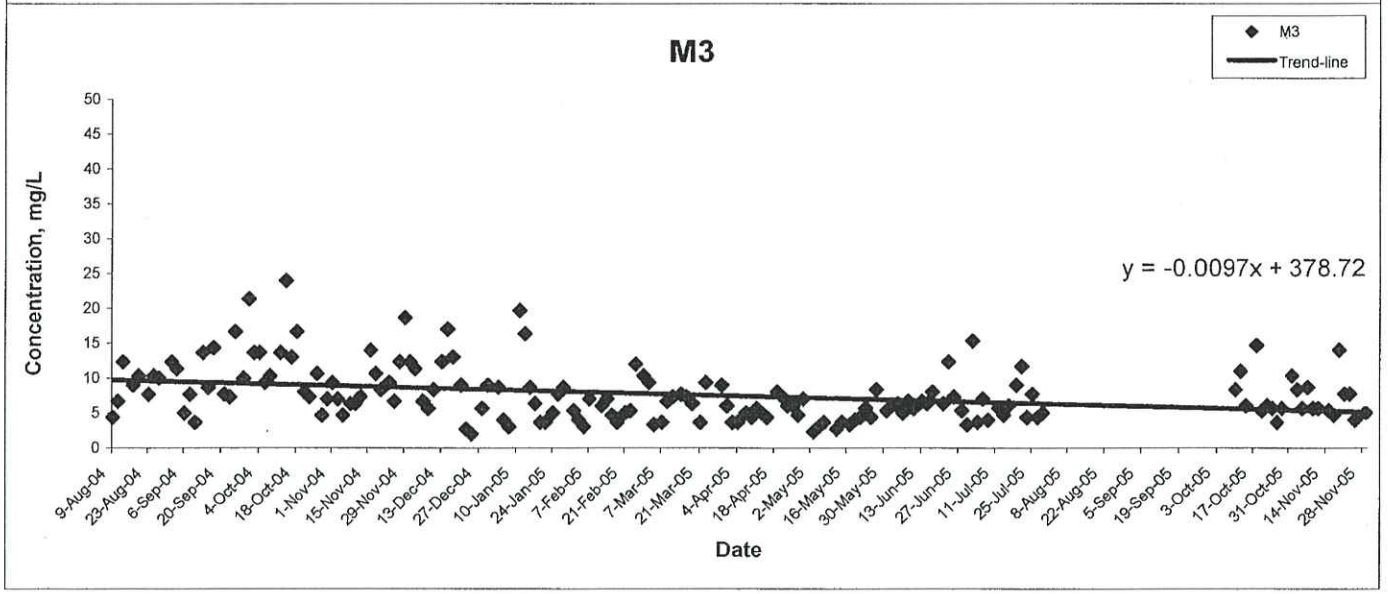




ENSR | AECOM	Contract No.HY/2003/04 - Improvement to Castle Peak Road between Ka Loon Tsuen and Siu Lam **Graphical Presentation of Water Quality Monitoring Results**	SCALE	N.T.S.	DATE	2008
		CHECK	EWCM	DRAWN	LLMC
		JOB NO.	60016763	APPENDIX H	Rev -

Suspended Solids at Mid-Flood Tide





ENSR | AECOM	Contract No.HY/2003/04 - Improvement to Castle Peak Road between Ka Loon Tsuen and Siu Lam **Graphical Presentation of Water Quality Monitoring Results**	SCALE	N.T.S.	DATE	2008
		CHECK	EWCM	DRAWN	LLMC
		JOB NO.	60016763	APPENDIX	H
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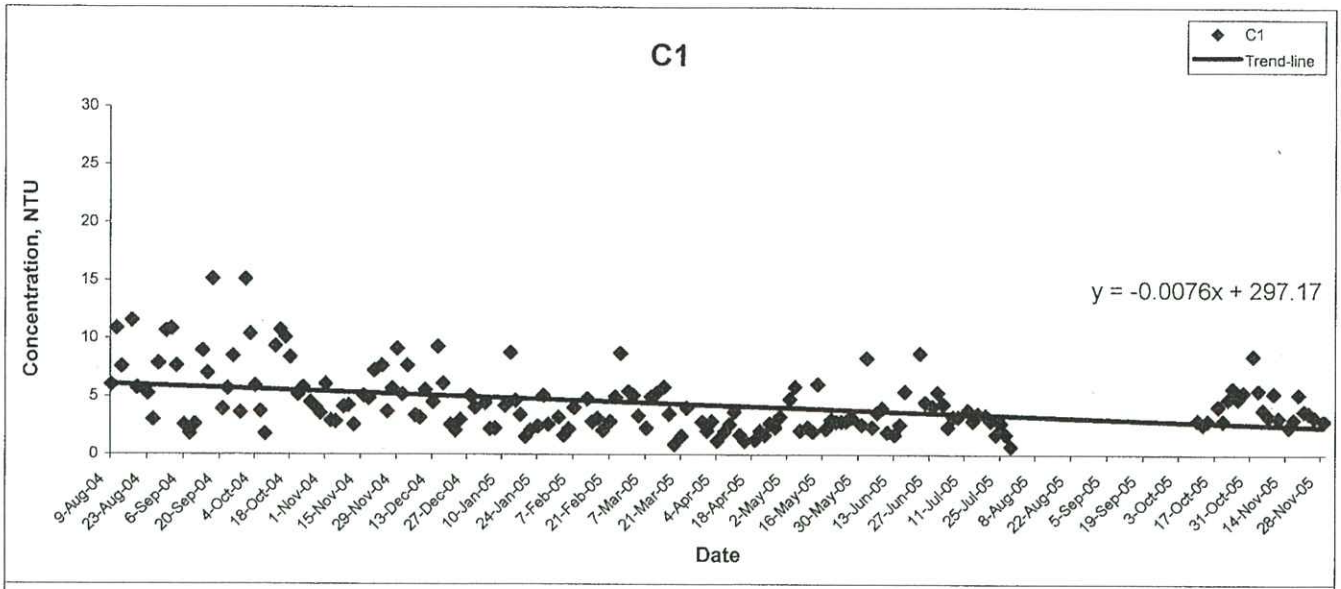
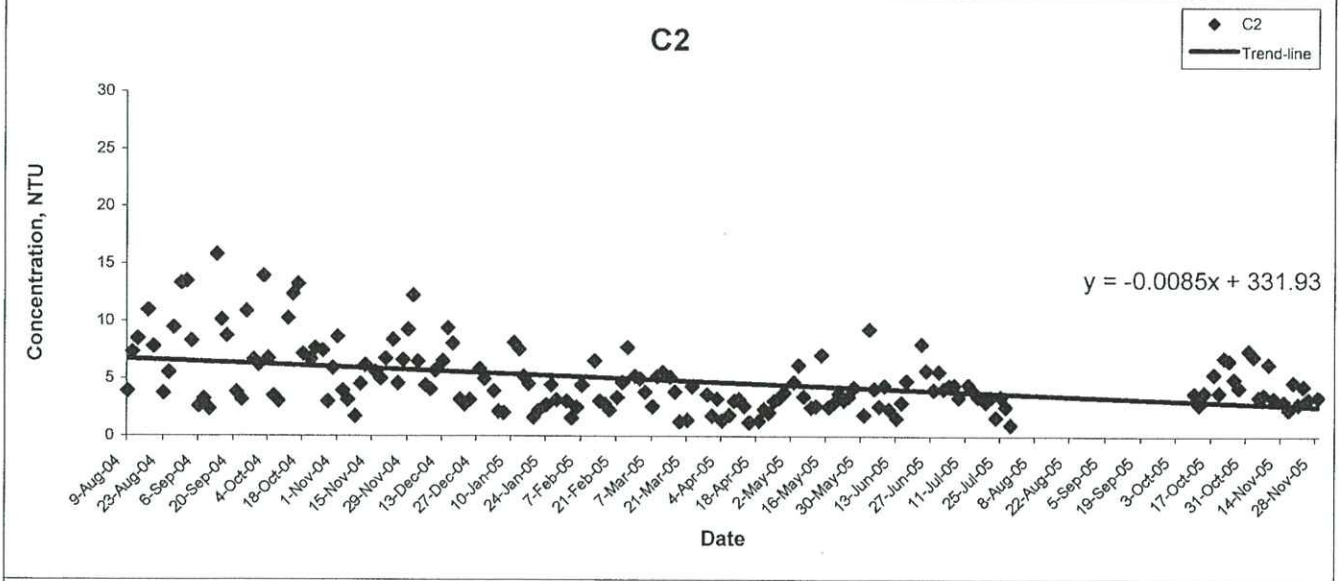
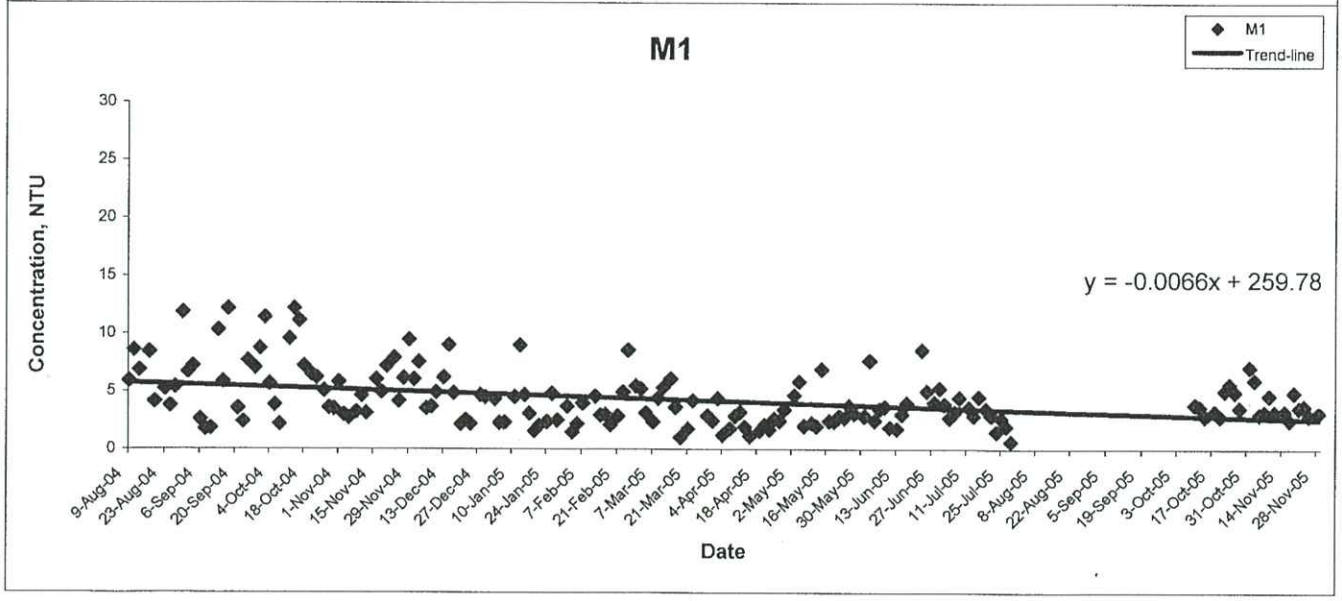
Turbidity at Mid-Ebb Tide







ENSR | AECOM	Contract No.HY/2003/04 - Improvement to Castle Peak Road between Ka Loon Tsuen and Siu Lam **Graphical Presentation of Water Quality Monitoring Results**	SCALE	N.T.S.	DATE	2008
		CHECK	EWCM	DRAWN	LLMC
		JOB NO.	60016763	APPENDIX	H
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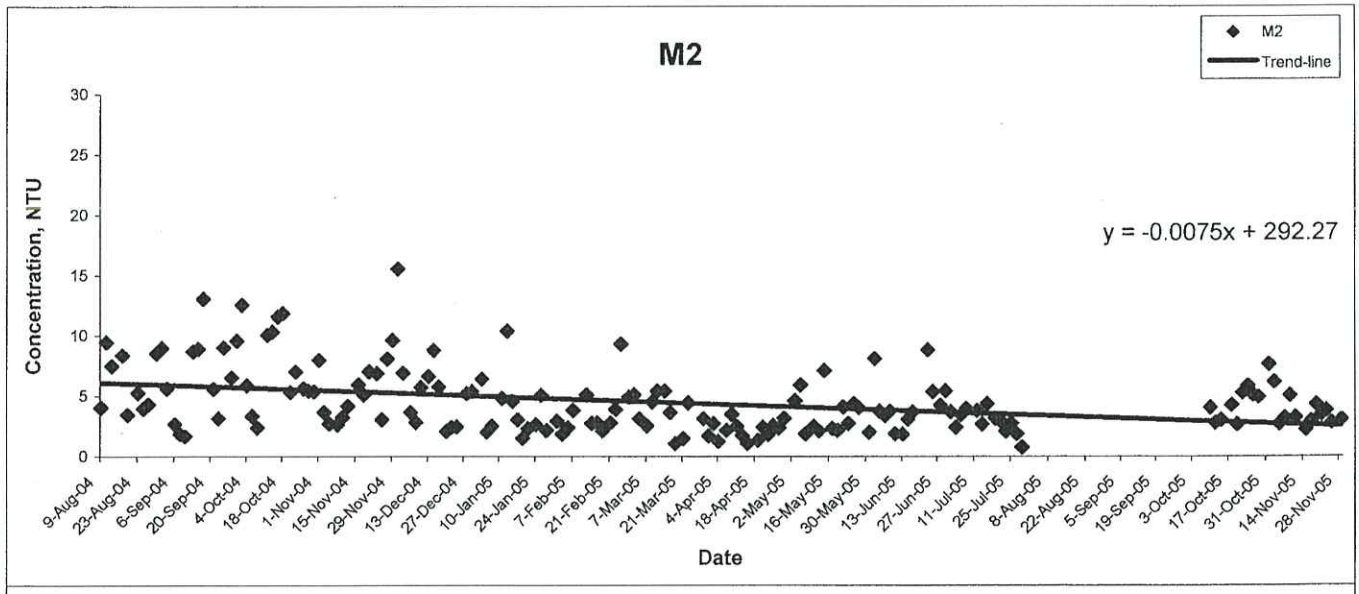
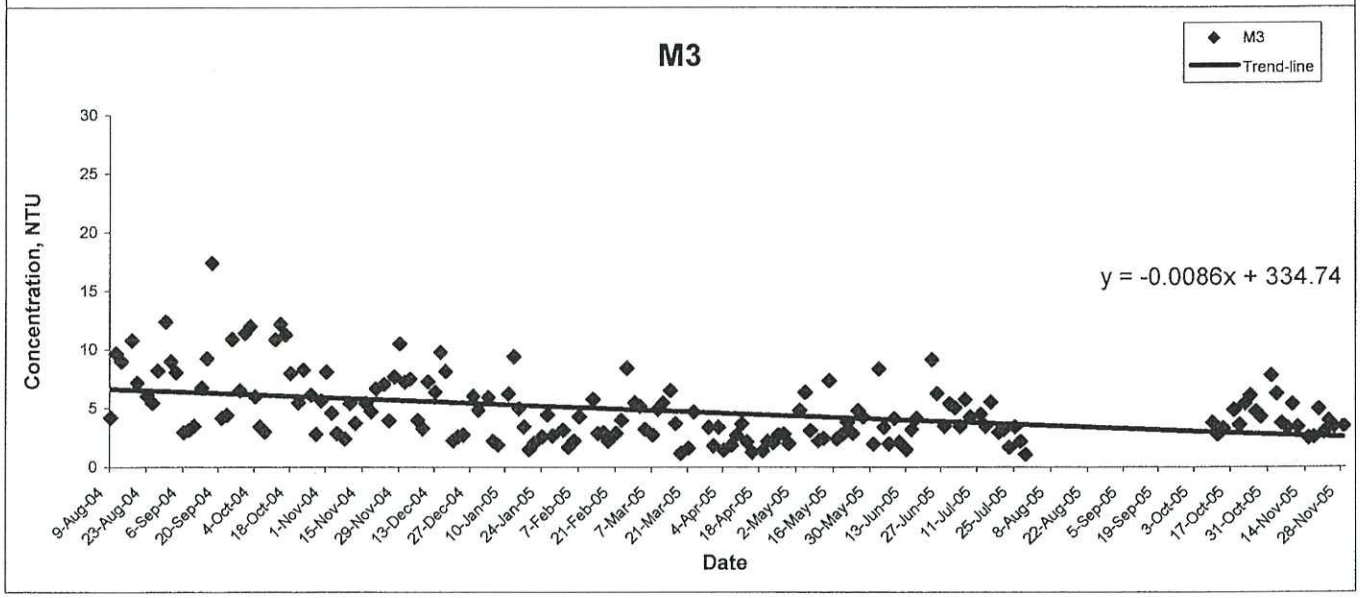
Turbidity at Mid-Ebb Tide





ENSR | AECOM	Contract No.HY/2003/04 - Improvement to Castle Peak Road between Ka Loon Tsuen and Siu Lam **Graphical Presentation of Water Quality Monitoring Results**	SCALE	N.T.S.	DATE	2008
		CHECK	EWCM	DRAWN	LLMC
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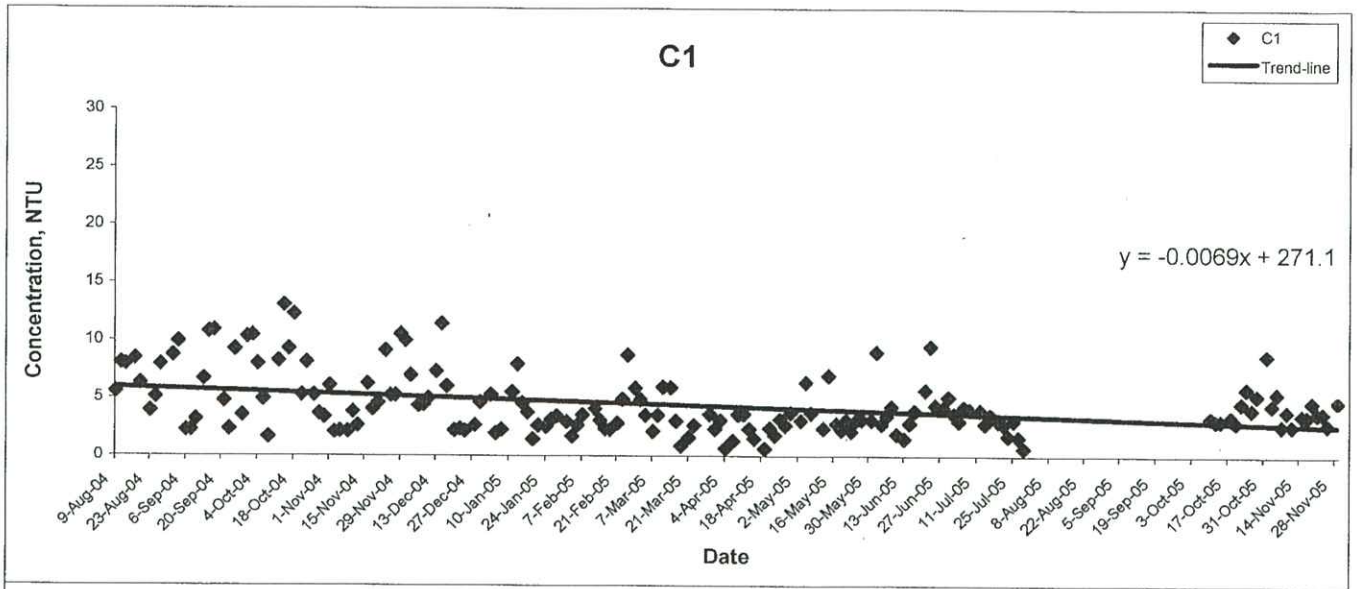
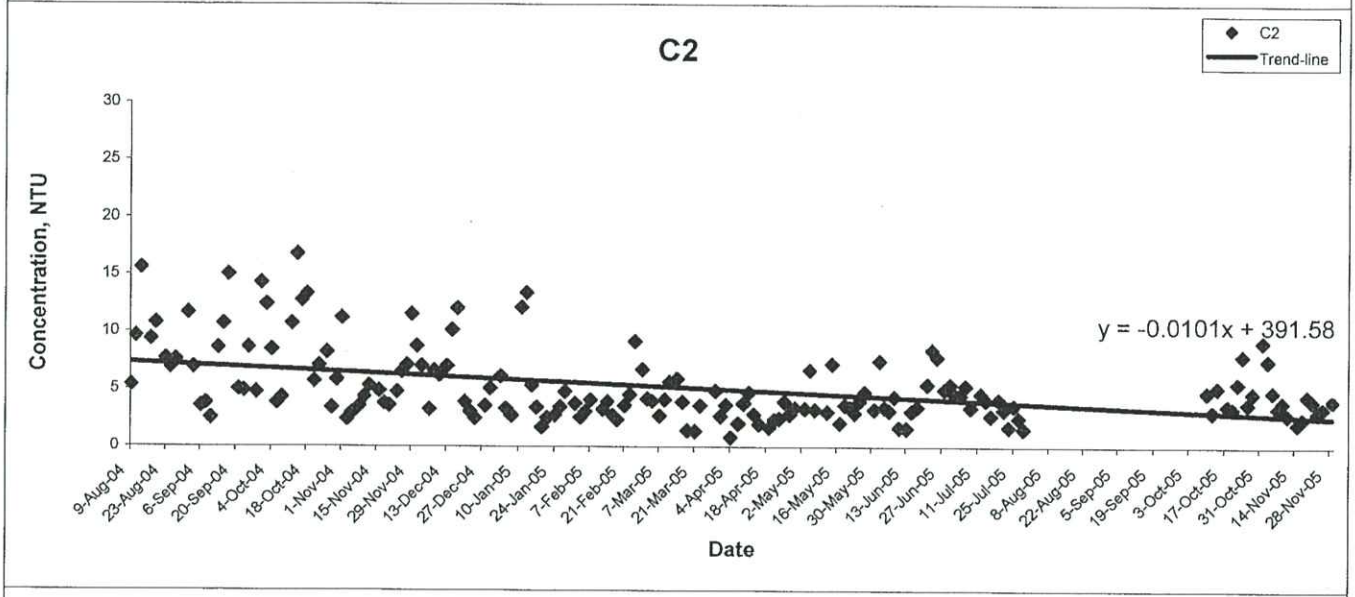
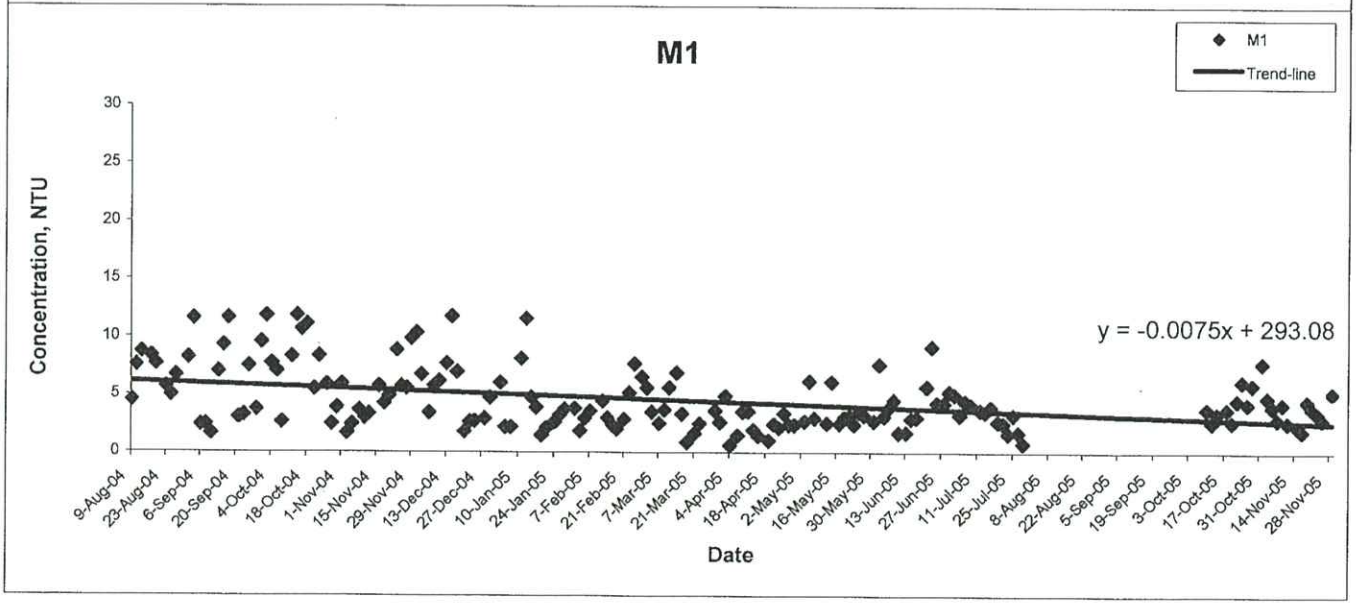
Turbidity at Mid-Flood Tide







ENSR | AECOM	Contract No.HY/2003/04 - Improvement to Castle Peak Road between Ka Loon Tsuen and Siu Lam **Graphical Presentation of Water Quality Monitoring Results**	SCALE	N.T.S.	DATE	2008
		CHECK	EWCM	DRAWN	LLMC
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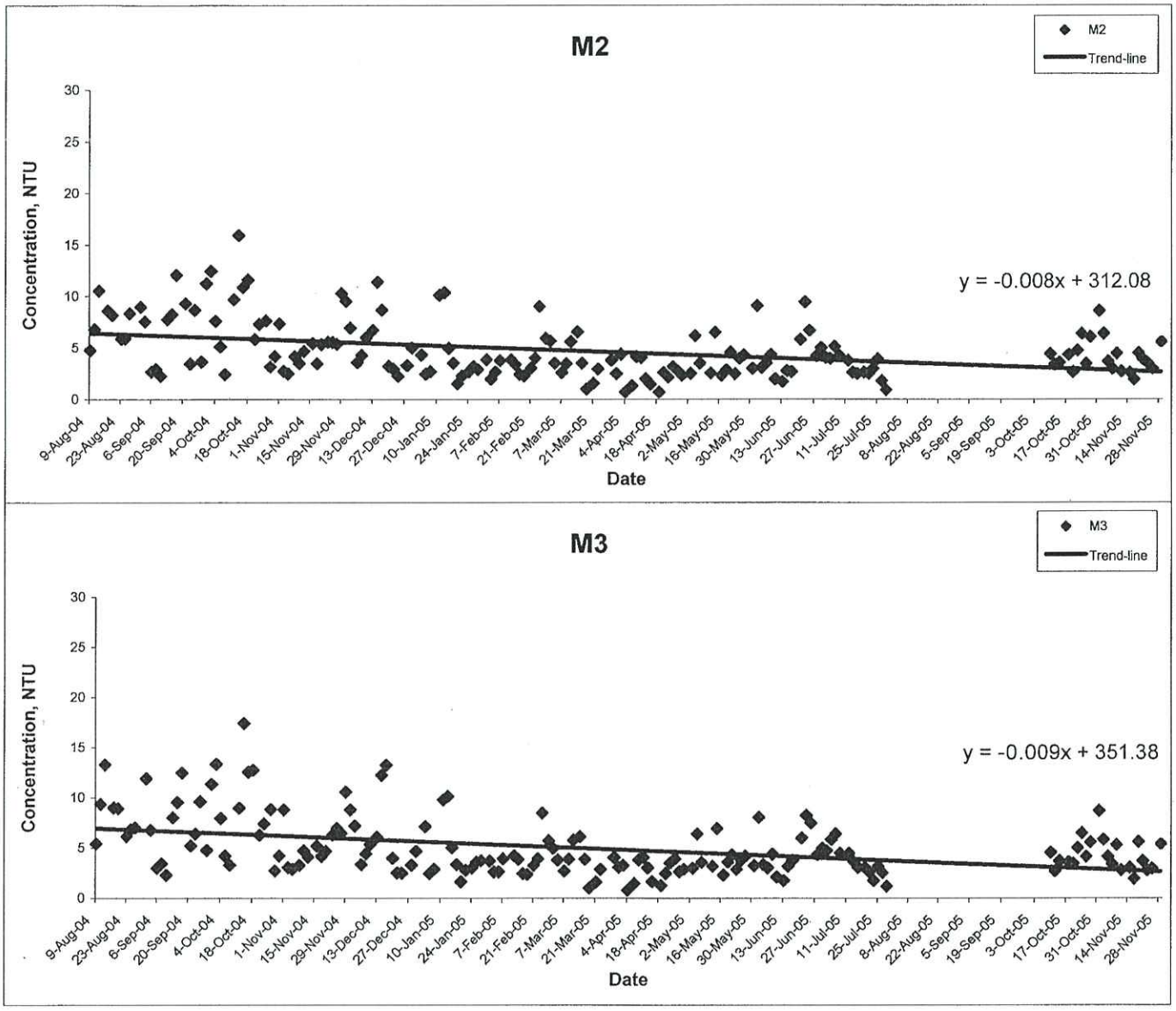
Turbidity at Mid-Flood Tide



ENSR | AECOM	Contract No.HY/2003/04 - Improvement to Castle Peak Road between Ka Loon Tsuen and Siu Lam **Graphical Presentation of Water Quality Monitoring Results**	SCALE	N.T.S.	DATE	2008
		CHECK	EWCM	DRAWN	LLMC
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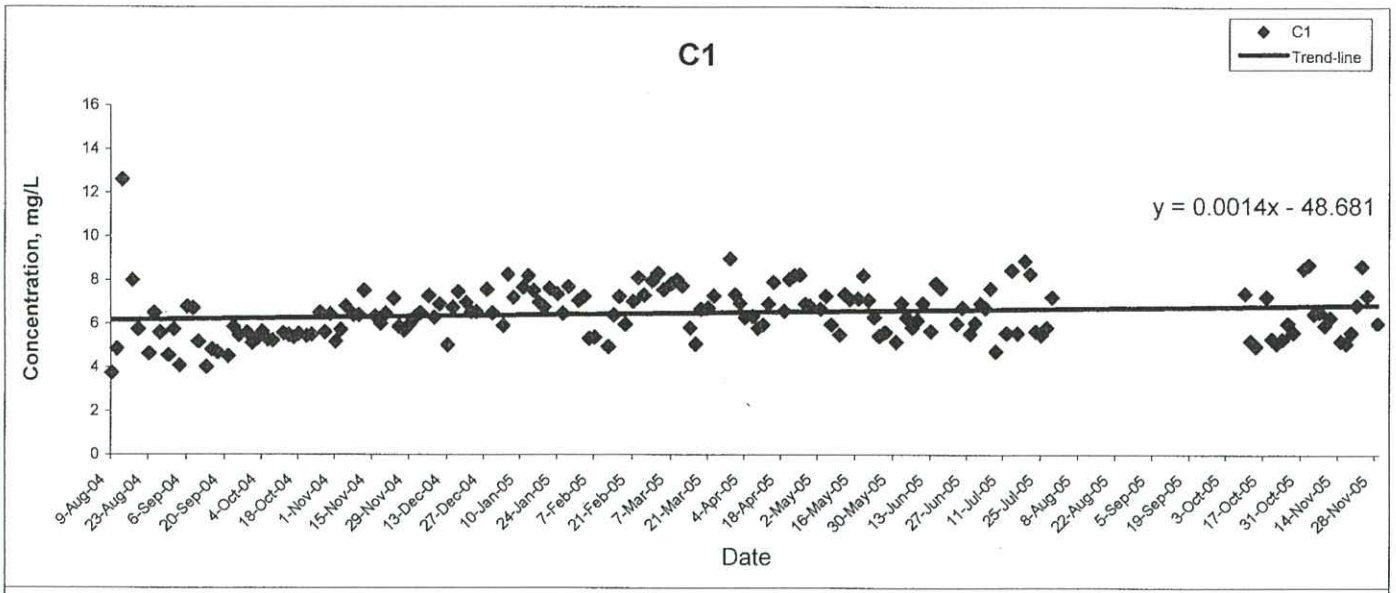
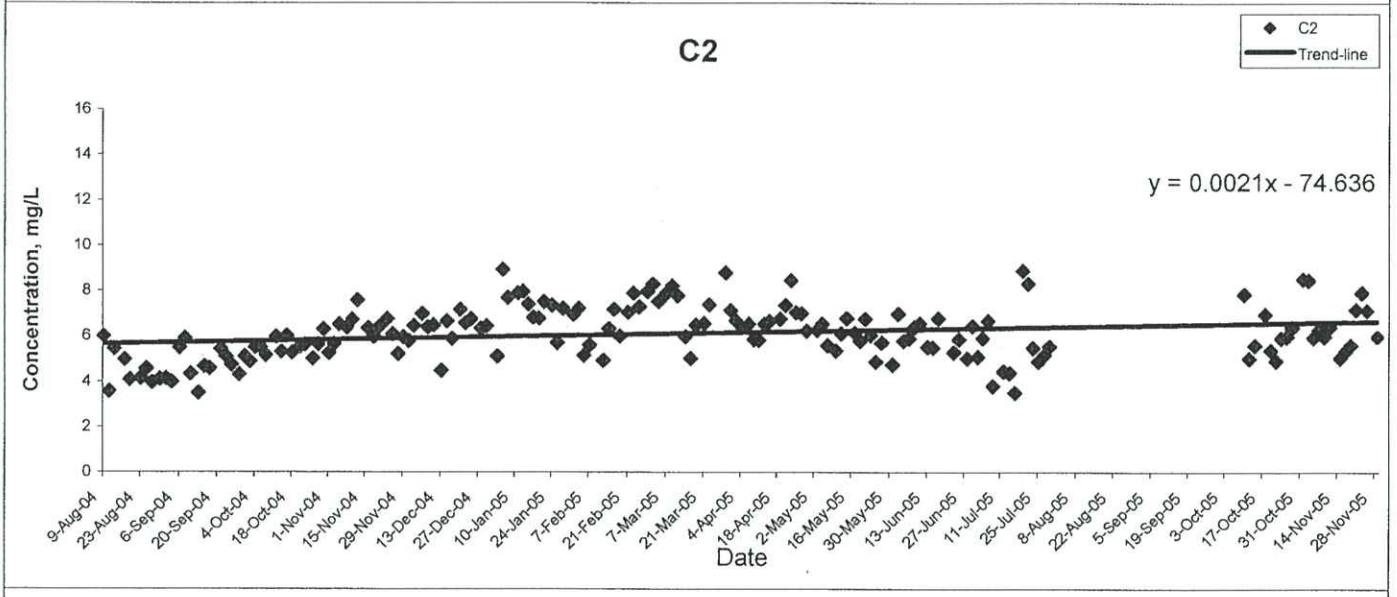
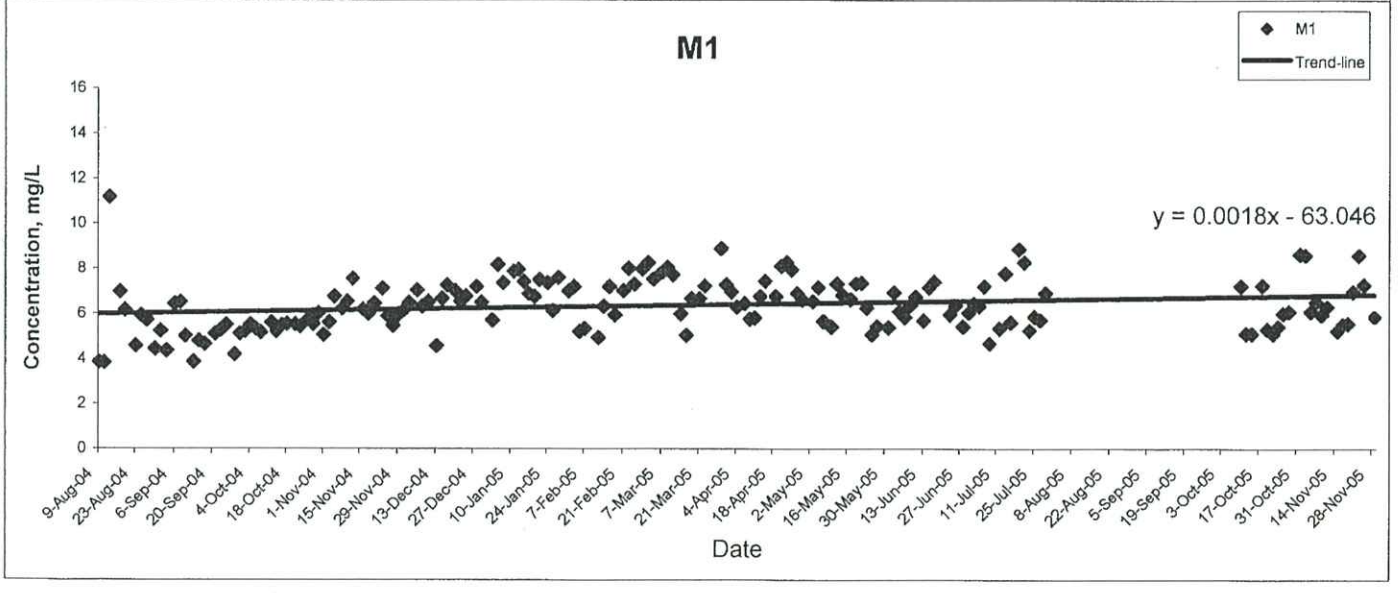
Dissolved Oxygen (Bottom) at Mid-Ebb Tide







