

Chun Wo Construction &
Engineering Co Ltd

**Contract No HY/2005/06
Castle Peak Road
Improvement – West of
Tsing Lung Tau**

Quarterly Environmental
Monitoring and Audit
Summary Report for
Reclamation Works (EP
No EP-219/2005) –
March to May 2007

First Issue

Chun Wo Construction &
Engineering Co Ltd

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March to May 2007

June 2007

This report takes into account the particular
instructions and requirements of our client.
It is not intended for and should not be relied
upon by any third party and no responsibility
is undertaken to any third party

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Job number 24583

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By Fax (2492 6201) and Post

Meinhardt Halcrow JV
4/F., Wah Ming Centre,
421 Queen's Road West,
Hong Kong

Attn: Mr. Michael S Harfoot

27 June 2007

Dear Sir,

Contract No. HY/2005/06**Castle Peak Road Improvement – West of Tsing Lung Tau****Quarterly EM&A Summary Report for Reclamation Works (EP No. EP-219/2005) – March 2007 to May 2007**

We refer to the Quarterly EM&A Summary Report for Reclamation Works (EP No. EP-219/2005) – March 2007 to May 2007 received via emails on 26 June 2007 from Ove Arup & Partners Hong Kong Ltd., the Environmental Team (ET) of Castle Peak Road Improvement – West of Tsing Lung Tau (Remaining Contract).

Having addressed the IEC's comment on 26 June 2007, the Quarterly EM&A Summary Report for Reclamation Works (EP No. EP-219/2005) – March 2007 to May 2007 is verified to be acceptable for onward submission to the Engineer, HyD, EPD and AFCD.

Should you have any inquiry or comment, please do not hesitate to contact the undersigned or our Miss Connie Wong at 3105 8530.

Yours faithfully,
For and on behalf of
ENSR Asia (HK) Ltd.



Y T Tang
Independent Environmental Checker

Encl.

cc	MHJV	-	Mr. Simon Illingworth	(Fax: 2559 1613)
	Arup	-	Mr. Sam Tsoi / Mr. Samuel Chan	(Fax: 2268 3950)

Co-Chairmen: T C K Shum, R C Weber President: M Chan, Managing Director: A Y Kwok

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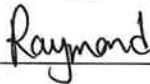

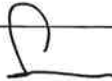
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Executive Summary

This is the fifth quarterly environmental monitoring and audit (EM&A) summary report presenting the progress of environmental monitoring and audit works for the reporting period between March 2007 and May 2007. Noise monitoring at Grand Bay Villa was temporarily suspended as the premises were vacant with no resident. Marine water monitoring and weekly environmental site audit were carried out during the reporting period.

Marine Water Quality

Impact marine water quality monitoring was conducted during mid-ebb and mid-flood tidal cycles at 10 designated locations including 5 impact and 5 control stations. A baseline check was conducted on 27 February 2006 prior to the commencement of marine works and a compliance checking mechanism was established in accordance with the criteria specified in Baseline Monitoring Report.

Summary of Mid-Ebb Tide

The lowest DO levels for surface & middle position of 5.42 mg/L was recorded at WWA3 on 26 March 2007 and the lowest DO level for bottom position of 5.35 mg/L was recorded at WWA3 on 04 April 2007. There were no exceedances of DO levels during reporting period when compared with the established baseline check criteria in Section 3.3 of this report.

The highest depth-averaged Tby level of 15.3 Nephelometric Turbidity Unit (NTU) was recorded at WWA2 on 19 March 2007. There were 3 exceedances of Baseline Check Criteria, 1 exceedance of Action Level and 12 exceedances of Limit Level during the reporting period when compared with the established baseline check criteria in Section 3.3 of this report.

The highest SS level of 33.7 mg/L was recorded at WWA3 on 16 March 2007. There were 25 exceedances of SS Baseline Check Criteria and 3 exceedances of SS Limit Level during the reporting period when compared with the established baseline check criteria in Section 3.3 of this report.

Summary of Mid-Flood Tide

The lowest DO levels for surface & middle position of 5.36 mg/L was recorded at WWA1 on 04 April 2007 and the lowest level for bottom position of 5.31 mg/L was recorded at WWA2 on 10 April 2007 respectively. There were no exceedances of DO levels during reporting period when compared with the established baseline check criteria in Section 3.3 of this report.

The highest depth-averaged Tby level of 11.0 NTU was recorded at WWA2 on 19 March 2007. There were 2 exceedances of Baseline Check Criteria, 3 exceedances of Action Level and 4 exceedances of Limit Level during the reporting period when compared with the established baseline check criteria in Section 3.3 of this report.

The highest SS level of 33.8 mg/L was recorded at WWA2 on 19 March 2007. There were 6 exceedances of SS Baseline Check Criteria and 3 exceedances of Limit Level during reporting period when compared with the established baseline check criteria in Section 3.3 of this report.

Waste Disposal

A total of 82.08 tonnes of Construction & Demolition (C&D) waste and 24,059.06 tonnes of C&D materials were disposed of at WENT Landfills and Public Filling Area in Tuen Mun respectively during the reporting period. No chemical waste was disposed of during the reporting period.

Complaint Records

EPD conducted a site inspection on 12 April 2007 and observed environmental deficiencies in the following areas:

- (1) Silt curtain was not properly provided for construction works at Seawall B and
- (2) Dust suppression measures were not provided for rock breaking works.

A warning, in a form of yellow form, was issued to the CT. In response to EPD's warning, the CT had installed a new silt curtain, covered the stockpile on the seaside, conducted daily inspection of the silt curtain. The CT had also provided water spraying for rock breaking works.

Exceedance

In March 2007, the exceedances were likely attributed to damaged silt curtain, which had subsequently been repaired in the same month. The CT installed a new silt curtain around the stockpile at Seawall B on 14 April 2007 and the water quality had been improved on subsequent monitoring (14 and 16 April 2007). However, the bottom of the silt curtain was observed broken and mud plume was dispersed out of the silt curtain on 18 and 20 April 2007. An *ad hoc* meeting was held between the CT, ET and IEC on 24 April 2007. Upon advised by the ET and IEC, the CT had implemented the following measures:

- To reinstate the silt curtain, which was completed on 28 April 2007;
- Stop all excavation works and stockpile removal at Seawall B, until the silt curtain was properly reinstated;
- Cover the stockpile on the seaside; and
- Conduct daily inspection of silt curtain.

With the implementation of mitigation measures, the water quality was improved.

In early May 2007, muddy water was observed outside silt curtain again and marginal exceedances of Tby and SS were recorded. Re-suspension of soil from seabed and seepage of muddy water from Slope 82 was the likely source of muddy plume. ET further recommended the Contractor to extend the silt curtain to cover a larger area, including the working area of Slope 82, which was completed on 28 May 2007. The water quality was improved and exceedance of A/L levels was not recorded in subsequent marine water quality monitoring.

Notification of Summons and Successful Prosecution

No notification of summon and prosecution was received during the reporting period.

Environmental Licences

A new Construction Noise Permit was granted during the reporting period.

1 Introduction

Ove Arup & Partners Hong Kong Limited (Arup) was appointed by the Contractor (CT) – Chun Wo Construction & Engineering Co. Ltd as the Environmental Team (ET) for *Contract No. HY/2005/06 Castle Peak Road Improvements – West of Tsing Lung Tau* (hereafter called the “Project”). The reclamation at west of Tsing Lung Tau is covered by an Environmental Permit (EP) No. EP-219/2005 issued in June 2005 with reference to Section 6 of the Technical Memorandum on Environmental Impact Assessment Ordinance (TM-EIAO). The EP was issued following the approval of the application to apply directly for an EP based upon the Project Profile. In accordance with the EM&A Manual, environmental monitoring for construction noise and marine water quality will be required during the construction and operational phases. The construction phase of the Project commenced on 28 February 2006.

1.1 Project Background

The Castle Peak Road (CPR) Improvement works consist of upgrading the existing CPR to provide a dual two-lane carriageway of “Rural Road A” classification between Area 2 (Tsuen Wan) and Ka Loon Tsuen. The CPR Improvement project is divided into three contracts, namely HY/99/18 (West Contract), HY/99/19 (Middle Contract) and HY/2000/02 (East Contract).

Prior to inviting tenders for Contract No. HY/99/18, a section of the proposed works, between Ch.1+800 and Ch.2+240, west of Tsing Lung Tau, was excised from the Project and entrusted to the Route 10 – North Lantau to Yuen Long Highway project. This 440m long section of CPR was located under the proposed Route 10 suspension bridge, and was to form part of the works area for the Route 10 project. The Route 10 project team revised the alignment of this section of CPR accordingly to suit the arrangement of the Route 10 suspension bridge.

Following subsequent developments, the Route 10 project was placed under review, and Government therefore decided to implement the excised section of CPR (the Remaining Project) under the original CPR Improvement project. The site location plan is showed in **Appendix A**.

Additional reclamation (0.58 ha) at west of Tsing Lung Tau is required to support part of the remaining section of road improvement works and the additional reclamation works constitutes a material change to the reclamation works at Tsing Lung Tau.

The scope of the construction works covered by this Project is summarised as follows:

- The area of reclamation to the east of Grand Bay Villa is about 0.12 ha. The length of this part of the reclamation, measured parallel to the road, is about 107 m, and the maximum width, measured from the existing High Water Mark (HWM) to the proposed toe of the scour apron is about 16 m, of which about 13 m is sloping revetment;
- The area of reclamation west of Grand Bay Villa is about 0.46 ha. The length of this part of the reclamation, measured parallel to the road, is about 172 m, and the maximum width, measured from the existing High Water Mark (HWM) to the proposed toe of the scour apron is about 38 m, of which about 15 m is sloping revetment.

1.2 Project Organisation

The project organisation chart for environmental management is shown in **Appendix B**. The key personnel contact names and numbers are summarised in **Table 1-1**. The duties of respective parties are listed in Section 1.9 of the EM&A Manual.

Table 1-1: Contact Information of Key Personnel

Organisation	Name	Telephone
Highway Department	Mr WK Lee	Tel: 2762 3570
Environmental Protection Department	Mr Thomas To	Tel: 2835 1103
Engineer's Representative (MHJV)	Mr Michael Harfoot	Tel: 2417 3820
Independent Environmental Checker (ENSR)	Mr YT Tang	Tel: 3105 8537
Contractor (Chun Wo)	Mr Simon Wong	Tel: 2491 1214
ET Leader (Arup)	Mr Sam Tsoi	Tel: 2268 3211

1.3 Purpose of the Report

The purpose of the quarterly EM&A summary report is to provide the information on monitoring methodology, monitoring results, environmental permit status, site audit findings, recommendations and conclusions for the scope of impact EM&A specified under EP No. EP-219/2005.

This is the fifth quarterly EM&A summary report summarising the monitoring methodology, locations, periods, frequencies, results and any observation from the noise, marine water quality and environmental site audit from March to May 2007.

2 Scope of Construction Works

2.1 Construction Programme

The construction work was commenced on 28 February 2006. An up-to-date construction programme is attached in **Appendix C**.

2.2 Construction Activities of the Quarter

The major construction activities carried out by CT during the reporting period included:

- Installation of precast panel at Seawall B;
- Removal of stockpile at Seawall B;
- Soil nailing works and construction of footing at Slope 82;
- Construction of retaining wall at Seawall B; and
- Concreting at slope 82.

3 Summary of EM&A Requirements

The impact environmental monitoring and audit for the Project included noise, marine water quality and environmental site audit. The monitoring parameters, frequency and locations are shown in **Appendix D**.

3.1 Performance Limits and Event and Action Plan

The monitoring results will be checked against appropriate standards and requirements. A two-tier system performance limits have been established in the Project specific EM&A Manual. The "Action Level" and the "Limit Level" (A/L) are established according to the EPD

requirements. The ET, ER, IEC, and CT will take corresponding action in accordance with the Event-Action Plans if the monitoring results exceed the performance limits.

3.1.1 Construction Noise

The A/L Levels for the construction noise have been established during the baseline monitoring as summarised in **Table 3-1**.

Table 3-1: Action and Limit Levels of construction noise

Time Period	Action Level	Limit Level
0700 - 1900 hours on any day not being a Sunday or public holiday	When one documented complaint is received	75dB(A)

The action required to be taken by different parties in case of occurrence of exceedances of A/L Levels and summarised in the Event and Action Plan in **Appendix E**.

3.1.2 Marine Water Quality

Based on the baseline water quality monitoring data obtained. The A/L levels established using the baseline marine water quality monitoring data are shown in **Table 3-2**. If the water quality monitoring results at any impact stations exceeded the criteria, the actions in accordance with the Event-Action Plan in **Appendix E** should be carried out.

As the baseline monitoring was conducted in September to October 2005, the established A/L Levels will be more representative to the marine water quality during summer months. To cope with any potential variation of baseline levels due to change in weather conditions, baseline check will be conducted in bi-annual basis in order to update any variation of the baseline water quality at the monitoring locations.

The first baseline check was conducted on 27 February 2006 prior to the commencement of marine works and the updated marine water quality monitoring data were summarised in **Table 3-3**. Compliance assessment for future impact monitoring data will be made against the updated baseline check criteria as follows:

- Tier 1 - Comparison of water quality monitoring data at Impact Stations with the A/L Levels (**Table 3-2**) established in the Baseline Monitoring Report. If the data comply with A/L Levels, go to Tier 2. Otherwise, non-compliance will be reported and Event and Action Plan will be triggered.
- Tier 2 - Comparison of water quality monitoring data at Impact Stations with the Baseline Check Level (80% of average values of baseline check data collected at 10 monitoring locations for DO and 120% of average values of baseline check data collected at 10 monitoring locations for Tby and SS) (**Table 3-3**). If the impact water quality is better than Baseline Check Level, compliance will be reported. Otherwise, go to Tier 3.
- Tier 3 - Comparison of water quality monitoring data at Impact Stations with the respective Control Stations. If the impact water quality is better than the respective Control Station, compliance will be reported. Otherwise, non-compliance will be reported and Event and Action Plan will be triggered for implementation of action based on exceedance of Action Level.

Table 3-2: Action and Limit Levels of marine water quality established in Baseline Monitoring Report #

Parameters		Monitoring locations									
		WWA1		WWA2		WWA3		WWFCZ1		WWFCZ2	
		Action Level	Limit Level	Action Level	Limit Level	Action Level	Limit Level	Action Level	Limit Level	Action Level	Limit Level
Mid-ebb											
DO (mg/L)	Surface & middle	3.5	3.5	3.5	3.4	3.4	3.3	5.0 *	5.0	5.0 *	5.0
	Bottom	3.4	3.4	3.4	3.3	3.4	3.2	3.7	2.0	3.6	2.0
Tby (NTU)		7.4	7.7	6.7	6.9	7.8	8.3	6.4	8.6	6.7	7.0
SS (mg/L)		25.3	26.0	22.2	23.1	24.6	25.2	26.3	30.3	22.6	22.9
Mid-flood											
DO (mg/L)	Surface & middle	3.3	3.3	3.4	3.3	3.5	3.3	5.0 *	5.0	5.0 *	5.0
	Bottom	3.2	3.2	3.2	3.2	3.2	3.2	3.3	2.0	3.5	2.0
Tby (NTU)		6.9	7.2	7.6	8.2	8.7	10.7	7.4	11.0	5.9	6.5
SS (mg/L)		24.1	24.3	23.5	23.6	22.3	23.5	24.4	25.8	27.4	28.0

Notes:

Action and Limit Level for marine water quality were extracted from Baseline Monitoring Report, January 2006.

* Based on the criteria in Table 4-6 of Baseline Monitoring Report, the originally established action levels of DO for fish culture zone at surface & middle level were all below the 5.0 mg/L.

Table 3-3: Marine water quality data obtained in the baseline check on 27 February 2006

Parameters		Monitoring locations				
		WWA1	WWA2	WWA3	WWFCZ1	WWFCZ2
Mid-ebb						
DO (mg/L)	Surface & middle	5.4	5.4	5.4	5.4	5.4
	Bottom	5.4	5.4	5.4	5.4	5.4
Tby (NTU)		6.5	6.5	6.5	6.5	6.5
SS (mg/L)		13.0	13.0	13.0	13.0	13.0
Mid-flood						
DO (mg/L)	Surface & middle	5.3	5.3	5.3	5.3	5.3
	Bottom	5.3	5.3	5.3	5.3	5.3
Tby (NTU)		6.6	6.6	6.6	6.6	6.6
SS (mg/L)		17.0	17.0	17.0	17.0	17.0

3.2 Site Inspection and Environmental Complaint Handling

3.2.1 Site Inspection Frequency and Areas Covered

Regular site inspections will be carried out on a weekly basis. The areas of inspection cover the different environmental impacts, such as air, noise, water and waste, and their pollution controls and mitigation measures for both within and outside the site area.

Ad hoc site inspection will be carried out if significant environmental non-compliance is identified. Inspections may also be carried out subsequent to receipt of any environmental complaints, or as part of the investigation work, as specified in the Event and Action Plans.

3.2.2 Environmental Complaints

A 24-hour complaint hotline at 6277 7465 has been established for the Project. In accordance with the EM&A Manual, environmental complaints will be referred to the ET for initiation of the complaint investigation procedures. The ET will undertake the following procedures upon receipt of complaints:

During the complaint investigation work undertaken by the ET, the CT and ER should cooperate with the ET on providing all the necessary information and assistance for completion of the investigation. If mitigation measures are identified as necessary after the investigation, the CT should promptly carry out the required mitigation to the satisfaction of ET. The ER should ensure that the CT has carried out such identified measures.

A flow chart of the complaint response procedures is shown in **Appendix F** for reference.

4 Noise Monitoring

4.1 Occupancy Status of Grand Bay Villa

In the reporting period, Grand Bay Villa (WN5) was vacant with no resident and noise monitoring was temporarily suspended.

5 Marine Water Quality Monitoring

5.1 Summary of Results

Impact marine water quality monitoring was undertaken during mid-ebb and mid-flood tidal cycles at 10 designated locations including 5 impact and 5 control stations. A baseline check was conducted on 27 February 2006 prior to the commencement of marine works and a compliance checking mechanism was established in accordance with the Baseline Monitoring Report. Graphical presentation of the monitoring results are illustrated in **Appendix G**.

5.1.1 Summary of Mid-Ebb Tide

The lowest DO levels for surface & middle position of 5.42 mg/L was recorded at WWA3 on 26 March 2007 and the lowest DO level for bottom position of 5.35 mg/L was recorded at WWA3 on 04 April 2007. There were no exceedances of DO levels during reporting period when compared with the established baseline check criteria in Section 3.3 of this report.

The highest depth-averaged Tby level of 15.3 Nephelometric Turbidity Unit (NTU) was recorded at WWA2 on 19 March 2007. There were 3 exceedances of Baseline Check Criteria, 1 exceedance of Action Level and 12 exceedances of Limit Level during the reporting period when compared with the established baseline check criteria in Section 3.3 of this report.

The highest SS level of 33.7 mg/L was recorded at WWA3 on 16 March 2007. There were 25 exceedances of SS Baseline Check Criteria and 3 exceedances of SS Limit Level during the reporting period when compared with the established baseline check criteria in Section 3.3 of this report.