ENSR | AECOM	Contract No.HY/2003/04 - Improvement to Castle Peak Road between Ka Loon Tsuen and Siu Lam **Graphical Presentation of Water Quality Monitoring Results**	SCALE	N.T.S.	DATE	2008
		CHECK	EWCM	DRAWN	LLMC
		JOB NO.	60016763	APPENDIX	H
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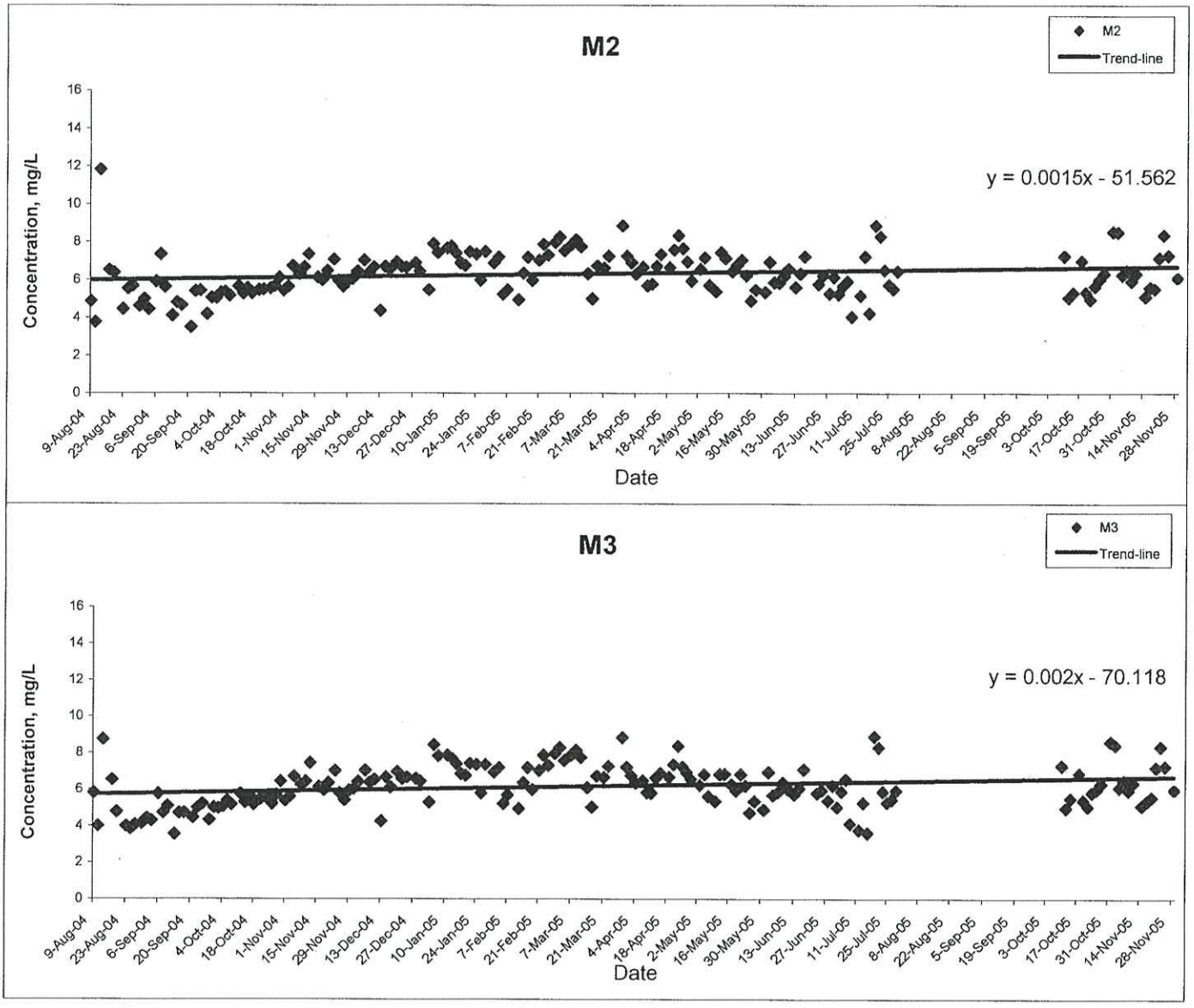
Dissolved Oxygen (Bottom) at Mid-Ebb Tide



ENSR | AECOM	Contract No.HY/2003/04 - Improvement to Castle Peak Road between Ka Loon Tsuen and Siu Lam **Graphical Presentation of Water Quality Monitoring Results**	SCALE	N.T.S.	DATE	2008
		CHECK	EWCM	DRAWN	LLMC
		JOB NO.	60016763	APPENDIX	H
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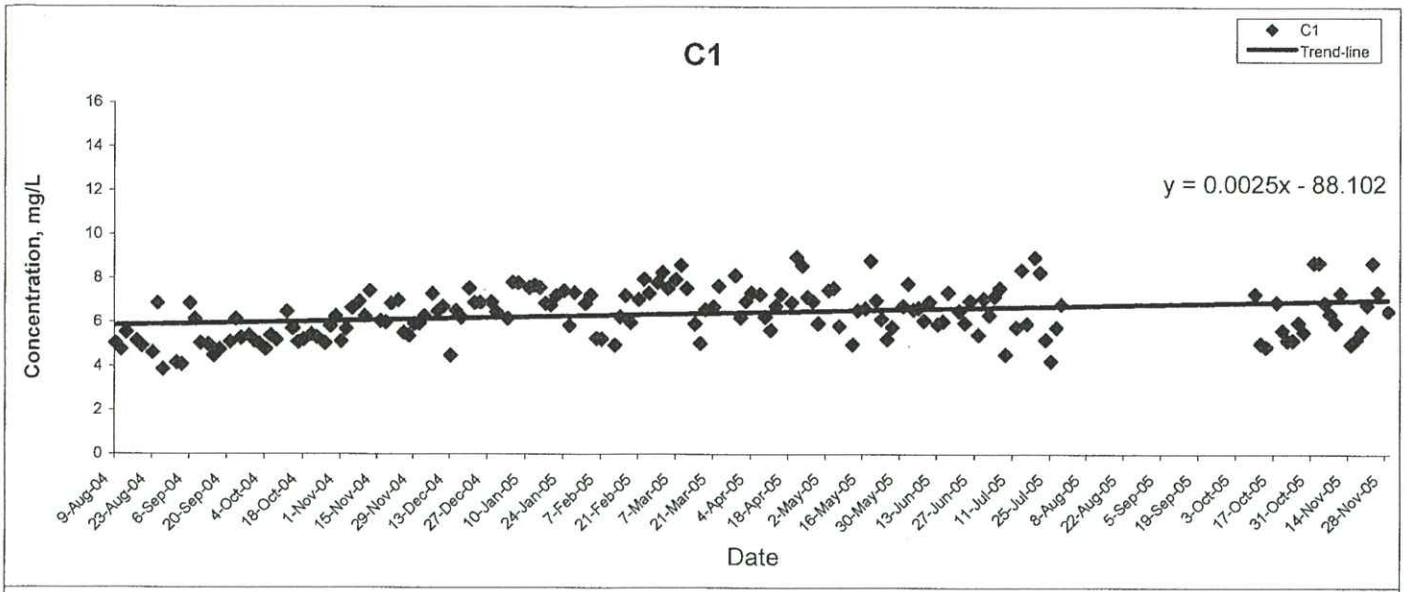
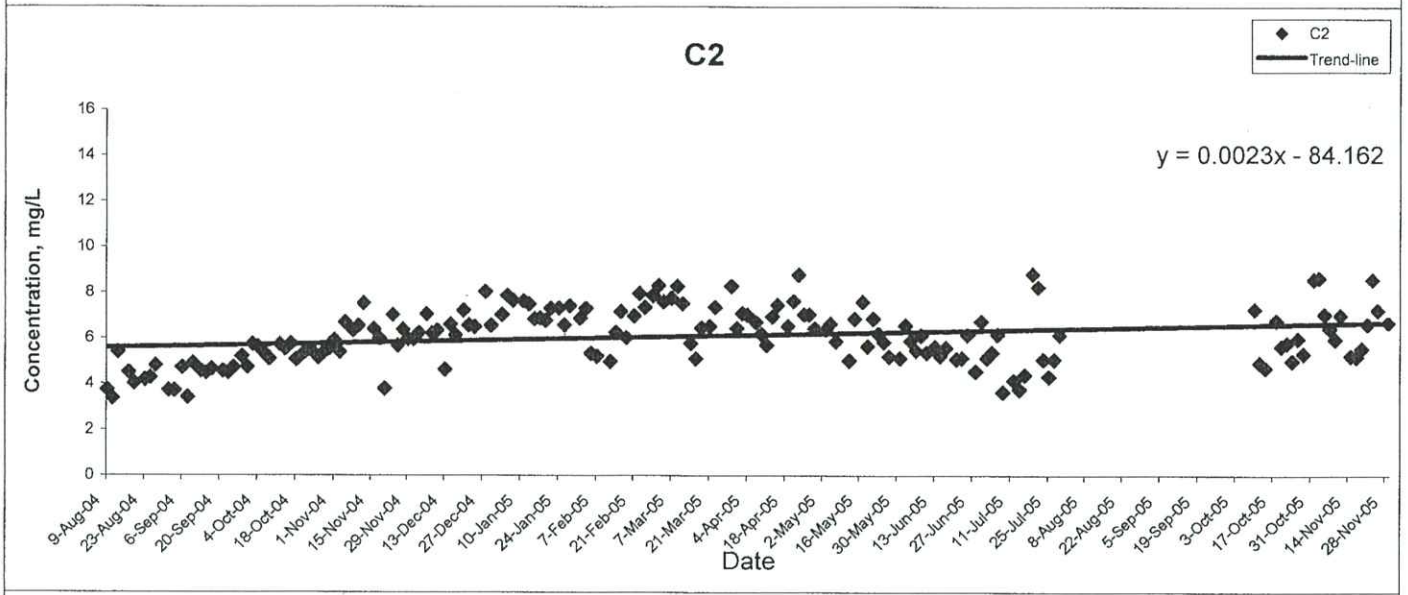
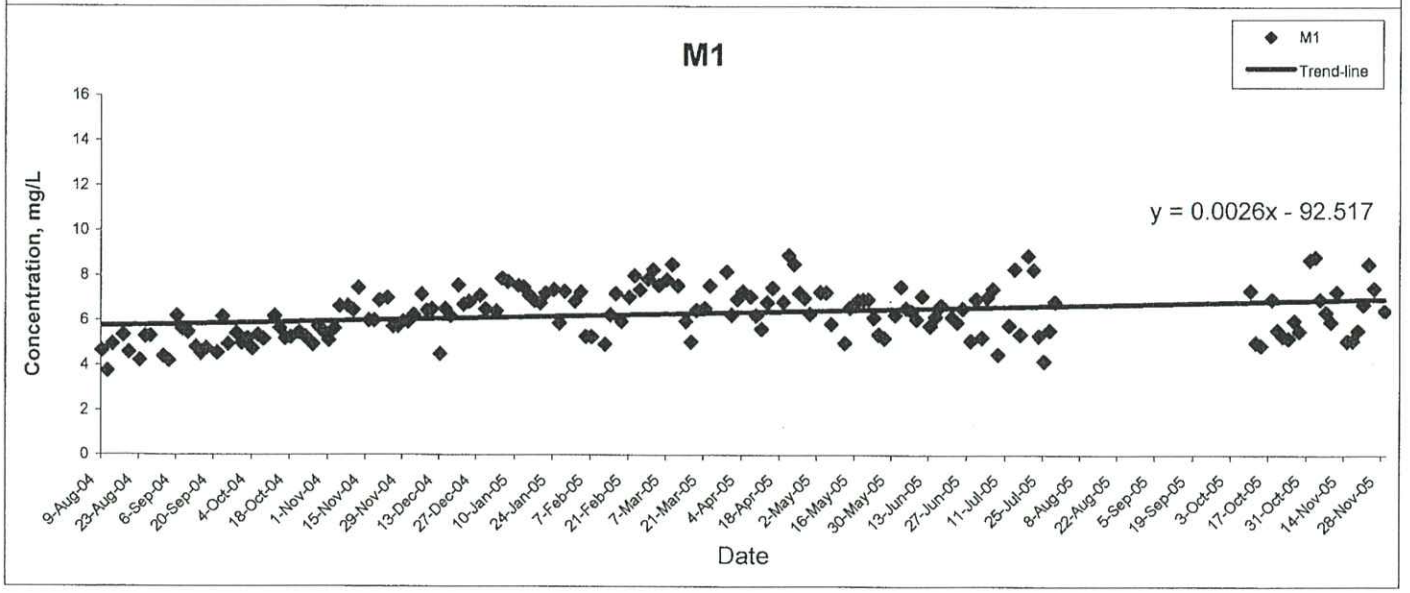
Dissolved Oxygen (Bottom) at Mid-Flood Tide

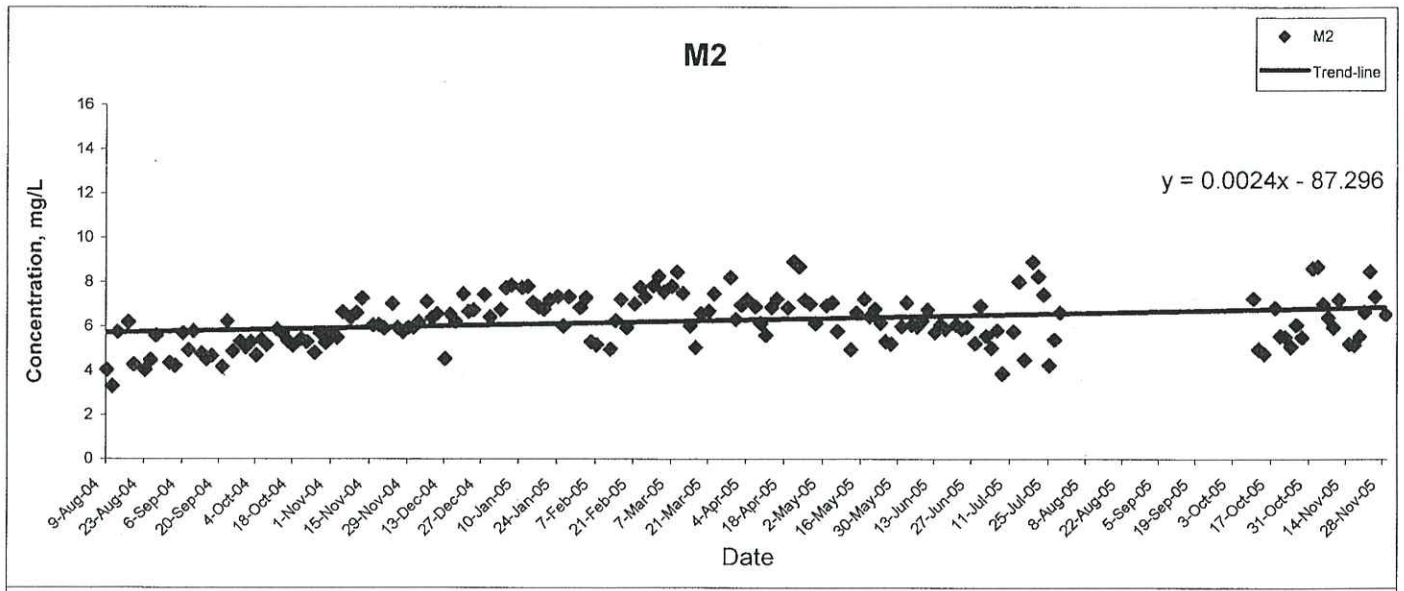


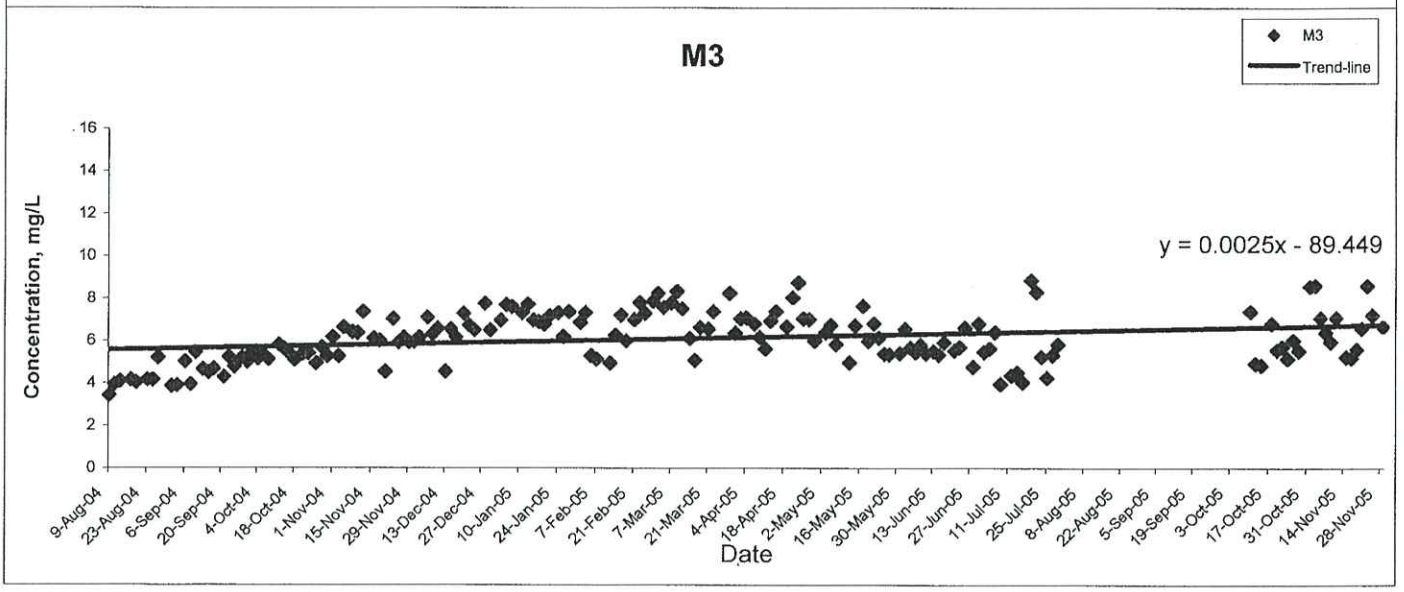




ENSR | AECOM	Contract No.HY/2003/04 - Improvement to Castle Peak Road between Ka Loon Tsuen and Siu Lam **Graphical Presentation of Water Quality Monitoring Results**	SCALE	N.T.S.	DATE	2008
		CHECK	EWCM	DRAWN	LLMC
		JOB NO.	60016763	APPENDIX H	Rev -

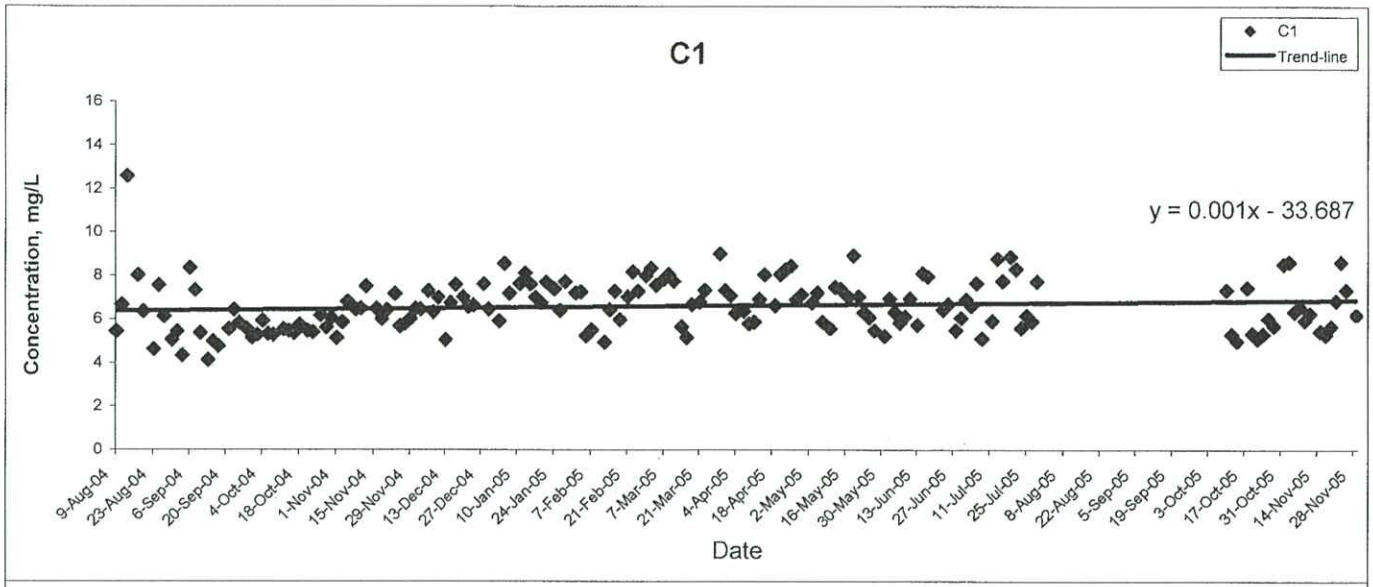
Dissolved Oxygen (Bottom) at Mid-Flood Tide

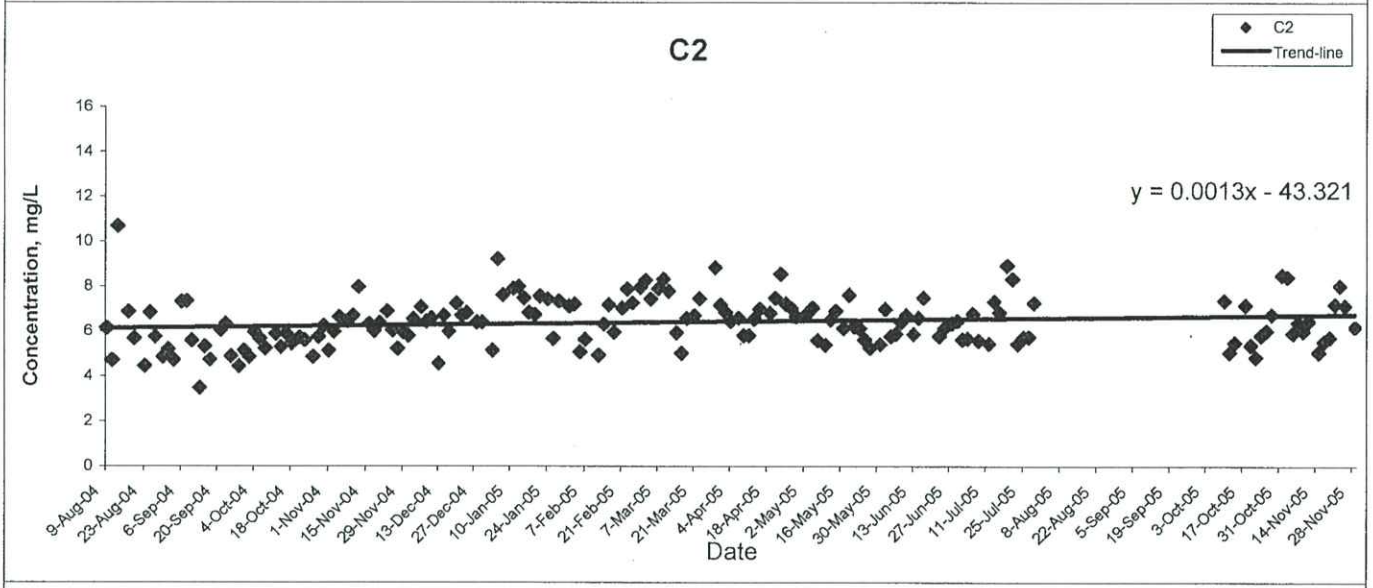


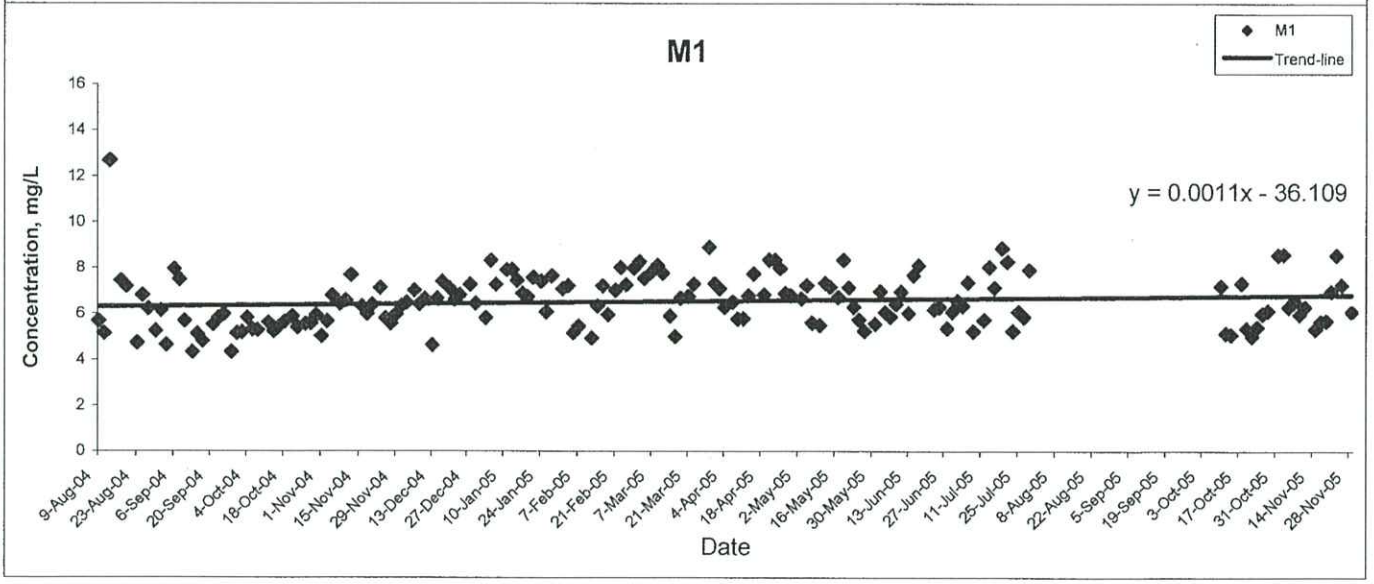


ENSR | AECOM	Contract No.HY/2003/04 - Improvement to Castle Peak Road between Ka Loon Tsuen and Siu Lam **Graphical Presentation of Water Quality Monitoring Results**	SCALE	N.T.S.	DATE	2008
		CHECK	EWCM	DRAWN	LLMC
		JOB NO.	60016763	APPENDIX H	Rev -

Dissolved Oxygen (Surface & Middle) at Mid-Ebb Tide

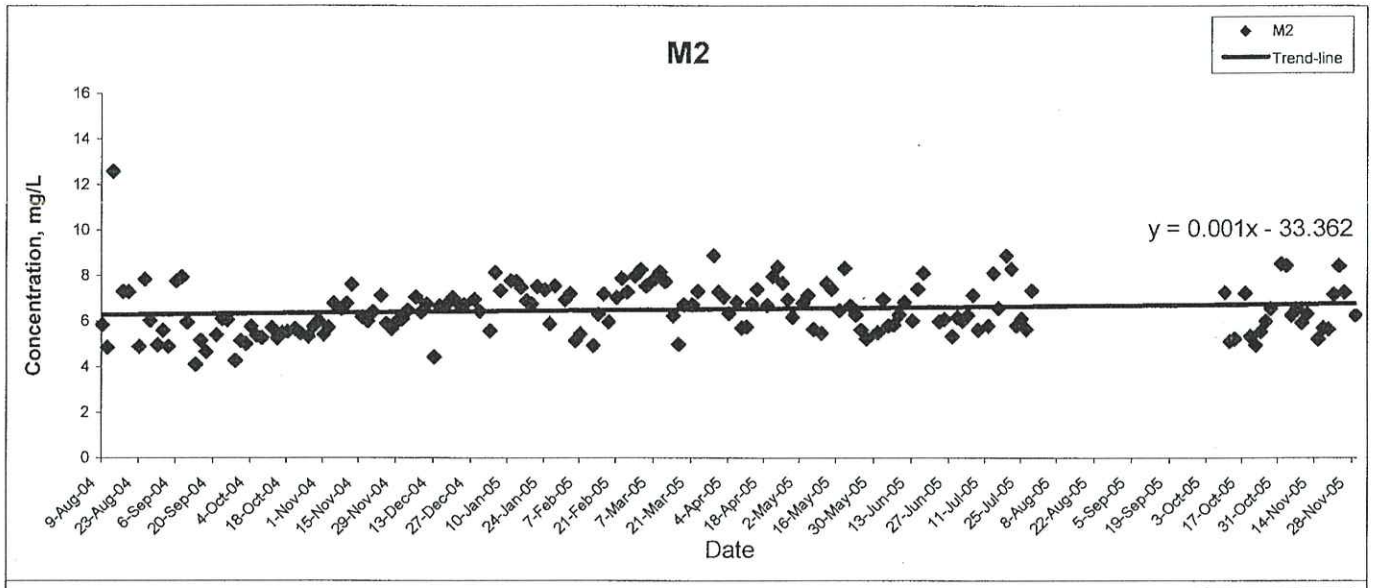


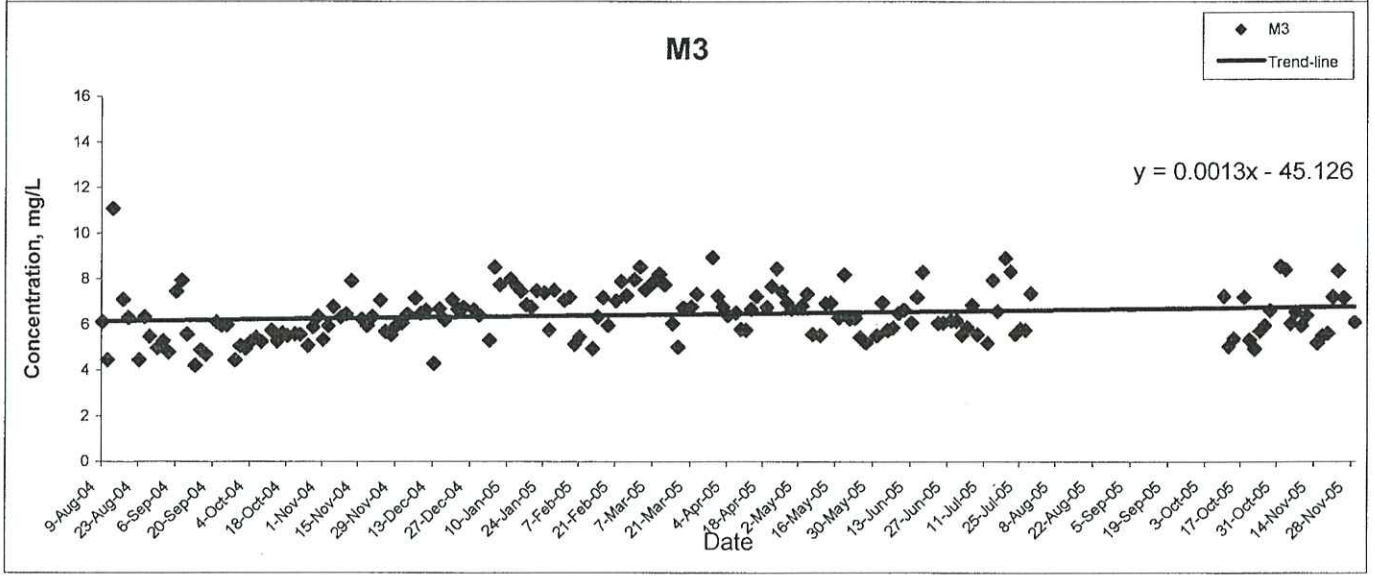




ENSR | AECOM	Contract No.HY/2003/04 - Improvement to Castle Peak Road between Ka Loon Tsuen and Siu Lam **Graphical Presentation of Water Quality Monitoring Results**	SCALE	N.T.S.	DATE	2008
		CHECK	EWCM	DRAWN	LLMC
		JOB NO.	60016763	APPENDIX H	Rev -

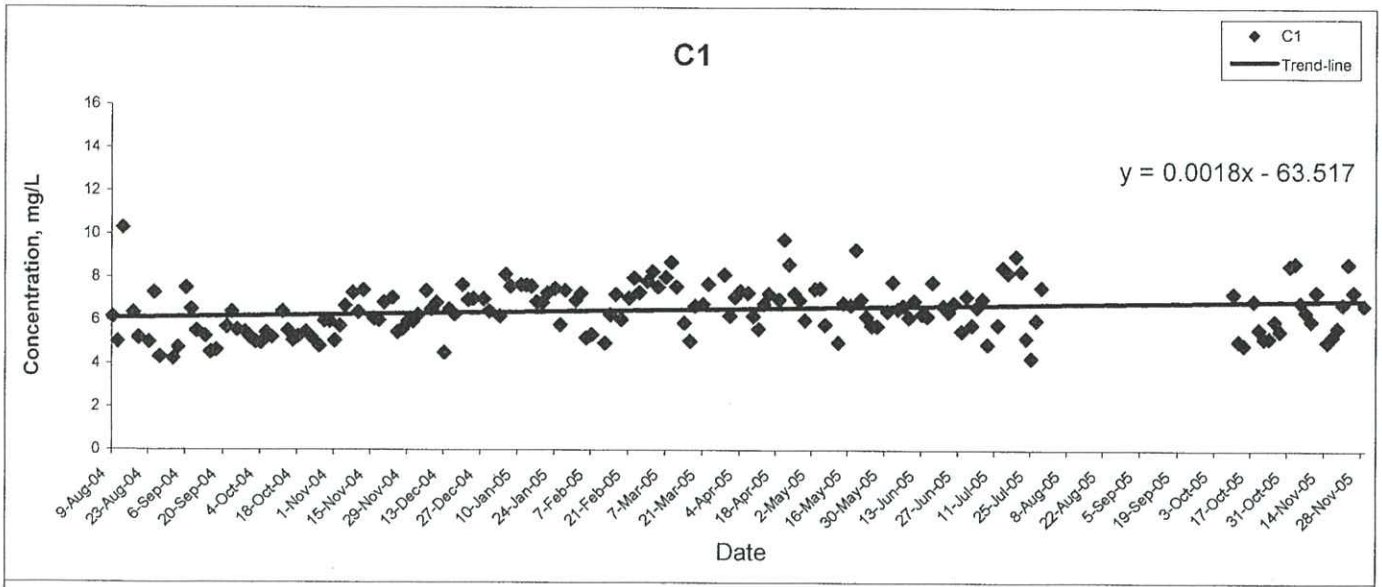
Dissolved Oxygen (Surface & Middle) at Mid-Ebb Tide

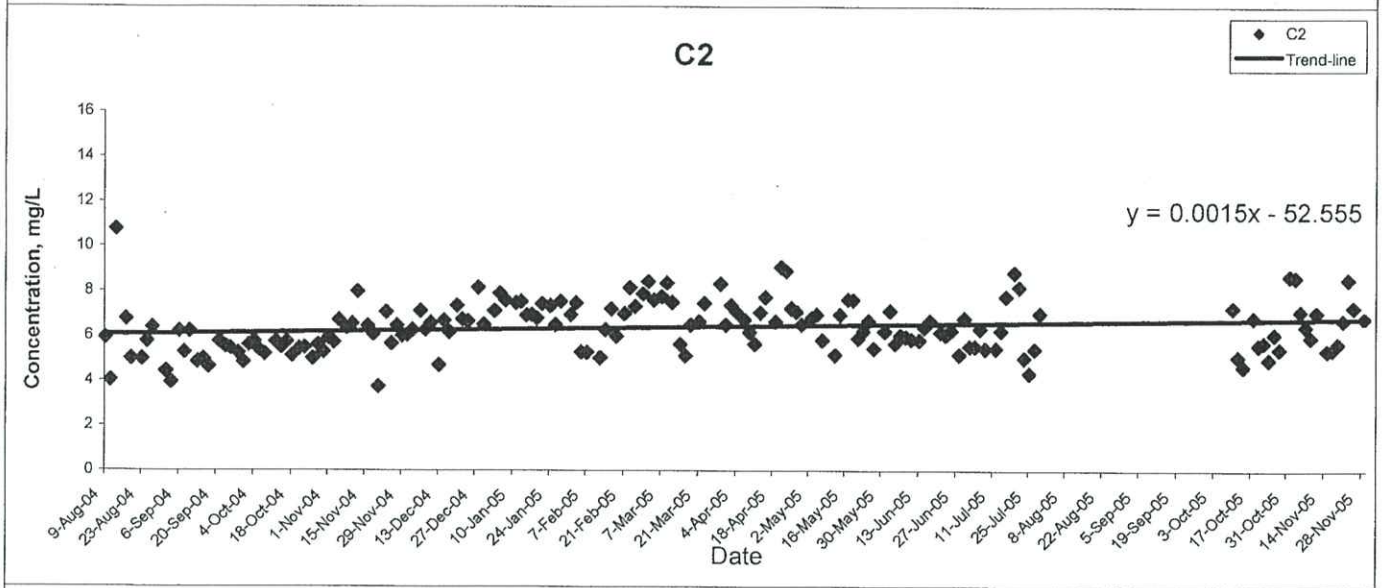


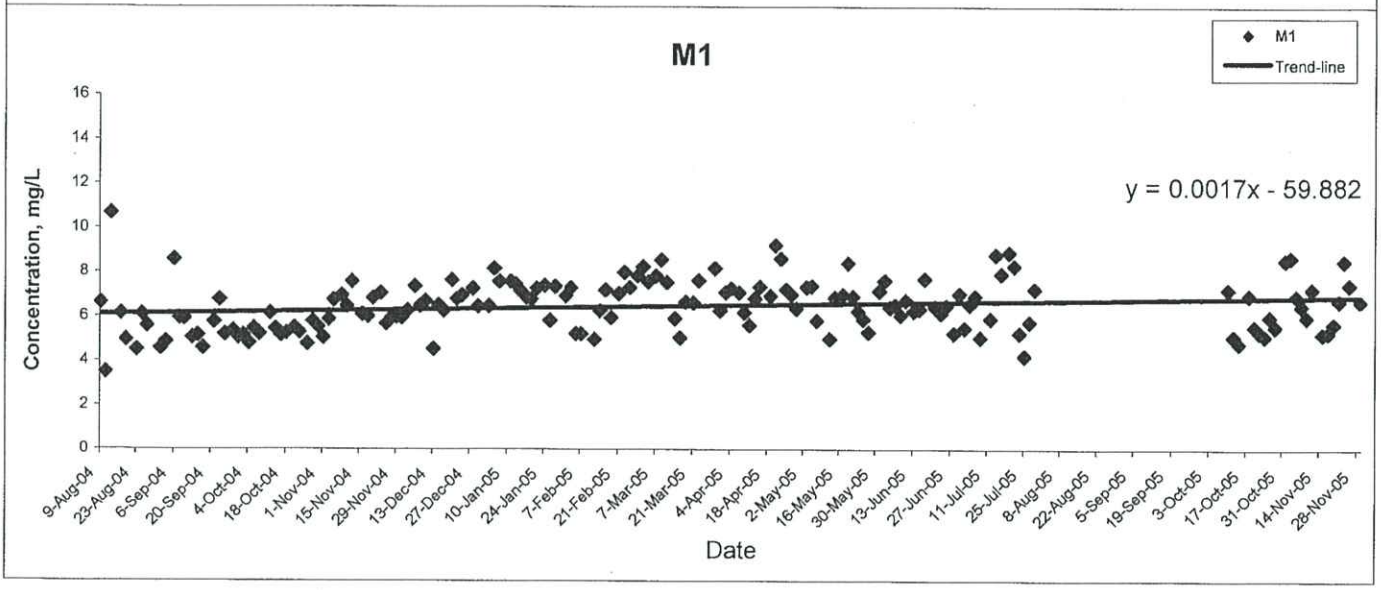


ENSR | AECOM	Contract No.HY/2003/04 - Improvement to Castle Peak Road between Ka Loon Tsuen and Siu Lam **Graphical Presentation of Water Quality Monitoring Results**	SCALE	N.T.S.	DATE	2008
		CHECK	EWCM	DRAWN	LLMC
		JOB NO.	60016763	APPENDIX H	Rev -

Dissolved Oxygen (Surface & Middle) at Mid-Flood Tide







ENSR | AECOM	Contract No.HY/2003/04 - Improvement to Castle Peak Road between Ka Loon Tsuen and Siu Lam **Graphical Presentation of Water Quality Monitoring Results**	SCALE	N.T.S.	DATE	2008
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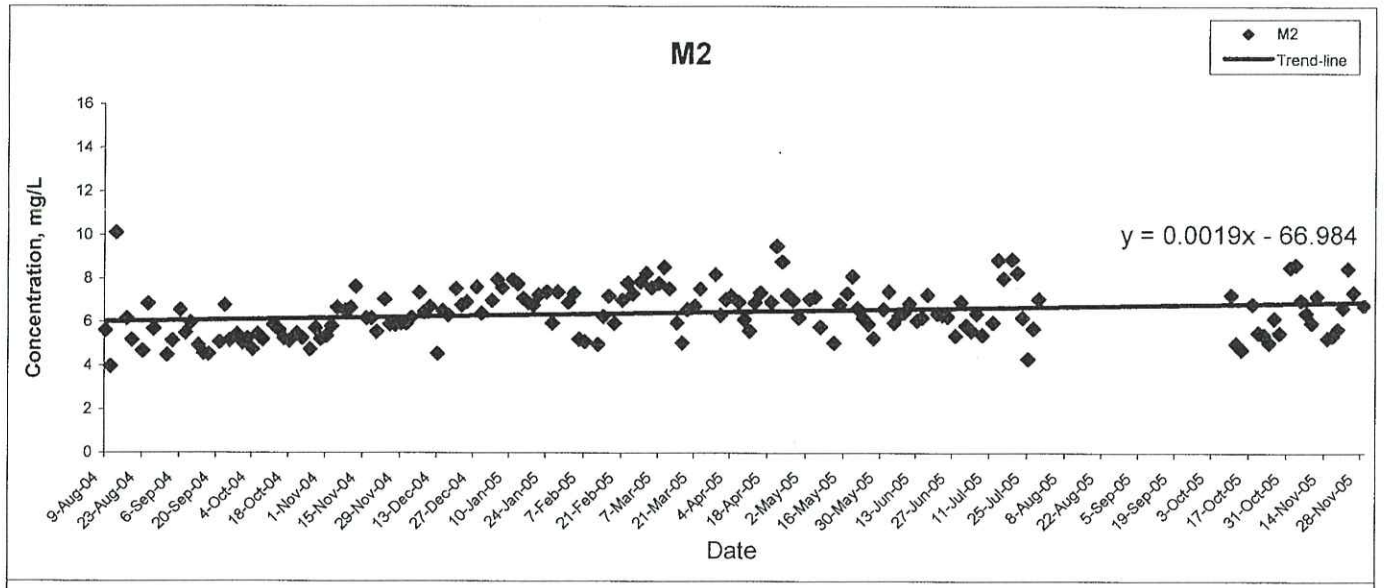
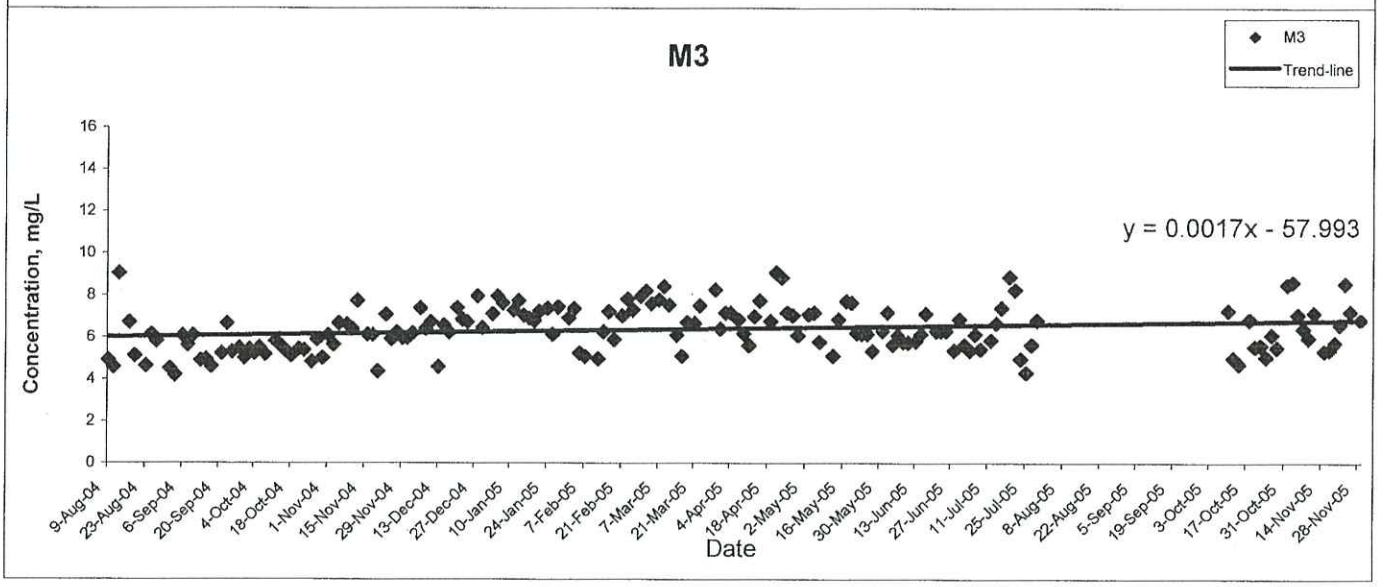
		JOB NO.	60016763	APPENDIX H	Rev -

Dissolved Oxygen (Surface & Middle) at Mid-Flood Tide





ENSR | AECOM	Contract No.HY/2003/04 - Improvement to Castle Peak Road between Ka Loon Tsuen and Siu Lam **Graphical Presentation of Water Quality Monitoring Results**	SCALE	N.T.S.	DATE	2008
		CHECK	EWCM	DRAWN	LLMC
		JOB NO.	60016763	APPENDIX H	Rev -

APPENDIX I
POST-PROJECT WATER QUALITY MONITORING RESULTS AND GRAPHICAL PRESENTATION

Appendix I - Post-Project Marine Water Quality Monitoring Results

Water Quality Monitoring Results at C1 - Mid-Ebb Tide

Date	Weather Condition	Sea Condition***	Sampling Time	Depth (m)		Temperature (°C)		Salinity (ppt)		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)	
						Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Average	DA*
01/04/2008	Fine	Moderate	10:43	Surface	1	19.9 19.9	19.9	35.1 35.1	35.1	74.0 74.5	74.3	5.5 5.5	5.5	5.5	7.4 7.2	7.3	7.6	5.0	5.7
				Middle	5	19.9 19.9	19.9	35.3 35.3	35.3	74.3 74.1	74.2	5.5 5.5	5.5		7.7 7.8	7.8		6.0	
				Bottom	9	19.9 19.9	19.9	35.3 35.3	35.3	74.1 73.3	73.7	5.5 5.4	5.5	5.5	7.8 7.8	7.8		6.0	
03/04/2008	Fine	Moderate	11:50	Surface	1	20.2 20.2	20.2	32.3 32.3	32.3	97.6 95.6	96.6	7.3 7.2	7.2	7.3	6.7 6.6	6.7	7.2	5.0	5.7
				Middle	5	20.2 20.2	20.2	32.5 32.6	32.5	99.4 95.9	97.7	7.4 7.2	7.3		7.9 7.5	7.7		6.0	
				Bottom	9	20.2 20.2	20.2	32.6 32.6	32.6	104.4 96.3	100.4	7.8 7.2	7.5	7.5	7.5 7.2	7.4		6.0	
05/04/2008	Sunny	Moderate	12:40	Surface	1	20.8 20.7	20.8	32.2 32.3	32.2	94.7 99.2	97.0	7.0 7.4	7.2	7.3	7.6 9.4	8.5	8.8	7.0	11.3
				Middle	4.5	20.5 20.6	20.5	32.5 32.4	32.5	101.1 95.9	98.5	7.5 7.1	7.3		8.8 8.6	8.7		8.0	
				Bottom	8	20.6 20.6	20.6	32.4 32.4	32.4	97.0 104.6	100.8	7.2 7.8	7.5	7.5	9.0 9.1	9.1		19.0	
07/04/2008	Sunny	Moderate	13:18	Surface	1	21.8 22.1	21.9	30.5 30.2	30.4	114.5 112.9	113.7	8.4 8.3	8.4	8.4	6.6 6.0	6.3	8.8	7.0	9.7
				Middle	4.5	21.4 21.4	21.4	31.3 31.1	31.2	114.9 112.9	113.9	8.5 8.3	8.4		9.7 9.6	9.7		12.0	
				Bottom	8	21.4 21.4	21.4	31.3 31.4	31.3	113.4 118.8	116.1	8.4 8.8	8.6	8.6	10.7 10.0	10.4		10.0	
09/04/2008	Sunny	Moderate	14:47	Surface	1	22.5 22.5	22.5	29.1 29.0	29.1	79.8 80.9	80.4	5.8 5.9	5.9	5.9	11.0 10.3	10.7	12.1	11.0	18.3
				Middle	5.5	22.1 22.1	22.1	30.7 30.7	30.7	80.2 82.3	81.3	5.9 6.0	5.9		13.7 13.7	13.7		18.0	
				Bottom	10	22.1 22.1	22.1	30.8 30.9	30.9	80.8 85.6	83.2	5.9 6.3	6.1	6.1	11.9 12.1	12.0		26.0	
11/04/2008	Sunny	Moderate	16:30	Surface	1	22.8 22.5	22.6	30.4 30.8	30.6	108.9 108.3	108.6	7.9 7.9	7.9	7.9	4.2 4.9	4.6	5.8	5.0	7.0
				Middle	5	22.2 22.2	22.2	31.5 31.4	31.5	109.3 111.2	110.3	7.9 8.1	8.0		5.7 6.4	6.1		7.0	
				Bottom	9	22.2 22.1	22.2	31.7 31.8	31.8	117.0 108.9	113.0	8.5 7.9	8.2	8.2	6.8 6.5	6.7		9.0	
14/04/2008	Fine	Moderate	20:31	Surface	1	24.0 22.5	23.2	31.4 31.4	31.4	105.0 104.9	105.0	7.5 7.5	7.5	7.6	4.0 4.4	4.2	4.5	3.0	3.3
				Middle	5	22.2 22.3	22.3	32.0 31.9	31.9	107.2 107.4	107.3	7.7 7.8	7.8		5.1 4.5	4.8		3.0	
				Bottom	9	22.3 22.3	22.3	31.9 32.1	32.0	109.7 109.7	109.7	7.9 7.9	7.9	7.9	4.8 4.2	4.5		4.0	

Remarks: * DA: Depth-Averaged
** Cancelled due to Thunderstorm Warning
*** Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher

Appendix I - Post-Project Marine Water Quality Monitoring Results

Water Quality Monitoring Results at C1 - Mid-Ebb Tide

Date	Weather Condition	Sea Condition***	Sampling Time	Depth (m)		Temperature (°C)		Salinity (ppt)		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)	
						Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Average	DA*
16/04/2008	Sunny	Moderate	11:27	Surface	1	23.6 23.6	23.6	30.4 30.4	30.4	80.9 80.6	80.8	5.8 5.7	5.7	5.8	3.2 3.3	3.3	4.3	7.0	7.3
				Middle	4.5	23.1 23.1	23.1	31.6 31.5	31.5	81.4 81.2	81.3	5.8 5.8	5.8		4.0 4.1	4.1		7.0	
				Bottom	8	22.6 22.5	22.5	32.0 32.1	32.1	81.4 81.3	81.4	5.8 5.9	5.8	5.8	5.2 5.9	5.6		8.0	
18/04/2008	Fine	Moderate	12:09	Surface	1	23.1 23.1	23.1	31.2 31.3	31.2	88.3 92.8	90.6	6.7 7.1	6.9	7.0	6.6 6.7	6.7	7.6	8.0	8.0
				Middle	5	22.9 22.9	22.9	31.7 31.8	31.7	89.5 94.7	92.1	6.8 7.2	7.0		7.6 7.9	7.8		7.0	
				Bottom	9	22.9 22.8	22.8	31.9 32.0	31.9	98.2 90.6	94.4	7.5 6.9	7.2	7.2	8.3 8.2	8.3		9.0	
21/04/2008	Cloudy	Moderate	13:07	Surface	1	23.2 23.3	23.2	30.5 30.2	30.3	77.5 78.2	77.9	5.4 5.4	5.4	5.4	8.5 7.4	8.0	8.6	8.0	10.0
				Middle	5	23.1 23.1	23.1	30.8 30.8	30.8	77.6 79.2	78.4	5.4 5.5	5.5		9.0 9.9	9.5		10.0	
				Bottom	9	23.1 23.2	23.2	30.8 30.7	30.8	77.9 80.9	79.4	5.4 5.6	5.5	5.5	8.2 8.3	8.3		12.0	
23/04/2008	Fine	Moderate	14:17	Surface	1	23.5 23.5	23.5	29.7 29.5	29.6	98.8 98.7	98.8	7.2 7.2	7.2	7.4	6.3 6.2	6.3	6.6	3.0	6.0
				Middle	5	23.4 23.4	23.4	31.1 31.1	31.1	101.0 101.2	101.1	7.5 7.5	7.5		6.8 6.7	6.8		6.0	
				Bottom	9	23.4 23.4	23.4	31.3 31.3	31.3	103.5 103.5	103.5	7.6 7.7	7.7	7.7	6.8 6.5	6.7		9.0	
25/04/2008	Fine	Moderate	15:19	Surface	1	23.5 23.5	23.5	28.9 28.8	28.9	82.9 84.0	83.5	6.0 6.1	6.0	6.1	4.7 4.0	4.4	5.8	4.0	8.7
				Middle	5	23.1 23.1	23.1	30.5 30.5	30.5	85.4 83.3	84.4	6.2 6.0	6.1		7.4 7.4	7.4		6.0	
				Bottom	9	23.1 23.1	23.1	30.6 30.7	30.7	83.9 88.7	86.3	6.0 6.4	6.2	6.2	5.6 5.8	5.7		16.0	

Remarks: * DA: Depth-Averaged
** Cancelled due to Thunderstorm Warning
*** Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher

Appendix I - Post-Project Marine Water Quality Monitoring Results

Water Quality Monitoring Results at C1 - Mid-Flood Tide

Date	Weather Condition	Sea Condition***	Sampling Time	Depth (m)		Temperature (°C)		Salinity (ppt)		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)	
						Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Average	DA*
01/04/2008	Fine	Moderate	14:07	Surface	1	18.4 18.4	18.4	36.4 36.5	36.4	66.4 64.3	65.4	5.0 4.9	4.9	4.9	6.9 7.2	7.1	7.2	4.0	4.0
				Middle	5	18.4 18.8	18.6	36.6 36.3	36.4	65.9 63.5	64.7	5.0 4.8	4.9		7.1 7.2	7.2		3.0	
				Bottom	9	18.1 19.4	18.8	36.9 35.7	36.3	64.9 62.3	63.6	4.9 4.6	4.8	4.8	7.3 7.4	7.4		5.0	
03/04/2008	Cloudy	Moderate	16:20	Surface	1	20.2 20.2	20.2	32.3 32.4	32.3	96.0 95.5	95.8	7.2 7.1	7.2	7.2	6.8 7.1	7.0	7.1	4.0	5.3
				Middle	4.5	20.2 20.2	20.2	32.6 32.6	32.6	96.4 95.6	96.0	7.2 7.2	7.2		7.1 7.1	7.1		4.0	
				Bottom	8	20.2 20.2	20.2	32.6 32.6	32.6	99.4 95.8	97.6	7.4 7.2	7.3	7.3	7.3 7.0	7.2		8.0	
05/04/2008	Cloudy	Moderate	18:13	Surface	1	20.7 20.8	20.7	32.4 32.2	32.3	93.5 92.4	93.0	6.9 6.8	6.9	6.9	6.9 6.7	6.8	9.3	7.0	11.7
				Middle	4.5	20.5 20.6	20.6	32.5 32.4	32.5	94.1 92.8	93.5	7.0 6.9	7.0		9.0 9.5	9.3		13.0	
				Bottom	8	20.6 20.6	20.6	32.4 32.4	32.4	93.4 97.1	95.3	6.9 7.2	7.1	7.1	11.5 11.9	11.7		15.0	
07/04/2008	Fine	Moderate	07:25	Surface	1	21.4 21.3	21.3	31.0 31.2	31.1	85.6 82.9	84.3	6.3 6.1	6.2	6.3	9.0 9.3	9.2	11.2	14.0	13.7
				Middle	4.5	21.2 21.3	21.3	31.3 31.3	31.3	83.4 87.0	85.2	6.2 6.4	6.3		11.7 12.0	11.9		13.0	
				Bottom	8	21.2 21.2	21.2	31.4 31.4	31.4	90.6 84.1	87.4	6.7 6.2	6.5	6.5	13.3 12.1	12.7		14.0	
09/04/2008	Sunny	Moderate	08:30	Surface	1	22.4 22.4	22.4	29.4 29.4	29.4	82.6 84.1	83.4	6.1 6.2	6.1	6.1	11.0 10.1	10.6	12.8	11.0	15.3
				Middle	5	22.1 22.1	22.1	30.8 30.8	30.8	85.2 83.5	84.4	6.2 6.1	6.2		14.5 14.2	14.4		16.0	
				Bottom	9	22.1 22.1	22.1	30.7 30.9	30.8	84.1 86.7	85.4	6.1 6.3	6.2	6.2	13.6 13.4	13.5		19.0	
11/04/2008	Sunny	Moderate	09:30	Surface	1	22.8 22.5	22.7	29.0 29.7	29.4	78.7 76.2	77.5	5.7 5.6	5.7	5.7	5.8 6.2	6.0	9.1	5.0	9.0
				Middle	5	22.3 22.3	22.3	30.8 30.9	30.8	80.1 76.7	78.4	5.8 5.6	5.7		9.3 10.6	10.0		10.0	
				Bottom	9	22.2 22.3	22.2	31.4 31.1	31.3	77.3 85.3	81.3	5.6 6.2	5.9	5.9	11.5 11.2	11.4		12.0	
14/04/2008	Sunny	Moderate	08:34	Surface	1	22.6 22.2	22.4	31.1 31.9	31.5	75.9 71.3	73.6	5.5 5.2	5.3	5.4	4.4 4.8	4.6	5.4	4.0	6.3
				Middle	5	22.2 22.2	22.2	31.9 32.0	31.9	72.3 76.9	74.6	5.2 5.6	5.4		4.6 5.0	4.8		8.0	
				Bottom	9	22.3 22.2	22.2	32.0 32.1	32.0	75.4 79.7	77.6	5.5 5.8	5.6	5.6	6.5 7.0	6.8		7.0	

Remarks: * DA: Depth-Averaged
** Cancelled due to Thunderstorm Warning
*** Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher

Appendix I - Post-Project Marine Water Quality Monitoring Results

Water Quality Monitoring Results at C1 - Mid-Flood Tide

Date	Weather Condition	Sea Condition***	Sampling Time	Depth (m)		Temperature (°C)		Salinity (ppt)		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)	
						Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Average	DA*
16/04/2008	Sunny	Moderate	16:17	Surface	1	24.5 24.5	24.5	28.6 28.6	28.6	82.1 82.8	82.5	5.8 5.9	5.9	5.8	2.5 2.5	2.5	3.5	3.0	5.0
				Middle	5	23.0 23.0	23.0	31.2 31.2	31.2	80.7 80.4	80.6	5.8 5.8	5.8		3.7 3.5	3.6		7.0	
				Bottom	9	22.7 22.7	22.7	31.5 31.4	31.5	81.9 82.2	82.1	5.9 5.9	5.9	5.9	4.3 4.4	4.4		5.0	
18/04/2008	Fine	Moderate	17:39	Surface	1	23.4 23.4	23.4	30.0 30.0	30.0	90.1 89.0	89.6	6.8 6.7	6.7	6.8	6.7 6.8	6.8	7.3	5.0	6.3
				Middle	5	23.2 23.2	23.2	30.5 30.4	30.4	89.4 90.7	90.1	6.7 6.8	6.8		7.1 6.8	7.0		7.0	
				Bottom	9	23.2 23.1	23.1	31.0 31.1	31.1	90.0 93.7	91.9	6.8 7.1	6.9	6.9	7.5 8.7	8.1		7.0	
21/04/2008	Cloudy	Moderate	07:05	Surface	1	23.2 23.2	23.2	30.3 30.4	30.4	76.9 75.8	76.4	5.4 5.4	5.4	5.4	7.9 8.0	8.0	8.9	12.0	12.7
				Middle	5	23.1 23.1	23.1	30.7 30.6	30.7	76.0 77.4	76.7	5.4 5.5	5.4		9.2 9.8	9.5		11.0	
				Bottom	9	23.1 23.2	23.1	30.8 30.7	30.8	78.9 76.4	77.7	5.6 5.4	5.5	5.5	9.7 8.6	9.2		15.0	
23/04/2008	Fine	Moderate	08:08	Surface	1	23.3 23.3	23.3	31.3 31.3	31.3	77.8 76.3	77.1	5.0 4.9	5.0	5.0	5.5 5.4	5.5	6.2	3.0	6.3
				Middle	5	23.3 23.3	23.3	31.8 31.8	31.8	78.3 76.6	77.5	5.1 4.9	5.0		7.0 6.4	6.7		8.0	
				Bottom	9	23.3 23.3	23.3	31.7 31.8	31.8	76.9 78.6	77.8	5.0 5.1	5.0	5.0	6.9 6.0	6.5		8.0	
25/04/2008	Fine	Moderate	08:31	Surface	1	23.4 23.4	23.4	29.2 29.2	29.2	82.5 84.0	83.3	6.1 6.2	6.1	6.1	5.4 4.5	5.0	7.2	4.0	5.0
				Middle	5	23.1 23.1	23.1	30.6 30.5	30.6	85.1 83.4	84.3	6.2 6.1	6.2		8.9 8.6	8.8		6.0	
				Bottom	9	23.0 23.1	23.1	30.7 30.5	30.6	86.6 84.0	85.3	6.3 6.1	6.2	6.2	7.8 8.0	7.9		5.0	

Remarks: * DA: Depth-Averaged
** Cancelled due to Thunderstorm Warning
*** Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher

Appendix I - Post-Project Marine Water Quality Monitoring Results

Water Quality Monitoring Results at C2 - Mid-Ebb Tide

Date	Weather Condition	Sea Condition***	Sampling Time	Depth (m)		Temperature (°C)		Salinity (ppt)		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)	
						Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Average	DA*
01/04/2008	Fine	Moderate	09:59	Surface	1	19.4 19.4	19.4	35.5 35.5	35.5	78.4 78.7	78.6	5.8 5.9	5.9	5.8	6.0 6.1	6.1	6.0	4.0	4.3
				Middle	18	19.6 19.3	19.4	35.6 35.8	35.7	78.9 77.2	78.1	5.9 5.8	5.8		5.9 6.0	6.0		4.0	
				Bottom	35	19.2 19.5	19.4	35.9 35.6	35.8	76.8 78.6	77.7	5.7 5.8	5.8	5.8	5.9 5.9	5.9		5.0	
03/04/2008	Fine	Moderate	10:54	Surface	1	21.1 20.2	20.6	31.8 32.4	32.1	113.3 108.3	110.8	8.4 8.1	8.2	8.2	6.8 6.7	6.8	6.6	4.0	5.7
				Middle	18.5	20.2 20.2	20.2	32.7 32.7	32.7	105.8 111.7	108.8	7.9 8.3	8.1		6.5 6.5	6.5		7.0	
				Bottom	36	20.2 20.2	20.2	32.7 32.7	32.7	113.6 106.6	110.1	8.5 8.0	8.2	8.2	6.7 6.5	6.6		6.0	
05/04/2008	Sunny	Moderate	12:01	Surface	1	20.7 20.7	20.7	32.2 32.4	32.3	113.6 114.4	114.0	8.4 8.5	8.5	8.5	5.4 5.0	5.2	5.9	9.0	10.7
				Middle	18.5	20.5 20.5	20.5	32.5 32.6	32.6	113.7 115.0	114.4	8.5 8.6	8.5		7.0 6.2	6.6		10.0	
				Bottom	36	20.5 20.5	20.5	32.7 32.7	32.7	115.0 116.8	115.9	8.6 8.7	8.6	8.6	6.1 5.7	5.9		13.0	
07/04/2008	Sunny	Moderate	13:53	Surface	1	21.5 22.2	21.9	31.1 30.5	30.8	83.4 77.6	80.5	6.1 5.7	5.9	6.0	5.1 4.9	5.0	5.2	9.0	10.0
				Middle	18	21.3 21.3	21.3	32.0 31.9	32.0	78.8 86.5	82.7	5.8 6.4	6.1		5.5 5.3	5.4		11.0	
				Bottom	35	21.3 21.3	21.3	32.0 32.0	32.0	87.7 81.6	84.7	6.5 6.0	6.2	6.2	5.1 5.4	5.3		10.0	
09/04/2008	Sunny	Moderate	15:24	Surface	1	21.8 21.8	21.8	31.9 31.9	31.9	76.5 80.6	78.6	5.6 5.9	5.7	5.8	7.8 7.4	7.6	9.0	11.0	12.0
				Middle	18.5	21.7 21.7	21.7	32.2 32.2	32.2	77.8 83.4	80.6	5.7 6.1	5.9		10.1 10.1	10.1		12.0	
				Bottom	36	21.7 21.7	21.7	32.2 32.2	32.2	78.7 84.4	81.6	5.7 6.2	6.0	6.0	9.1 9.6	9.4		13.0	
11/04/2008	Sunny	Moderate	17:01	Surface	1	22.2 22.3	22.2	31.6 31.4	31.5	76.7 73.5	75.1	5.6 5.3	5.5	5.5	4.9 4.5	4.7	6.1	6.0	7.3
				Middle	18.5	21.9 21.9	21.9	32.4 32.4	32.4	75.2 79.4	77.3	5.5 5.8	5.6		6.7 6.7	6.7		6.0	
				Bottom	36	21.9 21.9	21.9	32.4 32.4	32.4	75.2 80.2	77.7	5.5 5.8	5.6	5.6	6.7 6.9	6.8		10.0	
14/04/2008	Fine	Moderate	21:02	Surface	1	23.8 24.0	23.9	29.3 29.0	29.2	87.4 93.4	90.4	6.3 6.7	6.5	6.7	4.2 4.8	4.5	4.8	4.0	3.7
				Middle	18.5	22.2 22.1	22.1	32.3 32.5	32.4	91.2 100.5	95.9	6.6 7.3	6.9		4.7 5.1	4.9		3.0	
				Bottom	36	22.2 22.2	22.2	32.4 32.4	32.4	100.4 95.3	97.9	7.3 6.9	7.1	7.1	5.3 4.6	5.0		4.0	