5.1.2 Summary of Mid-Flood Tide

The lowest DO levels for surface & middle position of 5.36 mg/L was recorded at WWA1 on 04 April 2007 and the lowest level for bottom position of 5.31 mg/L was recorded at WWA2 on 10 April 2007 respectively. There were no exceedances of DO levels during reporting period when compared with the established baseline check criteria in Section 3.3 of this report.

The highest depth-averaged Tby level of 11.0 NTU was recorded at WWA2 on 19 March 2007. There were 2 exceedances of Baseline Check Criteria, 3 exceedances of Action Level and 4 exceedances of Limit Level during the reporting period when compared with the established baseline check criteria in Section 3.3 of this report.

The highest SS level of 33.8 mg/L was recorded at WWA2 on 19 March 2007. There were 6 exceedances of SS Baseline Check Criteria and 3 exceedances of Limit Level during reporting period when compared with the established baseline check criteria in Section 3.3 of this report.

6 Implementation Status on Environmental Protection Requirements

The CT had implemented various environmental mitigation measures as stipulated in the EIA Report and EM&A Manual. The implementation status of environmental mitigation measures during the reporting period is summarized in **Appendix H**.

7 Quarterly Summary, Environmental Complaint and Non-compliance Record

7.1 Summary of Waste Disposal

Disposal of waste material during the reporting period generally complied with the corresponding waste disposal requirements. The waste disposal quantity during the reporting period is summarised in **Table 7-1**.

Table 7-1: Waste disposal quantity during the reporting period

Type of waste or material		Disposal at	No. of loads or quantities
C&D waste		WENT Landfill	82.08 tonnes
C&D material	By truck	Public Filling Reception Facility in Tuen Mun Area 38	2,719.11 tonnes
	By barge		21,339.95 tonnes
Chemical waste		Collected by licensed collector	0

7.2 Complaint Record

EPD conducted a site inspection on 12 April 2007 and observed environmental deficiencies in the following areas:

- (3) Silt curtain was not properly provided for construction works at Seawall B and
- (4) Dust suppression measures were not provided for rock breaking works.

A warning, in a form of yellow form, was issued to the CT. In response to EPD's warning, the CT had installed a new silt curtain, covered the stockpile on the seaside, conducted daily inspection of the silt curtain. The CT had also provided water spraying for rock breaking works.

7.3 Summary of Exceedance

Exceedances of Tby and SS levels for marine water quality were recorded during the reporting period. Investigations have been conducted for the exceedances.

The exceedances are summarized in the **Table 7-2 and Table 7-3**. The details of the investigation was summarised in **Appendix I**.

In March 2007, the exceedances were likely attributed to damaged silt curtain, which had subsequently been repaired in the same month. The CT installed a new silt curtain around the stockpile at Seawall B on 14 April 2007 and the water quality had been improved on subsequent monitoring (14 and 16 April 2007). However, the bottom of the silt curtain was observed broken and mud plume was dispersed out of the silt curtain on 18 and 20 April

2007. An *ad hoc* meeting was held between the CT, ET and IEC on 24 April 2007. Upon advised by the ET and IEC, the CT had implemented the following measures:

- To reinstate the silt curtain, which was completed on 28 April 2007;
- Stop all excavation works and stockpile removal at Seawall B, until the silt curtain was properly reinstated;
- Cover the stockpile on the seaside; and
- Conduct daily inspection of silt curtain.

With the implementation of mitigation measures, the water quality was improved.

In early May 2007, muddy water was observed outside silt curtain again and marginal exceedances of Tby and SS were recorded. Re-suspension of soil from seabed and seepage of muddy water from Slope 82 was the likely source of muddy plume. ET further recommended the Contractor to extend the silt curtain to cover a larger area, including the working area of Slope 82, which was completed on 28 May 2007. The water quality was improved and exceedance of A/L levels was not recorded in subsequent marine water quality monitoring.

A comparison between the quarterly mean of SS and the 1.3 times the baseline mean was conducted for each monitoring station and the results are shown in **Table 7-4**. The quarterly mean of SS monitoring data collected in the reporting period was lower than 1.3 times of the baseline mean at both mid-ebb and mid-flood tides. The statistical analysis results are given in **Appendix J**.

Table 7-2: Summary of exceedances of marine water quality monitoring not related to construction works from March to May 2007

Tide	Month	Number of exceedances									Total
		DO (mg/L)			Tby (NTU)			SS (mg/L)			
		Baseline Check	Action Level	Limit Level	Baseline Check	Action Level	Limit Level	Baseline Check	Action Level	Limit Level	
Mid-Ebb	Mar	0	0	0	0	0	0	2	0	0	2
	Apr	0	0	0	0	0	0	1	0	0	1
	May	0	0	0	0	0	0	0	0	0	0
Mid-flood	Mar	0	0	0	0	0	0	0	0	1	1
	Apr	0	0	0	0	0	0	0	0	0	0
	May	0	0	0	0	0	0	0	0	0	0
Total		0	0	0	0	0	0	3	0	1	4

Table 7-3: Summary of exceedances of marine water quality monitoring related to construction works from March to May 2007

Tide	Month	Number of exceedances									Total
		DO (mg/L)			Tby (NTU)			SS (mg/L)			
		Baseline Check	Action Level	Limit Level	Baseline Check	Action Level	Limit Level	Baseline Check	Action Level	Limit Level	
Mid-Ebb	Mar	0	0	0	2	0	9	12	0	3	26
	Apr	0	0	0	1	0	3	5	0	0	9
	May	0	0	0	0	1	0	5	0	0	6
Mid-flood	Mar	0	0	0	1	3	4	2	0	2	12
	Apr	0	0	0	1	0	0	1	0	0	2
	May	0	0	0	0	0	0	3	0	0	3
Total		0	0	0	5	4	16	28	0	5	58

Table 7-4: Comparison of quarterly mean and 130% of the baseline mean

Monitoring Station		Mid-ebb		Mid-flood	
		130% Baseline Mean	Quarterly Mean	130% Baseline Mean	Quarterly Mean
Impact Station	WWA1	22.1	10.8	20.9	10.1
	WWA2	24.8	10.6	21.6	10.9
	WWA3	22.5	10.5	22.6	10.0
	WWFCZ1	24.6	8.8	21.6	8.6
	WWFCZ2	22.7	8.6	22.8	9.1
Control Station	WRA1	22.2	9.4	23.1	8.6
	WRA2	22.5	8.8	23.2	9.1
	WRA3	22.8	9.0	21.2	9.6
	WFCZR1	23.4	9.0	22.5	9.9
	WFCZR2	26.0	8.2	24.2	9.5

7.4 Notification of Summons and Successful Prosecution

No notification of summon and prosecution was received during the reporting period.

7.5 Environmental Licenses

A new Construction Noise Permit (CNP) was granted during the reporting period. A summary of the valid environmental licences is given in **Table 7-4**.

Table 7-4: Summary of valid environmental licences during the reporting period

Type of Licence	Reference No.	Valid from	Valid to
Environmental Permit	EP-219/2005	20 Jun 2005	Not applicable
Registration of Chemical Waste Producer	5111-336-C2869-49	16 Feb 2006	Not applicable
Water Discharge Licence	EP-760/336/011348 I	31 Mar 2006	31 Mar 2011
Construction Noise Permit	GW-RW 0654-06	14 Nov 2006	15 Mar 2007
Construction Noise Permit	GW-RW 0155-07	04 Apr 2007	15 Aug 2007
Delivery of C&D Materials to PFRF at Tuen Mun Area 38 by Barge	Application No.: CEDD00160	30 Jan 2007	30 Jun 2007

8 Comments, Recommendation and Conclusion

8.1 Comments and Recommendations

Unpaved area within the site was observed dry and water spraying was not provided during rock breaking works occasionally. The CT had implemented mitigation measures upon requested by the ET. These included frequent watering of dry and dusty haul road and unpaved areas.

Accumulation of general refuse and C&D waste were observed occasionally. The CT had cleared the waste upon requested by the ET. Some oil drums were not equipped with drip trays. The CT was reminded to provide drip trays for all oil drums.

Seepage of muddy water was observed from the silt curtain and Slope 82. The Contractor was recommended to extend the silt curtain to cover a larger area, including the working area of Slope 82. The extension of the silt curtain had been completed on 28 May 2007. The water quality had been improved and exceedance of A/L levels was not recorded in subsequent marine water quality monitoring on 28 and 30 May 2007.

The environmental monitoring methodologies and procedures were regularly reviewed by the ET. No modification to the existing EM&A programme was recommended.

8.2 Conclusion

The EM&A programme was implemented during the reporting period, including marine water quality monitoring and environmental site audits. The environmental performance of the Contractor during the reporting period was in general satisfactory. Upon advised by the ET, remedial measures had been taken to mitigate the environmental impacts caused by the construction activities. As a whole, EM&A programme had been well conducted in the reporting period.

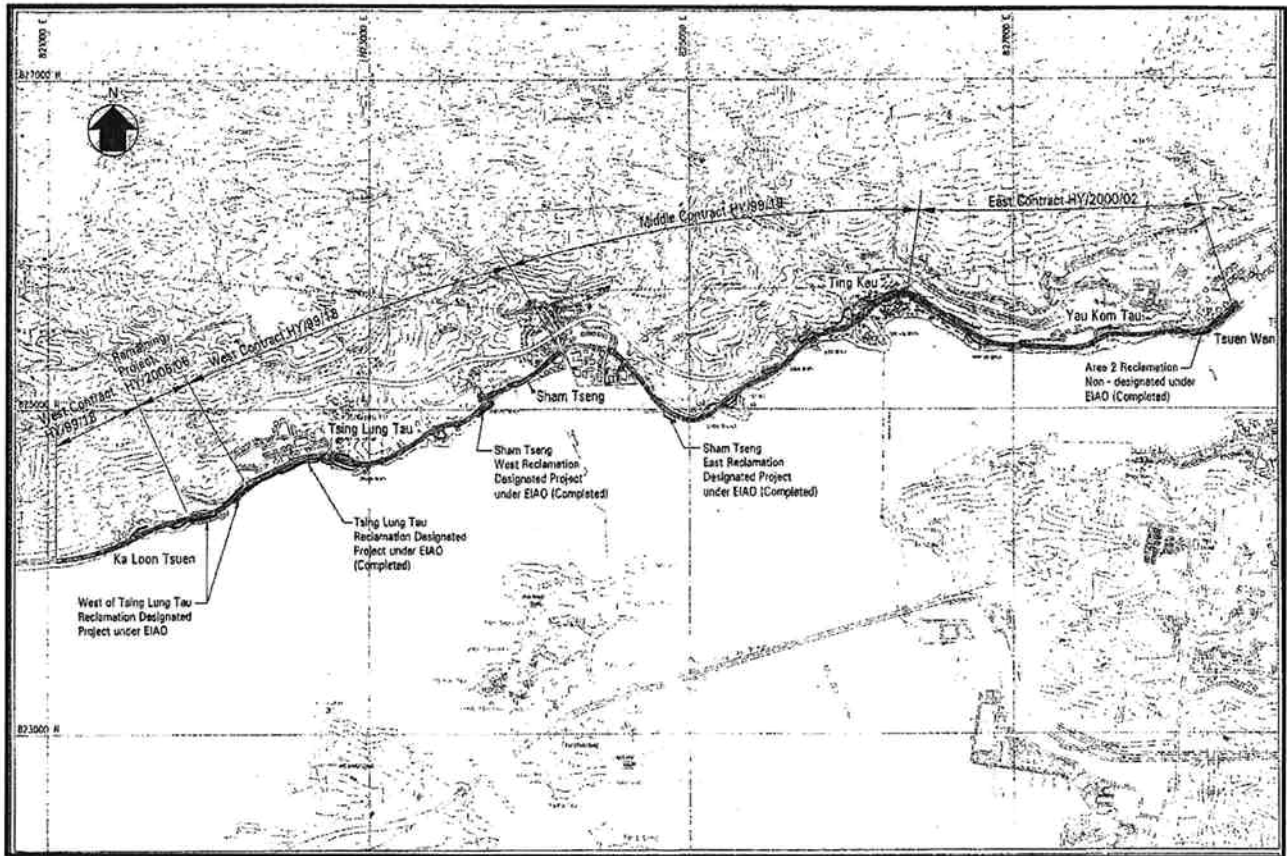
9 References

- [1] Mouchel Halcrow Joint Venture. January 2006. Supplementary Agreement No.1 – Remaining Project EM&A Manual for Construction of Reclamation West of Tsing Lung Tau.
- [2] Ove Arup & Partners Hong Kong Limited. January 2006. Castle Peak Road Improvement – West of Tsing Lung Tau. Contract No.HY2005/06. Environmental Baseline Monitoring Report (Second Issue)

Appendix A
Project Location Plan



Project location plan

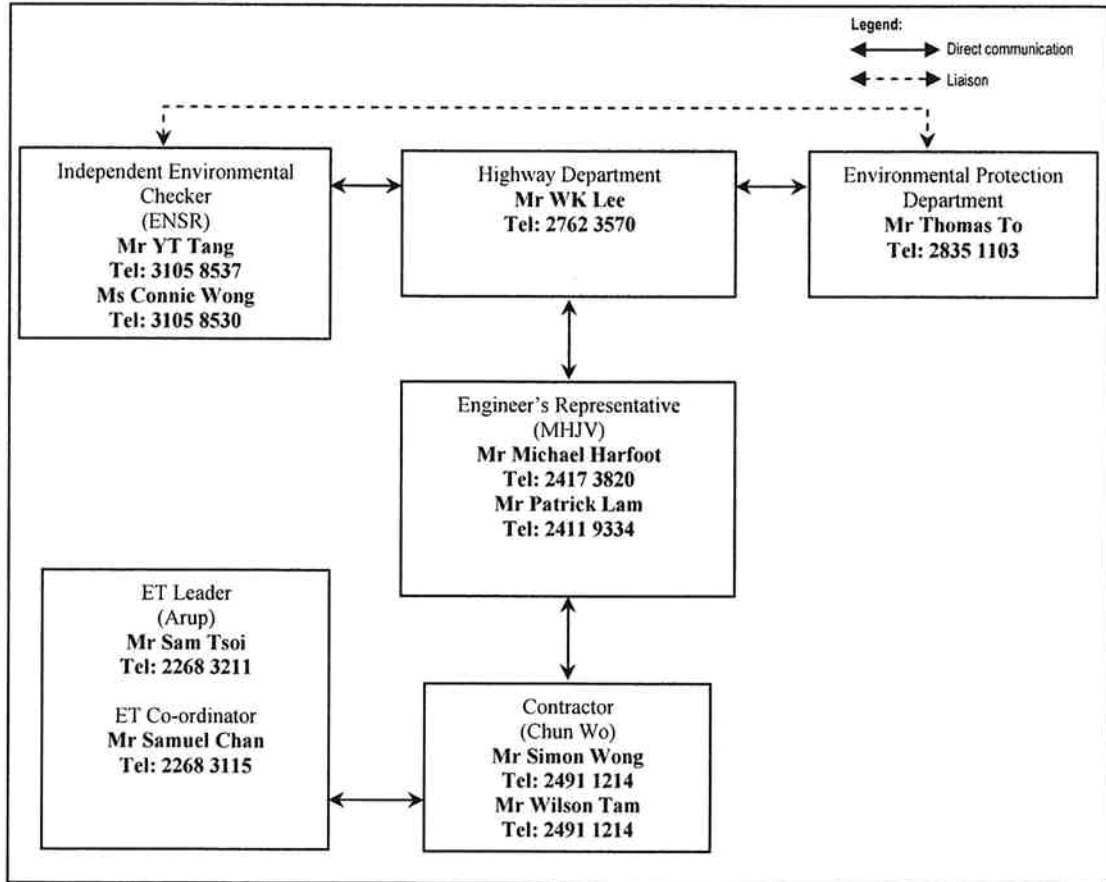


Appendix B

**Project Organisation
Chart**

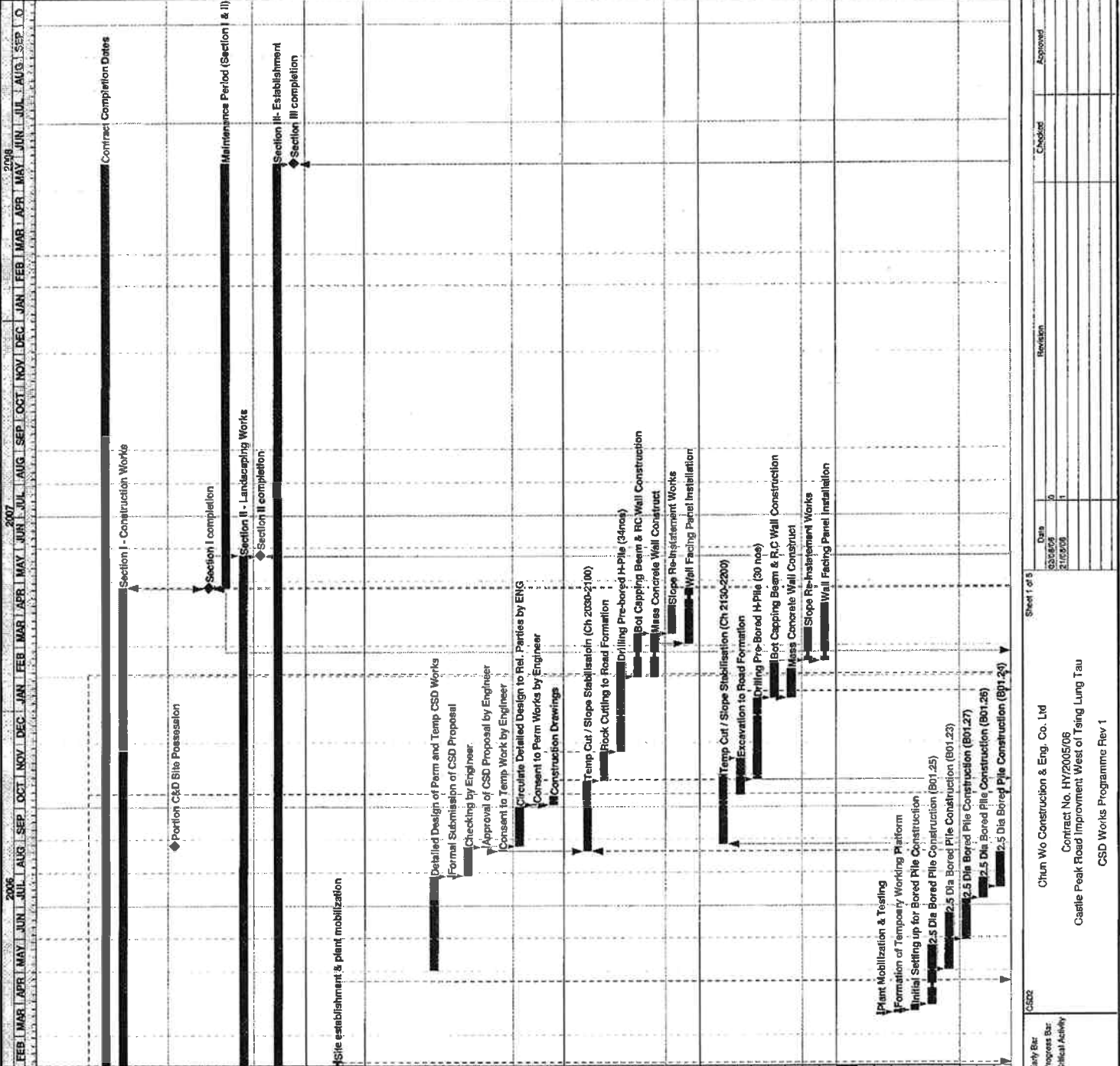
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Project Organisation





Appendix C
**Construction
Programme**



Activity ID	Activity Description	Orig Dur	Early Start	Early Finish
KD0500	Commencement of Works	0	21/12/05	
KD1000	Contract Completion Dates	865	21/12/05	23/05/08
KD1100	Section I - Construction Works	480	21/12/05	24/04/07
KD1110	Portion A Site Possession	0	21/12/05	
KD1120	Portion B Site Possession	0	21/12/05	
KD1130	Portion C&D Site Possession	0	27/08/06	
KD1140	Portion E Site Possession	0	21/12/05	
KD1200	Section I completion	0	24/04/07	
KD1300	Maintenance Period (Section I & II)	385	25/04/07	23/05/08
KD1400	Section II - Landscaping Works	520	21/12/05	24/05/07
KD1500	Section II completion	0	24/05/07	
KD1600	Section III - Establishment	865	21/12/05	23/05/08
KD1700	Section III completion	0	23/05/08	

PRELIMINARIES

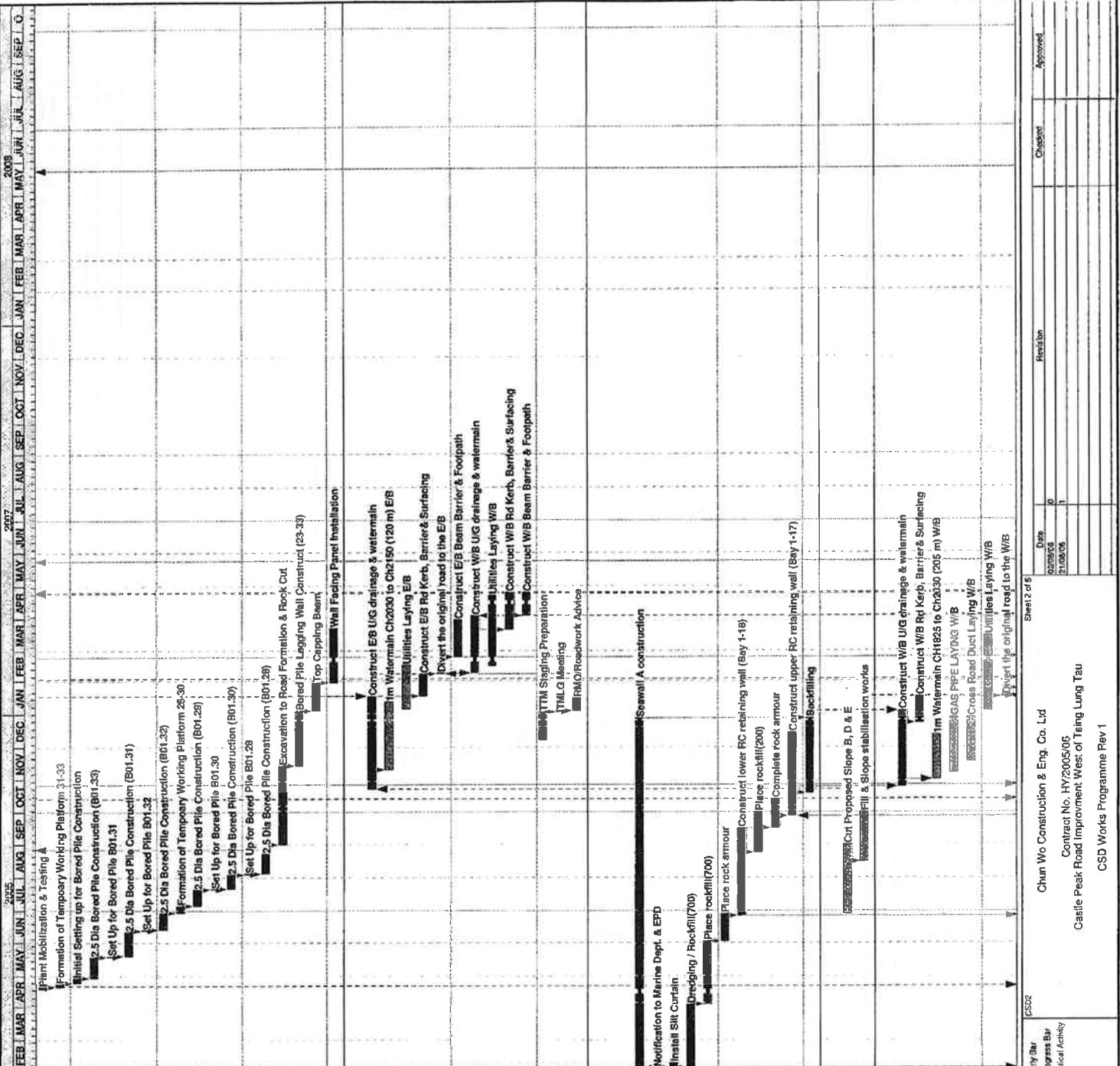
P1000	Site establishment & plant mobilization	40	21/12/05	05/02/06
P1010	Submit TTM Schematic Drawing (PS1.15S(16))	0	20/12/05	20/12/05

Area 4 Construction (Ch2-030 to Ch2-150)
Pre-Bored H-Pile Wall at Both Ends at GL

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish
4PP0100	Detailed Design of Perm and Temp CSD Works	72	02/05/06*	27/07/06
4PP0110	Formal Submission of CSD Proposal	1	28/07/06	28/07/06
4PP0120	Checking by Engineer	23	28/07/06	24/08/06
4PP0130	Approval of CSD Proposal by Engineer	1	25/08/06	25/08/06
4PP0135	Consent to Temp Work by Engineer	1	21/08/06	21/08/06
4PP0150	Circulate Detailed Design to Rel. Parties by ENG	31	25/08/06	30/09/06
4PP0155	Consent to Perm Works by Engineer	1	03/10/06	03/10/06
4PP0160	Construction Drawings	7	03/10/06	11/10/06
Construction - West Side				
4APFP1022	Temp Cut / Slope Stabilisation (Ch 2030-2100)	55	21/08/06	25/10/06
4APFP1026	Rock Cutting to Road Formation	22	26/10/06	21/11/06
4APFP1030	Drilling Pre-bored H-Pile (34 nos)	58	22/11/06	13/02/07
4APFP1040	Bot Capping Beam & RC Wall Construction	30	31/01/07	12/03/07
4APFP1050	Mass Concrete Wall Construct	30	31/01/07	12/03/07
4APFP1060	Slope Re-instatement Works	22	13/03/07	07/04/07
4APFP1070	Wall Facing Panel Installation	40	03/03/07	23/04/07
Construction - East Side				
4PP2000	Temp Cut / Slope Stabilisation (Ch 2130-2200)	53	28/09/06	31/10/06
4PP2020	Excavation to Road Formation	28	13/10/06	15/11/06
4PP2030	Drilling Pre-Bored H-Pile (30 nos)	60	27/10/06	10/01/07
4PP2040	Bot Capping Beam & R.C Wall Construction	30	11/01/07	14/02/07
4PP2100	Mass Concrete Wall Construct	24	11/01/07	07/02/07
4PP2110	Slope Re-instatement Works	22	15/02/07	17/03/07
4PP2120	Wall Facing Panel Installation	40	15/02/07	09/04/07

Bored Pile Retaining Wall Construction

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish
4BP3000	Plant Mobilization & Testing	2	20/03/06*	21/03/06
4BP3010	Formation of Temporary Working Platform	3	22/03/06	24/03/06
4BP3020	Initial Setting up for Bored Pile Construction	5	24/03/06	29/03/06
4BP3030	2.5 Dia Bored Pile Construction (B01.25)	41	30/03/06	23/05/06
4BP3040	2.5 Dia Bored Pile Construction (B01.23)	43	02/05/06	22/06/06
4BP3050	2.5 Dia Bored Pile Construction (B01.27)	31	30/05/06	06/07/06
4BP3060	2.5 Dia Bored Pile Construction (B01.26)	15	08/07/06	25/07/06
4BP3070	2.5 Dia Bored Pile Construction (B01.24)	28	18/07/06	18/08/06

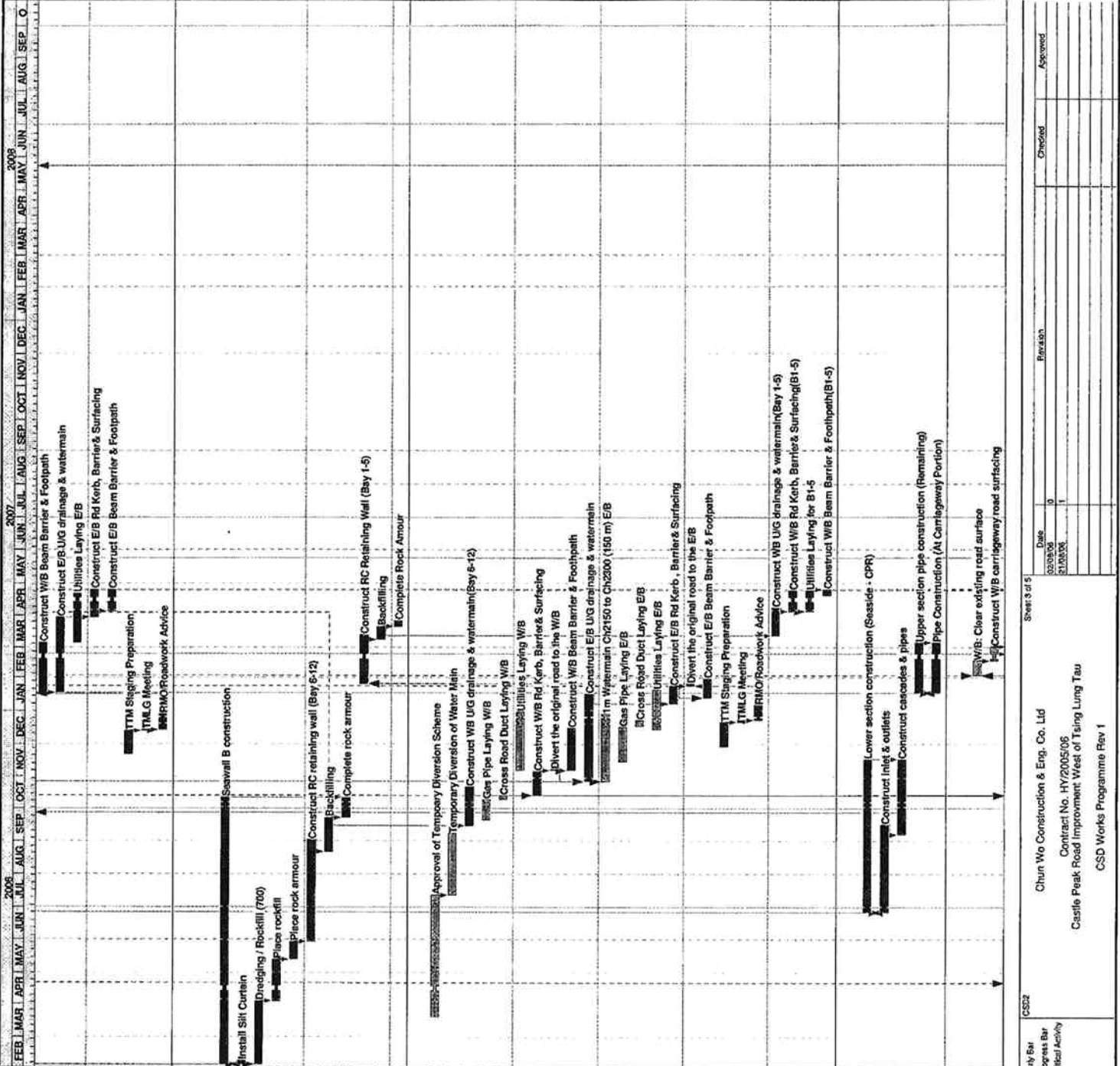


Activity ID	Activity Description	Orig Dur	Early Start	Early Finish
4BP3080	Plant Mobilization & Testing	2	18/04/06	19/04/06
4BP3090	Formation of Temporary Working Platform 31-33	3	20/04/06	22/04/06
4BP3100	Initial Setting up for Bored Pile Construction	5	24/04/06	29/04/06
4BP3110	2.5 Dia Bored Pile Construction (B01.33)	15	29/04/06	19/05/06
4BP3115	Set Up for Bored Pile B01.31	1	19/05/06	19/05/06
4BP3120	2.5 Dia Bored Pile Construction (B01.31)	18	20/05/06	10/06/06
4BP3125	Set Up for Bored Pile B01.32	1	12/06/06	12/06/06
4BP3130	2.5 Dia Bored Pile Construction (B01.32)	14	13/06/06	28/06/06
4BP3131	Formation of Temporary Working Platform 28-30	5	29/06/06	05/07/06
4BP3132	2.5 Dia Bored Pile Construction (B01.29)	13	06/07/06	20/07/06
4BP3133	Set Up for Bored Pile B01.30	1	21/07/06	21/07/06
4BP3134	2.5 Dia Bored Pile Construction (B01.30)	11	22/07/06	03/08/06
4BP3135	Set Up for Bored Pile B01.28	1	04/08/06	04/08/06
4BP3136	2.5 Dia Bored Pile Construction (B01.28)	16	05/08/06	23/08/06
4BP3150	Excavation to Road Formation & Rock Cut	60	01/09/06	13/11/06
4BP3160	Bored Pile Lagging Wall Construct (23-33)	40	14/11/06	03/01/07
4BP3170	Top Capping Beam	22	04/01/07	29/01/07
4BP3180	Wall Facing Panel Installation	40	30/01/07	22/03/07
Roadworks Construction				
4RW4100	Construct E/B U/G drainage & watermain	70	23/10/06	17/01/07
AQUJ25900	1m Watermain Ch2030 to Ch2150 (120 m) E/B	50	10/11/06	11/01/07
A04RW4200	Utilities Laying E/B	35	06/01/07	15/02/07
4RW4300	Construct E/B Rd Kerb, Barrier & Surfacing	18	18/01/07	07/02/07
4RW4505	Divert the original road to the E/B	30	24/02/07	30/03/07
4RW4600	Construct W/B U/G drainage & watermain	40	09/02/07	02/04/07
A04RW44100	Utilities Laying W/B	48	15/02/07	21/04/07
4RW4610	Construct W/B Rd Kerb, Barrier & Surfacing	28	21/03/07	24/04/07
4RW4615	Construct W/B Beam Barrier & Footpath	15	03/04/07	24/04/07
4RW4620	TTM Staging Preparation	19	07/12/06	02/01/07
4RW4630	TWLG Meeting	1	03/01/07	03/01/07
4RW4640	FINO/Roadwork Advice	10	04/01/07	15/01/07
Area 3 Construction (Ch1+825 to Ch2+030)				
Seawall A Construction				
3SWA0500	Seawall A construction	265	04/02/06	27/12/06
3SWA0600	Notification to Marine Dept. & EPD	28	07/01/06	03/02/06
A03SWA100	Install Silk Curtain	4	04/02/06	08/02/06
3SWA1000	Dredging / Rockfill(700)	50	04/02/06	03/04/06
3SWA1100	Place rockfill(700)	45	04/04/06	02/06/06
3SWA1200	Place rock armour	21	02/06/06	27/06/06
3SWA1300	Construct lower RC retaining wall (Bay 1-18)	70	25/05/06	15/09/06
3SWA1400	Place rockfill(200)	32	25/08/06	30/08/06
3SWA1500	Complete rock armour	22	16/09/06	13/10/06
3SWA1600	Construct upper RC retaining wall (Bay 1-17)	64	28/09/06	14/12/06
3SWA1700	Backfilling	58	19/10/06	27/12/06
Slope Works				
3SW1000	Cut Proposed Slope B, D & E	55	28/06/06	31/08/06
3SW2000	Fill & Slope stabilisation works	40	16/08/06	30/09/06
Roadworks Construction				
3RW2100	Construct W/B U/G drainage & watermain	58	25/10/06	03/01/07
3RW2110	Construct W/B Rd Kerb, Barrier & Surfacing	18	23/12/06	16/01/07
AQUJ25200	1m Watermain CH1825 to Ch2030 (205 m) W/B	35	01/11/06	11/12/06
A03RW4200	GAS PIPE LAYING W/B	42	07/11/06	28/12/06
A03RW4100	Cross Road Duct Laying W/B	32	18/11/06	28/12/06
A03RW4000	Utilities Laying W/B	55	04/01/07	15/03/07
3RW2500	Divert the original road to the W/B	1	17/01/07	17/01/07

Sheet No: 21/12/05
 Date: 21/12/06
 Drawn By: 21/12/06
 Run Date: 22/08/06 15:00

Chun Wo Construction & Eng. Co. Ltd
 Contract No. HY/2005/05
 Castle Peak Road Improvement West of Tsing Lung Tau
 CSD Works Programme Rev 1