Remarks: * DA: Depth-Averaged
** Cancelled due to Thunderstorm Warning
*** Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher

Appendix I - Post-Project Marine Water Quality Monitoring Results

Water Quality Monitoring Results at C2 - Mid-Ebb Tide

Date	Weather Condition	Sea Condition***	Sampling Time	Depth (m)		Temperature (°C)		Salinity (ppt)		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)	
						Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Average	DA*
16/04/2008	Sunny	Moderate	10:48	Surface	1	23.3 23.2	23.2	31.3 31.3	31.3	83.1 83.4	83.3	5.9 6.0	5.9	6.0	2.0 2.1	2.1	2.4	3.0	4.7
				Middle	19	22.3 22.3	22.3	32.6 32.5	32.6	83.1 82.7	82.9	6.0 6.0	6.0		2.3 2.2	2.3		6.0	
				Bottom	37	22.2 22.2	22.2	32.9 32.8	32.9	83.8 84.1	84.0	6.0 6.1	6.0	6.0	2.6 2.9	2.8		5.0	
18/04/2008	Fine	Moderate	11:35	Surface	1	22.9 23.0	23.0	31.5 31.4	31.5	107.1 107.9	107.5	8.1 8.2	8.2	8.2	6.5 6.1	6.3	6.5	5.0	7.3
				Middle	19.5	22.7 22.7	22.7	32.3 32.3	32.3	108.5 107.2	107.9	8.3 8.2	8.2		6.6 6.5	6.6		9.0	
				Bottom	38	22.7 22.7	22.7	32.4 32.4	32.4	108.5 110.3	109.4	8.3 8.4	8.3	8.3	6.5 6.7	6.6		8.0	
21/04/2008	Cloudy	Moderate	13:36	Surface	1	23.2 23.3	23.3	30.3 30.0	30.2	74.1 74.1	74.1	5.1 5.1	5.1	5.1	8.2 8.2	8.2	8.2	10.0	10.7
				Middle	18.5	23.1 23.0	23.0	31.3 31.6	31.4	74.5 74.0	74.3	5.2 5.1	5.1		8.2 8.1	8.2		10.0	
				Bottom	36	23.0 23.0	23.0	31.7 31.5	31.6	74.2 75.7	75.0	5.1 5.2	5.2	5.2	8.2 8.4	8.3		12.0	
23/04/2008	Fine	Moderate	14:48	Surface	1	23.4 23.4	23.4	29.2 31.0	30.1	81.2 87.2	84.2	6.0 6.4	6.2	6.4	5.4 5.6	5.5	6.8	5.0	9.7
				Middle	18.5	23.3 23.3	23.3	32.0 31.8	31.9	85.0 94.3	89.7	6.3 7.0	6.7		7.5 7.4	7.5		12.0	
				Bottom	36	23.3 23.3	23.3	32.0 32.1	32.0	94.2 89.1	91.7	7.0 6.6	6.8	6.8	7.6 7.2	7.4		12.0	
25/04/2008	Fine	Moderate	15:56	Surface	1	22.8 22.8	22.8	31.7 31.7	31.7	82.8 86.9	84.9	5.9 6.2	6.0	6.1	4.7 4.3	4.5	6.0	4.0	8.7
				Middle	19	22.7 22.7	22.7	32.0 32.0	32.0	84.1 89.7	86.9	6.0 6.4	6.2		7.2 7.0	7.1		11.0	
				Bottom	37	22.7 22.7	22.7	32.0 32.0	32.0	85.0 90.7	87.9	6.0 6.5	6.3	6.3	6.0 6.5	6.3		11.0	

Remarks: * DA: Depth-Averaged
** Cancelled due to Thunderstorm Warning
*** Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher

Appendix I - Post-Project Marine Water Quality Monitoring Results

Water Quality Monitoring Results at C2 - Mid-Flood Tide

Date	Weather Condition	Sea Condition***	Sampling Time	Depth (m)		Temperature (°C)		Salinity (ppt)		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)	
						Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Average	DA*
01/04/2008	Fine	Moderate	14:43	Surface	1	18.8 19.1	19.0	36.4 36.1	36.2	76.2 77.3	76.8	5.7 5.8	5.8	5.8	5.9 5.8	5.9	6.0	4.0	4.0
				Middle	18.5	19.0 17.6	18.3	36.3 37.5	36.9	76.0 76.3	76.2	5.7 5.8	5.8		6.2 6.0	6.1		4.0	
				Bottom	36	15.4 18.9	17.2	39.7 36.5	38.1	76.8 76.0	76.4	6.0 5.7	5.9	5.9	6.1 5.9	6.0		4.0	
03/04/2008	Cloudy	Moderate	17:03	Surface	1	20.2 20.2	20.2	32.5 32.5	32.5	96.3 96.8	96.6	7.2 7.2	7.2	7.2	5.7 5.7	5.7	5.8	4.0	4.7
				Middle	19	20.2 20.2	20.2	32.7 32.7	32.7	97.4 96.2	96.8	7.3 7.2	7.2		5.7 6.0	5.9		4.0	
				Bottom	37	20.2 20.2	20.2	32.8 32.8	32.8	98.4 96.5	97.5	7.4 7.2	7.3	7.3	5.8 6.0	5.9		6.0	
05/04/2008	Cloudy	Moderate	18:47	Surface	1	20.7 20.6	20.6	32.2 32.3	32.2	92.7 94.1	93.4	6.9 7.0	6.9	7.0	7.4 6.7	7.1	7.0	9.0	8.3
				Middle	18.5	20.5 20.5	20.5	32.6 32.4	32.5	93.0 94.5	93.8	6.9 7.0	7.0		7.2 6.7	7.0		9.0	
				Bottom	36	20.5 20.5	20.5	32.6 32.5	32.6	93.7 96.1	94.9	7.0 7.2	7.1	7.1	7.4 6.6	7.0		7.0	
07/04/2008	Fine	Moderate	06:50	Surface	1	21.1 21.1	21.1	32.1 32.1	32.1	109.0 109.8	109.4	8.0 8.1	8.1	8.1	9.6 10.0	9.8	10.7	18.0	17.3
				Middle	18.5	21.1 21.1	21.1	32.3 32.3	32.3	109.4 110.4	109.9	8.1 8.1	8.1		10.8 11.4	11.1		18.0	
				Bottom	36	21.1 21.1	21.1	32.3 32.3	32.3	109.5 111.7	110.6	8.1 8.2	8.2	8.2	10.7 11.5	11.1		16.0	
09/04/2008	Sunny	Moderate	07:55	Surface	1	21.9 21.9	21.9	31.4 31.4	31.4	97.5 97.1	97.3	7.4 7.4	7.4	7.4	9.2 9.3	9.3	12.0	10.0	13.3
				Middle	19.5	21.8 21.8	21.8	31.7 31.8	31.8	97.7 98.2	98.0	7.4 7.4	7.4		13.4 13.8	13.6		13.0	
				Bottom	38	21.8 21.8	21.8	31.8 31.8	31.8	97.4 98.9	98.2	7.4 7.5	7.4	7.4	13.1 13.1	13.1		17.0	
11/04/2008	Sunny	Moderate	09:00	Surface	1	22.2 22.2	22.2	31.5 31.5	31.5	109.6 107.4	108.5	8.0 7.8	7.9	7.9	3.3 3.5	3.4	5.1	4.0	8.0
				Middle	19.5	21.9 21.9	21.9	32.2 32.3	32.2	109.3 110.3	109.8	7.9 8.0	8.0		6.0 5.8	5.9		8.0	
				Bottom	38	21.9 21.8	21.9	32.2 32.4	32.3	109.5 110.3	109.9	8.0 8.0	8.0	8.0	5.7 6.3	6.0		12.0	
14/04/2008	Sunny	Moderate	07:55	Surface	1	22.4 22.5	22.5	31.4 31.1	31.2	108.3 107.7	108.0	7.8 7.8	7.8	7.8	4.0 4.0	4.0	4.6	3.0	4.3
				Middle	19.5	21.9 21.9	21.9	32.9 33.0	32.9	107.4 108.3	107.9	7.8 7.8	7.8		4.7 5.1	4.9		6.0	
				Bottom	38	21.9 21.9	21.9	33.0 32.9	33.0	108.4 108.7	108.6	7.8 7.9	7.9	7.9	5.0 4.9	5.0		4.0	

Remarks: * DA: Depth-Averaged
** Cancelled due to Thunderstorm Warning
*** Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher

Appendix I - Post-Project Marine Water Quality Monitoring Results

Water Quality Monitoring Results at C2 - Mid-Flood Tide

Date	Weather Condition	Sea Condition***	Sampling Time	Depth (m)		Temperature (°C)		Salinity (ppt)		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)	
						Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Average	DA*
16/04/2008	Sunny	Moderate	17:00	Surface	1	23.8 23.7	23.7	29.5 29.6	29.6	84.2 83.8	84.0	6.0 6.0	6.0	5.9	2.2 2.0	2.1	2.7	7.0	5.3
				Middle	18.5	22.4 22.4	22.4	32.2 32.3	32.2	81.6 81.8	81.7	5.9 5.9	5.9		2.5 2.7	2.6		3.0	
				Bottom	36	22.3 22.2	22.2	32.9 33.0	32.9	82.6 82.6	82.6	5.9 5.9	5.9	5.9	3.4 3.2	3.3		6.0	
18/04/2008	Fine	Moderate	18:15	Surface	1	22.8 22.8	22.8	32.3 32.3	32.3	89.3 90.7	90.0	6.7 6.8	6.8	6.8	8.3 8.3	8.3	8.8	8.0	9.0
				Middle	19	22.8 22.8	22.8	32.3 32.3	32.3	89.6 91.1	90.4	6.8 6.9	6.8		9.4 9.9	9.7		8.0	
				Bottom	37	22.8 22.8	22.8	32.4 32.4	32.4	90.3 92.7	91.5	6.8 7.0	6.9	6.9	8.6 8.5	8.6		11.0	
21/04/2008	Cloudy	Moderate	06:34	Surface	1	23.1 23.1	23.1	31.1 31.0	31.1	98.6 101.5	100.1	7.2 7.4	7.3	7.4	6.1 5.9	6.0	7.9	8.0	9.0
				Middle	19.5	22.9 22.9	22.9	31.8 31.8	31.8	100.4 101.4	100.9	7.4 7.4	7.4		8.8 8.8	8.8		10.0	
				Bottom	38	22.9 23.0	22.9	32.0 31.7	31.9	101.3 100.6	101.0	7.4 7.4	7.4	7.4	9.0 8.7	8.9		9.0	
23/04/2008	Fine	Moderate	07:36	Surface	1	23.3 23.4	23.4	30.4 30.1	30.2	110.7 104.1	107.4	7.9 7.5	7.7	7.8	7.6 7.2	7.4	7.7	7.0	8.0
				Middle	19	23.3 23.3	23.3	32.1 32.3	32.2	107.9 112.2	110.1	7.7 8.0	7.8		8.4 7.3	7.9		8.0	
				Bottom	37	23.3 23.3	23.3	32.2 32.1	32.2	113.9 108.9	111.4	8.1 7.7	7.9	7.9	7.6 8.3	8.0		9.0	
25/04/2008	Fine	Moderate	07:56	Surface	1	22.9 22.9	22.9	31.2 31.2	31.2	97.4 97.0	97.2	7.4 7.4	7.4	7.4	6.8 6.9	6.9	9.3	5.0	5.0
				Middle	19	22.8 22.8	22.8	31.5 31.5	31.5	97.6 98.1	97.9	7.4 7.4	7.4		11.0 11.4	11.2		4.0	
				Bottom	37	22.8 22.8	22.8	31.6 31.6	31.6	97.3 98.8	98.1	7.4 7.5	7.4	7.4	10.7 8.9	9.8		6.0	

Remarks: * DA: Depth-Averaged
** Cancelled due to Thunderstorm Warning
*** Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher

Appendix I - Post-Project Marine Water Quality Monitoring Results

Water Quality Monitoring Results at M1 - Mid-Ebb Tide

Date	Weather Condition	Sea Condition***	Sampling Time	Depth (m)		Temperature (°C)		Salinity (ppt)		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)	
						Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Average	DA*
01/04/2008	Fine	Moderate	10:33	Surface	1	19.9 19.9	19.9	35.1 35.1	35.1	78.0 77.0	77.5	5.8 5.7	5.8	5.7	6.6 6.8	6.7	7.1	2.0	3.3
				Middle	7.5	19.9 19.9	19.9	35.3 35.2	35.3	76.8 77.5	77.2	5.7 5.7	5.7		7.3 7.0	7.2		4.0	
				Bottom	14	19.8 19.9	19.9	35.3 35.2	35.3	78.1 77.3	77.7	5.8 5.7	5.8	5.8	7.5 7.4	7.5		4.0	
03/04/2008	Fine	Moderate	11:41	Surface	1	20.3 20.2	20.3	32.3 32.3	32.3	95.7 97.6	96.7	7.2 7.3	7.2	7.3	6.1 6.8	6.5	7.4	3.0	4.7
				Middle	7	20.2 20.2	20.2	32.5 32.6	32.6	98.1 96.0	97.1	7.3 7.2	7.3		7.0 7.9	7.5		4.0	
				Bottom	13	20.2 20.2	20.2	32.6 32.6	32.6	96.7 99.4	98.1	7.2 7.4	7.3	7.3	8.1 8.5	8.3		7.0	
05/04/2008	Sunny	Moderate	12:30	Surface	1	20.7 20.8	20.7	32.2 32.2	32.2	98.8 97.1	98.0	7.3 7.2	7.3	7.3	8.2 7.9	8.1	9.0	9.0	9.7
				Middle	6.5	20.5 20.5	20.5	32.5 32.5	32.5	99.5 97.9	98.7	7.4 7.3	7.4		9.4 9.3	9.4		7.0	
				Bottom	12	20.5 20.5	20.5	32.5 32.5	32.5	101.2 99.0	100.1	7.5 7.4	7.5	7.5	9.7 9.4	9.6		13.0	
07/04/2008	Sunny	Moderate	13:26	Surface	1	22.6 21.6	22.1	30.2 30.9	30.5	102.5 96.4	99.5	7.4 7.1	7.3	7.4	6.1 6.5	6.3	7.7	14.0	12.7
				Middle	6.5	21.4 21.4	21.4	31.4 31.4	31.4	98.5 106.2	102.4	7.3 7.8	7.5		8.0 8.1	8.1		12.0	
				Bottom	12	21.4 21.4	21.4	31.4 31.5	31.5	100.8 109.4	105.1	7.4 8.1	7.7	7.7	8.0 9.3	8.7		12.0	
09/04/2008	Sunny	Moderate	14:54	Surface	1	22.4 22.2	22.3	29.9 30.3	30.1	80.6 78.7	79.7	5.9 5.8	5.8	5.8	9.9 9.7	9.8	13.4	9.0	14.7
				Middle	8.5	22.0 22.1	22.1	30.9 30.8	30.9	79.1 81.3	80.2	5.8 5.9	5.9		15.3 15.0	15.2		15.0	
				Bottom	16	22.0 22.0	22.0	31.1 31.2	31.2	79.7 83.9	81.8	5.8 6.1	6.0	6.0	15.6 14.9	15.3		20.0	
11/04/2008	Sunny	Moderate	16:37	Surface	1	22.3 22.5	22.4	31.1 30.8	31.0	109.1 105.8	107.5	7.9 7.7	7.8	7.8	4.4 4.2	4.3	5.3	5.0	6.0
				Middle	8.5	22.2 22.2	22.2	31.5 31.5	31.5	109.7 107.5	108.6	8.0 7.8	7.9		5.3 5.5	5.4		6.0	
				Bottom	16	22.0 22.0	22.0	32.1 32.1	32.1	107.9 111.3	109.6	7.8 8.1	8.0	8.0	6.1 6.2	6.2		7.0	
14/04/2008	Fine	Moderate	20:38	Surface	1	24.1 24.1	24.1	28.9 28.9	28.9	105.0 107.7	106.4	7.5 7.7	7.6	7.7	7.8 8.2	8.0	5.9	7.0	4.3
				Middle	8	22.2 22.4	22.3	32.2 31.6	31.9	108.4 108.5	108.5	7.8 7.8	7.8		4.7 4.2	4.5		4.0	
				Bottom	15	22.5 22.2	22.3	31.8 32.3	32.1	110.4 111.0	110.7	8.0 8.0	8.0	8.0	5.2 5.4	5.3		2.0	

Remarks: * DA: Depth-Averaged
** Cancelled due to Thunderstorm Warning
*** Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher

Appendix I - Post-Project Marine Water Quality Monitoring Results

Water Quality Monitoring Results at M1 - Mid-Ebb Tide

Date	Weather Condition	Sea Condition***	Sampling Time	Depth (m)		Temperature (°C)		Salinity (ppt)		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)	
						Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Average	DA*
16/04/2008	Sunny	Moderate	11:18	Surface	1	22.9 22.9	22.9	31.3 31.4	31.3	81.0 80.5	80.8	5.8 5.8	5.8	5.8	3.4 3.6	3.5	5.1	10.0	8.0
				Middle	7	22.6 22.7	22.7	31.7 31.8	31.7	81.2 81.4	81.3	5.9 5.8	5.9		5.7 5.7	5.7		7.0	
				Bottom	13	22.4 22.4	22.4	32.2 32.3	32.3	82.3 81.9	82.1	5.9 5.9	5.9	5.9	6.1 6.3	6.2		7.0	
18/04/2008	Fine	Moderate	12:01	Surface	1	23.1 23.0	23.0	31.4 31.4	31.4	92.4 90.7	91.6	7.0 6.9	7.0	7.0	6.0 6.3	6.2	7.3	8.0	6.7
				Middle	8.5	22.8 22.8	22.8	32.0 32.0	32.0	91.5 93.1	92.3	7.0 7.1	7.1		8.5 8.1	8.3		7.0	
				Bottom	16	22.8 22.8	22.8	32.0 32.0	32.0	92.6 94.8	93.7	7.1 7.2	7.2	7.2	7.7 7.2	7.5		5.0	
21/04/2008	Cloudy	Moderate	13:11	Surface	1	23.2 23.2	23.2	30.2 30.1	30.2	77.3 76.1	76.7	5.4 5.3	5.3	5.4	8.9 8.2	8.6	9.5	9.0	16.7
				Middle	8	23.1 23.1	23.1	30.6 30.7	30.7	76.3 78.0	77.2	5.3 5.4	5.4		9.4 8.5	9.0		17.0	
				Bottom	15	23.1 23.1	23.1	30.9 30.9	30.9	76.7 79.4	78.1	5.3 5.5	5.4	5.4	11.0 10.9	11.0		24.0	
23/04/2008	Fine	Moderate	14:22	Surface	1	23.5 23.5	23.5	29.3 29.4	29.4	98.8 101.5	100.2	7.2 7.4	7.3	7.4	6.3 6.7	6.5	7.1	6.0	9.3
				Middle	8	23.3 23.4	23.4	31.2 31.1	31.1	102.2 102.3	102.3	7.6 7.6	7.6		7.5 7.4	7.5		10.0	
				Bottom	15	23.4 23.4	23.4	31.3 31.3	31.3	104.2 104.8	104.5	7.7 7.7	7.7	7.7	7.2 7.3	7.3		12.0	
25/04/2008	Fine	Moderate	15:26	Surface	1	23.4 23.2	23.3	29.6 30.1	29.9	83.7 81.8	82.8	6.0 5.9	6.0	6.0	3.6 3.4	3.5	7.1	5.0	6.7
				Middle	8.5	23.0 23.1	23.1	30.7 30.6	30.7	82.2 84.4	83.3	5.9 6.1	6.0		9.1 8.7	8.9		6.0	
				Bottom	16	23.0 23.0	23.0	30.9 31.0	30.9	82.8 87.0	84.9	6.0 6.3	6.1	6.1	9.3 8.6	9.0		9.0	

Remarks: * DA: Depth-Averaged
** Cancelled due to Thunderstorm Warning
*** Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher

Appendix I - Post-Project Marine Water Quality Monitoring Results

Water Quality Monitoring Results at M1 - Mid-Flood Tide

Date	Weather Condition	Sea Condition***	Sampling Time	Depth (m)		Temperature (°C)		Salinity (ppt)		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)	
						Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Average	DA*
01/04/2008	Fine	Moderate	14:15	Surface	1	19.8 19.8	19.8	35.4 35.3	35.3	72.0 71.6	71.8	5.3 5.3	5.3	5.3	6.9 6.8	6.9	7.2	4.0	3.7
				Middle	7.5	19.7 19.7	19.7	35.6 35.6	35.6	71.7 71.8	71.8	5.3 5.3	5.3		7.1 7.4	7.3		4.0	
				Bottom	14	19.4 19.7	19.6	35.8 35.6	35.7	73.4 71.5	72.5	5.5 5.3	5.4	5.4	7.7 7.3	7.5		3.0	
03/04/2008	Cloudy	Moderate	16:30	Surface	1	20.2 20.3	20.2	32.4 32.2	32.3	96.6 97.0	96.8	7.2 7.3	7.2	7.2	6.0 7.3	6.7	8.2	5.0	4.3
				Middle	7	20.2 20.2	20.2	32.6 32.6	32.6	97.1 96.6	96.9	7.3 7.2	7.2		8.5 9.9	9.2		4.0	
				Bottom	13	20.2 20.2	20.2	32.6 32.6	32.6	96.9 98.3	97.6	7.2 7.3	7.3	7.3	8.9 8.7	8.8		4.0	
05/04/2008	Cloudy	Moderate	18:20	Surface	1	21.1 20.7	20.9	31.7 31.9	31.8	94.4 94.3	94.4	7.0 7.0	7.0	7.1	5.6 5.9	5.8	8.0	6.0	8.3
				Middle	6.5	20.5 20.5	20.5	32.2 32.2	32.2	95.0 95.3	95.2	7.1 7.1	7.1		8.6 8.7	8.7		8.0	
				Bottom	12	20.6 20.5	20.5	32.1 32.2	32.2	96.5 97.6	97.1	7.2 7.3	7.2	7.2	9.7 9.3	9.5		11.0	
07/04/2008	Fine	Moderate	07:19	Surface	1	21.4 21.3	21.4	30.7 31.0	30.8	86.2 90.8	88.5	6.4 6.7	6.6	6.6	8.1 8.7	8.4	9.4	12.0	14.0
				Middle	8	21.3 21.3	21.3	31.3 31.3	31.3	87.2 92.1	89.7	6.4 6.8	6.6		8.7 9.1	8.9		15.0	
				Bottom	15	21.3 21.3	21.3	31.3 31.3	31.3	96.2 89.1	92.7	7.1 6.6	6.9	6.9	10.9 11.0	11.0		15.0	
09/04/2008	Sunny	Moderate	08:23	Surface	1	22.4 22.3	22.3	29.6 29.7	29.6	81.6 82.8	82.2	6.0 6.1	6.0	6.0	9.0 8.4	8.7	12.4	11.0	17.7
				Middle	9.5	22.1 22.1	22.1	30.8 30.8	30.8	82.1 83.4	82.8	6.0 6.1	6.0		14.7 14.7	14.7		22.0	
				Bottom	18	22.0 22.0	22.0	31.3 31.2	31.3	82.8 84.5	83.7	6.1 6.2	6.1	6.1	14.4 13.4	13.9		20.0	
11/04/2008	Sunny	Moderate	09:23	Surface	1	22.6 22.8	22.7	29.4 28.8	29.1	78.7 76.6	77.7	5.7 5.6	5.7	5.7	4.9 4.4	4.7	6.7	4.0	8.3
				Middle	9	22.1 22.2	22.2	31.4 31.3	31.4	79.5 77.3	78.4	5.8 5.6	5.7		7.2 6.8	7.0		11.0	
				Bottom	17	22.0 22.0	22.0	32.0 32.0	32.0	80.9 78.1	79.5	5.9 5.7	5.8	5.8	9.2 7.5	8.4		10.0	
14/04/2008	Sunny	Moderate	08:25	Surface	1	22.5 22.5	22.5	31.1 31.2	31.2	77.0 73.8	75.4	5.6 5.3	5.5	5.5	10.4 10.5	10.5	11.9	2.0	3.7
				Middle	8	22.2 22.1	22.1	32.1 32.2	32.2	74.1 77.6	75.9	5.4 5.6	5.5		12.2 12.4	12.3		5.0	
				Bottom	15	22.1 22.1	22.1	32.5 32.5	32.5	75.5 80.8	78.2	5.5 5.8	5.7	5.7	12.7 13.1	12.9		4.0	

Remarks: * DA: Depth-Averaged
** Cancelled due to Thunderstorm Warning
*** Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher

Appendix I - Post-Project Marine Water Quality Monitoring Results

Water Quality Monitoring Results at M1 - Mid-Flood Tide

Date	Weather Condition	Sea Condition***	Sampling Time	Depth (m)		Temperature (°C)		Salinity (ppt)		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)	
						Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Average	DA*
16/04/2008	Sunny	Moderate	16:27	Surface	1	23.8 23.8	23.8	29.2 29.2	29.2	80.4 80.1	80.3	5.7 5.7	5.7	5.8	2.8 2.6	2.7	3.2	7.0	7.3
				Middle	6	23.3 23.3	23.3	30.6 30.6	30.6	80.8 80.7	80.8	5.8 5.8	5.8		3.3 3.1	3.2		5.0	
				Bottom	11	23.2 23.2	23.2	31.0 31.2	31.1	81.8 81.1	81.5	5.8 5.8	5.8	5.8	3.7 3.6	3.7		10.0	
18/04/2008	Fine	Moderate	17:45	Surface	1	23.3 23.3	23.3	30.4 30.4	30.4	91.0 90.9	91.0	6.8 6.9	6.8	6.9	6.3 6.3	6.3	6.3	7.0	7.7
				Middle	8.5	23.0 23.0	23.0	31.4 31.5	31.5	91.9 91.6	91.8	6.9 6.9	6.9		6.3 6.3	6.3		6.0	
				Bottom	16	23.0 23.0	23.0	31.6 31.6	31.6	94.2 93.1	93.7	7.1 7.0	7.1	7.1	6.3 6.3	6.3		10.0	
21/04/2008	Cloudy	Moderate	06:58	Surface	1	23.5 23.8	23.7	28.9 28.6	28.7	74.6 74.8	74.7	5.3 5.3	5.3	5.3	5.1 5.6	5.4	5.7	5.0	7.3
				Middle	7.5	23.3 23.3	23.3	30.1 30.1	30.1	74.7 75.0	74.9	5.3 5.3	5.3		5.6 5.6	5.6		7.0	
				Bottom	14	23.3 23.2	23.2	30.4 30.6	30.5	75.1 76.8	76.0	5.3 5.4	5.4	5.4	5.7 6.8	6.3		10.0	
23/04/2008	Fine	Moderate	08:01	Surface	1	23.4 23.5	23.5	30.7 30.7	30.7	80.1 80.4	80.3	5.2 5.2	5.2	5.2	4.2 4.1	4.2	5.5	7.0	8.7
				Middle	7	23.3 23.4	23.3	31.8 31.4	31.6	80.7 80.1	80.4	5.2 5.2	5.2		6.6 6.4	6.5		7.0	
				Bottom	13	23.4 23.3	23.3	31.3 31.8	31.6	80.1 81.0	80.6	5.2 5.2	5.2	5.2	5.8 6.0	5.9		12.0	
25/04/2008	Fine	Moderate	08:24	Surface	1	23.3 23.3	23.3	29.3 29.5	29.4	81.5 82.7	82.1	6.0 6.1	6.0	6.0	5.4 5.8	5.6	7.7	6.0	5.7
				Middle	9.5	23.1 23.1	23.1	30.6 30.6	30.6	82.0 83.3	82.7	6.0 6.1	6.0		9.1 9.1	9.1		5.0	
				Bottom	18	22.9 23.0	23.0	31.1 31.0	31.1	82.7 84.4	83.6	6.1 6.2	6.1	6.1	8.8 7.8	8.3		6.0	

Remarks: * DA: Depth-Averaged
** Cancelled due to Thunderstorm Warning
*** Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher

Appendix I - Post-Project Marine Water Quality Monitoring Results

Water Quality Monitoring Results at M2 - Mid-Ebb Tide

Date	Weather Condition	Sea Condition***	Sampling Time	Depth (m)		Temperature (°C)		Salinity (ppt)		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)	
						Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Average	DA*
01/04/2008	Fine	Moderate	10:22	Surface	1	18.3 20.0	19.2	36.4 35.0	35.7	77.9 78.5	78.2	5.9 5.8	5.9	5.8	7.1 7.5	7.3	7.5	3.0	3.7
				Middle	9.5	17.0 20.0	18.5	37.9 35.2	36.6	78.4 75.6	77.0	6.0 5.6	5.8		7.3 7.9	7.6		3.0	
				Bottom	18	20.0 18.2	19.1	35.4 36.9	36.1	75.1 77.1	76.1	5.6 5.8	5.7	5.7	7.9 7.5	7.7		5.0	
03/04/2008	Fine	Moderate	11:26	Surface	1	20.3 20.2	20.3	32.3 32.3	32.3	99.9 98.1	99.0	7.5 7.3	7.4	7.4	5.8 5.9	5.9	6.5	5.0	5.3
				Middle	9	20.2 20.2	20.2	32.4 32.5	32.5	98.0 100.7	99.4	7.3 7.5	7.4		6.4 6.9	6.7		4.0	
				Bottom	17	20.3 20.2	20.2	32.7 32.7	32.7	104.4 99.1	101.8	7.8 7.4	7.6	7.6	7.2 7.0	7.1		7.0	
05/04/2008	Sunny	Moderate	12:20	Surface	1	20.9 20.8	20.9	32.1 32.2	32.2	96.6 97.1	96.9	7.1 7.2	7.2	7.2	4.4 4.6	4.5	6.2	5.0	6.0
				Middle	9.5	20.5 20.5	20.5	32.5 32.5	32.5	96.4 98.0	97.2	7.2 7.3	7.2		6.8 6.4	6.6		7.0	
				Bottom	18	20.5 20.5	20.5	32.5 32.6	32.5	102.3 97.2	99.8	7.6 7.2	7.4	7.4	6.8 7.9	7.4		6.0	
07/04/2008	Sunny	Moderate	13:34	Surface	1	21.6 21.6	21.6	30.8 30.9	30.9	86.3 83.7	85.0	6.4 6.2	6.3	6.3	6.0 6.3	6.2	7.1	13.0	12.3
				Middle	8.5	21.4 21.4	21.4	31.4 31.5	31.4	84.5 87.8	86.2	6.2 6.5	6.3		7.6 8.2	7.9		12.0	
				Bottom	16	21.3 21.5	21.4	31.7 31.4	31.5	91.8 85.2	88.5	6.8 6.3	6.5	6.5	7.4 7.1	7.3		12.0	
09/04/2008	Sunny	Moderate	15:03	Surface	1	22.2 22.2	22.2	30.5 30.5	30.5	77.8 79.5	78.7	5.7 5.8	5.8	5.8	13.0 13.0	13.0	14.7	10.0	13.0
				Middle	9.5	22.0 22.0	22.0	31.0 31.1	31.1	78.2 80.4	79.3	5.7 5.9	5.8		15.1 16.0	15.6		14.0	
				Bottom	18	22.0 22.0	22.0	31.2 31.1	31.2	81.3 78.7	80.0	5.9 5.7	5.8	5.8	16.0 15.1	15.6		15.0	
11/04/2008	Sunny	Moderate	16:46	Surface	1	22.3 22.2	22.2	31.3 31.4	31.3	92.9 98.9	95.9	6.7 7.2	7.0	7.0	6.1 5.9	6.0	6.7	5.0	10.0
				Middle	9.5	21.9 21.9	21.9	32.3 32.2	32.2	100.9 94.3	97.6	7.3 6.9	7.1		6.6 7.0	6.8		11.0	
				Bottom	18	21.9 21.9	21.9	32.4 32.4	32.4	96.0 103.3	99.7	7.0 7.5	7.2	7.2	7.5 7.1	7.3		14.0	
14/04/2008	Fine	Moderate	20:46	Surface	1	23.9 23.8	23.9	29.1 29.2	29.2	104.5 105.1	104.8	7.5 7.5	7.5	7.7	4.1 3.9	4.0	4.0	6.0	4.3
				Middle	9.5	22.2 22.1	22.2	32.3 32.3	32.3	108.8 107.6	108.2	7.9 7.8	7.8		4.0 4.0	4.0		3.0	
				Bottom	18	22.2 22.3	22.3	32.3 32.3	32.3	109.6 111.5	110.6	7.9 8.0	8.0	8.0	4.0 4.0	4.0		4.0	

Remarks: * DA: Depth-Averaged
** Cancelled due to Thunderstorm Warning
*** Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher

Appendix I - Post-Project Marine Water Quality Monitoring Results

Water Quality Monitoring Results at M2 - Mid-Ebb Tide

Date	Weather Condition	Sea Condition***	Sampling Time	Depth (m)		Temperature (°C)		Salinity (ppt)		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)	
						Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Average	DA*
16/04/2008	Sunny	Moderate	11:09	Surface	1	23.3 23.3	23.3	31.1 31.1	31.1	81.1 80.9	81.0	5.8 5.8	5.8	5.8	2.8 2.9	2.9	4.4	6.0	5.7
				Middle	8.5	22.5 22.5	22.5	31.9 31.9	31.9	80.6 81.2	80.9	5.8 5.8	5.8		4.7 4.8	4.8		7.0	
				Bottom	16	22.3 22.4	22.4	32.5 32.5	32.5	81.7 82.2	82.0	5.9 5.9	5.9	5.9	5.6 5.6	5.6		4.0	
18/04/2008	Fine	Moderate	11:54	Surface	1	23.0 23.0	23.0	31.4 31.5	31.4	93.4 93.9	93.7	7.0 7.1	7.0	7.1	5.5 6.1	5.8	7.8	8.0	6.7
				Middle	9.5	22.8 22.8	22.8	31.9 31.9	31.9	93.2 94.8	94.0	7.0 7.1	7.1		8.0 8.9	8.5		5.0	
				Bottom	18	22.8 22.8	22.8	32.0 32.0	32.0	99.1 94.0	96.6	7.5 7.1	7.3	7.3	9.1 8.9	9.0		7.0	
21/04/2008	Cloudy	Moderate	13:18	Surface	1	23.4 23.5	23.4	29.7 29.5	29.6	75.8 74.1	75.0	5.3 5.2	5.2	5.2	6.5 6.4	6.5	8.3	7.0	16.3
				Middle	9	23.1 23.1	23.1	30.7 30.8	30.8	74.4 76.1	75.3	5.2 5.3	5.2		8.9 8.4	8.7		7.0	
				Bottom	17	23.1 23.1	23.1	31.3 31.1	31.2	79.1 75.3	77.2	5.5 5.2	5.4	5.4	9.8 9.6	9.7		35.0	
23/04/2008	Fine	Moderate	14:30	Surface	1	23.5 23.5	23.5	29.7 29.5	29.6	98.3 98.9	98.6	7.2 7.2	7.2	7.4	7.3 6.5	6.9	7.5	5.0	8.7
				Middle	9	23.3 23.4	23.4	31.4 30.7	31.0	101.4 102.6	102.0	7.5 7.6	7.6		8.0 7.1	7.6		11.0	
				Bottom	17	23.3 23.4	23.3	31.7 31.5	31.6	103.4 105.3	104.4	7.6 7.8	7.7	7.7	8.3 7.9	8.1		10.0	
25/04/2008	Fine	Moderate	15:34	Surface	1	23.1 23.2	23.2	30.3 30.3	30.3	84.1 85.8	85.0	6.0 6.1	6.1	6.1	6.7 6.7	6.7	8.4	10.0	13.0
				Middle	9.5	23.0 23.0	23.0	30.8 30.9	30.8	84.5 86.7	85.6	6.0 6.2	6.1		8.8 9.7	9.3		13.0	
				Bottom	18	23.0 23.0	23.0	31.0 30.9	30.9	87.6 85.0	86.3	6.2 6.0	6.1	6.1	9.7 8.8	9.3		16.0	