Date	Checked	Approved
02/03/06		
21/08/06		



Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Activity Bar	Progress Bar	Critical Activity
3RW2500	Construct WB Beam Barrier & Footpath	35	18/01/07	05/03/07	█	█	
3RW2600	Construct E/B UG drainage & watermain	56	18/01/07	29/03/07	█	█	
A03RW4500	Utilities Laying EB	36	08/03/07	20/04/07	█	█	
3RW2605	Construct E/B Rd Kerb, Barrier & Surfacing	18	30/03/07	24/04/07	█	█	
3RW2608	Construct E/B Beam Barrier & Footpath	14	04/04/07	24/04/07	█	█	
3RW2610	TTM Staging Preparation	19	21/11/06	12/12/06	█	█	
3RW2650	TMLG Meeting	1	13/12/06	13/12/06	█	█	
3RW2650	RMO/Roadwork Advice	10	14/12/06	28/12/06	█	█	
Area 5 Construction (Ch2-150 to Ch2-300)							
Seawall B Construction							
2SWB0500	Seawall B construction	204*	04/02/06	11/10/06	█	█	
A02SWB100	Install Silt Curtain	3	04/02/06	07/02/06	█	█	
2SWB1000	Dredging / Rockfill (700)	50	04/02/06	03/04/06	█	█	
2SWB1100	Place rockfill	28	04/04/06	12/05/06	█	█	
2SWB1200	Place rock armour	14	13/05/06	29/05/06	█	█	
2SWB1300	Construct RC retaining wall (Bay 6-12)	80	30/05/06	01/09/06	█	█	
2SWB1400	Backfilling	28	22/08/06	22/09/06	█	█	
2SWB1500	Complete rock armour	14	23/09/06	11/10/06	█	█	
A02SWB0500	Construct RC Retaining Wall (Bay 1-5)	35	26/01/07	19/03/07	█	█	
A02SWB1000	Backfilling	10	09/03/07	20/03/07	█	█	
A02SWB1100	Complete Rock Armour	5	21/03/07	26/03/07	█	█	
Roadworks Construction							
A02RW0100	Approval of Temporary Diversion Scheme	90	20/03/06*	11/07/06	█	█	
A02RW0500	Temporary Diversion of Water Main	50	12/07/06	07/08/06	█	█	
2RW3200	Construct WB UG drainage & watermain (Bay 6-12)	30	15/08/06	21/10/06	█	█	
A02RW1900	Gas Pipe Laying WB	14	21/09/06	09/10/06	█	█	
A02RW1800	Cross Road Duct Laying WB	4*	10/10/06	13/10/06	█	█	
A02RW1600	Utilities Laying WB	45*	06/11/06	30/12/06	█	█	
2RW3010	Construct WB Rd Kerb, Barrier & Surfacing	18	14/10/06	04/11/06	█	█	
2RW3501	Divert the original road to the WB	1	06/11/06	06/11/06	█	█	
2RW3510	Construct WB Beam Barrier & Footpath	35	06/11/06	15/12/06	█	█	
2RW3600	Construct E/B UG drainage & watermain	65	27/10/06	16/01/07	█	█	
A02RW2000	1m Watermain Ch2150 to Ch2300 (150 m) EB	50	27/10/06	28/12/06	█	█	
A02RW2100	Gas Pipe Laying EB	28	15/11/06	16/12/06	█	█	
A02RW2200	Cross Road Duct Laying EB	4*	16/12/06	22/12/06	█	█	
A02RW1700	Utilities Laying EB	28*	15/12/06	29/01/07	█	█	
2RW2610	Construct E/B Rd Kerb, Barrier & Surfacing	15	09/01/07	24/01/07	█	█	
2RW3500	Divert the original road to the EB	1	25/01/07	25/01/07	█	█	
2RW3620	Construct E/B Beam Barrier & Footpath	15	13/01/07	30/01/07	█	█	
2RW3700	TTM Staging Preparation	19	29/11/06	21/12/06	█	█	
2RW3710	TMLG Meeting	1	22/12/06	22/12/06	█	█	
2RW3720	RMO/Roadwork Advice	10	23/12/06	06/01/07	█	█	
A02RW1100	Construct WB UG drainage & watermain (Bay 1-5)	22	13/03/07	07/04/07	█	█	
A02RW1300	Construct WB Rd Kerb, Barrier & Surfacing (B1-5)	13	04/04/07	22/04/07	█	█	
A02RW1200	Utilities Laying for B1-5	13	04/04/07	23/04/07	█	█	
A02RW1400	Construct WB Beam Barrier & Footpath (B1-5)	5	19/04/07	24/04/07	█	█	
OUTFALL EA & EB CONSTRUCTION							
3OF1000	Lower section construction (Seaside - CPR)	120*	26/06/06	16/11/06	█	█	
3OF1100	Construct inlet & outlets	70	26/06/06	15/09/06	█	█	
3OF1200	Construct cascades & pipes	59	07/09/06	16/11/06	█	█	
3OF2000	Upper section pipe construction (Remaining)	35*	18/01/07	05/03/07	█	█	
3OF2100	Pipe Construction (At Carriageway Portion)	35	18/01/07	05/03/07	█	█	
Area 1 Construction (Ch1-600 to Ch1-705)							
5RW0500	WB: Clear existing road surface	12	03/02/07	16/02/07	█	█	
5RW1500	Construct WB carriageway road surfacing	6	17/02/07	01/03/07	█	█	

2005 FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | 2006 JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | 2007 2008

CS22

Start Date: 21/12/05
 Finish Date: 23/02/09
 Date Date: 21/12/05
 Run Date: 22/08/05 15:00

Easy Bar
 Progress Bar
 Critical Activity

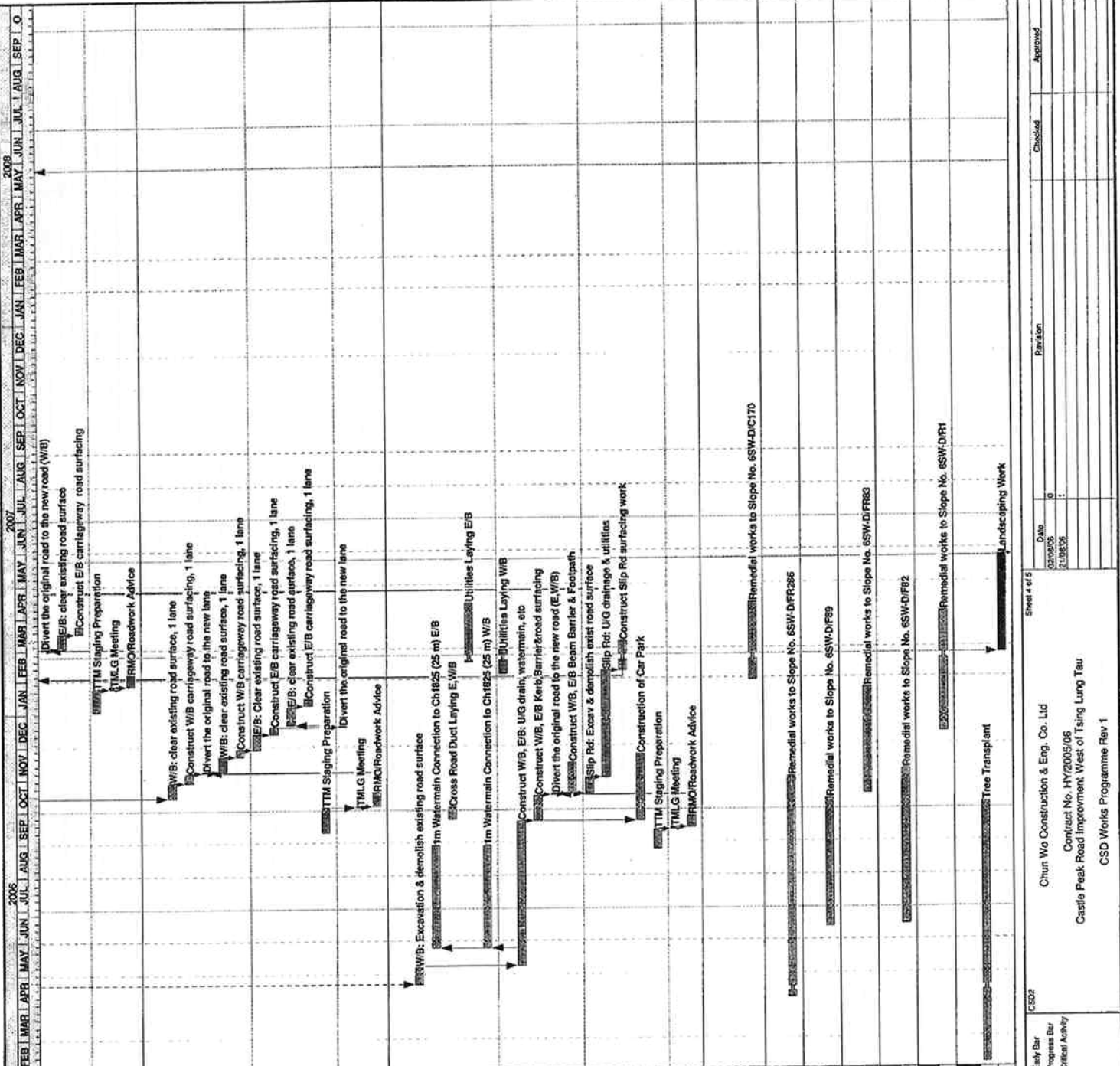
CS22

Chun Wo Construction & Eng. Co. Ltd
 Contract No. HW/2005/05
 Castle Peak Road Improvement West of Tsing Lung Tau
 CSD Works Programme Rev 1

Sheet 8 of 8

Date: 02/03/08
 Drawn: 21/03/08
 Checked: Approved

7P-Intervers Systems, Inc.



Activity ID	Activity Description	Orig Dur	Early Start	Early Finish
5RW2000	Divert the original road to the new road (W/B)	1	02/03/07	02/03/07
5RW2500	E/B: clear existing road surface	12	03/03/07	16/03/07
5RW3500	Construct E/B carriageway road surfacing	6	17/03/07	23/03/07
5RW3510	TTM Staging Preparation	19	03/01/07	24/01/07
5RW3520	TM/G Meeting	1	25/01/07	25/01/07
5RW3530	RMC/Roadwork Advice	10	28/01/07	06/02/07
Area 6 Construction (Ch2+300 to Ch2+400)				
6RW0500	W/B: clear existing road surface, 1 lane	12	14/10/06	27/10/06
6RW1500	Construct W/B carriageway road surfacing, 1 lane	6	28/10/06	04/11/06
6RW2000	Divert the original road to the new lane	1	06/11/06	06/11/06
6RW2100	W/B: clear existing road surface, 1 lane	12	07/11/06	20/11/06
6RW2200	Construct W/B carriageway road surfacing, 1 lane	6	21/11/06	27/11/06
6RW2500	E/B: Clear existing road surface, 1 lane	12	28/11/06	11/12/06
6RW3500	Construct E/B carriageway road surfacing, 1 lane	6	12/12/06	18/12/06
6RW3501	E/B: clear existing road surface, 1 lane	12	21/12/06	06/01/07
6RW3510	Construct E/B carriageway road surfacing, 1 lane	6	08/01/07	13/01/07
6RW3510	TTM Staging Preparation	19	11/09/06	03/10/06
6RW3511	Divert the original road to the new lane	1	19/12/06	19/12/06
6RW3520	TM/G Meeting	1	04/10/06	04/10/06
6RW3530	RMC/Roadwork Advice	10	05/10/06	17/10/06
Area 2 Construction (Ch1+705 to Ch1+825)				
1RW0500	W/B: Excavation & demolish existing road surface	12	21/04/06*	06/05/06
A01J25700	1m Watermain Connection to Ch1825 (25 m) E/B	80	25/05/06	28/09/06
A01RW0800	Cross Road Duct Laying E/W/B	8	23/09/06	03/10/06
A01RW0600	Utilities Laying E/B	42	17/02/07	13/04/07
A01J25100	1m Watermain Connection to Ch1825 (25 m) W/B	80	25/05/06	28/09/06
A01RW0700	Utilities Laying W/B	14	06/02/07	27/02/07
1RW1000	Construct W/B, E/B: U/G drain, watermain, etc	115	08/05/06	20/09/06
1RW1500	Construct W/B, E/B Kerb/Barrier/road surfacing	19	21/09/06	14/10/06
1RW2000	Divert the original road to the new road (E,W/B)	1	16/10/06	16/10/06
1RW2010	Construct W/B, E/B Beam Barrier & Footpath	24	17/10/06	14/11/06
1RW2500	Slip Rd: Excav & demolish exist road surface	12	17/10/06	31/10/06
1RW3000	Slip Rd: U/G drainage & utilities	82	01/11/06	08/02/07
1RW3500	Construct Slip Rd surfacing work	18	08/02/07	07/03/07
A01RW0500	Construction of Car Park	50	21/09/06	21/11/06
1RW3510	TTM Staging Preparation	15	26/08/06	12/09/06
1RW3520	TM/G Meeting	1	13/09/06	13/09/06
1RW3530	RMC/Roadwork Advice	10	14/09/06	25/09/06
Slope Remedial Works				
Remedial Work 6SW-D/C170				
5WS000	Remedial works to Slope No. 6SW-D/C170	57	30/01/07	12/04/07
Remedial Work 6SW-D/FR286				
5WS500	Remedial works to Slope No. 6SW-D/FR286	167	06/04/06	31/10/06
Remedial Work 6SW-D/F89				
5W4000	Remedial works to Slope No. 6SW-D/F89	100	13/06/06	10/10/06
Remedial Work 6SW-D/FR83				
5W5000	Remedial works to Slope No. 6SW-D/FR83	60	16/10/06	22/01/07
Remedial Work 6SW-D/F82				
5W5500	Remedial works to Slope No. 6SW-D/F82	120	15/06/06	06/11/06
Remedial Work 6SW-D/R1				
5W6000	Remedial works to Slope No. 6SW-D/R1	87	12/12/06	02/04/07
Section II - Landscaping Works				
A01W1000	Tree Transplant	200	06/02/06*	06/10/06
LW1000	Landscaping Work	90	24/02/07	24/03/07

Start Date: 21/12/05
 Finish Date: 22/03/06
 Data Date: 21/12/06
 Run Date: 22/03/06 15:00

CS02
 Early Bar
 Progress Bar
 Critical Activity

Chyun Wo Construction & Eng. Co. Ltd
 Contract No. HY2005/06
 Castle Peak Road Improvement, West of Tsing Lung Tau
 CSD Works Programme Rev 1

Sheet 4 of 5
 Date: 02/04/06
 Drawn: 21/02/06
 Checked: Approved

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish
EP1000	Establishment works	365	25/05/07	23/05/08

Section III - Establishment Period



Start Date	21/12/06	21/12/06	21/12/06	23/05/08
Finish Date	23/05/08	23/05/08	23/05/08	23/05/08
Data Date	21/12/06	21/12/06	21/12/06	23/05/08
Run Date	23/05/06 15:20	23/05/06 15:20	23/05/06 15:20	23/05/08

Sheet 5 of 5

Chun Wo Construction & Eng. Co. Ltd
 Contract No. HY/2005/06
 Castle Peak Road Improvement West of T'sing Lung Tau
 CSD Works Programme Rev 1

CSD00

Legend:
 ■ Early Bar
 ■ Progress Bar
 ■ Critical Activity

7P/mavere Systems, Inc.

Appendix D

**Summary of EM&A
Requirements**

100
100
100

Construction Noise

Monitoring Parameters

Construction noise monitoring will be measured in terms of the A-weighted equivalent continuous sound pressure level (L_{eq}). L_{10} and L_{90} will also be recorded as supplementary reference information for data auditing.

Monitoring Frequency

Noise measurements will be conducted on a weekly basis. The monitoring time periods, monitoring parameters and frequency are summarised in **Table D-1**.

Table D-1: Construction noise monitoring parameters and frequency

Time Period (when construction activity is found)	Parameters	Monitoring Frequency	No. of Measurements for Each Monitoring
Between 0700-1900 hours on normal weekdays	$L_{eq(30\text{ min})}$	Once per week	1
Between 1900-2300 hours on normal weekdays	$L_{eq(5\text{ min})}^*$		3 (consecutive)
Between 2300-0700 hours of next day			
Between 0700-1900 hours on holidays			

* The $L_{eq(5\text{ min})}$ will only be measured if construction activities are conducted in holidays and between the period of 1900 and 0700 hours during normal weekdays.

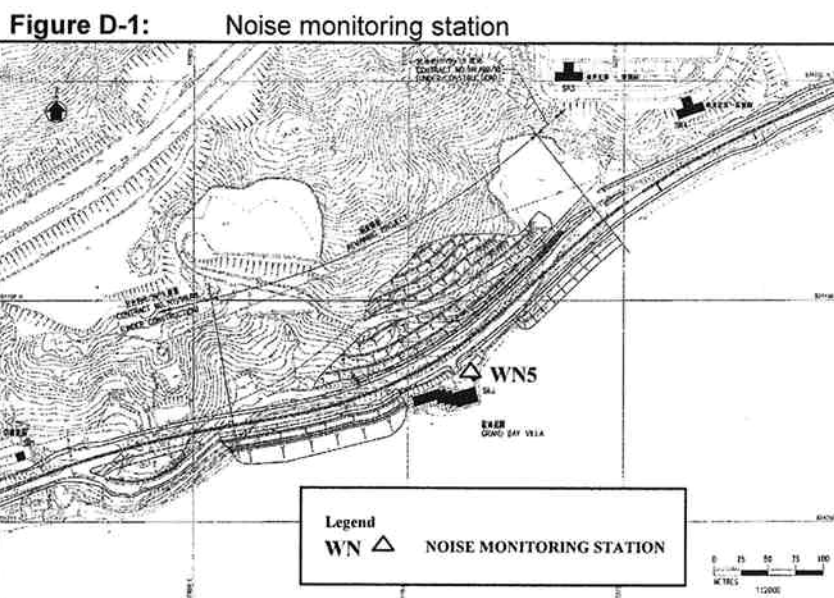
Monitoring Location

Noise monitoring will be conducted at one designated location as shown in **Figure D-1**. The details of the noise monitoring location are given in **Table D-2**. The measurements will be taken at a position 1m from the exterior of building façade and at a position of 1.2m above ground.

Table D-2: Construction noise monitoring locations

Noise Monitoring Station No.	Location	Monitoring Point	Remarks
WN5	Grand Bay Villa	G/F, House 1	Monitoring temporarily suspended *

* Grand Bay Villa is currently vacant with no resident. Construction noise monitoring at WN5 temporarily suspended until the premises are occupied.



Occupancy Status of Grand Bay Villa

The property management company of Grand Bay Villa (WN5) will be coordinated a monthly basis within 10 working days of each month to confirm the occupancy status of these premises. Once this location is confirmed occupied, noise monitoring will be resumed within 1 week.

Marine Water Quality

Monitoring Parameters

Marine water quality monitoring will include Turbidity (Tby) in the unit of NTU, Dissolved Oxygen (DO) in the unit of mg/L and Suspended Solids (SS) in the unit of mg/L. In addition to the water quality parameters, other relevant data such as monitoring location/position, time, water depth, water temperature, salinity, DO saturation, weather conditions, sea conditions, tidal stage will be recorded as far as practicable together with observations of any special phenomena, works underway at the construction site, etc.

Monitoring Frequency

Impact marine water quality monitoring will be conducted three times per week, at mid-flood and mid-ebb tides and at 10 designated monitoring locations. The interval between two sets of monitoring will not be less than 36 hours.

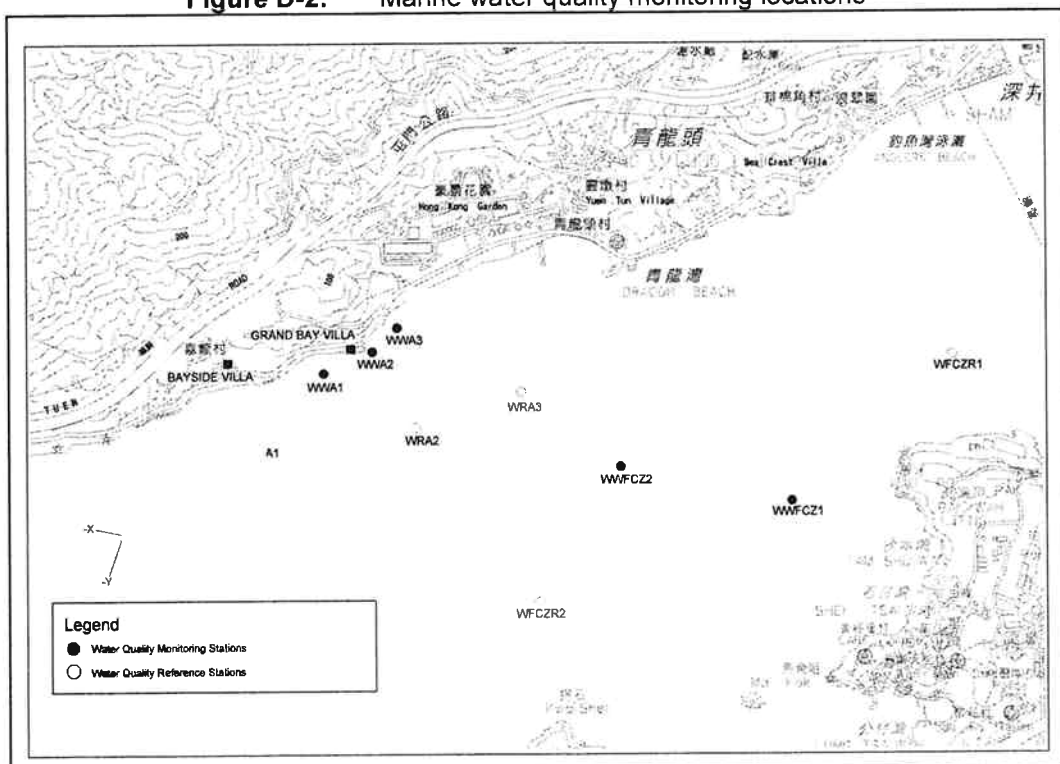
Monitoring Locations

A total of 10 locations, 5 for impact and 5 for control were specified for marine water quality monitoring in accordance with the EM&A Manual, which are summarised in **Table D-3** and shown in **Figure D-2**.

Table D-3: Marine water quality monitoring locations

Marine Water Quality Monitoring Location No.		Location	
		Eastings	Northings
West of Grand Bay Villa	WWA1 (Impact Location)	821981	824282
	WRA1 (Control Location)	821776	824078
Grand Bay Villa	WWA2 (Impact Location)	822141	824352
	WRA2 (Control Location)	822283	824107
East of Grand Bay Villa	WWA3 (Impact Location)	822222	824429
	WRA3 (Control Location)	822625	824222
Ma Wan Fish Culture Zone	WWFCZ1 (Impact Location)	823500	823870
	WWFCZ2 (Impact Location)	822943	823983
	WFCZR1 (Control Location)	824024	824333
	WFCZR2 (Control Location)	822677	823547

Figure D-2: Marine water quality monitoring locations



Appendix E

Event and Action Plan

12/15/1911

Construction Noise

Table E-1: Event and Action Plan for construction noise

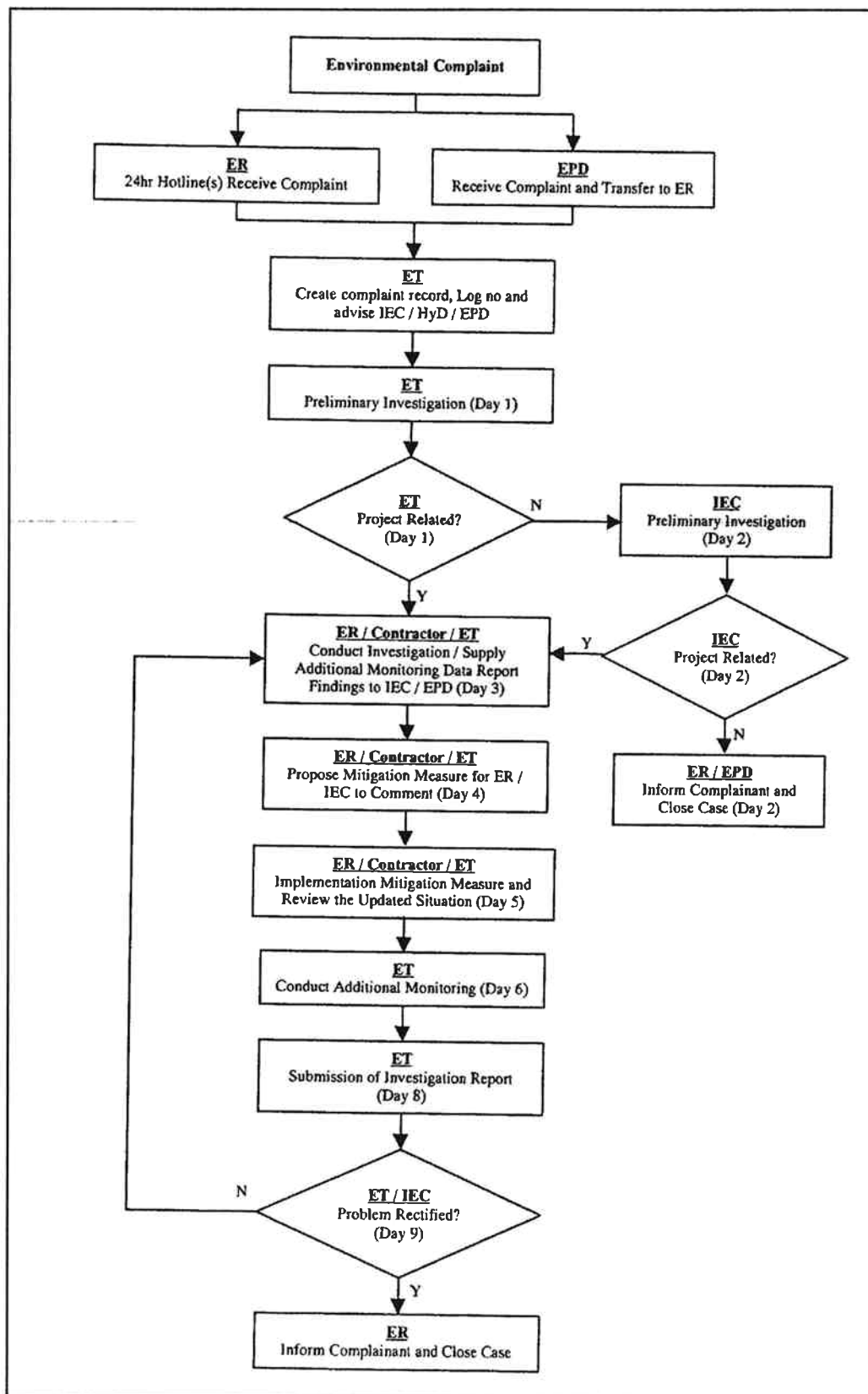
Event	Action			Contractor
	ET Leader	IEC	ER	
Action Level	<ol style="list-style-type: none"> 1. Notify IEC and the Contractor. 2. Carry out investigation. 3. Report the results of investigation to the IEC and the Contractor. 4. Discuss with the Contractor and formulate remedial measures. 5. Increase monitoring frequency to check mitigation effectiveness. 	<ol style="list-style-type: none"> 1. Review with the analysed results submitted by ET. 2. Review the proposed remedial measures by the Contractor and advise ER accordingly. 3. Supervise the implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of exceedance in writing. 2. Notify the Contractor. 3. Require the Contractor to propose remedial measures for the analysed noise problem. 4. Ensure remedial measures are properly implemented. 	<ol style="list-style-type: none"> 1. Submit noise mitigation proposals to IEC. 2. Implement noise mitigation proposals.
Limit Level	<ol style="list-style-type: none"> 1. Notify the IEC, the ER, the DEP and the Contractor. 2. Identify the source. 3. Repeat measurement to confirm findings. 4. Increase monitoring frequency. 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented. 6. Inform the IEC, the ER, and the DEP the causes & actions taken for the exceedances. 7. Assess effectiveness of the Contractor's remedial actions and keep the IEC, the DEP and the ER informed of the results. 8. If exceedance stops, cease additional monitoring 	<ol style="list-style-type: none"> 1. Discuss amongst the ER, the ET Leader and the Contractor on the potential remedial actions. 2. Review the Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly. 3. Supervise the implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of exceedance in writing. 2. Notify the Contractor. 3. Require the Contractor to propose remedial measures for the analysed noise problem. 4. Ensure remedial measures are properly implemented. 5. If exceedance continues, consider what activity of the work is responsible and instruct the Contractor to stop that activity of work until the exceedance is abated. 	<ol style="list-style-type: none"> 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 activity of works as determined by the ER until the exceedance is abated.

Marine Water Quality

Table E-2: Event and Action plan for marine water quality

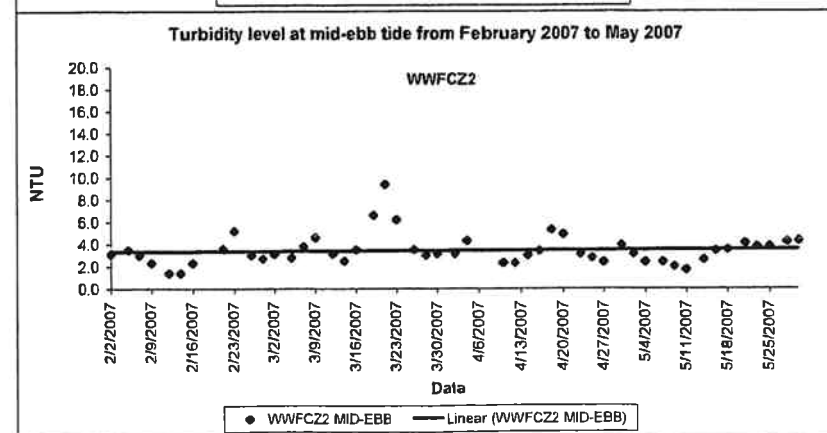
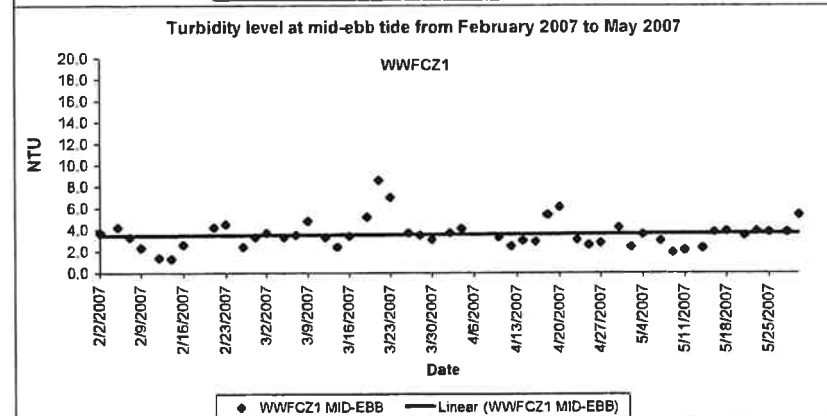
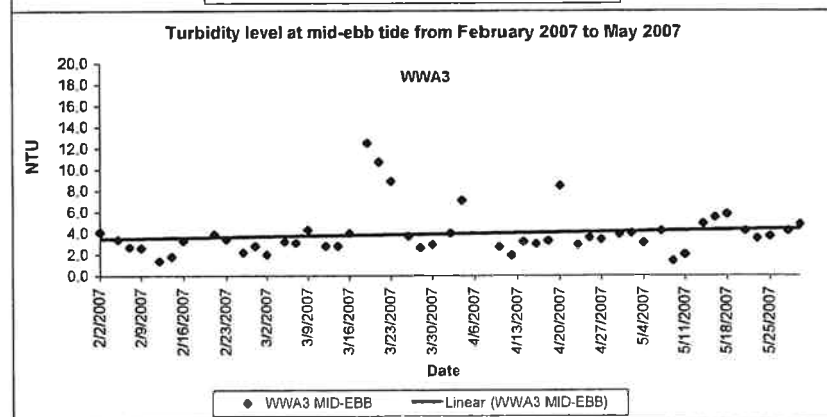
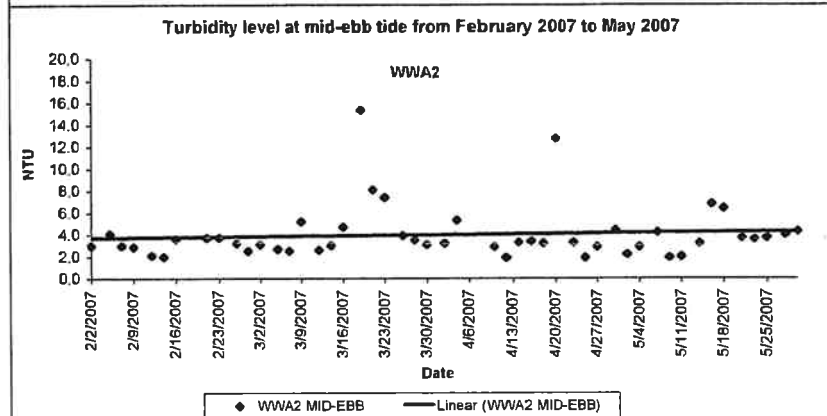
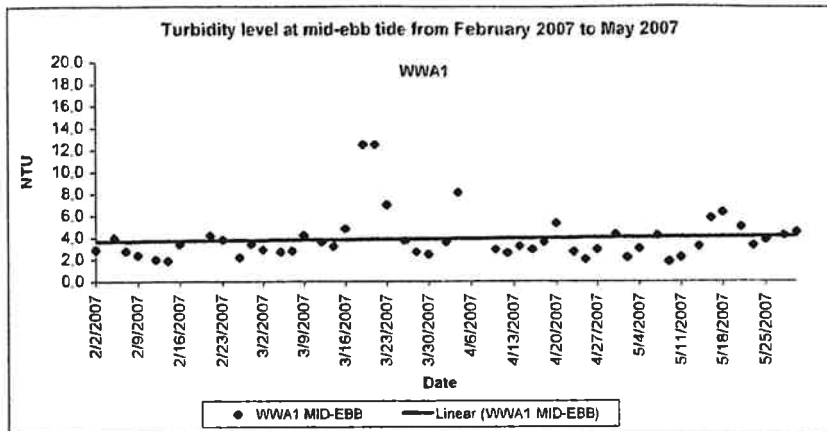
Event	Action			Contractor
	ET Leader	IEC	ER	
<p>Action Level Action level being exceeded by one sampling day</p>	<ol style="list-style-type: none"> 1. Repeat in-situ measurement to confirm findings. 2. Identify source(s) of impact. 3. Inform the IEC and the Contractor. 4. Check monitoring data, all plant, equipment and the Contractor's working methods. 5. Discuss mitigation measures with the IEC and the Contractor. 6. Repeat measurement on next day of exceedance. 	<ol style="list-style-type: none"> 1. Discuss with the ET Leader and the Contractor on the mitigation measures. 2. Review proposals on mitigation measures submitted by the Contractor and advised the ER accordingly. 3. Assess the effectiveness of the implemented mitigation measures. 	<ol style="list-style-type: none"> 1. Discuss with the IEC on the proposed mitigation measures. 2. Make agreement on the mitigation measures to be implemented. 	<ol style="list-style-type: none"> 1. Inform the ER and confirm notification of the non-compliance in writing. 2. Rectify unacceptable practice. 3. Check all plants and equipment. 4. Consider changes of working methods. 5. Discuss with the ET Leader and the IEC and propose mitigation measures to the IEC and the ER. 6. Implement the agreed mitigation measures.
<p>Action level being exceeded by more than one consecutive days</p>	<ol style="list-style-type: none"> 1. Repeat in-situ measurement to confirm findings. 2. Identify source(s) of impact. 3. Inform the IEC and the Contractor. 4. Check monitoring data, all plant, equipment and the Contractor's working methods. 5. Discuss mitigation measures with the IEC and the Contractor. 6. Ensure mitigation measures are implemented. 7. Prepare to increase the monitoring frequency to daily. 8. Repeat measurement on next day of exceedance. 	<ol style="list-style-type: none"> 1. Discuss with the ET Leader and the Contractor on the mitigation measures. 2. Review proposals on mitigation measures submitted by the Contractor and advised the ER accordingly. 3. Assess the effectiveness of the implemented mitigation measures. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 1. Inform the ER and confirm notification of the non-compliance in writing. 2. Rectify unacceptable practice. 3. Check all plants and equipment. 4. Consider changes of working methods. 5. Discuss with the ET Leader and the IEC and propose mitigation measures to the IEC and the ER within 3 working days. 6. Implement the agreed mitigation measures.
<p>Limit Level Limit level being exceeded by one sampling day</p>	<ol style="list-style-type: none"> 1. Repeat in-situ measurement to confirm findings. 2. Identify source(s) of impact. 3. Inform the IEC, the Contractor and the DEP. 4. Check monitoring data, all plant, equipment and the Contractor's working methods. 5. Discuss mitigation measures with the IEC, the ER and the Contractor. 6. Ensure mitigation measures are implemented. 7. Increase the monitoring frequency to daily until no exceedance of the Limit Level. 	<ol style="list-style-type: none"> 1. Discuss with the ET Leader and the Contractor on the mitigation measures. 2. Review proposals on mitigation measures submitted by the Contractor and advised the ER accordingly. 3. Assess the effectiveness of the implemented mitigation measures. 	<ol style="list-style-type: none"> 1. Discuss with IEC, the ET Leader and the Contractor on the proposed mitigation measures. 2. Request the 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. 	<ol style="list-style-type: none"> 1. Inform the ER and confirm notification of the non-compliance in writing. 2. Rectify unacceptable practice. 3. Check all plants and equipment. 4. Consider changes of working methods. 5. Discuss with the ET Leader, the IEC and the ER, and propose mitigation measures to the IEC and the ER within 3 working days. 6. Implement the agreed mitigation measures.
<p>Limit level being exceeded by more than one consecutive days</p>	<ol style="list-style-type: none"> 1. Repeat in-situ measurement to confirm findings. 2. Identify source(s) of impact. 3. Inform the IEC, the Contractor and the DEP. 4. Check monitoring data, all plant, equipment and the Contractor's working methods. 5. Discuss mitigation measures with the IEC, the ER and the Contractor. 6. Ensure mitigation measures are implemented. 7. Increase the monitoring frequency to daily until no exceedance of the Limit Level for two consecutive days. 	<ol style="list-style-type: none"> 1. Discuss with the ET Leader and the Contractor on the mitigation measures. 2. Review proposals on mitigation measures submitted by the Contractor and advised the ER accordingly. 3. Assess the effectiveness of the implemented mitigation measures. 	<ol style="list-style-type: none"> 1. Discuss with IEC, the ET Leader and the Contractor on the proposed mitigation measures. 2. Request the 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. 	<ol style="list-style-type: none"> 1. Inform the ER and confirm notification of the non-compliance in writing. 2. Rectify unacceptable practice. 3. Check all plants and equipment. 4. Consider changes of working methods. 5. Discuss with the ET Leader, the IEC and the ER, and propose mitigation measures to the IEC and the ER within 3 working days. 6. Implement the agreed mitigation measures. 7. As directed by the ER, slow down or stop all or part of the construction activities.