Remarks: * DA: Depth-Averaged
** Cancelled due to Thunderstorm Warning
*** Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher

Appendix I - Post-Project Marine Water Quality Monitoring Results

Water Quality Monitoring Results at M2 - Mid-Flood Tide

Date	Weather Condition	Sea Condition***	Sampling Time	Depth (m)		Temperature (°C)		Salinity (ppt)		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)	
						Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Average	DA*
01/04/2008	Fine	Moderate	14:24	Surface	1	19.8 19.8	19.8	35.4 35.4	35.4	74.2 72.3	73.3	5.5 5.4	5.4	5.4	6.6 6.5	6.6	6.5	3.0	3.0
				Middle	9.5	19.8 19.8	19.8	35.5 35.5	35.5	71.0 72.8	71.9	5.3 5.4	5.3		6.3 6.4	6.4		3.0	
				Bottom	18	19.7 19.8	19.7	35.7 35.7	35.7	71.5 72.8	72.2	5.3 5.4	5.4	5.4	6.2 7.1	6.7		3.0	
03/04/2008	Cloudy	Moderate	16:42	Surface	1	20.3 20.2	20.3	32.3 32.3	32.3	97.8 96.8	97.3	7.3 7.2	7.3	7.3	5.9 6.0	6.0	7.0	4.0	5.0
				Middle	8.5	20.2 20.2	20.2	32.6 32.6	32.6	96.7 98.9	97.8	7.2 7.4	7.3		7.5 7.3	7.4		4.0	
				Bottom	16	20.2 20.2	20.2	32.7 32.6	32.7	97.5 103.2	100.4	7.3 7.7	7.5	7.5	7.2 8.1	7.7		7.0	
05/04/2008	Cloudy	Moderate	18:29	Surface	1	20.9 21.0	20.9	31.8 31.8	31.8	95.0 96.1	95.6	7.0 7.1	7.1	7.1	5.5 5.4	5.5	6.7	7.0	10.0
				Middle	8.5	20.5 20.5	20.5	32.2 32.2	32.2	96.3 95.7	96.0	7.2 7.1	7.2		7.8 7.2	7.5		13.0	
				Bottom	16	20.5 20.5	20.5	32.2 32.2	32.2	97.8 97.2	97.5	7.3 7.2	7.3	7.3	7.8 6.7	7.3		10.0	
07/04/2008	Fine	Moderate	07:07	Surface	1	21.4 21.4	21.4	30.3 30.4	30.4	88.3 91.9	90.1	6.5 6.8	6.7	6.7	7.3 7.5	7.4	9.4	9.0	12.0
				Middle	9.5	21.3 21.3	21.3	31.3 31.2	31.3	89.2 93.1	91.2	6.6 6.9	6.7		10.2 9.8	10.0		14.0	
				Bottom	18	21.3 21.3	21.3	31.4 31.3	31.3	90.1 95.8	93.0	6.7 7.1	6.9	6.9	10.6 10.9	10.8		13.0	
09/04/2008	Sunny	Moderate	08:12	Surface	1	22.0 22.0	22.0	31.0 30.9	30.9	84.1 84.0	84.1	6.1 6.1	6.1	6.3	10.0 9.8	9.9	9.6	14.0	15.0
				Middle	10.5	22.0 22.0	22.0	31.0 31.2	31.1	89.2 84.9	87.1	6.5 6.2	6.4		9.7 10.2	10.0		14.0	
				Bottom	20	21.9 21.9	21.9	31.3 31.3	31.3	86.4 83.4	84.9	6.3 6.1	6.2	6.2	8.9 9.0	9.0		17.0	
11/04/2008	Sunny	Moderate	09:15	Surface	1	22.3 22.5	22.4	30.9 30.6	30.7	79.3 80.8	80.1	5.8 5.9	5.8	5.9	5.1 6.0	5.6	6.7	5.0	6.3
				Middle	10	22.1 22.1	22.1	31.5 31.5	31.5	80.0 82.3	81.2	5.8 6.0	5.9		6.8 6.9	6.9		6.0	
				Bottom	19	22.0 22.0	22.0	32.0 32.0	32.0	80.2 83.0	81.6	5.8 6.0	5.9	5.9	7.9 7.7	7.8		8.0	
14/04/2008	Sunny	Moderate	08:12	Surface	1	22.4 22.5	22.5	31.4 31.3	31.3	84.9 80.4	82.7	6.1 5.8	6.0	6.0	4.8 4.8	4.8	5.6	3.0	4.7
				Middle	10	22.0 22.0	22.0	32.7 32.6	32.7	81.5 86.4	84.0	5.9 6.3	6.1		5.8 6.0	5.9		5.0	
				Bottom	19	21.9 22.0	22.0	32.9 32.9	32.9	89.0 83.1	86.1	6.4 6.0	6.2	6.2	6.2 5.7	6.0		6.0	

Remarks: * DA: Depth-Averaged
** Cancelled due to Thunderstorm Warning
*** Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher

Appendix I - Post-Project Marine Water Quality Monitoring Results

Water Quality Monitoring Results at M2 - Mid-Flood Tide

Date	Weather Condition	Sea Condition***	Sampling Time	Depth (m)		Temperature (°C)		Salinity (ppt)		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)	
						Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Average	DA*
16/04/2008	Sunny	Moderate	16:38	Surface	1	24.0 24.1	24.1	29.1 29.1	29.1	81.9 82.2	82.1	5.8 5.9	5.8	5.8	2.0 1.8	1.9	3.9	3.0	5.7
				Middle	8	22.6 22.6	22.6	31.6 31.6	31.6	80.1 79.9	80.0	5.8 5.7	5.8		3.9 4.2	4.1		6.0	
				Bottom	15	22.4 22.4	22.4	32.4 32.3	32.3	80.7 81.2	81.0	5.8 5.8	5.8	5.8	5.7 5.7	5.7		8.0	
18/04/2008	Fine	Moderate	17:53	Surface	1	23.1 23.1	23.1	31.2 31.2	31.2	92.7 91.6	92.2	7.0 6.9	6.9	7.0	7.8 7.3	7.6	8.2	6.0	7.7
				Middle	9	22.9 22.9	22.9	31.7 31.7	31.7	92.3 92.9	92.6	7.0 7.0	7.0		8.4 8.4	8.4		8.0	
				Bottom	17	22.8 22.9	22.8	32.1 32.0	32.0	93.8 94.4	94.1	7.1 7.1	7.1	7.1	9.1 8.4	8.8		9.0	
21/04/2008	Cloudy	Moderate	06:50	Surface	1	23.4 23.5	23.5	29.4 29.3	29.4	77.4 74.4	75.9	5.5 5.3	5.4	5.4	7.1 6.2	6.7	9.0	6.0	13.7
				Middle	9.5	23.1 23.1	23.1	30.7 30.8	30.7	74.9 78.4	76.7	5.3 5.5	5.4		10.1 12.1	11.1		9.0	
				Bottom	18	23.0 23.0	23.0	31.4 31.3	31.3	76.6 81.6	79.1	5.4 5.8	5.6	5.6	9.3 9.4	9.4		26.0	
23/04/2008	Fine	Moderate	07:53	Surface	1	23.4 23.4	23.4	30.8 30.9	30.9	88.8 85.3	87.1	5.8 5.6	5.7	5.7	5.9 5.6	5.8	7.2	5.0	8.3
				Middle	9	23.3 23.3	23.3	31.9 31.9	31.9	90.0 86.1	88.1	5.9 5.6	5.8		7.6 7.9	7.8		8.0	
				Bottom	17	23.2 23.2	23.2	32.3 32.3	32.3	87.2 93.6	90.4	5.7 6.1	5.9	5.9	8.1 7.9	8.0		12.0	
25/04/2008	Fine	Moderate	08:13	Surface	1	23.0 23.0	23.0	30.8 30.7	30.7	84.0 83.9	84.0	6.1 6.1	6.1	6.3	7.6 7.4	7.5	7.2	5.0	6.0
				Middle	10	23.0 23.0	23.0	30.8 31.0	30.9	89.1 84.8	87.0	6.5 6.2	6.4		7.3 7.8	7.6		7.0	
				Bottom	19	22.9 22.9	22.9	31.1 31.1	31.1	86.3 83.3	84.8	6.3 6.1	6.2	6.2	6.5 6.6	6.6		6.0	

Remarks: * DA: Depth-Averaged
** Cancelled due to Thunderstorm Warning
*** Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher

Appendix I - Post-Project Marine Water Quality Monitoring Results

Water Quality Monitoring Results at M3 - Mid-Ebb Tide

Date	Weather Condition	Sea Condition***	Sampling Time	Depth (m)		Temperature (°C)		Salinity (ppt)		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)	
						Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Average	DA*
01/04/2008	Fine	Moderate	10:11	Surface	1	19.9 19.9	19.9	35.1 35.1	35.1	76.6 76.1	76.4	5.7 5.6	5.7	5.7	7.1 6.8	7.0	7.4	4.0	5.3
				Middle	10.5	19.9 19.9	19.9	35.3 35.3	35.3	76.5 75.9	76.2	5.7 5.6	5.6		8.6 7.4	8.0		7.0	
				Bottom	20	19.9 19.9	19.9	35.4 35.4	35.4	76.0 77.0	76.5	5.6 5.7	5.7	5.7	7.2 7.1	7.2		5.0	
03/04/2008	Fine	Moderate	11:10	Surface	1	20.2 20.2	20.2	32.4 32.4	32.4	100.5 104.0	102.3	7.5 7.8	7.7	7.7	5.9 6.0	6.0	6.2	3.0	3.7
				Middle	11.5	20.2 20.2	20.2	32.6 32.6	32.6	101.3 105.7	103.5	7.6 7.9	7.7		6.1 6.4	6.3		4.0	
				Bottom	22	20.2 20.3	20.2	32.8 32.8	32.8	102.5 109.3	105.9	7.7 8.2	7.9	7.9	6.3 6.7	6.5		4.0	
05/04/2008	Sunny	Moderate	12:10	Surface	1	20.9 20.9	20.9	32.1 32.2	32.1	96.0 94.6	95.3	7.1 7.0	7.1	7.1	4.3 4.7	4.5	5.7	8.0	8.3
				Middle	11.5	20.5 20.5	20.5	32.5 32.5	32.5	94.6 96.4	95.5	7.0 7.2	7.1		6.2 5.9	6.1		9.0	
				Bottom	22	20.5 20.5	20.5	32.7 32.6	32.7	99.5 96.0	97.8	7.4 7.1	7.3	7.3	7.3 5.9	6.6		8.0	
07/04/2008	Sunny	Moderate	13:41	Surface	1	23.1 21.9	22.5	29.8 30.7	30.2	83.6 81.0	82.3	6.0 5.9	6.0	6.1	4.7 5.3	5.0	7.0	6.0	6.7
				Middle	11	21.3 21.3	21.3	31.7 31.8	31.7	86.1 81.5	83.8	6.3 6.0	6.2		7.4 7.2	7.3		8.0	
				Bottom	21	21.3 21.2	21.3	32.0 32.1	32.0	90.9 83.0	87.0	6.7 6.1	6.4	6.4	8.7 8.5	8.6		6.0	
09/04/2008	Sunny	Moderate	15:10	Surface	1	21.9 21.9	21.9	31.6 31.6	31.6	76.5 76.4	76.5	5.6 5.6	5.6	5.6	9.8 9.0	9.4	9.8	15.0	14.0
				Middle	11	21.9 21.9	21.9	31.6 31.6	31.6	76.4 76.7	76.6	5.6 5.6	5.6		9.3 10.2	9.8		14.0	
				Bottom	21	21.9 21.9	21.9	31.7 31.6	31.7	77.1 76.5	76.8	5.6 5.6	5.6	5.6	10.7 9.6	10.2		13.0	
11/04/2008	Sunny	Moderate	16:55	Surface	1	22.6 22.5	22.6	30.5 30.8	30.7	79.7 84.2	82.0	5.8 6.1	5.9	6.0	3.5 4.1	3.8	6.0	6.0	8.0
				Middle	11.5	21.9 21.9	21.9	32.3 32.2	32.2	81.5 86.3	83.9	5.9 6.3	6.1		7.1 6.1	6.6		9.0	
				Bottom	22	21.9 21.9	21.9	32.4 32.4	32.4	82.4 88.2	85.3	6.0 6.4	6.2	6.2	8.3 6.8	7.6		9.0	
14/04/2008	Fine	Moderate	20:55	Surface	1	24.0 23.9	24.0	29.0 28.9	28.9	98.3 101.4	99.9	7.0 7.2	7.1	7.3	5.7 6.4	6.1	7.3	4.0	4.3
				Middle	11	22.2 22.1	22.2	32.2 32.3	32.2	103.1 103.9	103.5	7.5 7.5	7.5		7.3 7.5	7.4		6.0	
				Bottom	21	22.1 22.2	22.1	32.6 32.3	32.4	105.8 106.0	105.9	7.7 7.7	7.7	7.7	8.4 8.7	8.6		3.0	

Remarks: * DA: Depth-Averaged
** Cancelled due to Thunderstorm Warning
*** Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher

Appendix I - Post-Project Marine Water Quality Monitoring Results

Water Quality Monitoring Results at M3 - Mid-Ebb Tide

Date	Weather Condition	Sea Condition***	Sampling Time	Depth (m)		Temperature (°C)		Salinity (ppt)		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)	
						Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Average	DA*
16/04/2008	Sunny	Moderate	11:00	Surface	1	23.2 23.2	23.2	31.2 31.2	31.2	81.9 82.3	82.1	5.9 5.9	5.9	5.9	3.5 3.4	3.5	4.4	9.0	7.3
				Middle	11	22.4 22.3	22.4	32.4 32.5	32.5	82.2 82.5	82.4	5.9 5.9	5.9		4.1 3.8	4.0		5.0	
				Bottom	21	22.3 22.3	22.3	32.8 32.8	32.8	83.3 82.9	83.1	6.0 6.0	6.0	6.0	5.5 5.8	5.7		8.0	
18/04/2008	Fine	Moderate	11:46	Surface	1	23.0 23.0	23.0	31.5 31.5	31.5	92.8 91.4	92.1	7.0 6.9	6.9	6.9	5.7 4.8	5.3	6.9	6.0	6.0
				Middle	12	22.8 22.9	22.9	31.9 31.9	31.9	91.4 93.2	92.3	6.9 7.0	7.0		6.8 6.7	6.8		4.0	
				Bottom	23	22.8 22.8	22.8	32.0 32.0	32.0	92.8 96.3	94.6	7.0 7.3	7.1	7.1	8.5 8.6	8.6		8.0	
21/04/2008	Cloudy	Moderate	13:28	Surface	1	23.3 23.3	23.3	30.2 30.0	30.1	72.1 73.0	72.6	5.0 5.1	5.0	5.0	9.4 9.1	9.3	10.6	6.0	9.3
				Middle	11	23.0 23.0	23.0	31.3 31.3	31.3	72.5 72.3	72.4	5.0 5.0	5.0		11.3 12.1	11.7		13.0	
				Bottom	21	23.0 23.0	23.0	31.5 31.5	31.5	72.3 73.7	73.0	5.0 5.1	5.1	5.1	10.3 11.1	10.7		9.0	
23/04/2008	Fine	Moderate	14:39	Surface	1	23.4 23.4	23.4	29.7 31.3	30.5	92.1 95.2	93.7	6.8 7.0	6.9	7.0	6.3 6.2	6.3	6.4	7.0	7.0
				Middle	11	23.3 23.3	23.3	31.8 31.7	31.8	97.7 96.9	97.3	7.2 7.2	7.2		5.8 5.4	5.6		5.0	
				Bottom	21	23.3 23.3	23.3	31.8 31.9	31.9	99.8 99.6	99.7	7.4 7.4	7.4	7.4	7.3 7.5	7.4		9.0	
25/04/2008	Fine	Moderate	15:41	Surface	1	22.9 22.9	22.9	31.4 31.4	31.4	82.8 82.7	82.8	5.9 5.9	5.9	5.9	6.7 5.9	6.3	5.6	6.0	7.0
				Middle	11	22.9 22.9	22.9	31.4 31.4	31.4	82.7 83.0	82.9	5.9 5.9	5.9		4.0 4.4	4.2		5.0	
				Bottom	21	22.9 22.8	22.9	31.4 31.5	31.5	82.8 83.4	83.1	5.9 5.9	5.9	5.9	6.5 6.2	6.4		10.0	

Remarks: * DA: Depth-Averaged
** Cancelled due to Thunderstorm Warning
*** Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher

Appendix I - Post-Project Marine Water Quality Monitoring Results

Water Quality Monitoring Results at M3 - Mid-Flood Tide

Date	Weather Condition	Sea Condition***	Sampling Time	Depth (m)		Temperature (°C)		Salinity (ppt)		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)	
						Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Average	DA*
01/04/2008	Fine	Moderate	14:33	Surface	1	19.8 19.8	19.8	35.5 35.5	35.5	73.1 74.9	74.0	5.4 5.6	5.5	5.5	6.4 6.5	6.5	6.6	3.0	3.3
				Middle	11.5	19.8 19.8	19.8	35.6 35.6	35.6	72.4 74.1	73.3	5.4 5.5	5.4		6.5 6.5	6.5		4.0	
				Bottom	22	19.7 19.8	19.8	35.6 35.6	35.6	71.8 73.9	72.9	5.3 5.5	5.4	5.4	7.1 6.3	6.7		3.0	
03/04/2008	Cloudy	Moderate	16:54	Surface	1	20.2 20.2	20.2	32.3 32.4	32.4	96.6 97.3	97.0	7.2 7.3	7.3	7.3	5.7 5.8	5.8	6.4	5.0	4.0
				Middle	12	20.2 20.2	20.2	32.6 32.6	32.6	96.3 97.5	96.9	7.2 7.3	7.2		6.7 6.7	6.7		3.0	
				Bottom	23	20.2 20.2	20.2	32.8 32.7	32.7	96.8 99.4	98.1	7.2 7.4	7.3	7.3	6.4 7.3	6.9		4.0	
05/04/2008	Cloudy	Moderate	18:39	Surface	1	21.0 20.8	20.9	31.7 31.8	31.8	95.3 95.8	95.6	7.1 7.1	7.1	7.1	5.2 6.3	5.8	7.6	8.0	10.3
				Middle	10	20.5 20.5	20.5	32.2 32.2	32.2	94.8 96.8	95.8	7.1 7.2	7.1		8.2 8.7	8.5		10.0	
				Bottom	19	20.5 20.5	20.5	32.3 32.2	32.2	99.2 95.7	97.5	7.4 7.1	7.3	7.3	8.2 8.8	8.5		13.0	
07/04/2008	Fine	Moderate	06:57	Surface	1	21.1 21.1	21.1	32.1 32.1	32.1	94.3 100.8	97.6	7.0 7.4	7.2	7.3	10.3 10.8	10.6	11.1	18.0	18.3
				Middle	11.5	21.1 21.1	21.1	32.3 32.2	32.2	103.6 95.6	99.6	7.6 7.1	7.4		11.3 11.2	11.3		17.0	
				Bottom	22	21.1 21.1	21.1	32.4 32.3	32.4	97.5 107.9	102.7	7.2 8.0	7.6	7.6	11.8 11.2	11.5		20.0	
09/04/2008	Sunny	Moderate	08:06	Surface	1	21.9 21.9	21.9	31.4 31.5	31.5	96.6 89.8	93.2	7.1 6.6	6.8	6.9	8.5 8.4	8.5	10.1	13.0	13.3
				Middle	12	21.9 21.9	21.9	31.5 31.6	31.6	99.6 91.3	95.5	7.3 6.7	7.0		11.0 10.7	10.9		14.0	
				Bottom	23	21.8 21.8	21.8	31.8 31.7	31.7	100.0 93.4	96.7	7.4 6.8	7.1	7.1	11.5 10.7	11.1		13.0	
11/04/2008	Sunny	Moderate	09:09	Surface	1	22.2 22.2	22.2	31.5 31.4	31.5	87.1 91.4	89.3	6.3 6.6	6.5	6.6	7.0 7.0	7.0	7.9	9.0	10.0
				Middle	11.5	22.0 22.0	22.0	31.9 31.9	31.9	88.2 94.6	91.4	6.4 6.9	6.6		8.2 8.6	8.4		10.0	
				Bottom	22	22.0 22.0	22.0	31.9 31.9	31.9	89.6 97.5	93.6	6.5 7.1	6.8	6.8	8.0 8.3	8.2		11.0	
14/04/2008	Sunny	Moderate	08:06	Surface	1	22.5 22.5	22.5	31.1 31.1	31.1	92.2 99.0	95.6	6.7 7.2	6.9	7.0	4.5 4.3	4.4	6.1	3.0	3.7
				Middle	12	22.1 22.1	22.1	32.4 32.3	32.3	94.8 102.5	98.7	6.9 7.4	7.1		7.1 6.4	6.8		4.0	
				Bottom	23	21.9 21.9	21.9	33.0 32.9	32.9	105.3 96.4	100.9	7.6 7.0	7.3	7.3	6.9 7.3	7.1		4.0	

Remarks: * DA: Depth-Averaged
** Cancelled due to Thunderstorm Warning
*** Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher

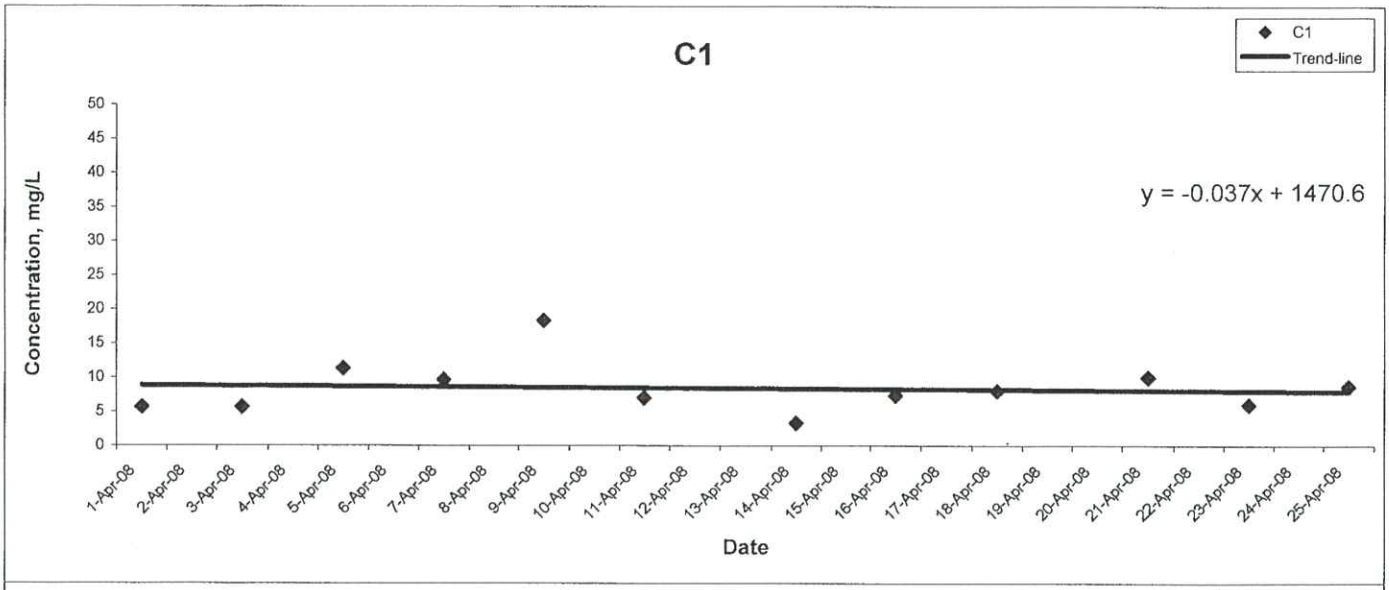
Appendix I - Post-Project Marine Water Quality Monitoring Results

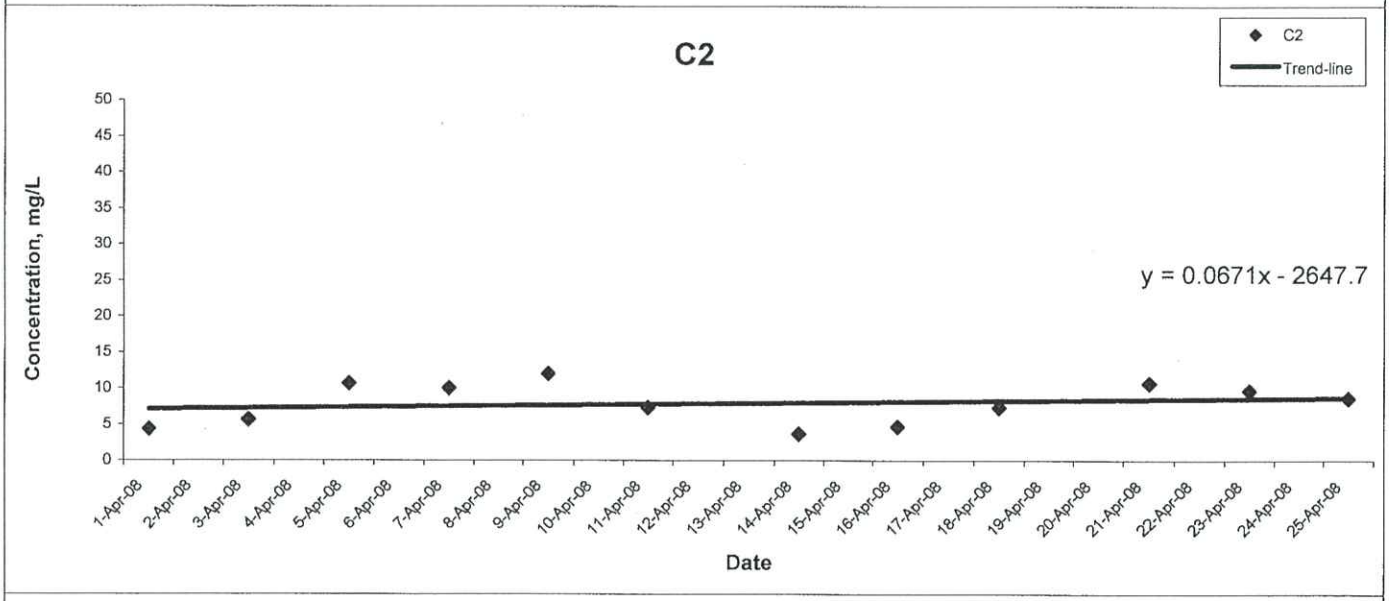
Water Quality Monitoring Results at M3 - Mid-Flood Tide

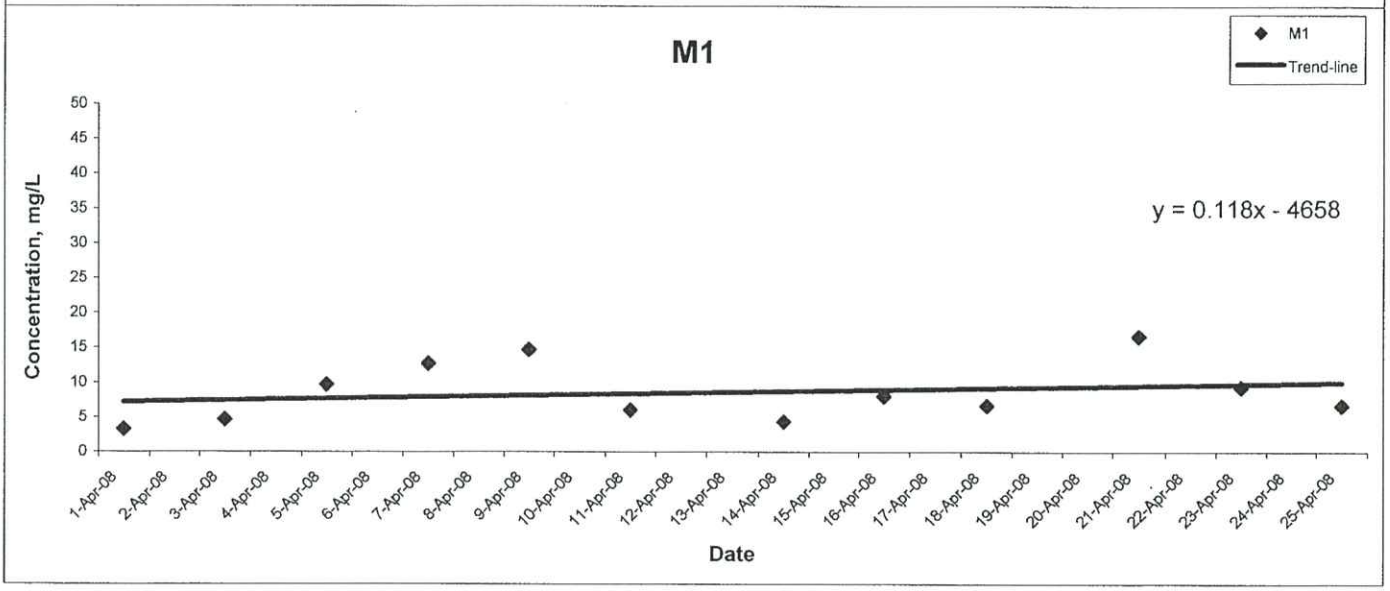
Date	Weather Condition	Sea Condition***	Sampling Time	Depth (m)		Temperature (°C)		Salinity (ppt)		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)	
						Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Average	DA*
16/04/2008	Sunny	Moderate	16:48	Surface	1	23.8 23.8	23.8	29.4 29.5	29.4	82.6 82.5	82.6	5.9 5.9	5.9	5.8	2.3 2.5	2.4	3.7	6.0	6.3
				Middle	11.5	22.6 22.6	22.6	31.9 31.8	31.9	80.0 79.8	79.9	5.8 5.7	5.8		4.0 3.8	3.9		7.0	
				Bottom	22	22.4 22.4	22.4	32.4 32.3	32.3	81.7 81.5	81.6	5.9 5.9	5.9	5.9	4.7 4.6	4.7		6.0	
18/04/2008	Fine	Moderate	18:02	Surface	1	23.0 23.0	23.0	31.7 31.6	31.6	92.4 91.9	92.2	7.0 6.9	6.9	7.0	6.9 7.1	7.0	7.9	6.0	6.3
				Middle	11.5	22.9 22.9	22.9	31.8 32.0	31.9	93.4 91.4	92.4	7.1 6.9	7.0		7.9 8.2	8.1		5.0	
				Bottom	22	22.9 22.9	22.9	32.1 32.0	32.0	92.3 95.8	94.1	7.0 7.2	7.1	7.1	8.9 8.6	8.8		8.0	
21/04/2008	Cloudy	Moderate	06:43	Surface	1	23.3 23.3	23.3	30.0 29.8	29.9	80.8 89.9	85.4	5.7 6.4	6.1	6.2	6.0 6.4	6.2	7.7	8.0	10.3
				Middle	11	23.1 23.1	23.1	31.0 30.9	31.0	83.9 93.9	88.9	5.9 6.6	6.3		9.8 10.1	10.0		12.0	
				Bottom	21	23.1 23.1	23.1	31.2 31.2	31.2	96.9 85.9	91.4	6.9 6.1	6.5	6.5	7.3 6.7	7.0		11.0	
23/04/2008	Fine	Moderate	07:46	Surface	1	23.5 23.4	23.5	29.4 30.8	30.1	85.9 93.2	89.6	6.0 6.4	6.2	6.3	4.6 4.9	4.8	5.3	7.0	7.3
				Middle	11.5	23.4 23.3	23.3	31.4 31.6	31.5	96.7 88.5	92.6	6.7 6.1	6.4		5.5 5.5	5.5		7.0	
				Bottom	22	23.3 23.3	23.3	31.8 31.8	31.8	101.3 90.2	95.8	7.0 6.2	6.6	6.6	5.7 5.6	5.7		8.0	
25/04/2008	Fine	Moderate	08:07	Surface	1	22.9 22.9	22.9	31.2 31.3	31.3	96.5 89.7	93.1	7.1 6.6	6.8	6.9	6.1 6.0	6.1	7.7	6.0	5.3
				Middle	11.5	22.9 22.8	22.9	31.3 31.4	31.3	99.5 91.2	95.4	7.3 6.7	7.0		8.6 8.3	8.5		4.0	
				Bottom	22	22.8 22.8	22.8	31.5 31.5	31.5	99.9 93.3	96.6	7.4 6.8	7.1	7.1	9.1 8.3	8.7		6.0	

Remarks: * DA: Depth-Averaged
** Cancelled due to Thunderstorm Warning
*** Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher

Suspended Solids at Mid-Ebb Tide







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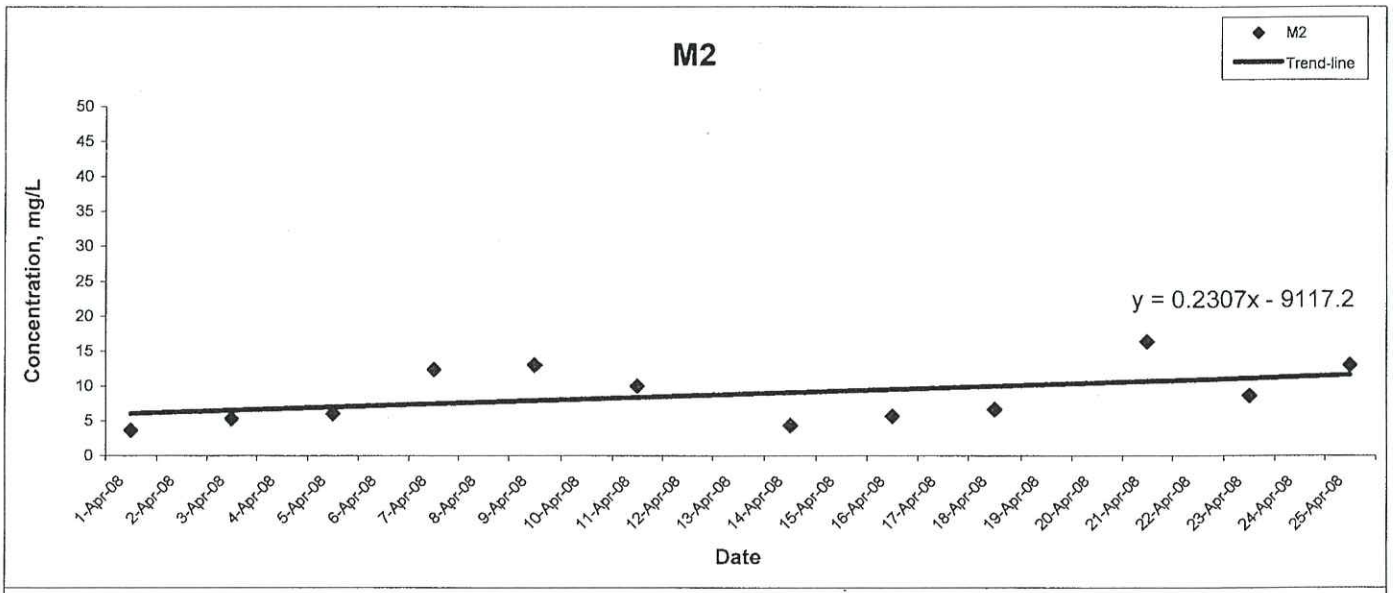
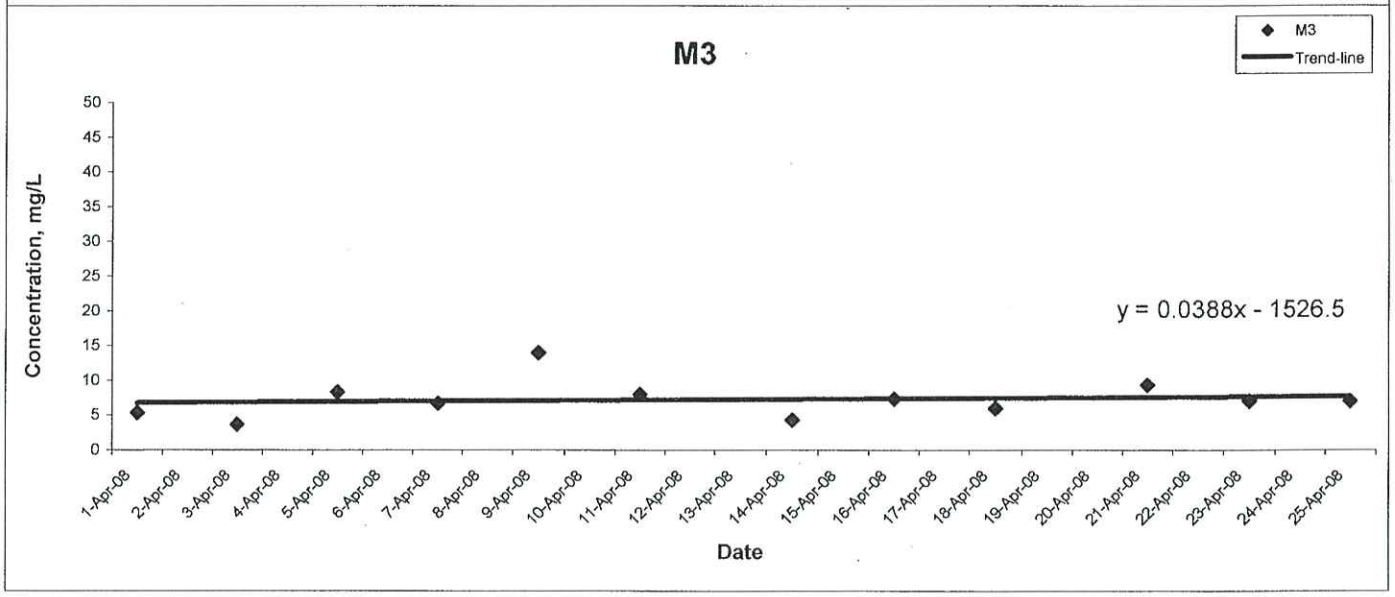
Suspended Solids at Mid-Ebb Tide





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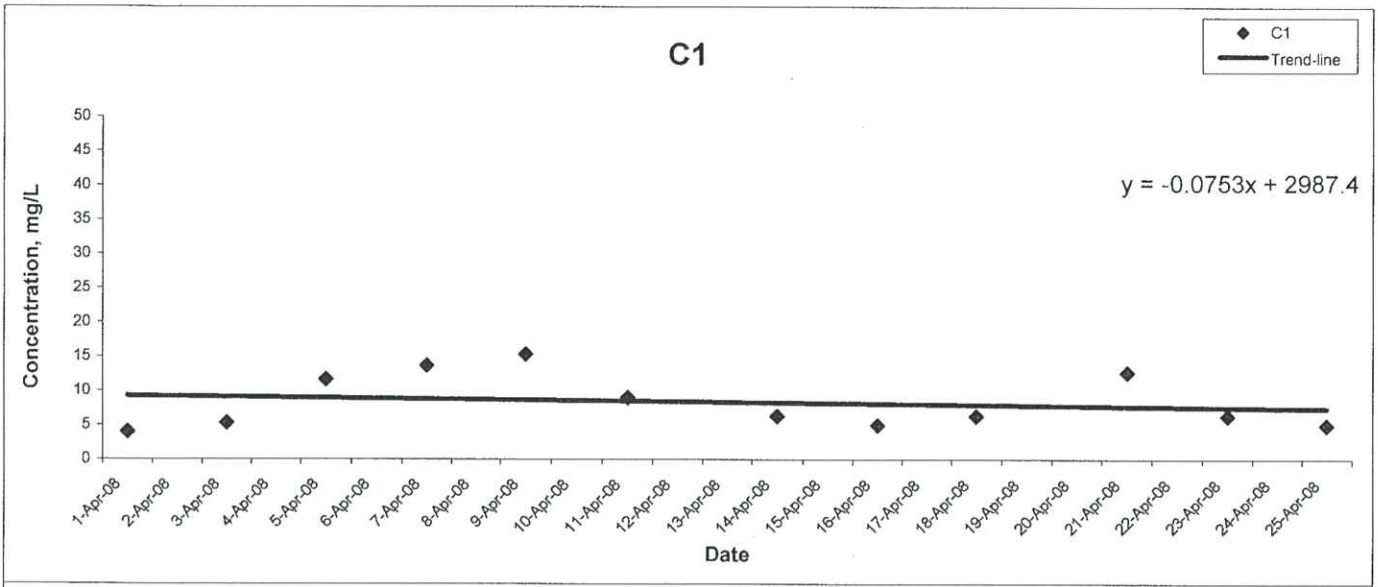
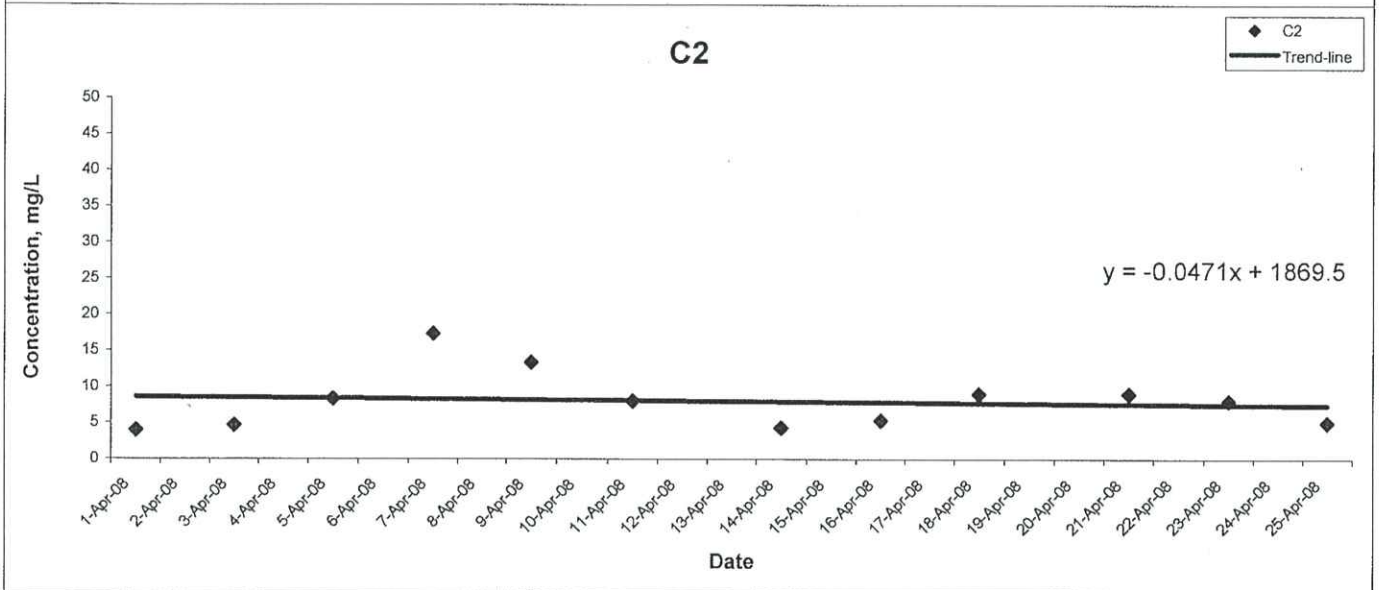
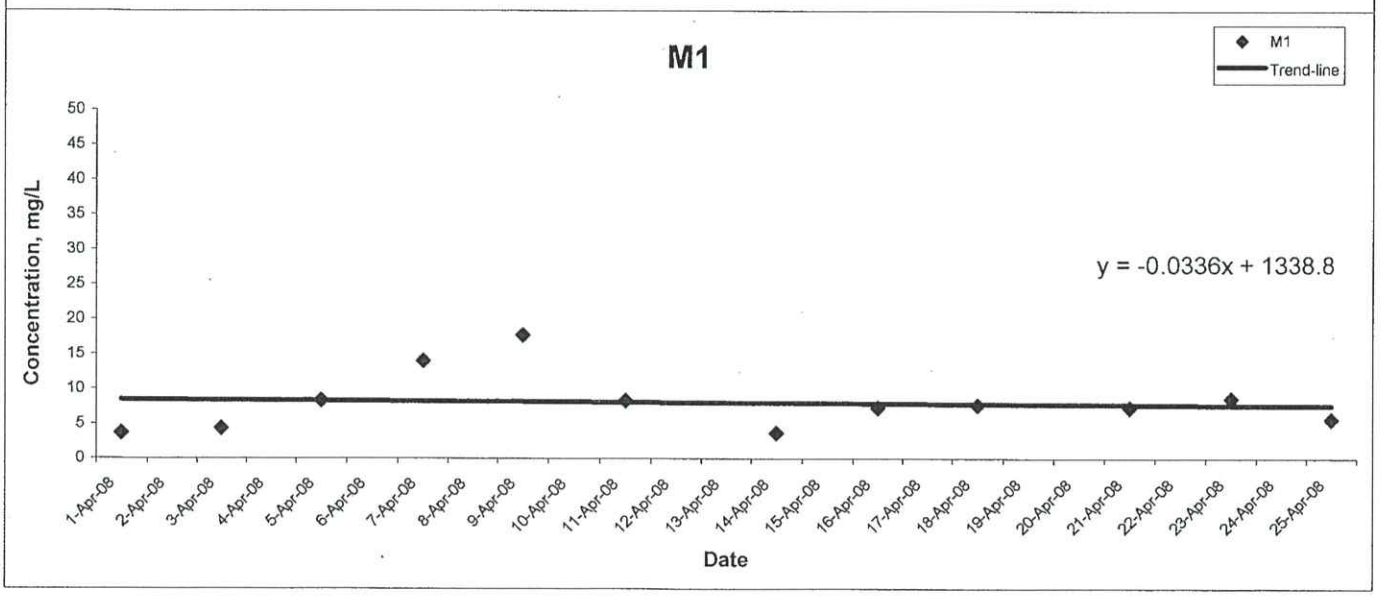
Suspended Solids at Mid-Flood Tide







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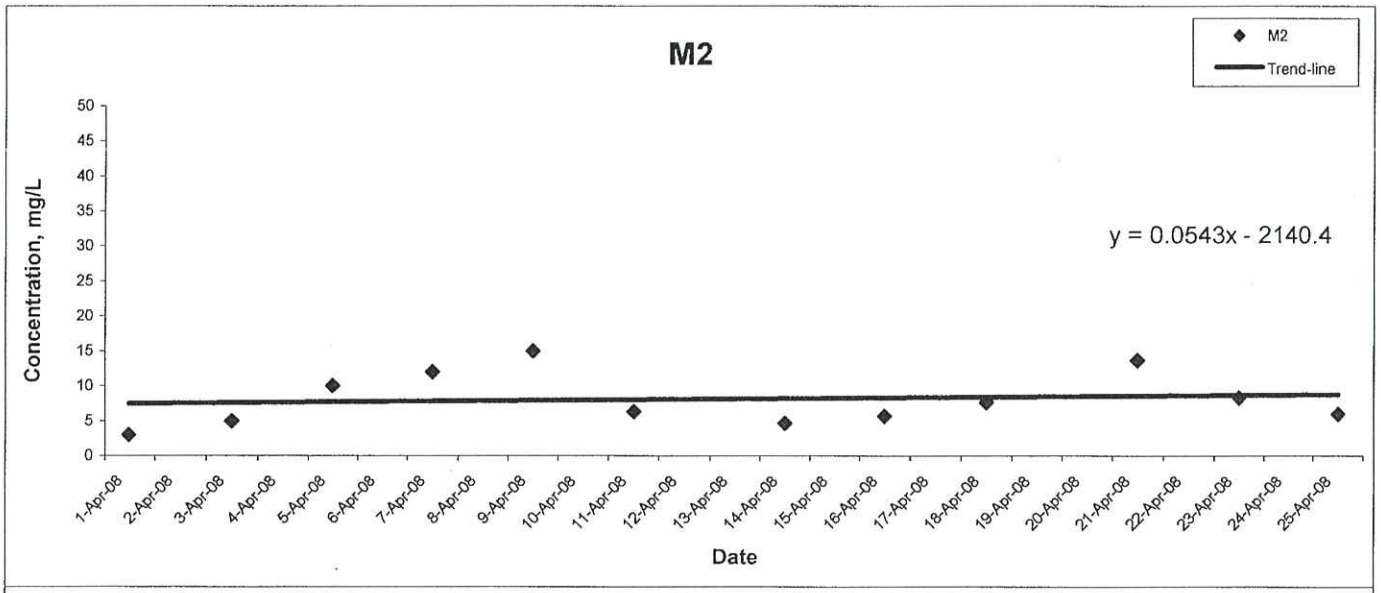
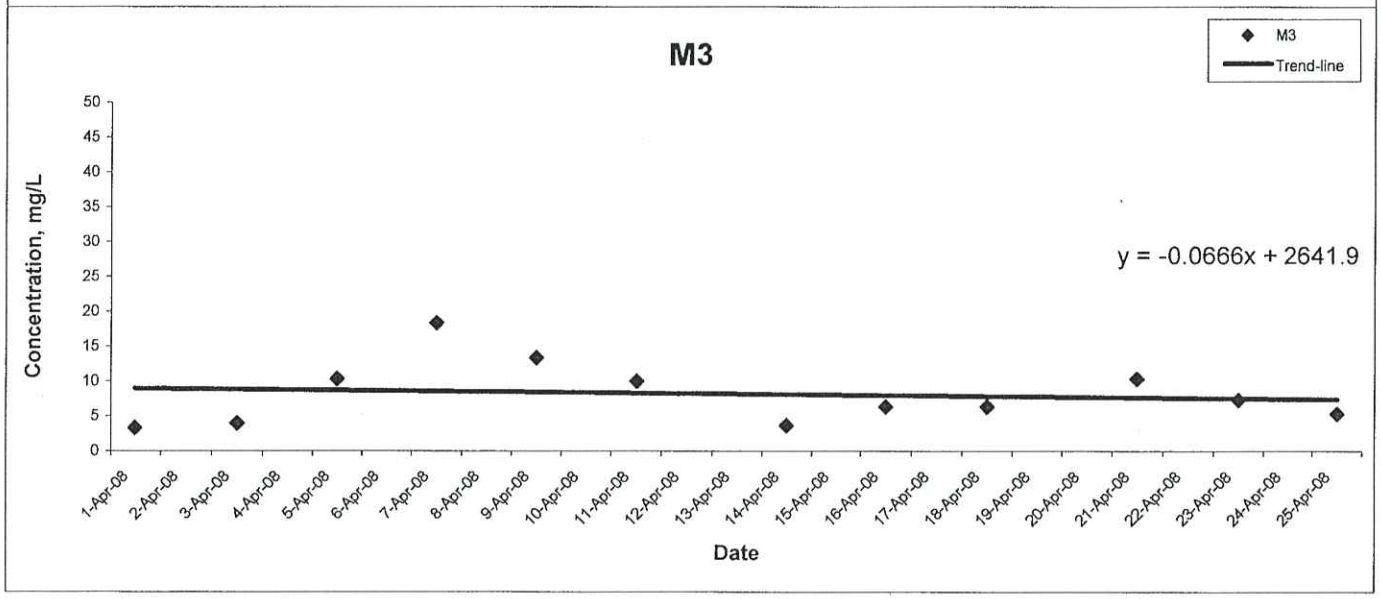
Suspended Solids at Mid-Flood Tide





ENSR | AECOM	Contract No.HY/2003/04 - Improvement to Castle Peak Road between Ka Loon Tsuen and Siu Lam **Graphical Presentation of Water Quality Monitoring Results**	SCALE	N.T.S.	DATE	2008
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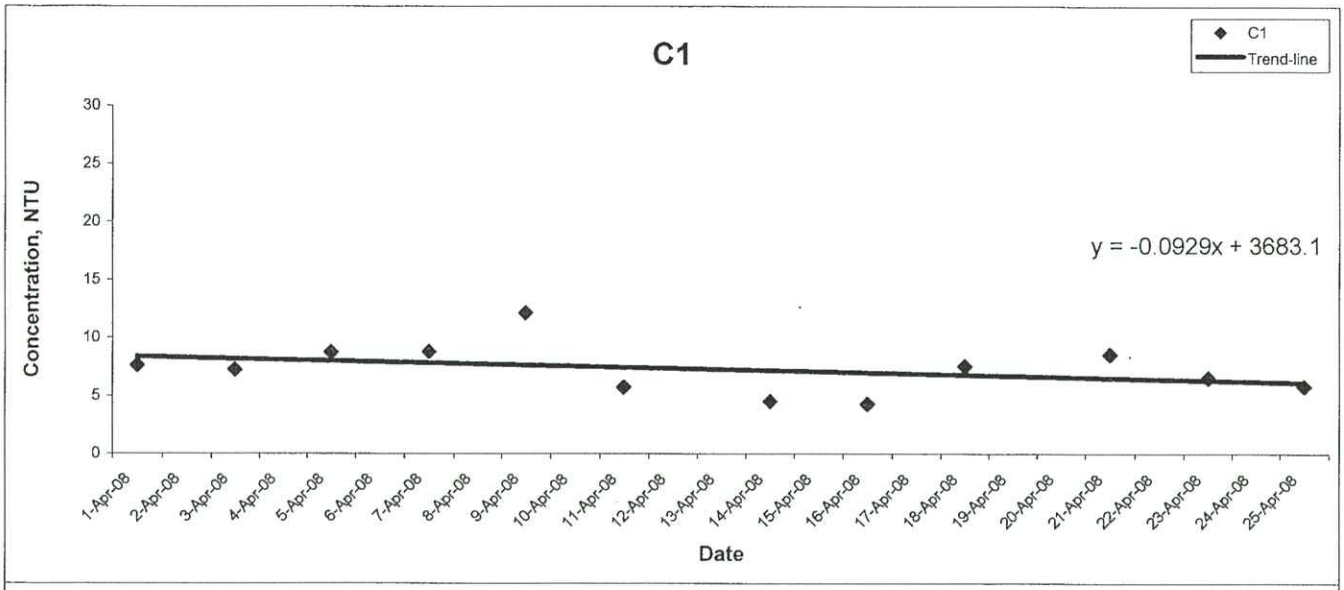
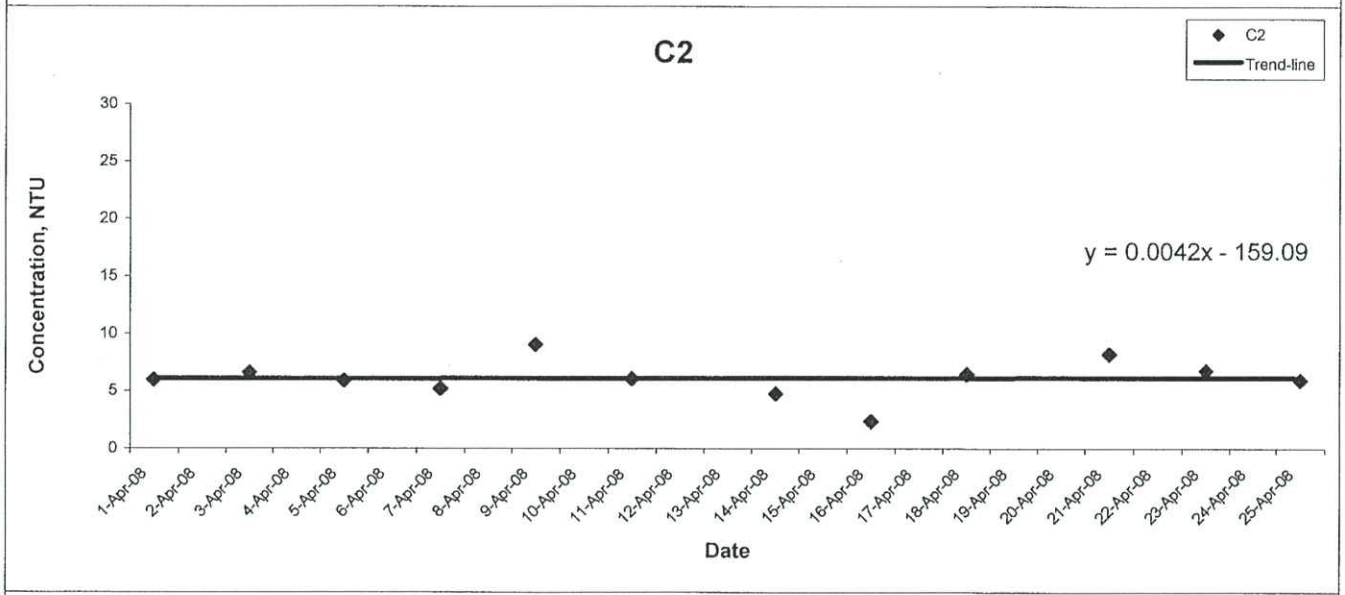
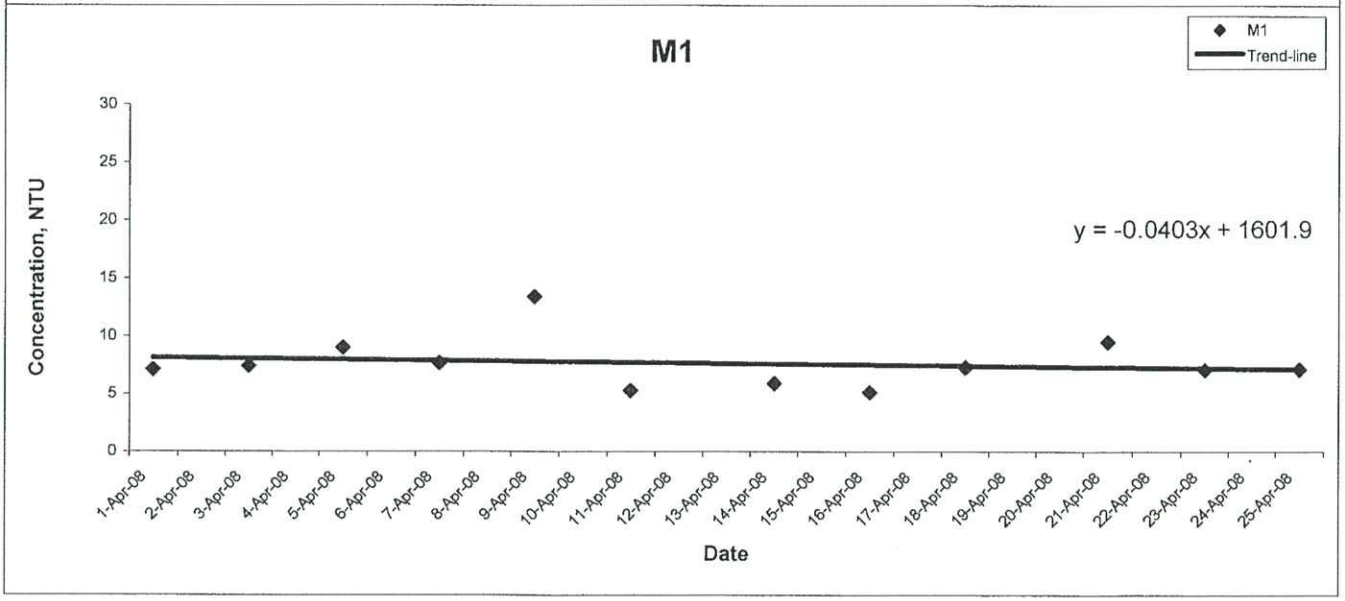
Turbidity at Mid-Ebb Tide







ENSR | AECOM	Contract No.HY/2003/04 - Improvement to Castle Peak Road between Ka Loon Tsuen and Siu Lam **Graphical Presentation of Water Quality Monitoring Results**	SCALE	N.T.S.	DATE	2008
		CHECK	EWCM	DRAWN	LLMC
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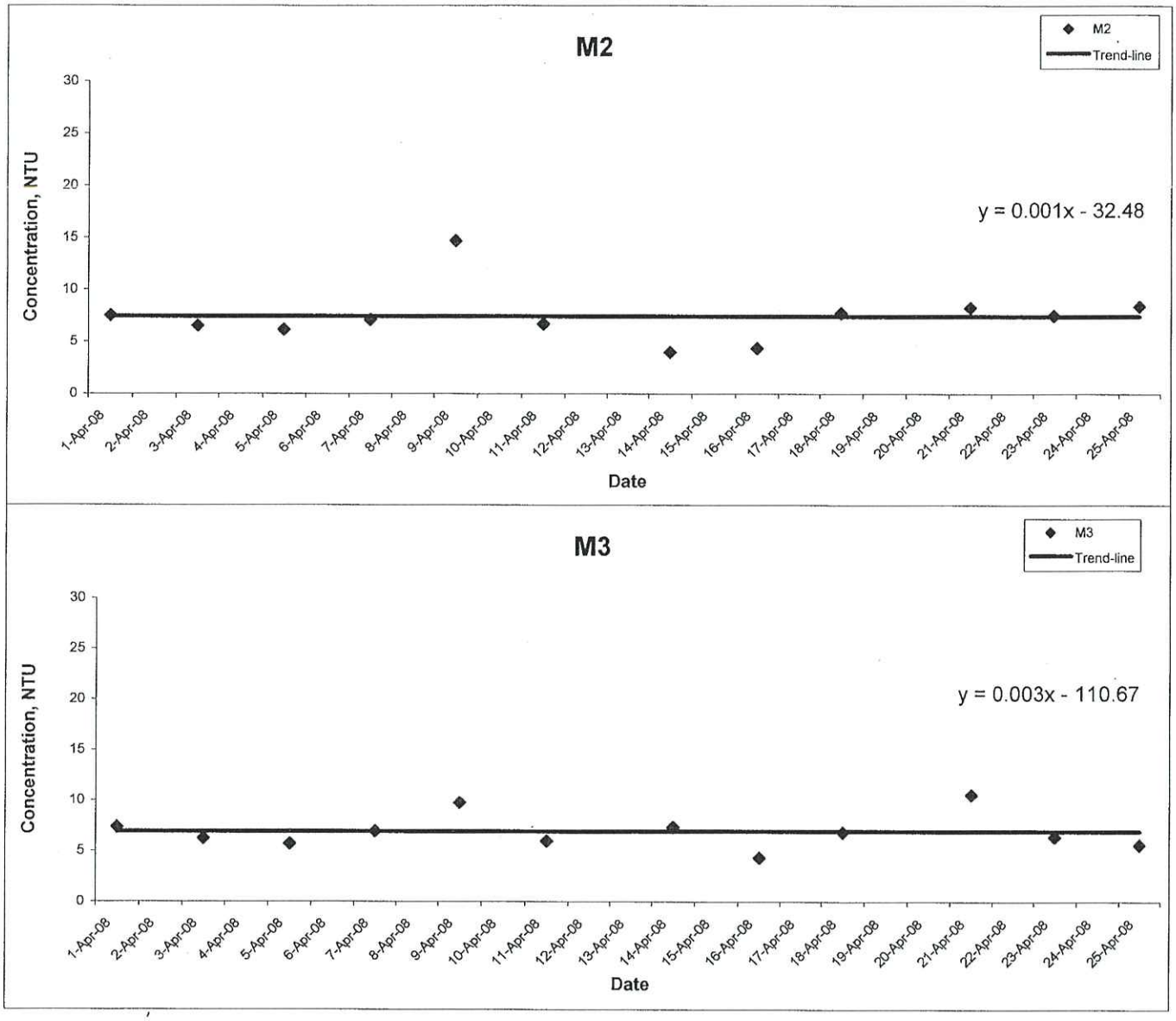
Turbidity at Mid-Ebb Tide



ENSR | AECOM	Contract No.HY/2003/04 - Improvement to Castle Peak Road between Ka Loon Tsuen and Siu Lam **Graphical Presentation of Water Quality Monitoring Results**	SCALE	N.T.S.	DATE	2008
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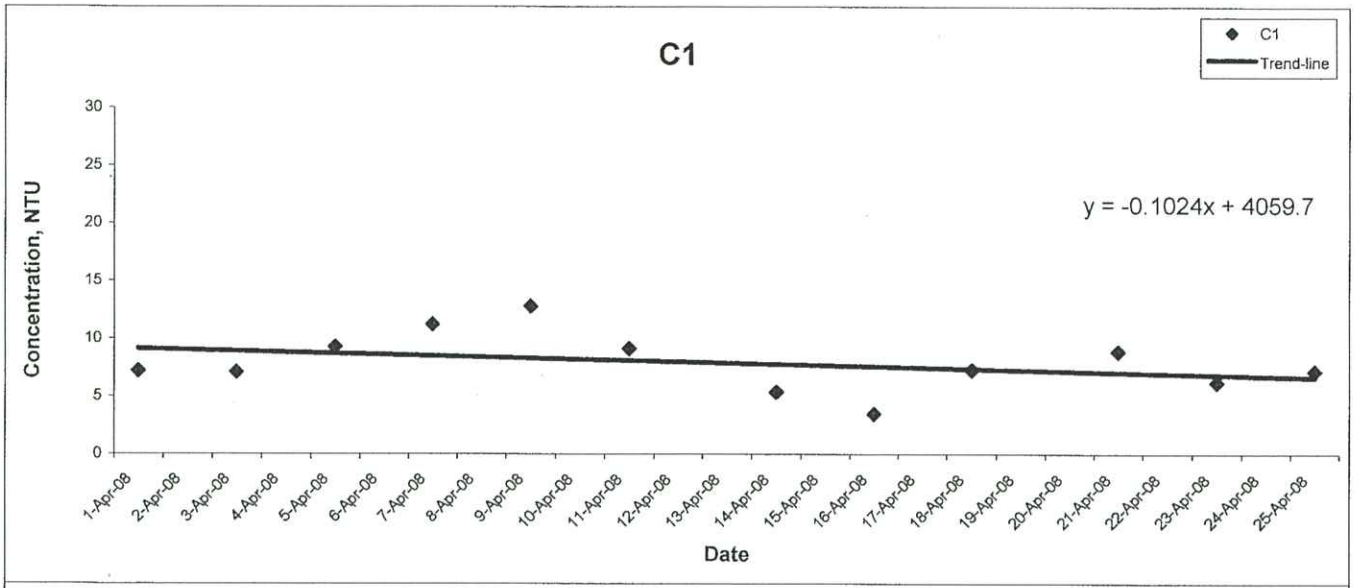
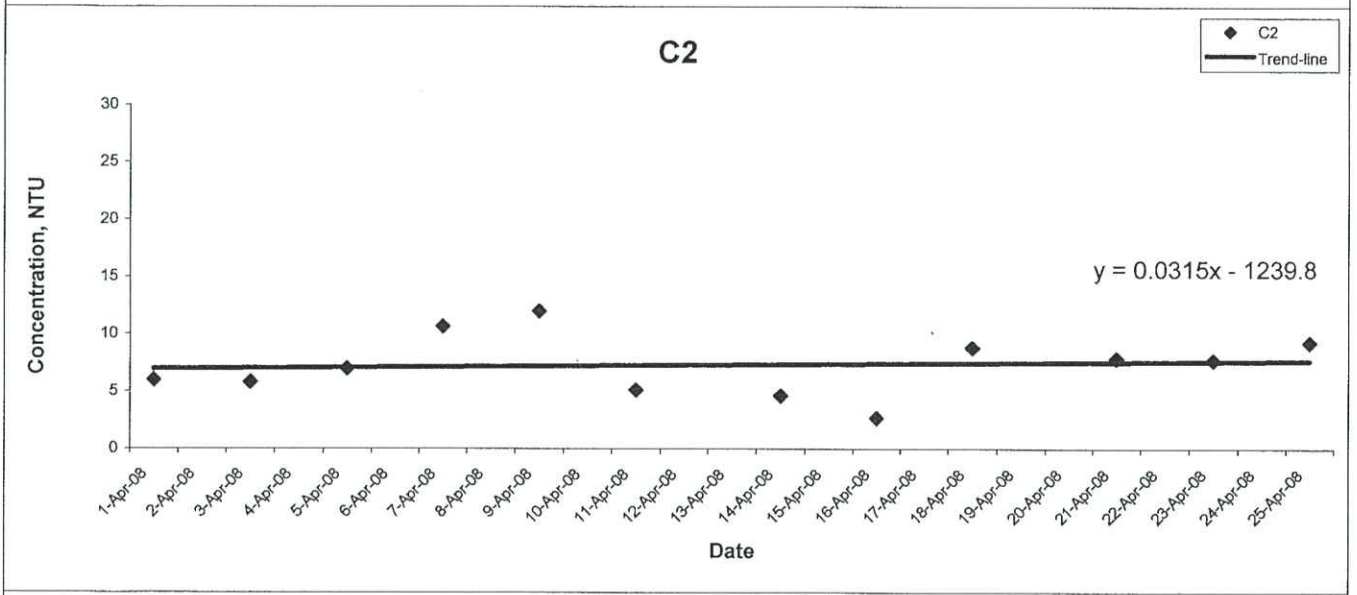
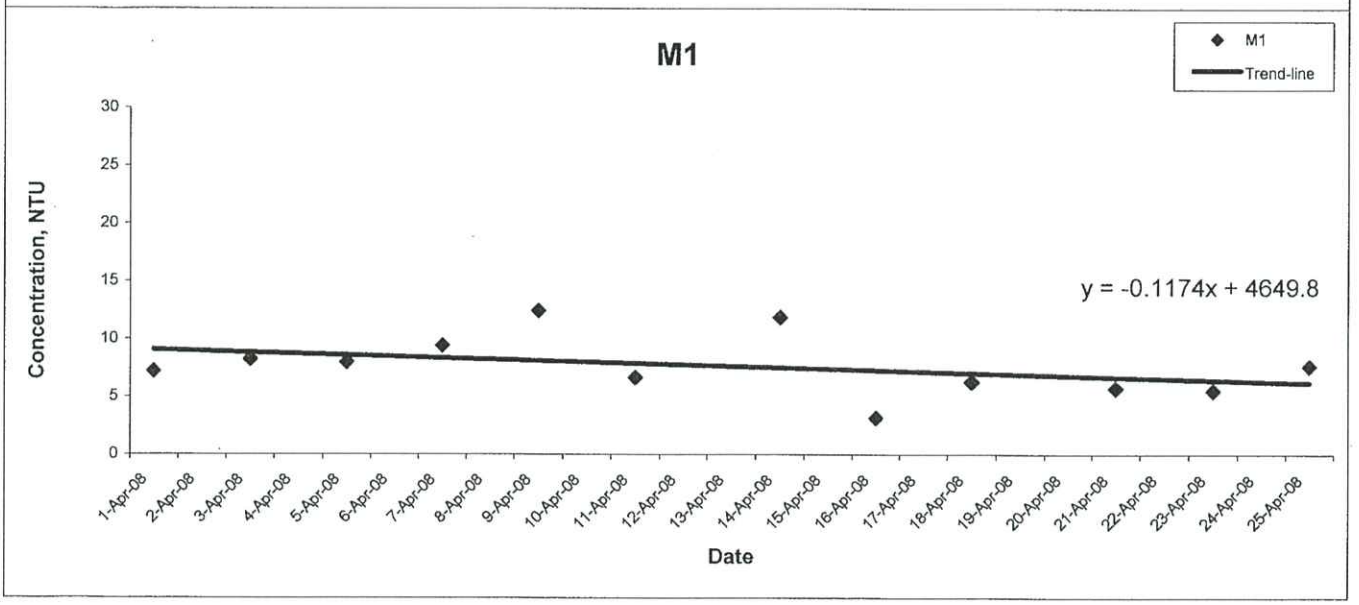
Turbidity at Mid-Flood Tide