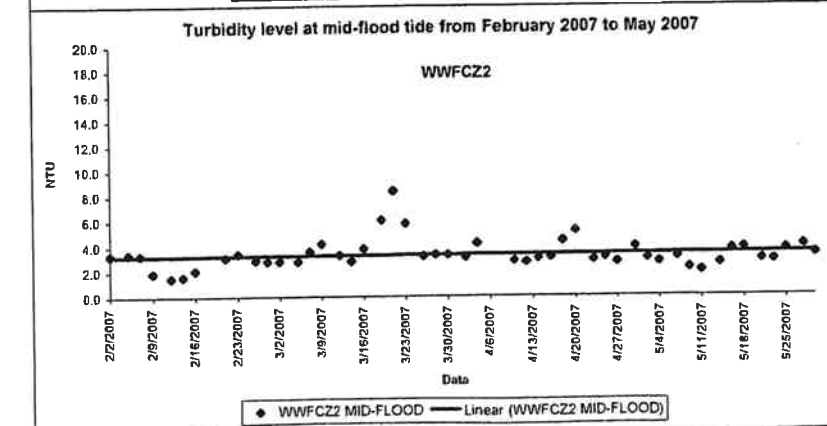
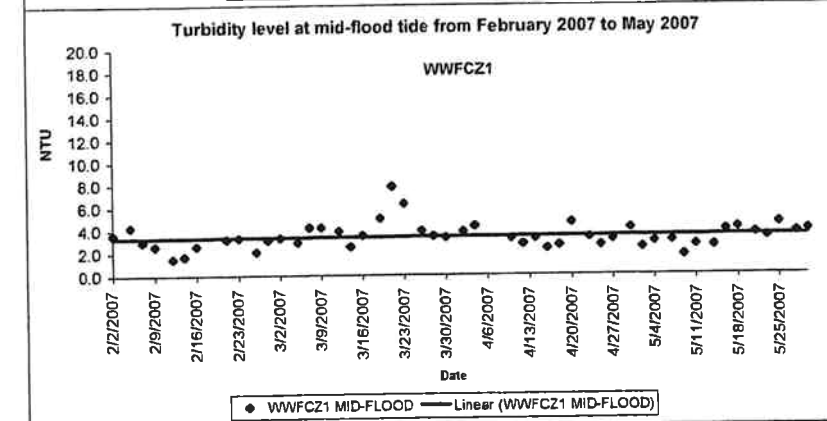
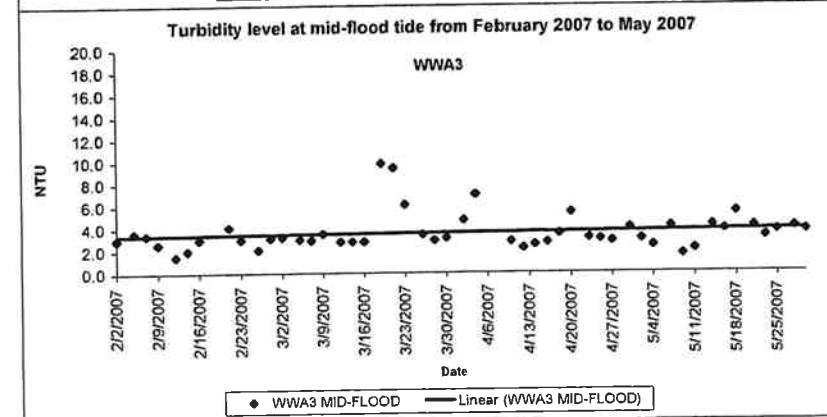
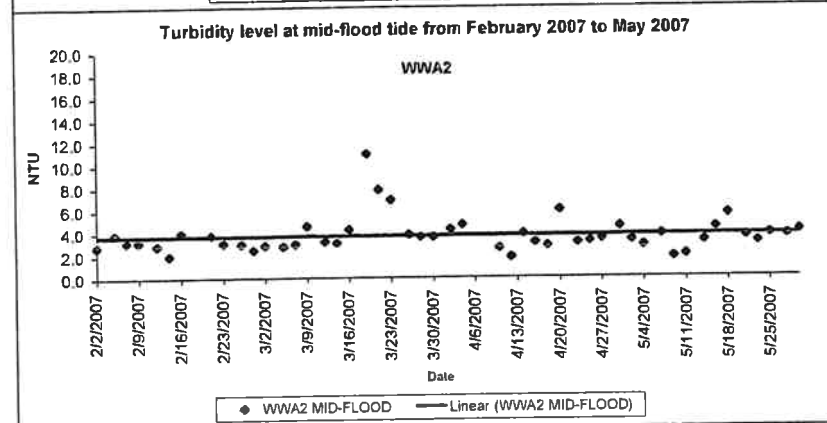
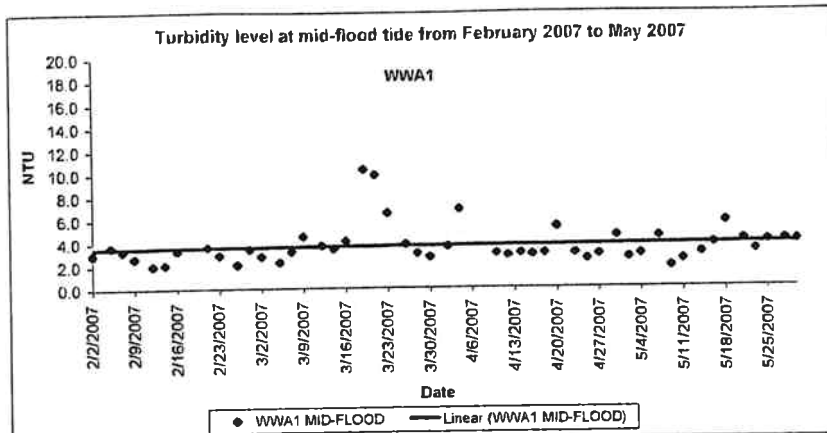
Appendix F
Complaint Procedures

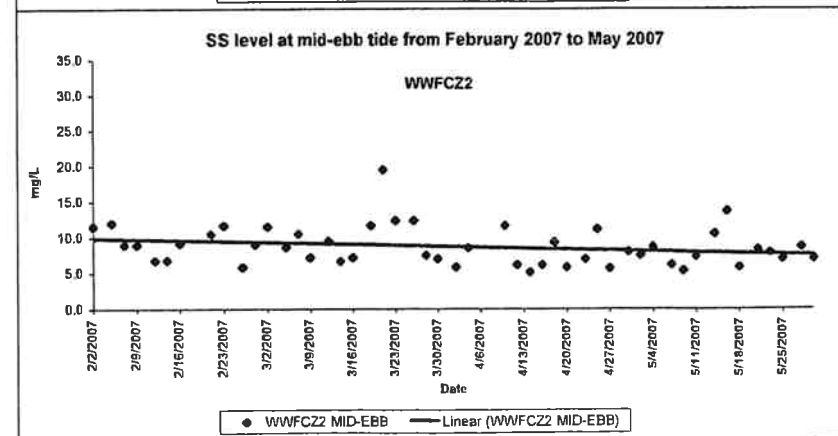
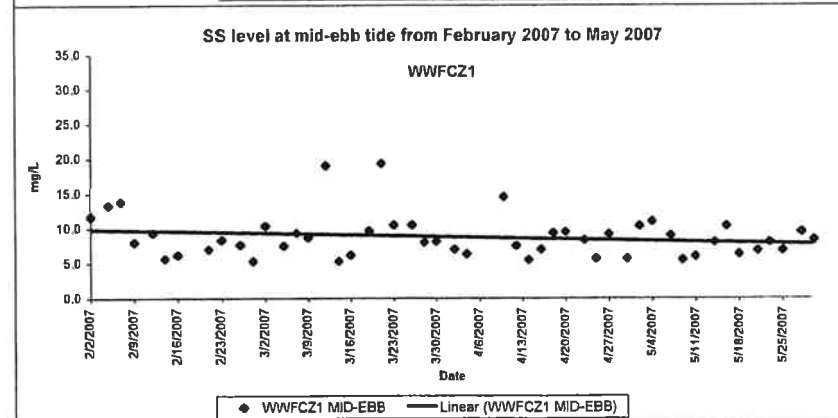
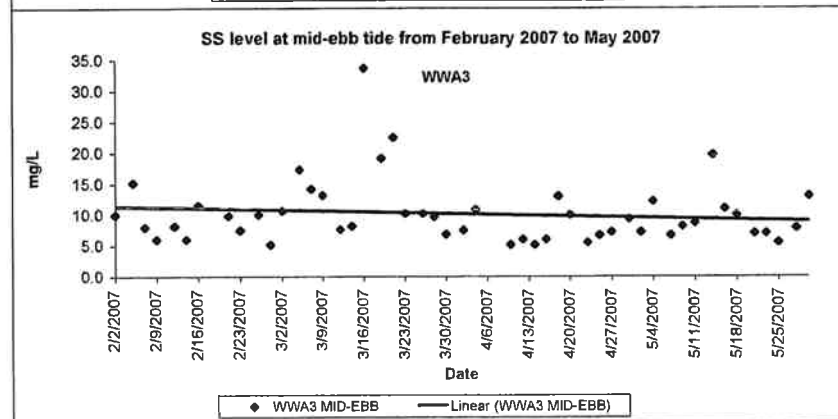
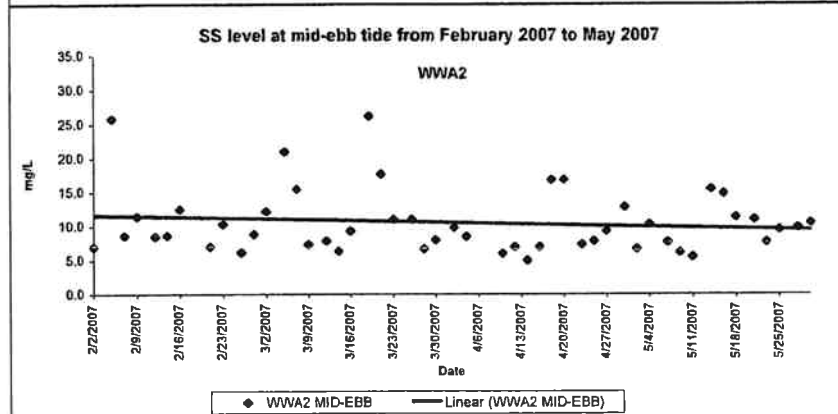
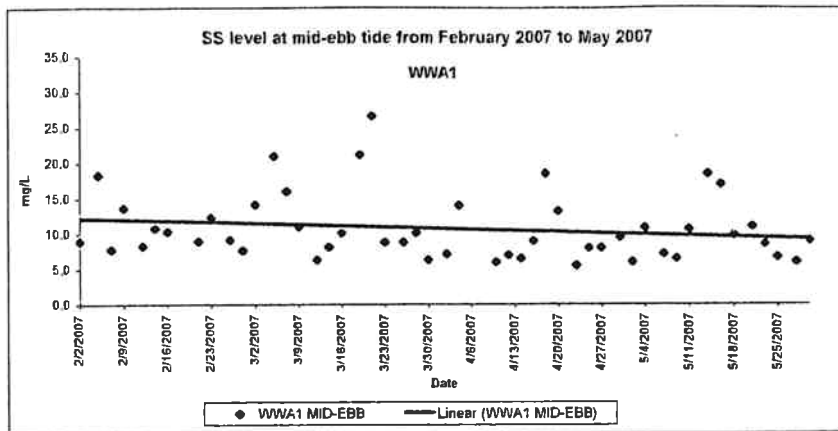


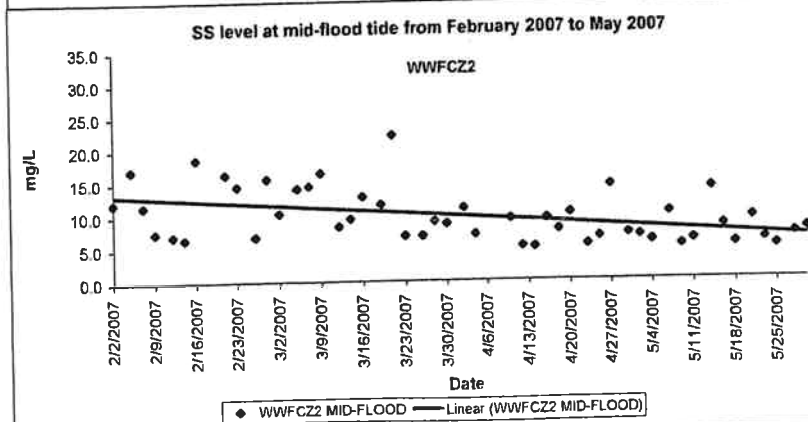
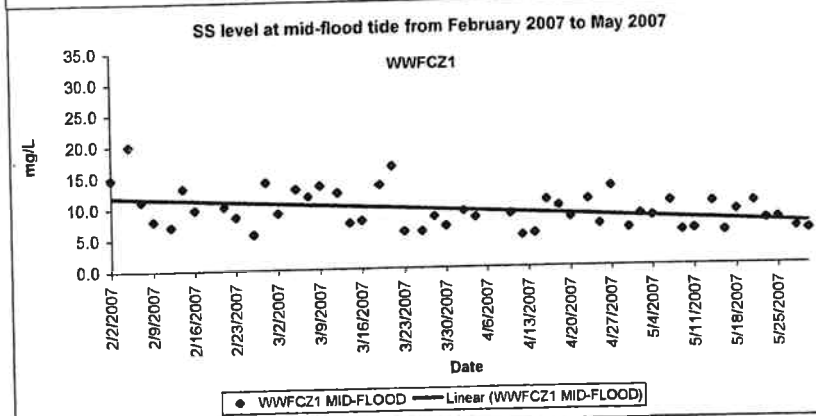
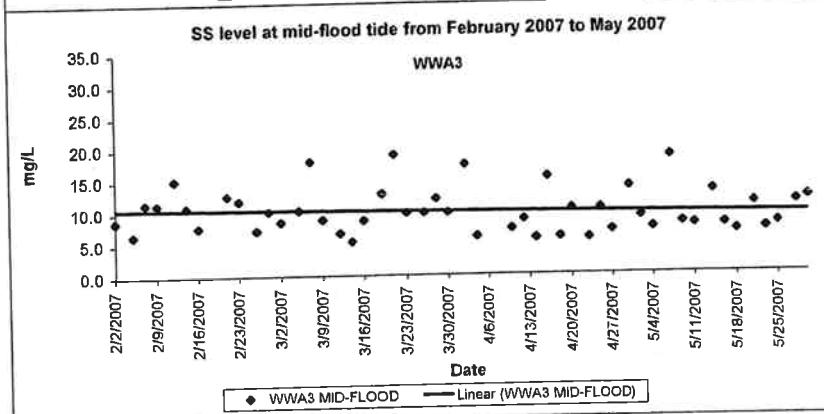
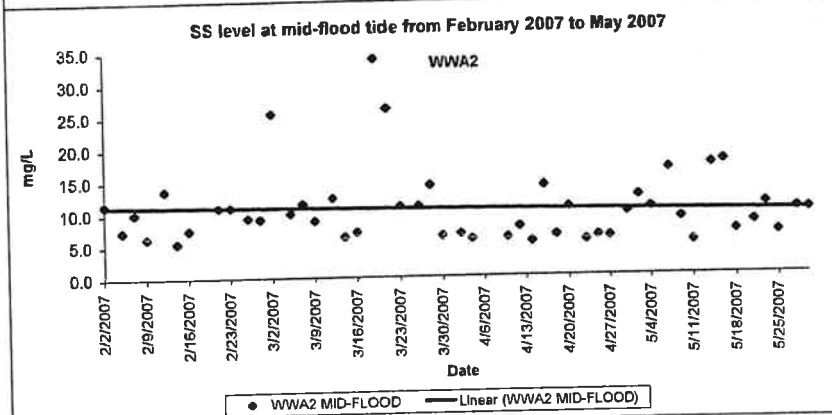
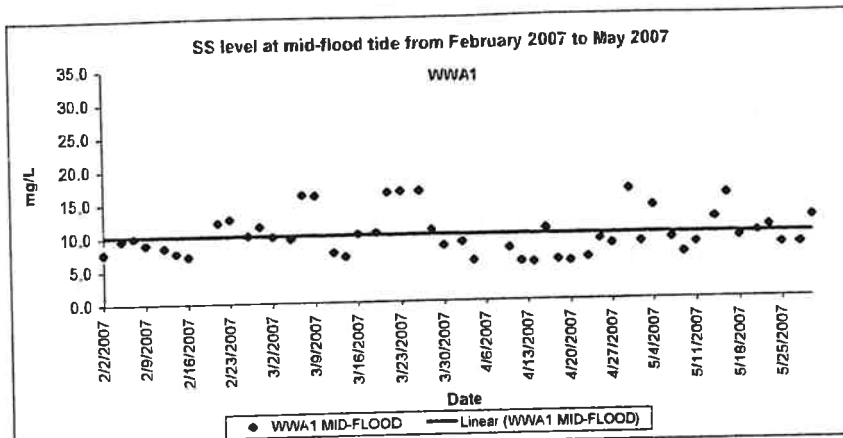
Appendix G