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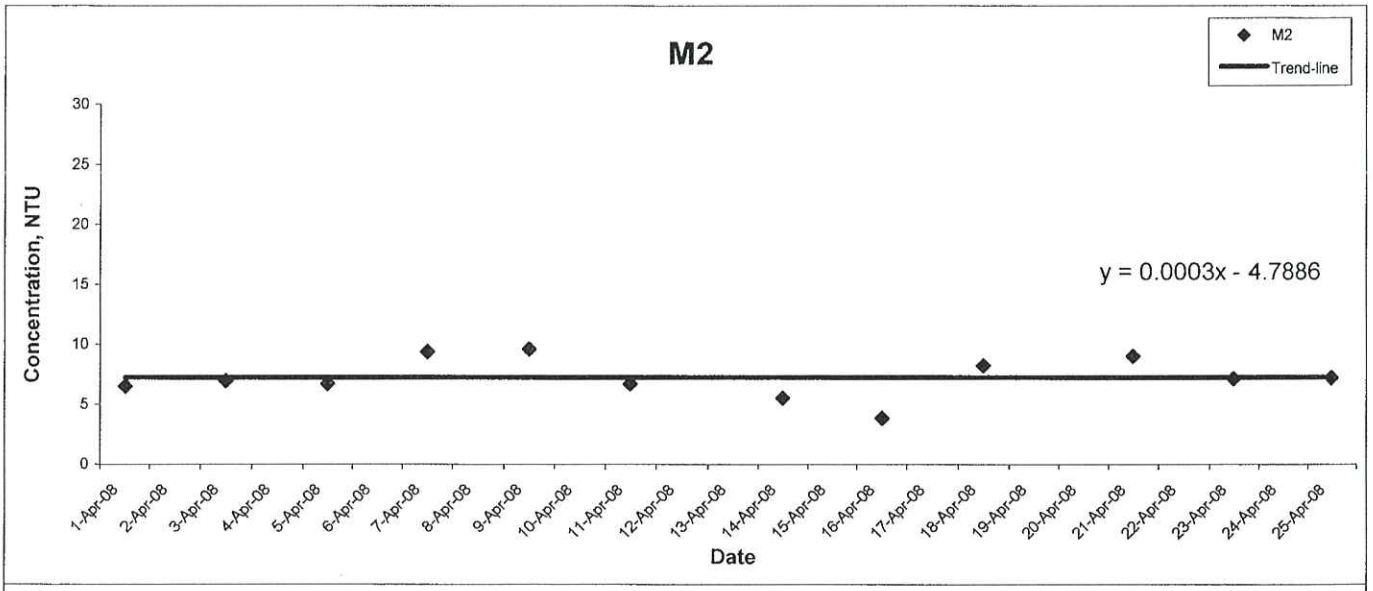
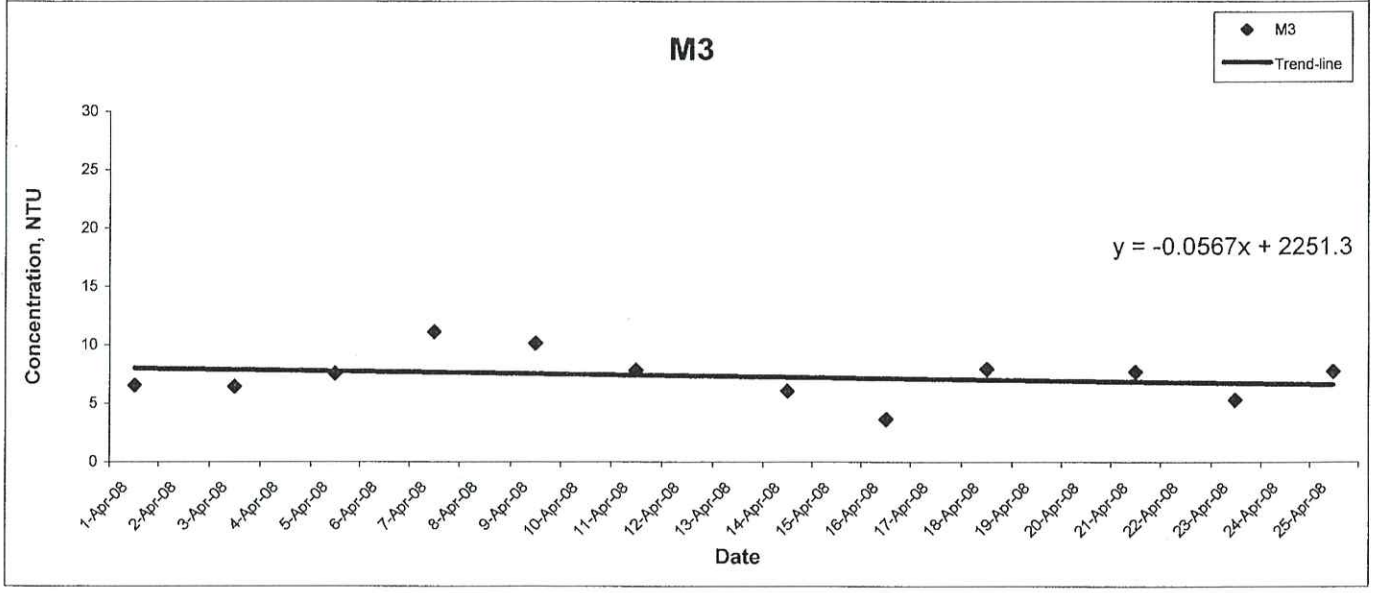
Turbidity at Mid-Flood Tide





ENSR | AECOM	Contract No.HY/2003/04 - Improvement to Castle Peak Road between Ka Loon Tsuen and Siu Lam **Graphical Presentation of Water Quality Monitoring Results**	SCALE	N.T.S.	DATE	2008
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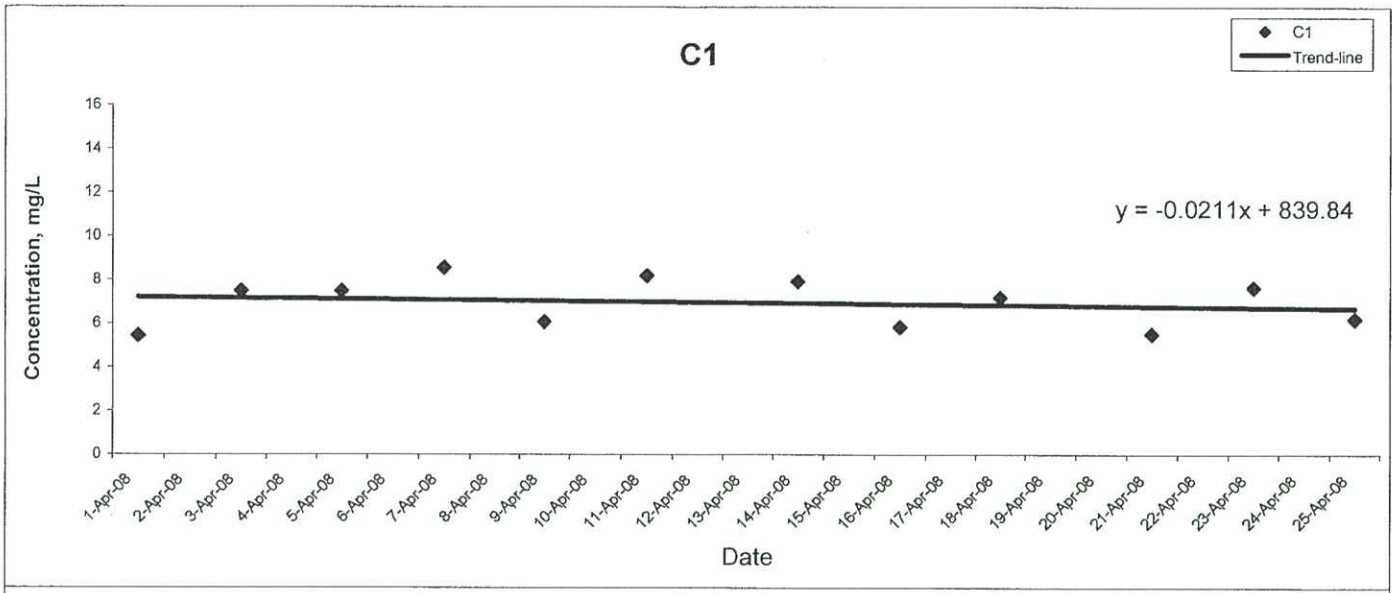
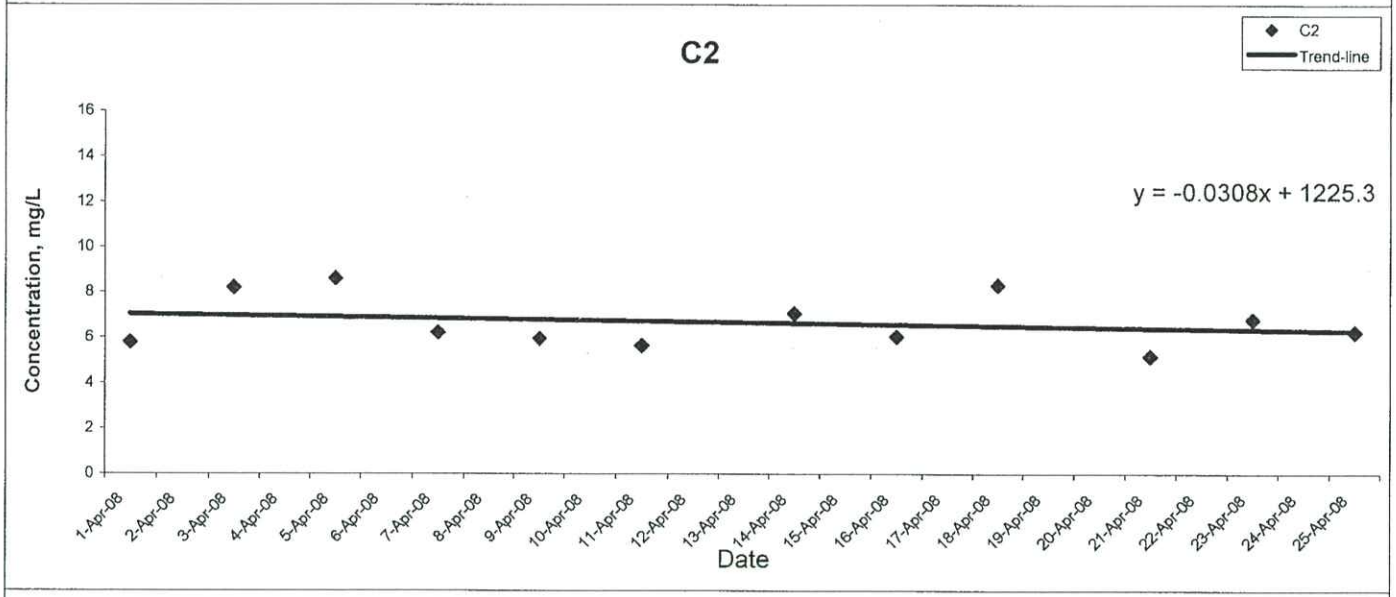
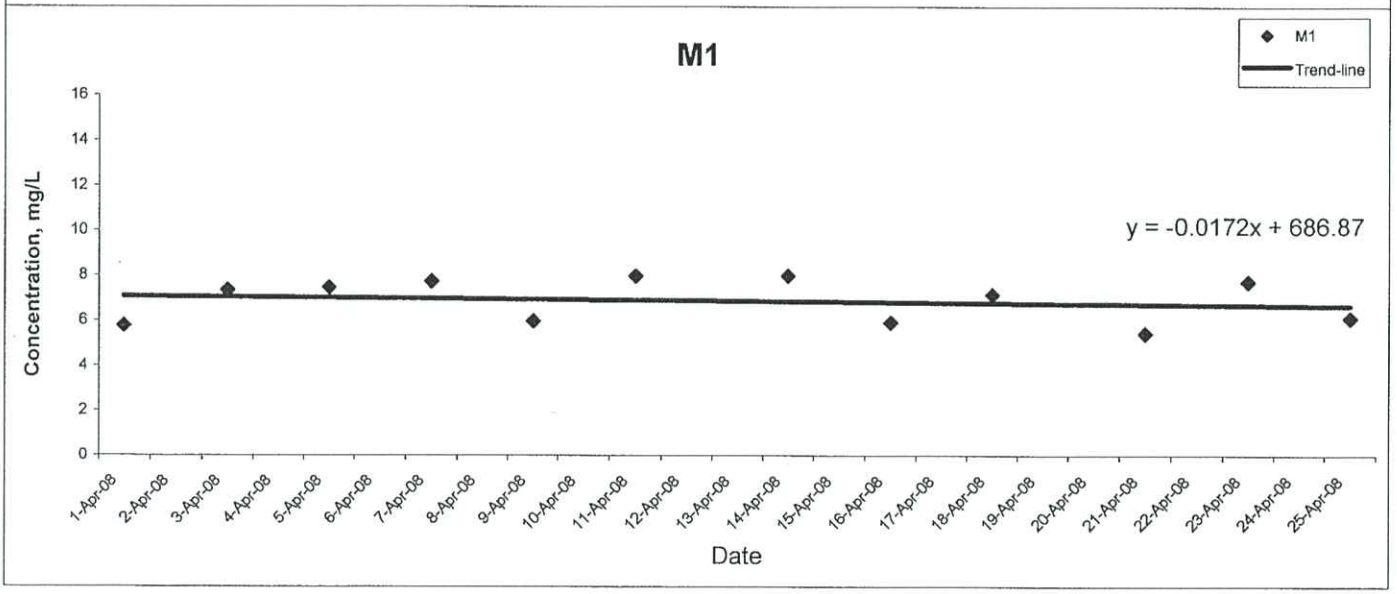
Dissolved Oxygen (Bottom) at Mid-Ebb Tide







ENSR | AECOM	Contract No.HY/2003/04 - Improvement to Castle Peak Road between Ka Loon Tsuen and Siu Lam **Graphical Presentation of Water Quality Monitoring Results**	SCALE	N.T.S.	DATE	2008
		CHECK	EWCM	DRAWN	LLMC
		JOB NO.	60016763	APPENDIX	I
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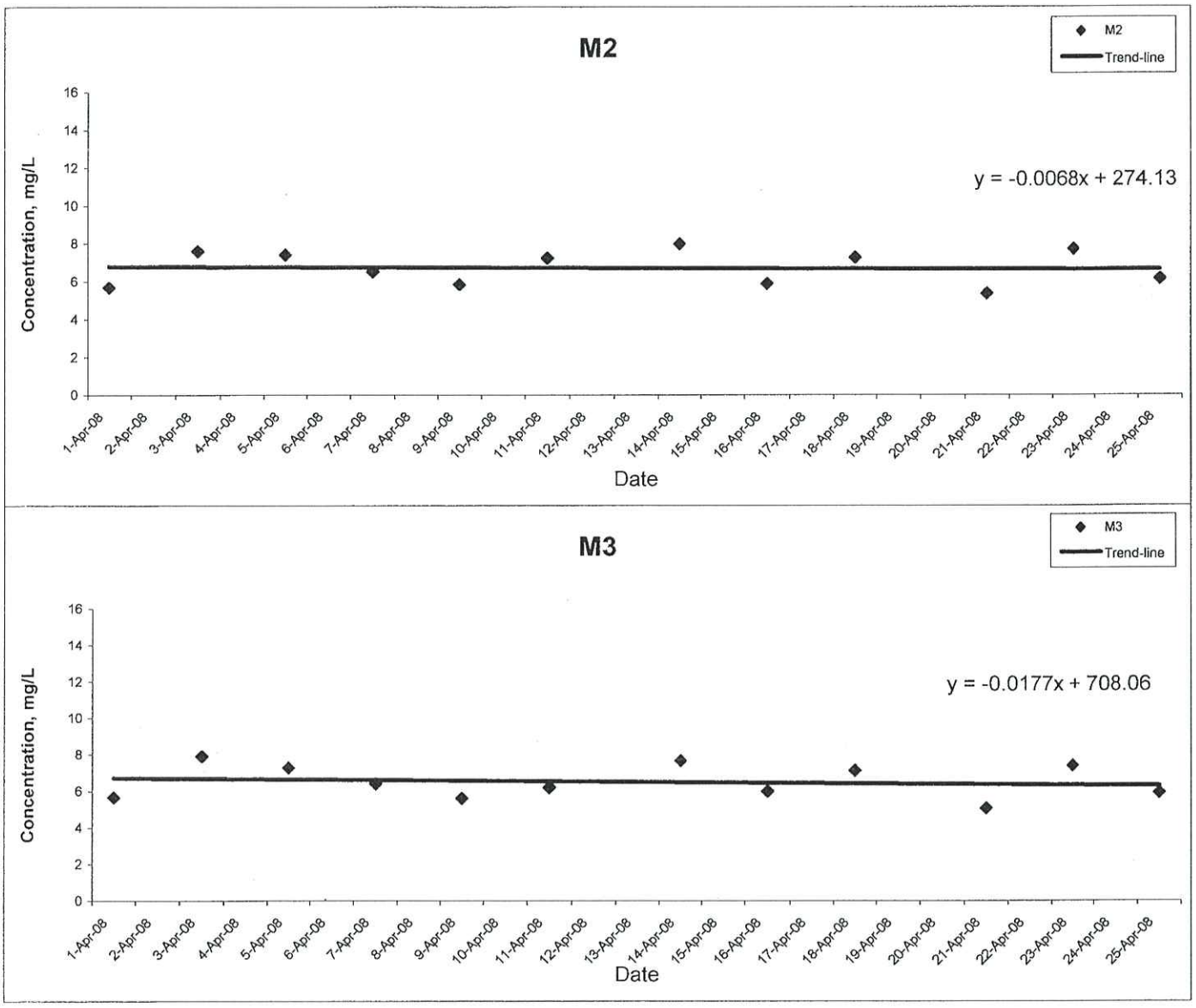
Dissolved Oxygen (Bottom) at Mid-Ebb Tide



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		CHECK	EWCM	DRAWN	LLMC
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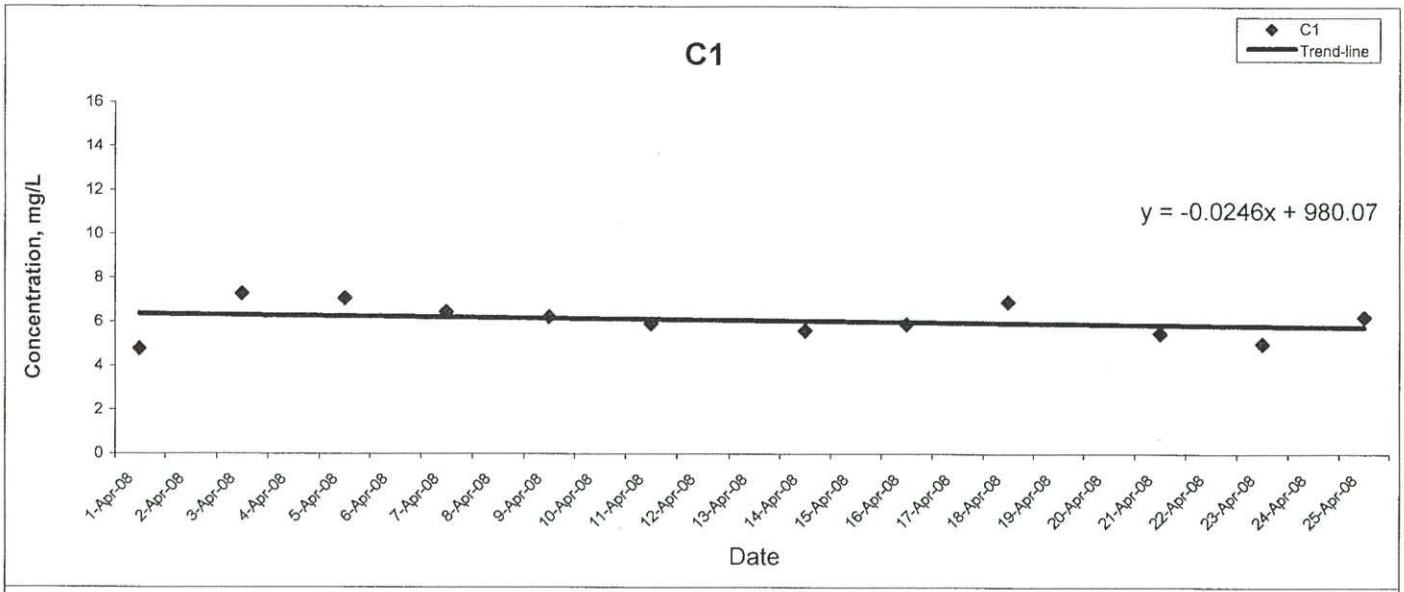
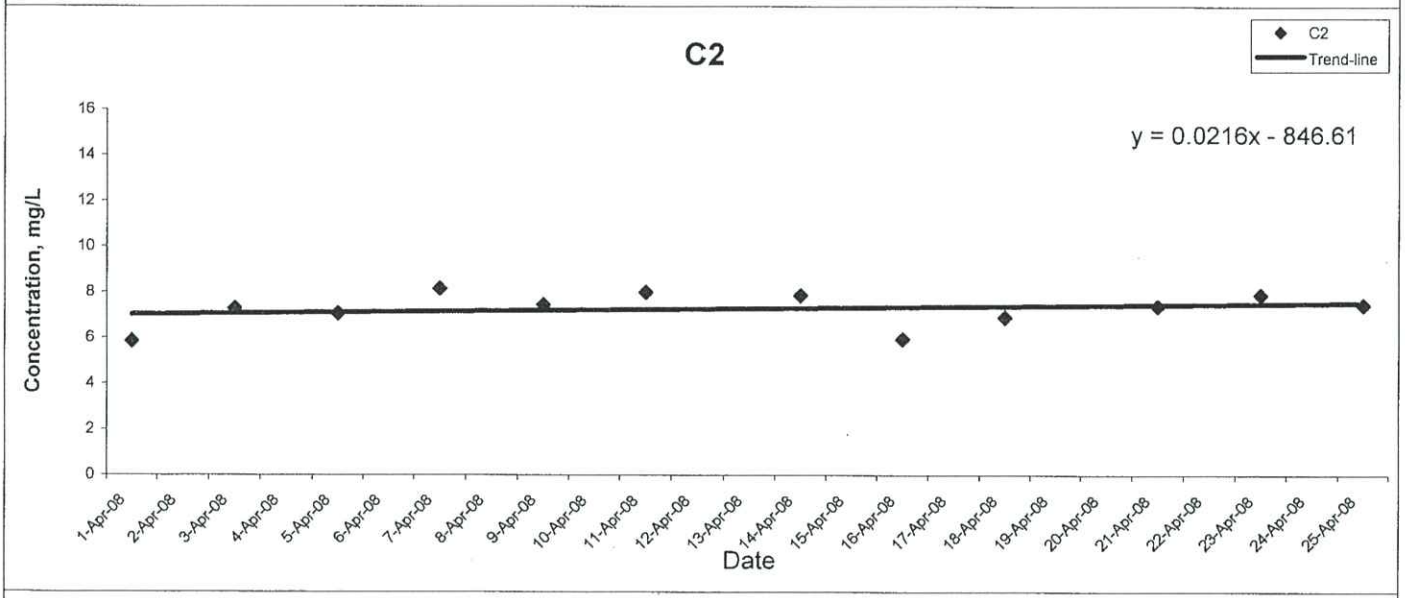
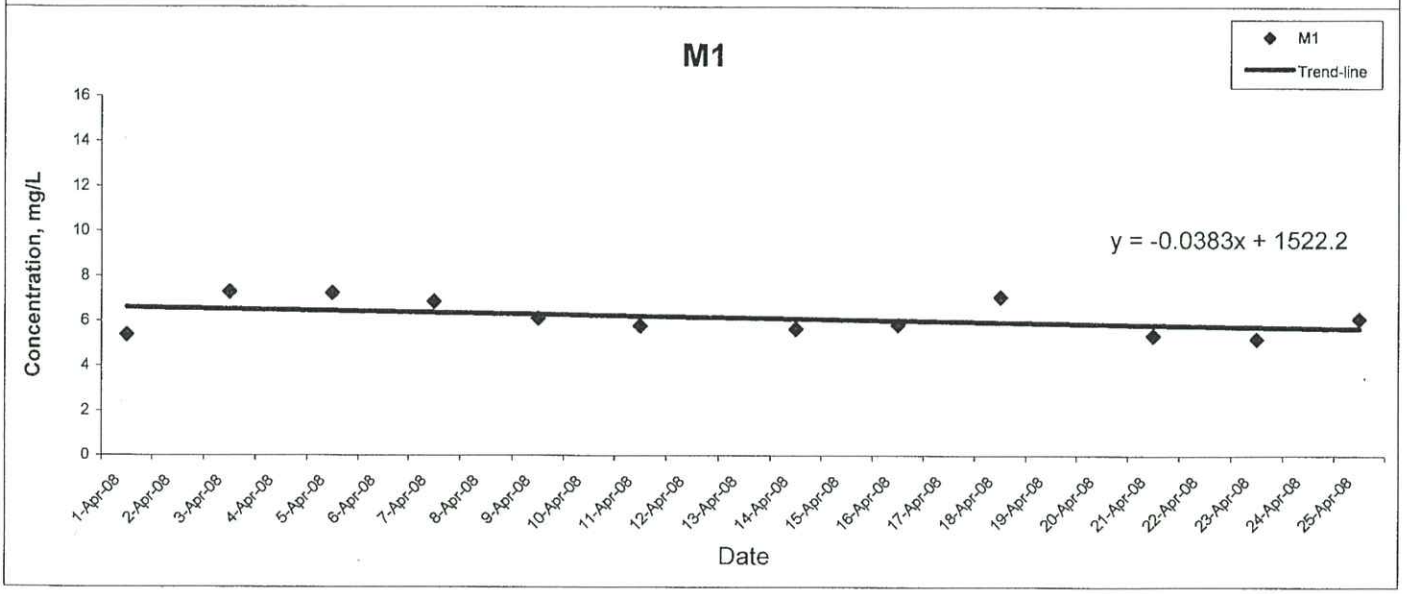
Dissolved Oxygen (Bottom) at Mid-Flood Tide







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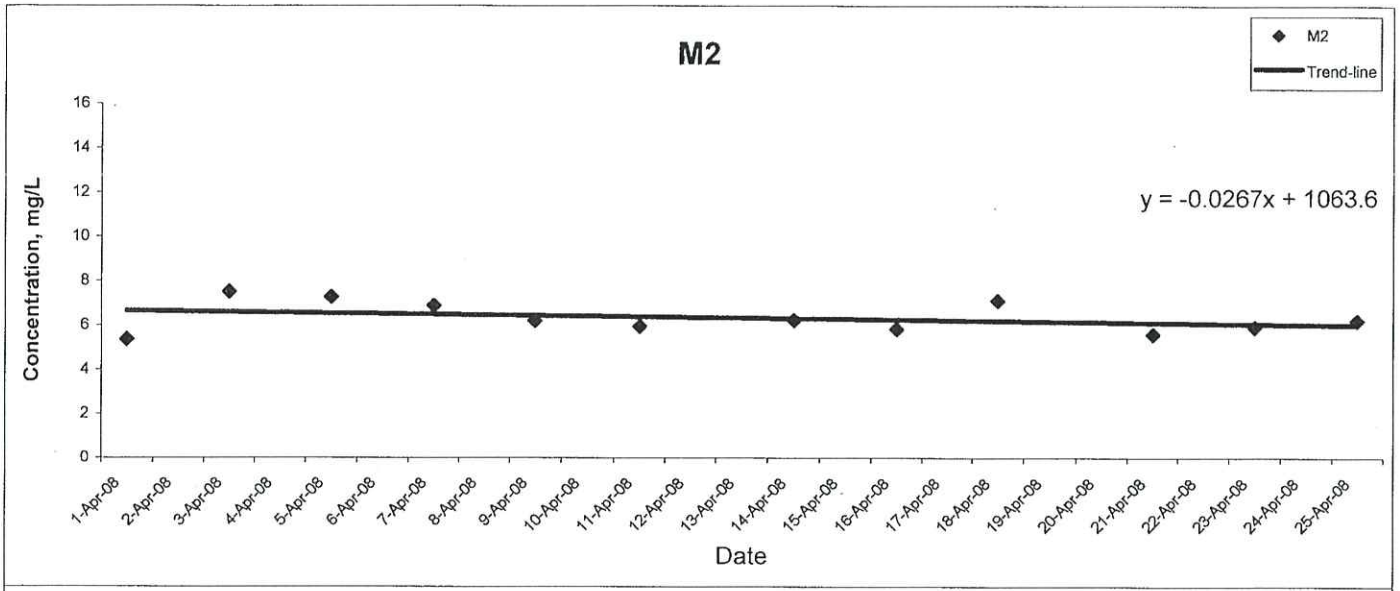
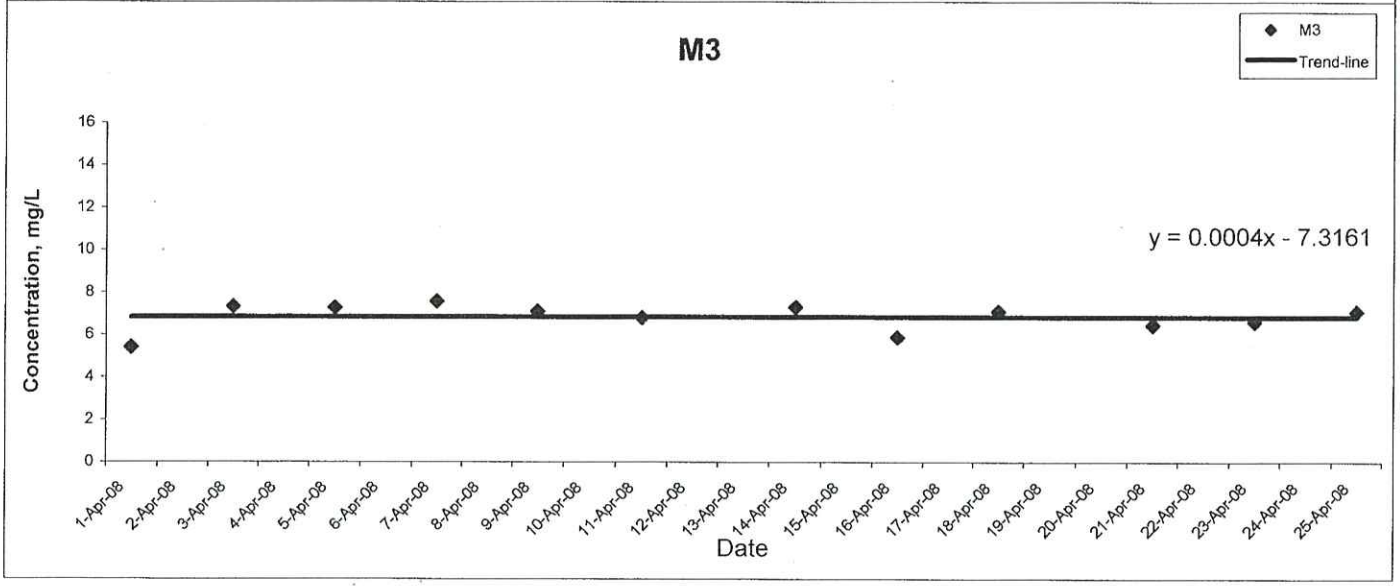
Dissolved Oxygen (Bottom) at Mid-Flood Tide