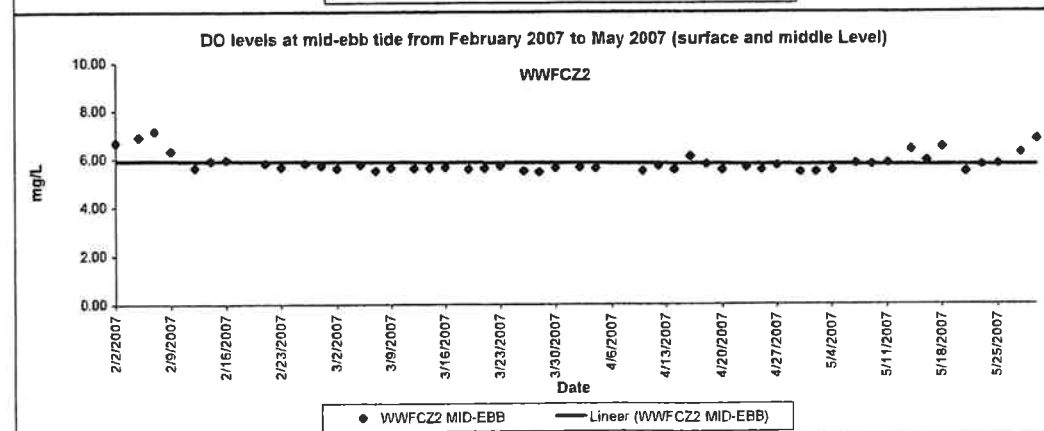
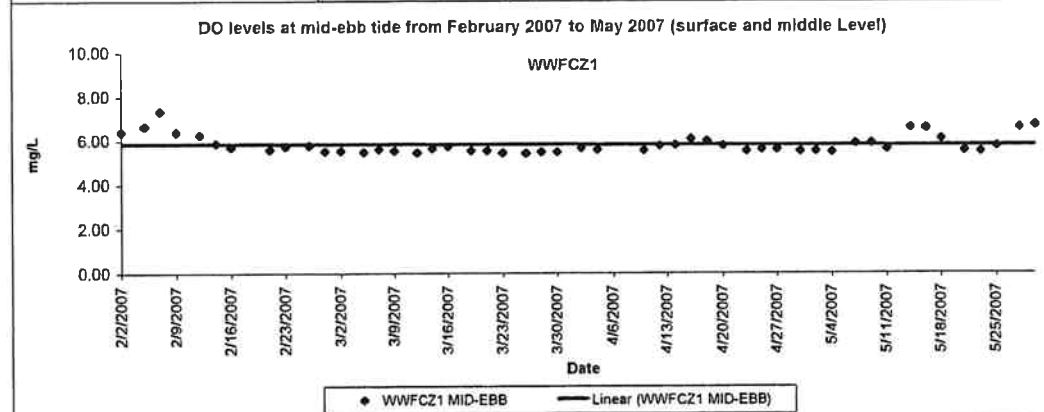
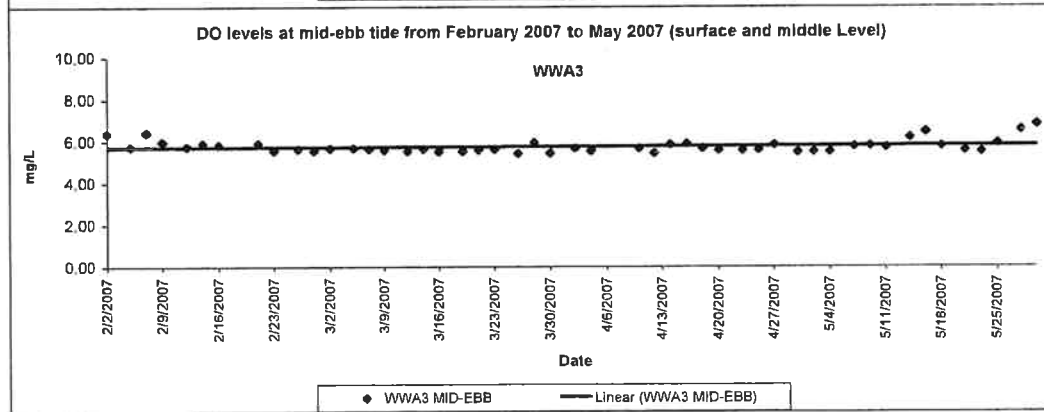
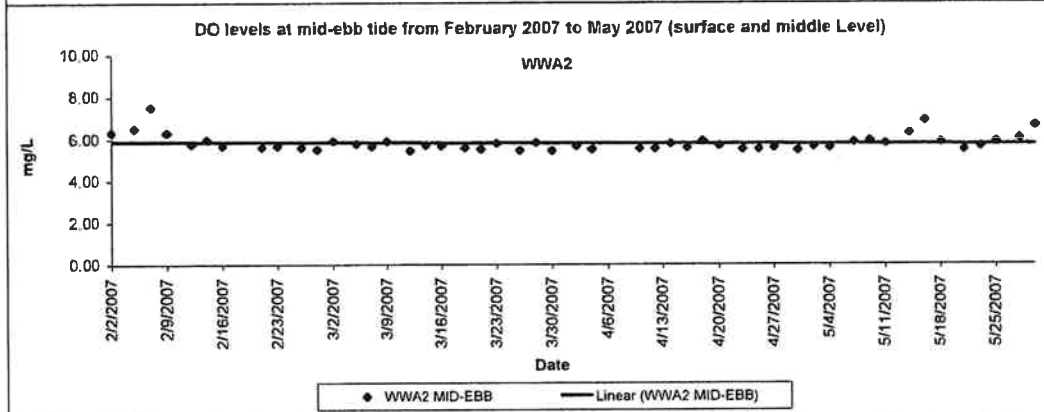
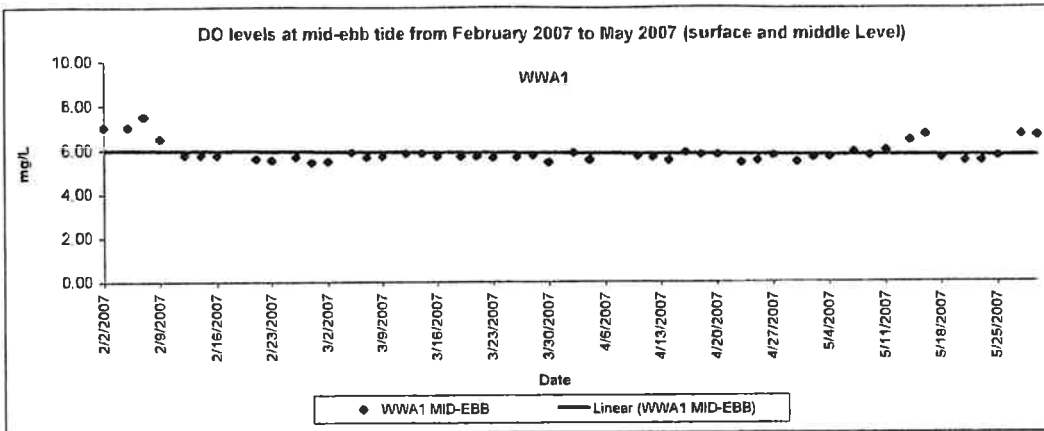
**Graphical Presentation
of Marine Water
Monitoring Results**

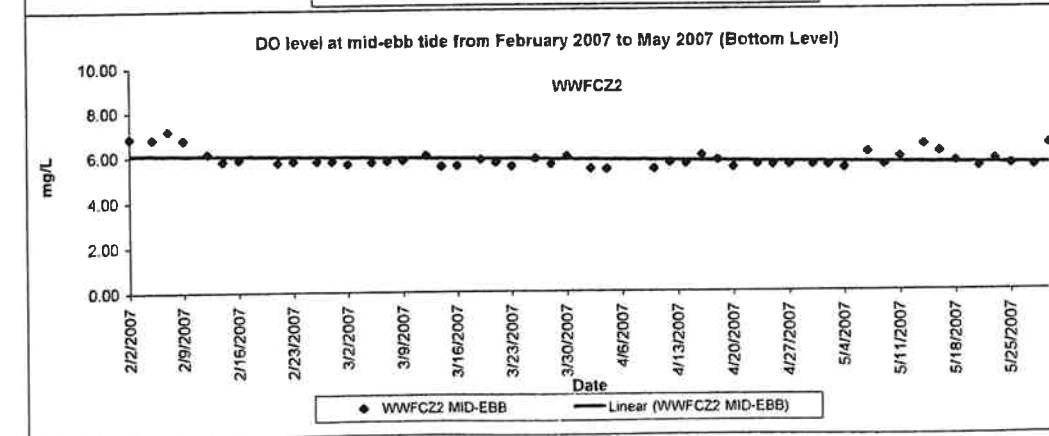
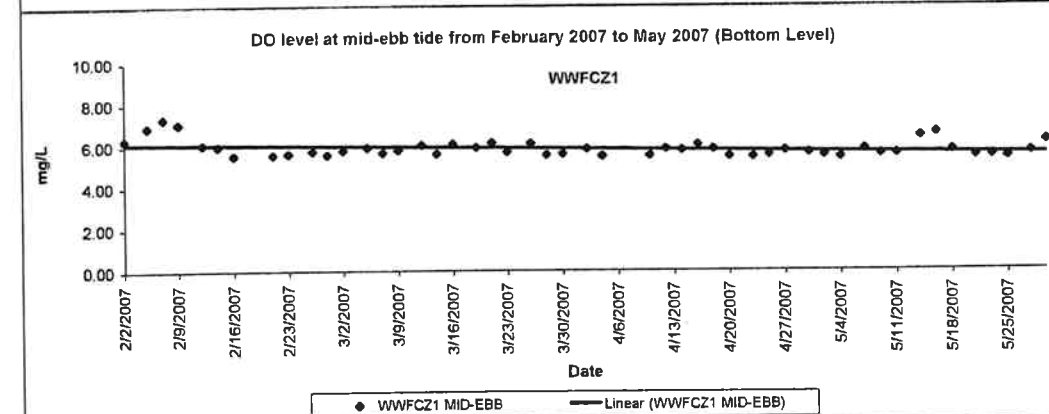
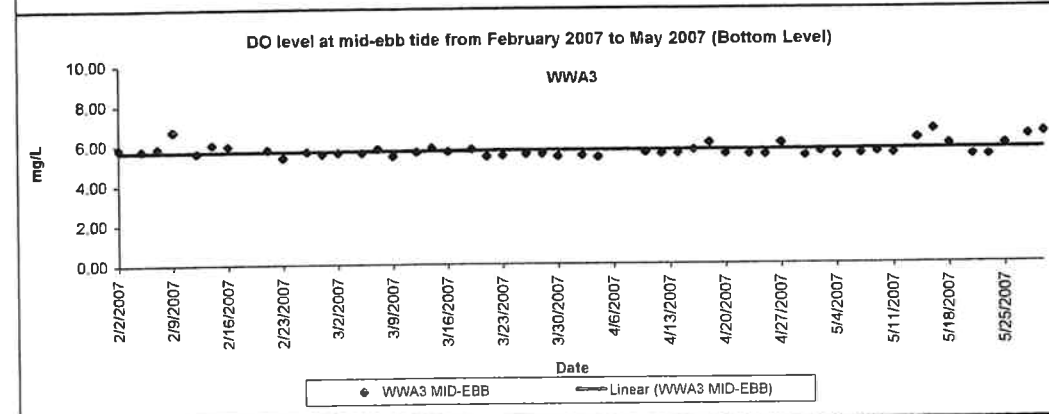
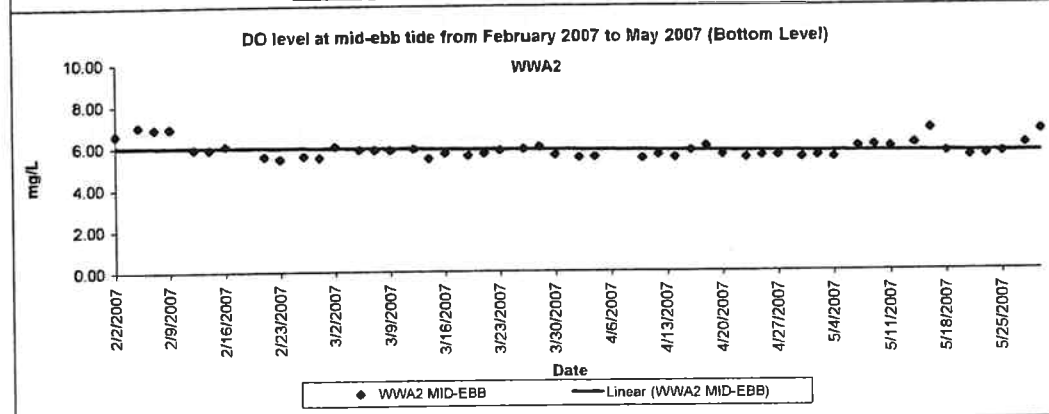
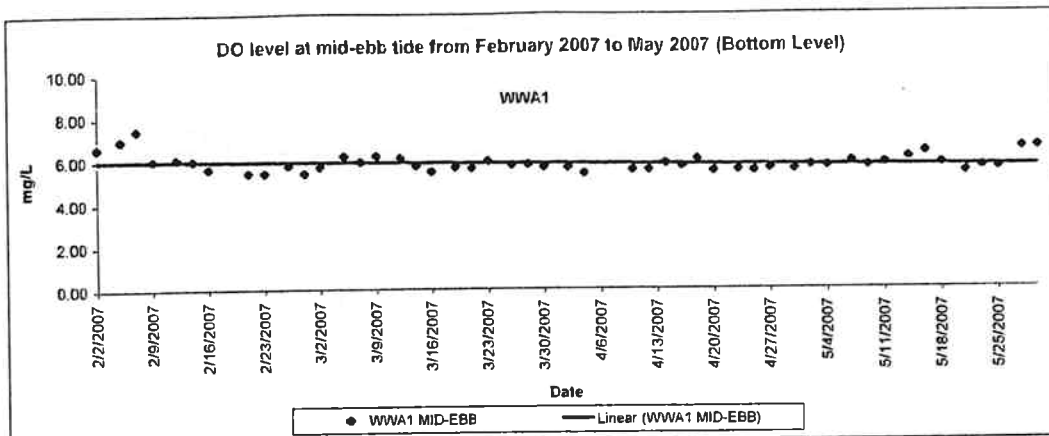


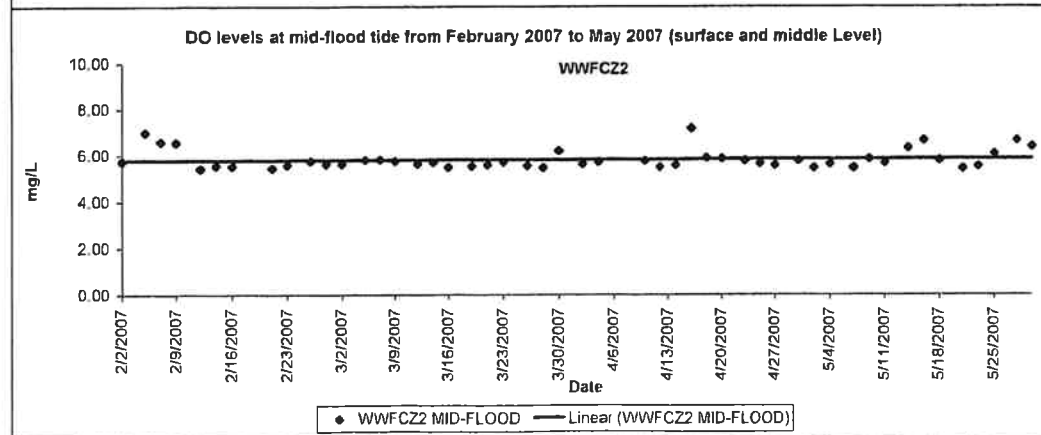
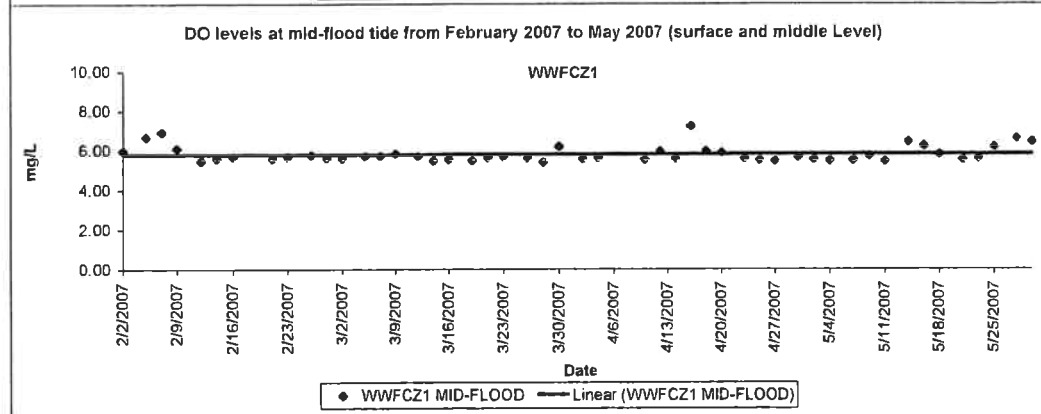
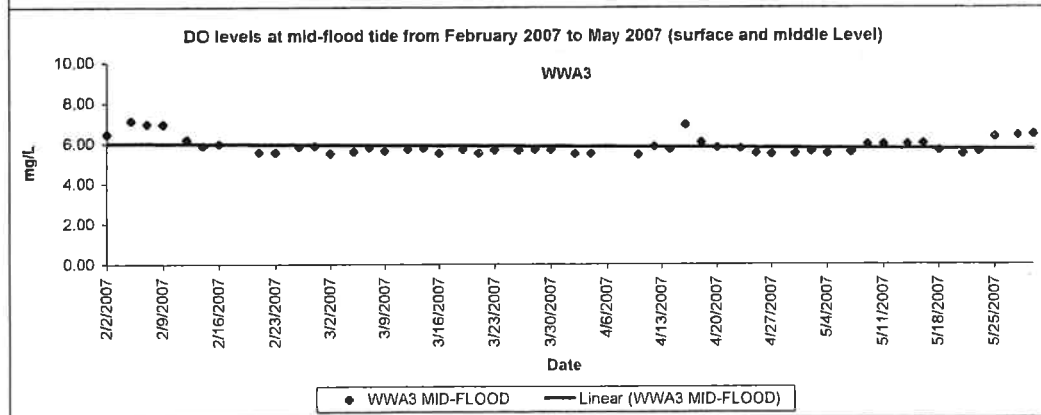
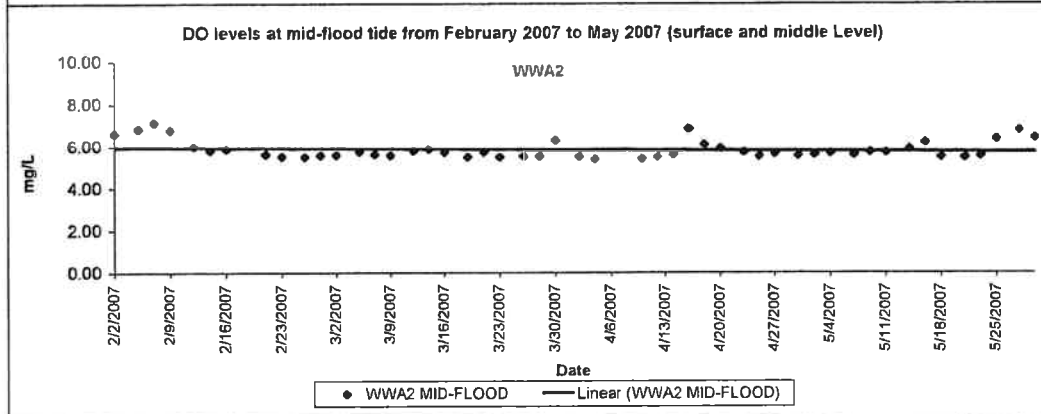
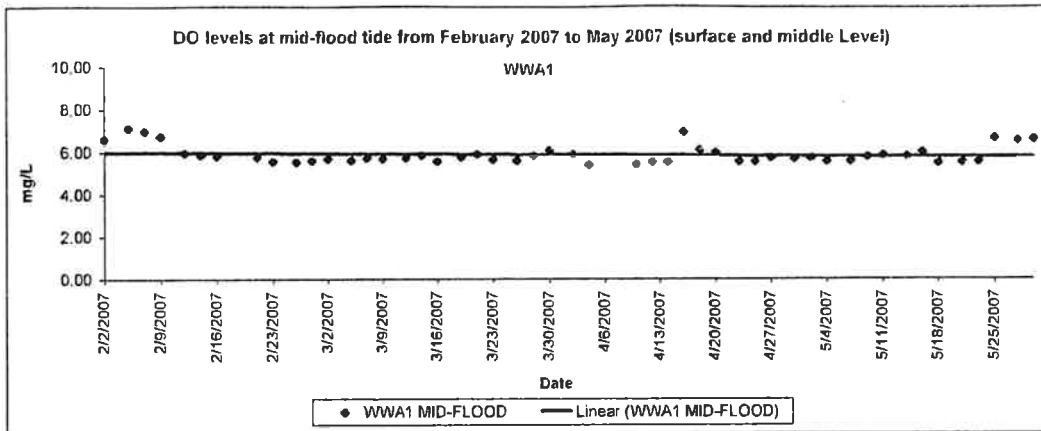