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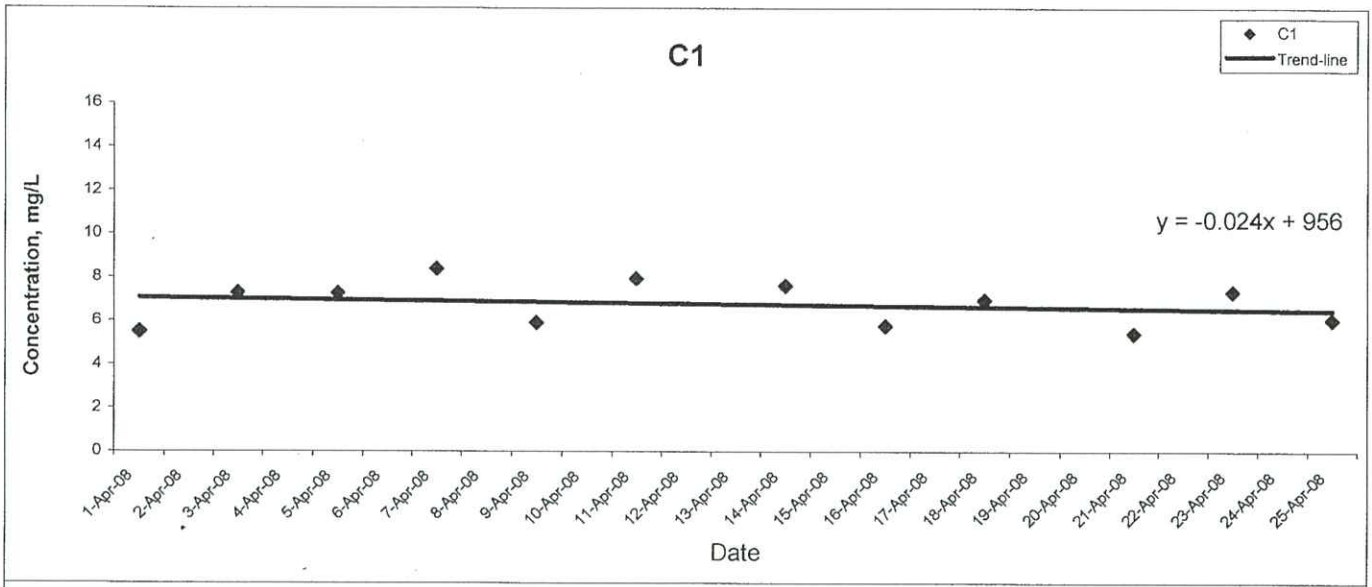
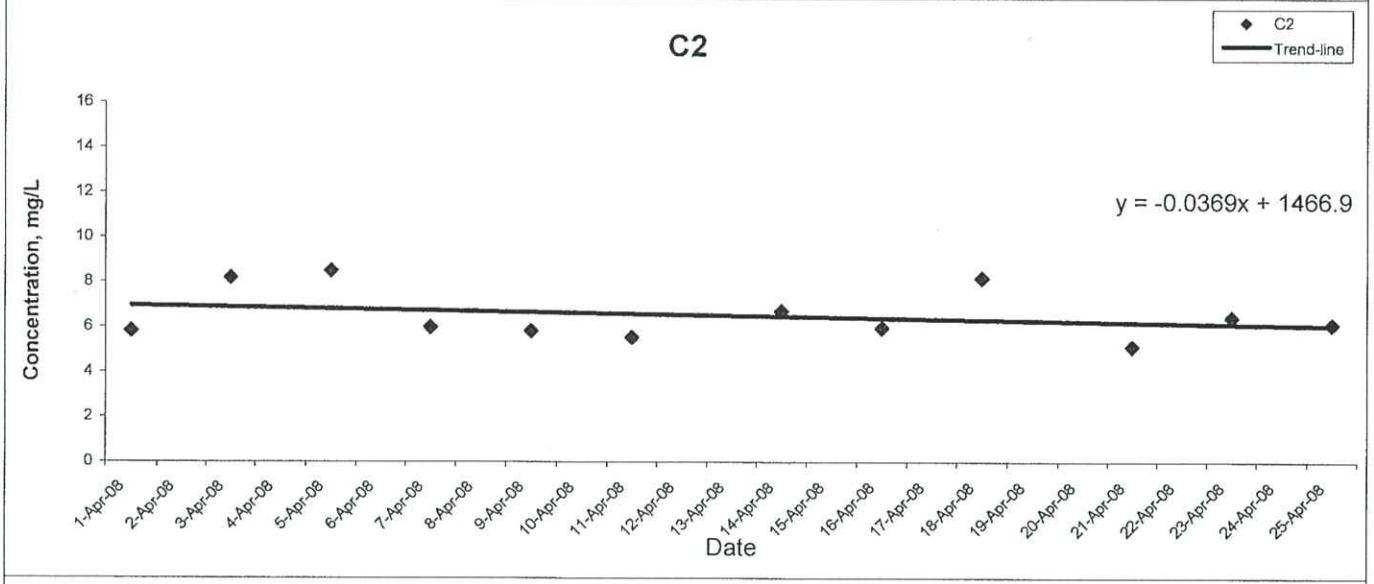
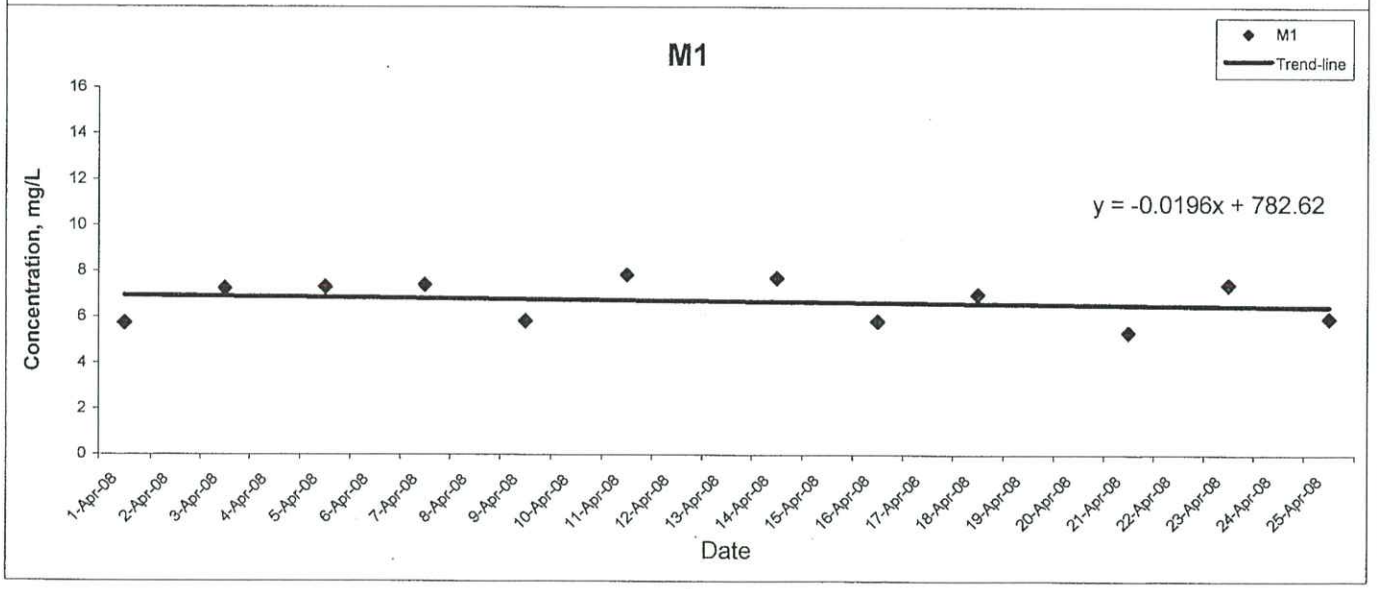
Dissolved Oxygen (Surface & Middle) at Mid-Ebb Tide







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		JOB NO.	60016763	APPENDIX	I
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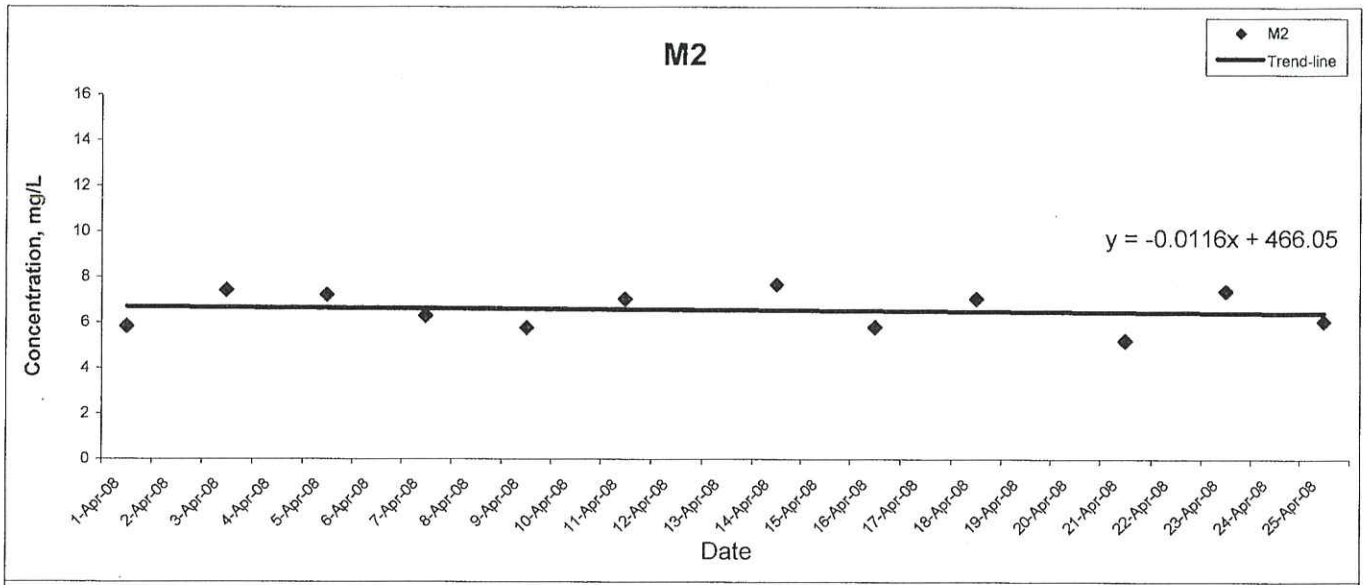
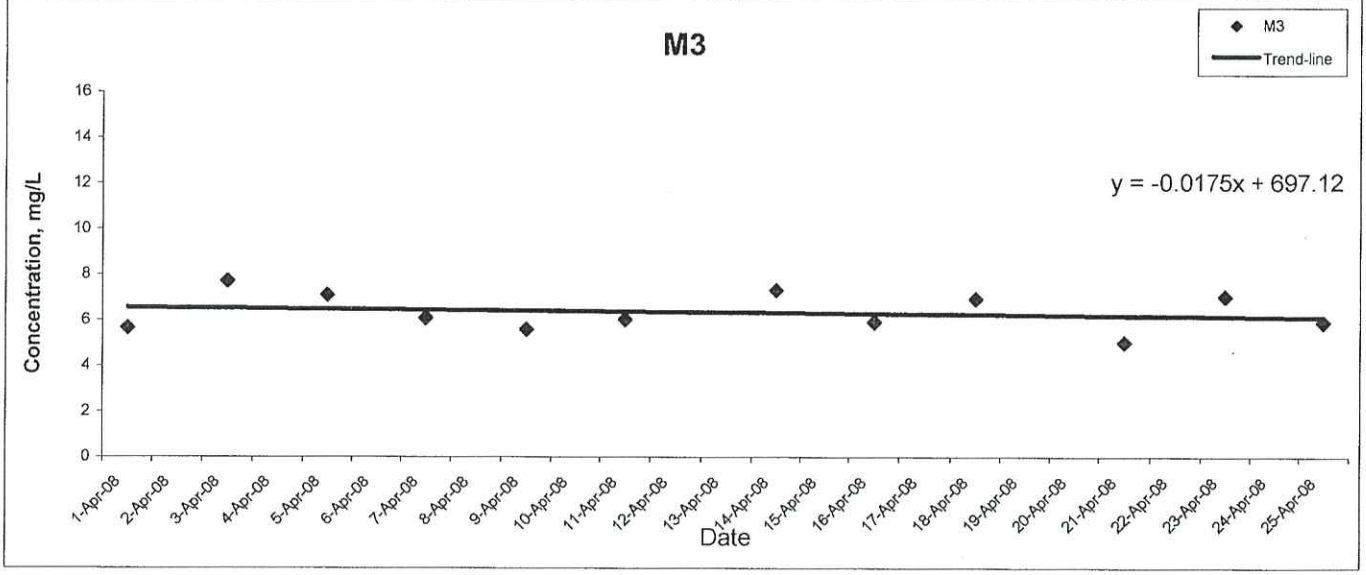
Dissolved Oxygen (Surface & Middle) at Mid-Ebb Tide





ENSR | AECOM	Contract No.HY/2003/04 - Improvement to Castle Peak Road between Ka Loon Tsuen and Siu Lam **Graphical Presentation of Water Quality Monitoring Results**	SCALE	N.T.S.	DATE	2008
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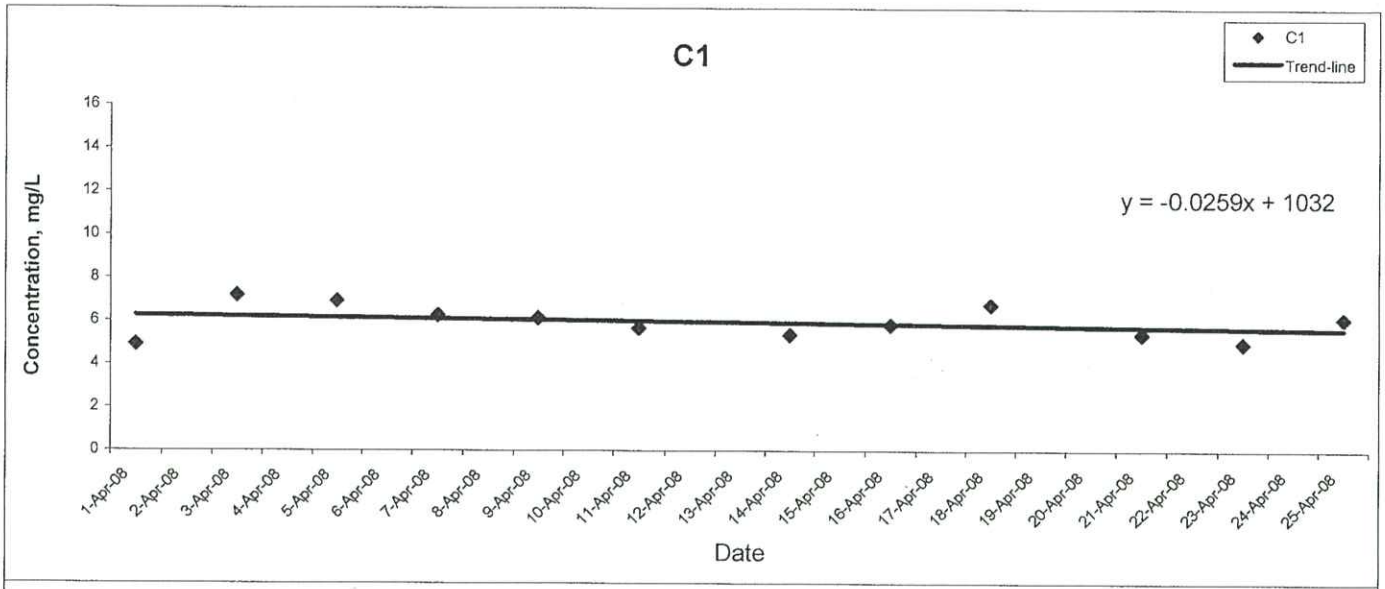
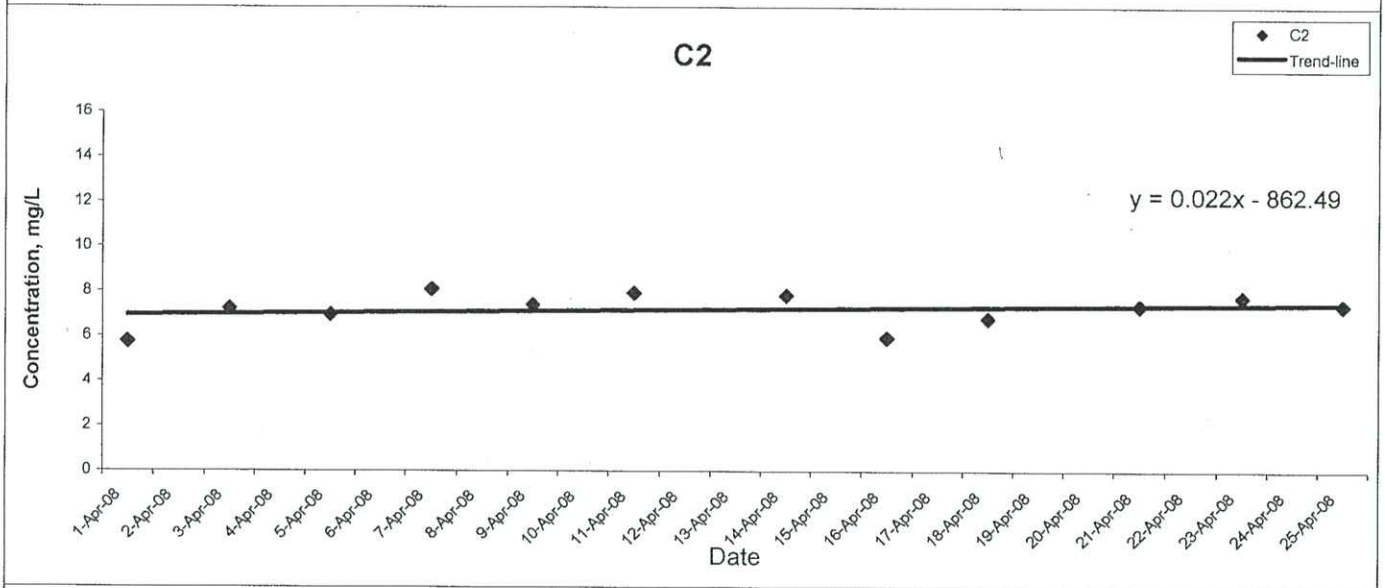
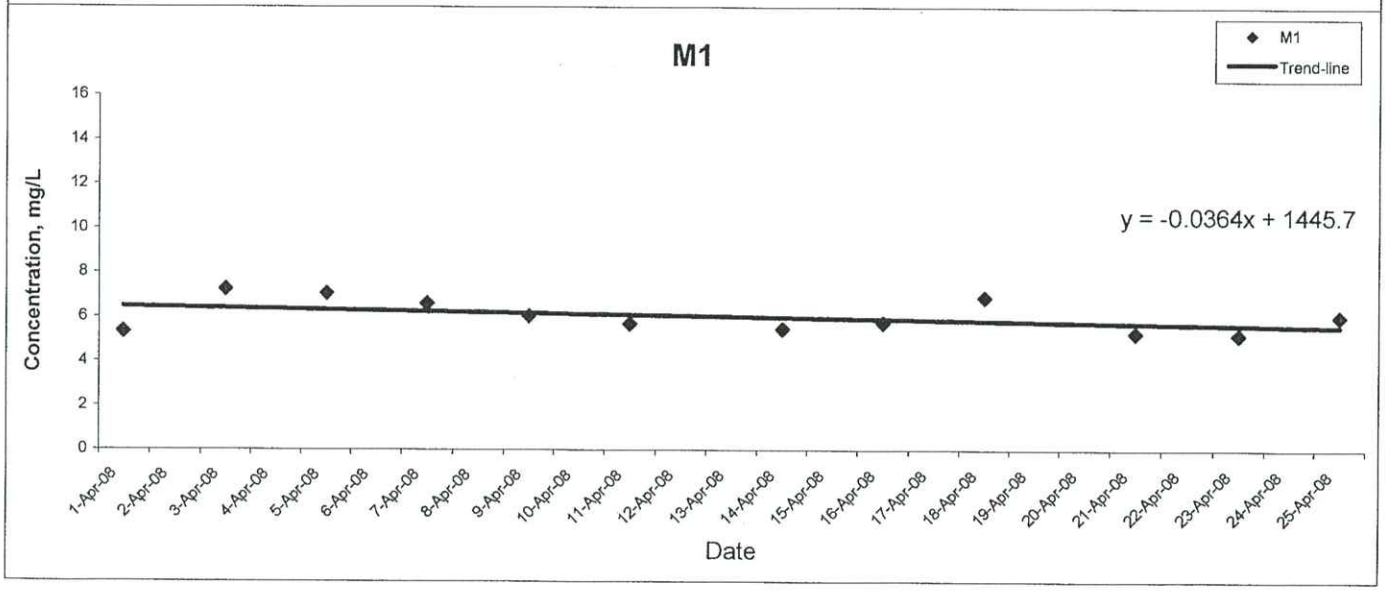
Dissolved Oxygen (Surface & Middle) at Mid-Flood Tide







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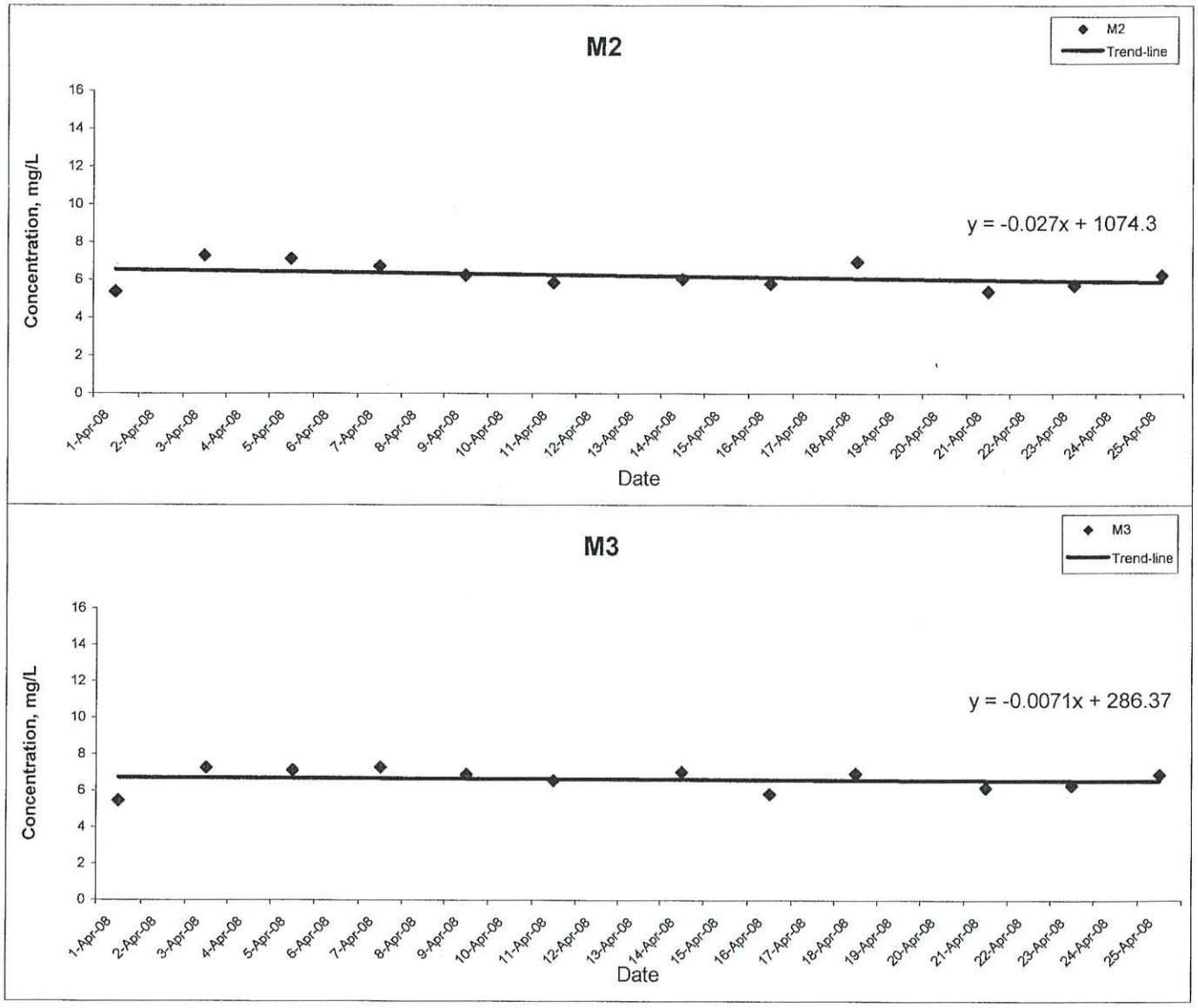
Dissolved Oxygen (Surface & Middle) at Mid-Flood Tide



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		CHECK	EWCM	DRAWN	LLMC
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APPENDIX J
DEATILED OPERATIONAL NOISE MONITORING RESULTS

Appendix J - Detailed Operational Noise Monitoring Results

Monitoring Date	Monitoring Station (Floor)	Period	Noise Level (Mitigated), L_{10} dB(A)	Noise Level (Mitigated), L_{10} (1hour) dB(A) *	Noise Standard, L_{10} (1 hour) dB(A)
23-Jul-08	NMO1 (G/F)	07:00 – 07:30	70.2	**69.9**	70
		07:30 – 08:00	70		
		08:00 – 08:30	69.8		
		16:00 – 16:30	68.7	**70**	
		16:30 – 17:00	69.7		
		17:00 – 17:30	70.3		
23-Jul-08	NMO2 (G/F)	07:00 – 07:30	64.8	**65.6**	70
		07:30 – 08:00	65.5		
		08:00 – 08:30	65.6		
		16:00 – 16:30	65.8	**65.9**	
		16:30 – 17:00	65.8		
		17:00 – 17:30	66		
18-Jul-08	NMO3 (2/F)	07:00 – 07:30	73.4	**73.8**	65
		07:30 – 08:00	74		
		08:00 – 08:30	73.6		
		16:00 – 16:30	73.6	**73.7**	
		16:30 – 17:00	73.6		
		17:00 – 17:30	73.8		
23-Jul-08	NMO4 (G/F)	07:00 – 07:30	59.1	**59.2**	70
		07:30 – 08:00	59.5		
		08:00 – 08:30	58.8		
		16:00 – 16:30	60.7	**59.8**	
		16:30 – 17:00	59.9		
		17:00 – 17:30	59.6		
23-Jul-08	NMO4 (2/F)	07:00 – 07:30	61.1	**61.9**	70
		07:30 – 08:00	61.6		
		08:00 – 08:30	62.2		
		16:00 – 16:30	65.2	**61.9**	
		16:30 – 17:00	62		
		17:00 – 17:30	61.8		

Remarks: * Calculated from noise level measured from 16:30 to 17:30.

APPENDIX K
TRAFFIC COUNT AND SPEED DATA

Appendix K - Traffic Data Obtained on 18 July 2008 for NMO3

07:00 - 08:30

		No. of Vehicle	Percentage of Heavy Vehicle	No. of Vehicle	Percentage of Heavy Vehicle	Estimated Speed (km/hr)
		North Bound		South Bound		
CP4	07:00 - 07:30	60	30%	96	25%	47
	07:30 - 08:00	30	20%	195	15%	47
	08:00 - 08:30	45	27%	384	7%	52
		North Bound		South Bound		
CP7	07:00 - 07:30	15	80%	24	50%	55
	07:30 - 08:00	9	67%	69	61%	50
	08:00 - 08:30	12	100%	72	42%	51
		North Bound		South Bound		
CP8	07:00 - 07:30	87	48%	135	33%	49
	07:30 - 08:00	42	36%	195	22%	42
	08:00 - 08:30	45	40%	468	12%	44
		North Bound		South Bound		
TMR3	07:00 - 07:30	378	61%	930	53%	76
	07:30 - 08:00	924	59%	1128	49%	68
	08:00 - 08:30	885	55%	1497	56%	70

16:00 - 17:30

		No. of Vehicle	Percentage of Heavy Vehicle	No. of Vehicle	Percentage of Heavy Vehicle	Estimated Speed (km/hr)
		North Bound		South Bound		
CP4	16:00 - 16:30	48	44%	30	30%	64
	16:30 - 17:00	36	33%	18	17%	43
	17:00 - 17:30	57	32%	48	25%	45
		North Bound		South Bound		
CP7	16:00 - 16:30	21	71%	24	50%	56
	16:30 - 17:00	15	80%	54	44%	54
	17:00 - 17:30	15	100%	48	44%	50
		North Bound		South Bound		
CP8	16:00 - 16:30	51	24%	60	35%	48
	16:30 - 17:00	66	27%	60	45%	42
	17:00 - 17:30	69	57%	60	25%	43
		North Bound		South Bound		
TMR3	16:00 - 16:30	1338	52%	1344	52%	74
	16:30 - 17:00	1455	53%	1245	52%	73
	17:00 - 17:30	1695	49%	1338	47%	70

Appendix K - Traffic Data Obtained on 23 July 2008 for NMO1, NMO2 and NMO4

07:00 - 08:30

		No. of Vehicle	Percentage of Heavy Vehicle	No. of Vehicle	Percentage of Heavy Vehicle	Estimated Speed (km/hr)
		North Bound		**South Bound**		
CP1	07:00 - 07:30	27	56%	324	19%	54
	07:30 - 08:00	18	67%	366	26%	56
	08:00 - 08:30	27	78%	461	17%	54
		North Bound		**South Bound**		
CP2	07:00 - 07:30	72	38%	51	29%	51
	07:30 - 08:00	144	27%	54	11%	55
	08:00 - 08:30	93	23%	57	21%	54
		East Bound		**West Bound**		
CP3	07:00 - 07:30	243	26%	93	45%	34
	07:30 - 08:00	180	35%	60	20%	35
	08:00 - 08:30	114	30%	69	35%	36
		North Bound		**South Bound**		
CP4	07:00 - 07:30	30	50%	84	21%	63
	07:30 - 08:00	39	31%	273	7%	63
	08:00 - 08:30	48	44%	375	4%	56
		East Bound		**West Bound**		
CP5	07:00 - 07:30	258	26%	102	44%	35
	07:30 - 08:00	186	37%	69	22%	35
	08:00 - 08:30	120	30%	70	40%	36
		East Bound		**West Bound**		
CP6	07:00 - 07:30	45	13%	222	23%	30
	07:30 - 08:00	30	20%	69	61%	28
	08:00 - 08:30	3	0%	48	88%	21
		North Bound		**South Bound**		
TMR1	07:00 - 07:30	774	49%	1428	37%	67
	07:30 - 08:00	978	44%	1800	42%	68
	08:00 - 08:30	1053	44%	2253	39%	63
		North Bound		**South Bound**		
HFR	07:00 - 07:30	24	50%	54	39%	57
	07:30 - 08:00	39	46%	57	37%	53
	08:00 - 08:30	42	43%	117	21%	52

Appendix K - Traffic Data Obtained on 23 July 2008 for NMO1, NMO2 and NMO4

16:00 - 17:30

		No. of Vehicle	Percentage of Heavy Vehicle	No. of Vehicle	Percentage of Heavy Vehicle	Estimated Speed (km/hr)
		North Bound		South Bound		
CP1	16:00 - 16:30	162	56%	192	31%	55
	16:30 - 17:00	210	40%	246	46%	52
	17:00 - 17:30	144	38%	132	55%	52
		North Bound		South Bound		
CP2	16:00 - 16:30	183	39%	51	24%	47
	16:30 - 17:00	138	30%	69	48%	43
	17:00 - 17:30	165	29%	45	33%	39
		East Bound		West Bound		
CP3	16:00 - 16:30	216	58%	114	63%	35
	16:30 - 17:00	216	56%	114	53%	34
	17:00 - 17:30	252	50%	78	46%	34
		North Bound		South Bound		
CP4	16:00 - 16:30	84	21%	30	40%	34
	16:30 - 17:00	54	33%	30	60%	33
	17:00 - 17:30	66	36%	36	67%	33
		East Bound		West Bound		
CP5	16:00 - 16:30	234	56%	132	59%	36
	16:30 - 17:00	228	53%	126	48%	35
	17:00 - 17:30	258	53%	102	47%	34
		East Bound		West Bound		
CP6	16:00 - 16:30	54	44%	132	30%	34
	16:30 - 17:00	57	11%	123	39%	32
	17:00 - 17:30	60	25%	165	31%	32
		North Bound		South Bound		
TMR1	16:00 - 16:30	1353	53%	1134	52%	71
	16:30 - 17:00	1443	50%	1104	51%	76
	17:00 - 17:30	1302	50%	1185	47%	73
		North Bound		South Bound		
HFR	16:00 - 16:30	36	67%	42	57%	53
	16:30 - 17:00	30	40%	30	40%	51
	17:00 - 17:30	54	11%	60	20%	49

APPENDIX L
CUMULATIVE STATISTICS ON COMPLAINTS, NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS AND COMPLAINT LOG

Appendix L Cumulative statistics on complaints, notifications of summons and successful prosecutions and Complaint Log

	Date Received	Subject	Status	Total no. recorded in this month	Total no. recorded since project commencement
Environmental complaints	10 September 2004	Muddy water discharge on 2 September 2004 at spot CH 2600	Closed	0	1
	30 March 2006	Dust emission from pedestrian road breaking activities along castle peak road	Closed	1	2
	11 May 2006	Potential dust emission and runoff from stockpiles of sand	Closed	1	3
Notification of summons	-	-	-	0	0
Successful Prosecutions	-	-	-	0	0

Contract No. HY/2003/04
Improvement to Castle Peak Road between Ka Loon Tsuen and Siu Lam

Environmental Complaint Log

Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
CPR/2004/01	Chainage 2600	10 September 2004	Muddy water discharge on 2 September 2004 at spot CH 2600	Rectification of deficiency of water quality mitigation measures was recommended. Improvement to water quality mitigation measures was considered effective and no muddy water was observed discharged at Chainage 2600 since mid-September.	Closed.
CPR/2006/01	Castle Peak Road outside Maritime Services Training Institute	30 March 2006	Dust emission from pedestrian road breaking activities along Castle Peak Road outside Maritime Services Training Institute on 30 March 2006	Air Quality mitigation measures was recommended and sufficient water spraying was recommended to provide to all breaking and dusty operation.	Closed.
CPR/2006/02	Chainage 2900	11 May 2006	Potential dust emission and runoff from stockpiles of sand	A joint inspection with EPD's representative was conducted, no adverse comment was given. The Contractor had provided tarpaulin cover for the stockpiles.	Closed.