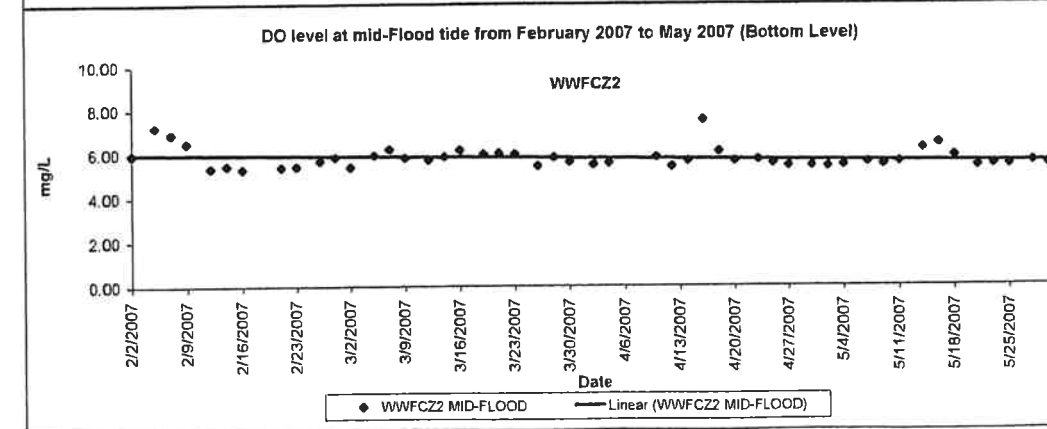
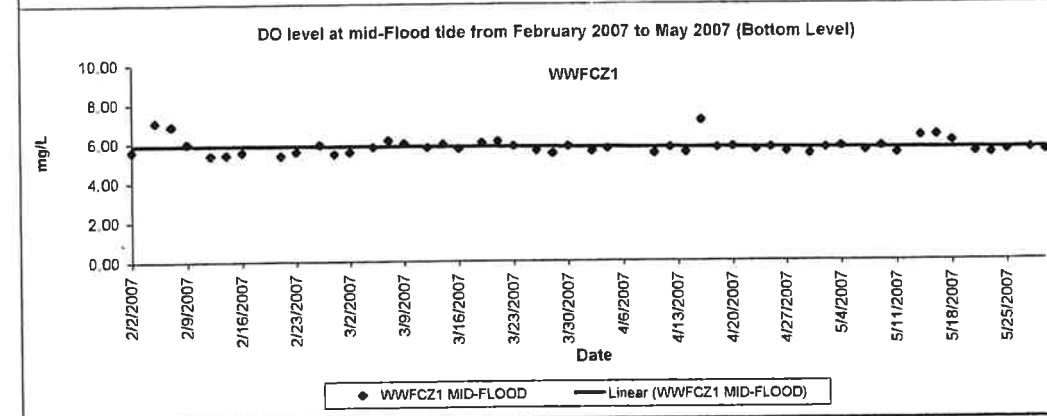
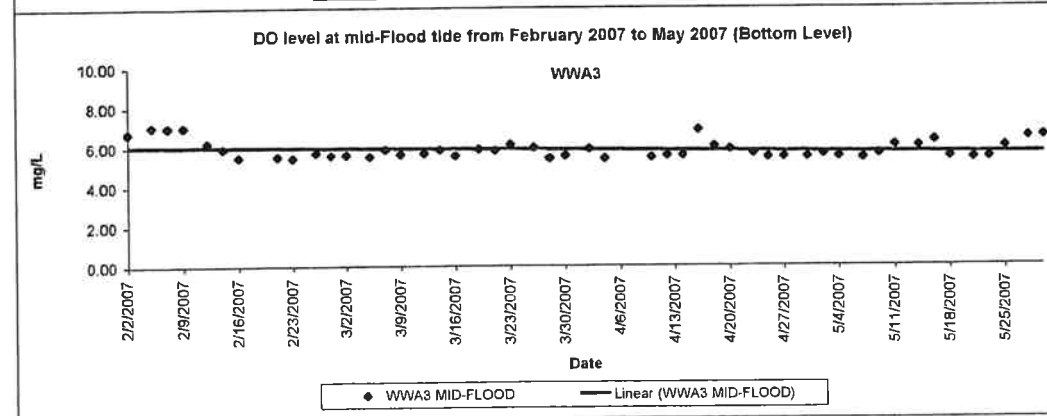
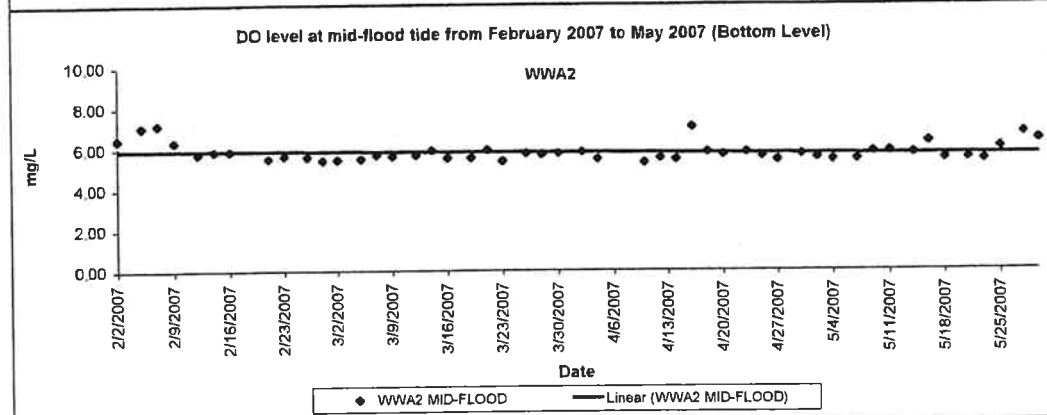
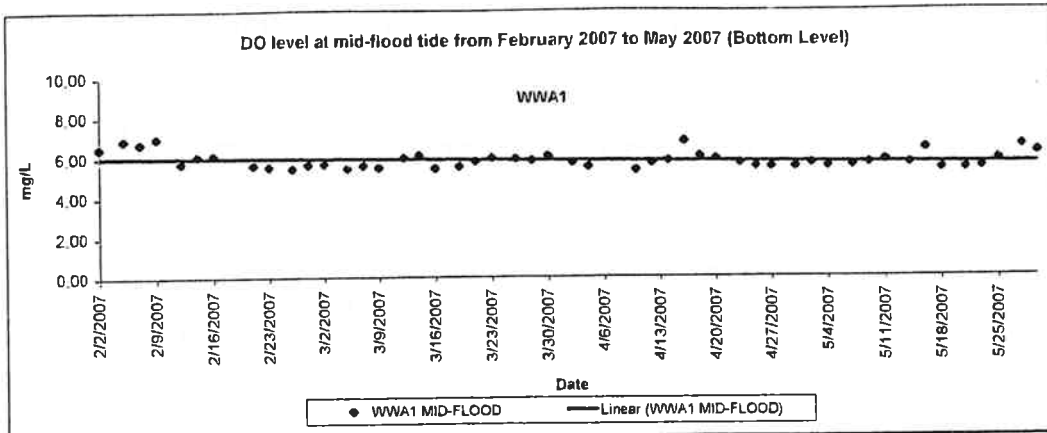












Appendix H
**Implementation Status
on Environmental
Protection
Requirements**

**HY/2005/06 Castle Peak Road Improvement – West of Tsing Lung Tau (EP No. EP219/2005)
Environmental Mitigation Implementation Schedule**

Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Implementation Status
				Design	Construction	Operation	
Construction Noise							
Noisy equipment and activities should be sited by the Contractor as far away from sensitive receivers as is practical	All areas	Contractor	TMEIA and Project Profile		✓		Implemented
Replace noisy plant with quieter alternatives	All areas	Contractor	TMEIA and Project Profile		✓		Implemented
Schedule noisy activities to reduce duration and severity of noise exposure	All areas	Contractor	TMEIA and Project Profile		✓		Implemented
In the event that Grand Bay Villa becomes occupied during the construction: <ul style="list-style-type: none"> 5m high temporary noise barriers with a material surface density of at least 7 kg/m² shall be erected to screen the façade of along Castle Peak Road and the Western end façade. Whenever the grab dredger is operating within 50 the reclamation west of Grand Bay Villa, the land based power mechanical equipment No more than a total of 2 derrick lighters shall be used for marine dredging works at the same time. 	West of Tsing Lung Tau Reclamation	Contractor	Environmental Permit No. 219/2005 Condition 3.11		✓		To be implemented when Grand Bay Villa becomes occupied

Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Implementation Status
				Design	Construction	Operation	
Construction Water Quality							
Dredging of marine sediment shall be limited to the scour apron.	West of Tsing Lung Tau Reclamation	Contractor	Environmental Permit No. 219/2005 Condition 3.1		✓		Implemented
No more than a total of 2 derrick lighter shall be used for marine dredger works. The maximum dredging rate shall not be more than 1,000 and 2,000 cum per day at the reclamation east and west of Grand Bay Villa respectively.	West of Tsing Lung Tau Reclamation	Contractor	Environmental Permit No. 219/2005 Condition 3.2		✓		Implemented
All filling activities shall be carried behind rockfill and rock armour.	West of Tsing Lung Tau Reclamation	Contractor	Environmental Permit No. 219/2005 Condition 3.3		✓		Implemented
Tightly closing grabs shall be used to restrict the loss of fine sediment to suspension.	West of Tsing Lung Tau Reclamation	Contractor	Environmental Permit No. 219/2005 Condition 3.4		✓		Implemented
Silt curtain shall be installed along the reclamation area during construction to control sediment suspension within the work area.	West of Tsing Lung Tau Reclamation	Contractor	Environmental Permit No. 219/2005 Condition 3.5		✓		Implemented
Marine water quality monitoring and audit programme shall be carried out.	West of Tsing Lung Tau Reclamation	Contractor	Environmental Permit No. 219/2005 Condition 3.6		✓		Implemented
The construction method specified in Section 2.1 of the Project Profile (Register No. PP-245/2005) shall be followed during construction.	West of Tsing Lung Tau Reclamation	Contractor	Environmental Permit No. 219/2005 Condition 3.7		✓		Implemented
Wastewater collected from canteen kitchens, including from basins, sinks and floor drains shall be discharged into public sewers via grease traps. Drainage system provided at car parking areas shall be equipped with oil interceptors in addition to sand or silt removal facilities.	West of Tsing Lung Tau Reclamation	Contractor	Environmental Permit No. 219/2005 Condition 3.10		✓		Not Applicable

Appendix I
**Investigation Summary
on Marine Water Quality
Exceedances**

Date	Tide	Location	Exceedance of Monitoring Data												ET's Investigation	CT's action	Closing Date	Remark
			DO (mg/L)			Tby (NTU)			SS (mg/L)									
			Position	Baseline Check	Control Station	Level at impact	Baseline Check	Control Station	Level at impact	Baseline Check	Control Station	Level at Impact Station						
2-Mar-07	Mid-ebb	WWA1	-	-	-	-	-	-	-	13.0	10.8	14.2	Muddy water was not observed by our field staff on 02 March 2007. High SS levels (> 10 mg/L) were recorded at respective control stations. No marine works was being conducted during monitoring period. It is likely that the exceedances were attributed to an unidentified source, and not related to the construction activities of the Project, however, the Contractor was reminded to repair the silt curtain promptly to prevent the propagation of sediment plume.	No action	16-Mar-07	Refer to ET's field record & CT's daily records.		
2-Mar-07	Mid-flood	WWA2	-	-	-	-	-	-	17.0	13.7	25.5	Ditto	Ditto	Ditto	Ditto	Ditto		
5-Mar-07	Mid-ebb	WWA1	-	-	-	-	-	-	13.0	8.5	21.0	Rainfall was observed on 05, 07 and 09 March 2007 during marine water monitoring period. Seepage of muddy water from the silt curtain was observed at Seawall B. The broken silt curtain at Seawall B has not been repaired. Silt may be washed-off from the stockpile at Seawall B to the sea via the broken silt curtain. The exceedances were likely attributed to the broken silt curtain and rainfall during monitoring periods. The Contractor was reminded to repair the silt curtain promptly.	With the amendment of silt curtain and suspension of C&D material removal by barge in late March 2007, the marine water quality has been improved. With remedial works implemented, subsequent marine water quality monitoring data (26, 28 and 30 March 2007) indicated resumption to normal ambient conditions.	10-Apr-07	Refer to ET's field record & CT's daily records.			
5-Mar-07	Mid-ebb	WWA2	-	-	-	-	-	-	13.0	9.0	21.0	Ditto	Ditto	Ditto	Ditto	Ditto	Ditto	
5-Mar-07	Mid-ebb	WWA3	-	-	-	-	-	-	13.0	15.0	17.3	Ditto	Ditto	Ditto	Ditto	Ditto	Ditto	
7-Mar-07	Mid-ebb	WWA1	-	-	-	-	-	-	13.0	13.5	16.0	Ditto	Ditto	Ditto	Ditto	Ditto	Ditto	
7-Mar-07	Mid-ebb	WWA2	-	-	-	-	-	-	13.0	13.3	15.5	Ditto	Ditto	Ditto	Ditto	Ditto	Ditto	
7-Mar-07	Mid-ebb	WWA3	-	-	-	-	-	-	13.0	13.3	14.2	Ditto	Ditto	Ditto	Ditto	Ditto	Ditto	

Date	Tide	Location	Exceedance of Monitoring Data												ET's Investigation	CT's action	Closing Date	Remark	
			DO (mg/L)			Tby (NTU)			SS (mg/L)										
			Position	Baseline Check	Control Station	Level at Impact	Baseline Check	Control Station	Level at Impact	Baseline Check	Control Station	Level at Impact Station							
7-Mar-07	Mid-flood	WWA3	-	-	-	-	-	-	-	-	-	-	17.0	13.3	18.0	Ditto	Ditto	Ditto	Refer to ET's field record & CT's daily records.
9-Mar-07	Mid-ebb	WWA3	-	-	-	-	-	-	-	-	-	-	13.0	12.8	13.2	Ditto	Ditto	Ditto	Refer to ET's field record & CT's daily records.
12-Mar-07	Mid-ebb	WWFCZ1	-	-	-	-	-	-	-	-	-	-	13.0	7.8	19.0	The impact station WWFCZ1 is located away from the construction site. Exceedances were not recorded at stations closer to the site (WWA1, WWA2 and WWA3). The exceedance was likely attributed from an unidentified source, and not related to the construction activities of the Project. The Contractor, however, was reminded to install a new silt curtain around the stockpile at Seawall B promptly.	No action	10-Apr-07	Refer to ET's field record & CT's daily records.
16-Mar-07	Mid-ebb	WWA3	-	-	-	-	-	-	-	-	-	-	13.0	9.8	33.7	The silt curtain has not been repaired during marine water monitoring on 16, 19 and 21 March 2007. In addition, rainfall was observed and C&D materials were grabbed from Seawall B to the barge during marine water monitoring on 19 and 21 March 2007 respectively. The exceedances were likely attributed to Seawall B to the barge together with faulty silt curtain during monitoring periods. The Contractor was reminded that the transfer of C&D materials from Seawall B to the barge should be conducted behind the silt curtain, closed grab should be used for grabbing C&D materials and the stockpile at Seawall B should be completely surrounded by silt curtain	CT mobilized workers to repair the silt curtain on 22 March 2007. Also, the transfer of C&D materials was suspended while the silt curtain was under maintenance. With the amendment of silt curtain and suspension of C&D material removal by barge, the marine water quality has been improved. SS exceedance was not recorded on 23 March 2007, however, Tby exceedances were recorded at some monitoring station. Starting from 27 March 2007, the transfer of C&D materials by barge was conducted behind the silt curtain. CT also advised that a new silt curtain would be installed around the stockpile at Seawall B in April 2007. With remedial works implemented, subsequent marine water quality monitoring data (26, 28 and 30 March 2007) indicated resumption to normal ambient conditions.	10-Apr-07	Refer to ET's field record & CT's daily records.
19-Mar-07	Mid-ebb	WWA1	-	-	-	-	-	-	-	-	-	-	13.0	18.5	21.2	Ditto	Ditto	Ditto	Ditto

Date	Tide	Location	Exceedance of Monitoring Data												CT's action	Closing Date	Remark
			DO (mg/L)				Tby (NTU)				SS (mg/L)						
			Position	Baseline Check	Control Station	Level at Impact	Baseline Check	Control Station	Level at Impact	Baseline Check	Control Station	Level at Impact Station					
4-Apr-07	Mid-ebb	WWA3	-	6.5	4.6	7.1	-	-	-	-	-	-	-	-	suspended the excavation works and removal of stockpile at Seawall B from 21 to 30 April 2007. The Contractor also conducted daily inspection of the silt curtain. With the implementation of remedial works, the marine water quality was resumed to ambient level. Tby and SS levels were complied with the relevant Action and Limit Level from 23 to 30 April 2007.		
4-Apr-07	Mid-flood	WWA3	-	6.6	4.2	7.0	-	-	-	-	-	-	-	-			
18-Apr-07	Mid-ebb	WWA1	-	-	-	-	13.0	6.8	18.5	-	-	-	-	-			
18-Apr-07	Mid-ebb	WWA2	-	-	-	-	13.0	8.5	16.8	-	-	-	-	-			
20-Apr-07	Mid-ebb	WWA1	-	-	-	-	13.0	6.0	13.2	-	-	-	-	-			
20-Apr-07	Mid-ebb	WWA2	-	6.5	5.0	12.7	13.0	7.8	16.8	-	-	-	-	-			
20-Apr-07	Mid-ebb	WWA3	-	6.5	6.2	8.5	-	-	-	-	-	-	-	-			
10-Apr-07	Mid-ebb	WWFCZ1	-	-	-	-	13.0	8.0	14.5	-	-	-	-	-	The impact station WWFCZ1 is located away from the construction site. Exceedances were not recorded at stations closer to the site (WWA1, WWA2 and WWA3). The exceedance was likely attributed from an unidentified source, and not related to the construction activities of the Project. The Contractor, however, was reminded to keep regular maintenance of the silt curtain.	7-May-07	Refer to ET's field record & CT's daily records.

Date	Tide	Location	Exceedance of Monitoring Data												ET's investigation	CT's action	Closing Date	Remark	
			DO (mg/L)			Tby (NTU)			SS (mg/L)										
			Position	Baseline Check	Control Station	Level at Impact	Baseline Check	Control Station	Level at Impact	Baseline Check	Control Station	Level at Impact Station							
7-May-07	Mid-flood	WWA3	-	-	-	-	-	-	-	-	-	-	17.0	8.5	18.5	Marginal exceedance of turbidity and suspended solids were recorded on 7, 14 and 16 May. Muddy water was observed along the shore of Slope 82 and beyond the silt curtain. The exceedances were likely due to wash off of temporary stockpile at slope 82 and re-suspension of soil from the seabed. The Contractor was recommended to extend the silt curtain to cover a larger area including working area of Slope 82.	The Contractor has removed the temporary stockpile at Slope 82 and extend the silt curtain to cover a larger area, including the shore of Slope 82. The CT closely monitored the effectiveness of the silt curtain. With the remedial work implemented, the subsequent marine water quality monitoring data (28 and 30 May 2007) indicated resumption to normal ambient conditions.	5-Jun-07	Refer to ET's field record & CT's daily records.
14-May-07	Mid-ebb	WWA2	-	-	-	-	-	-	-	-	-	-	13.0	14.0	15.5	Ditto	Ditto	Ditto	
14-May-07	Mid-ebb	WWA3	-	-	-	-	-	-	-	-	-	-	13.0	14.8	19.7	Ditto	Ditto	Ditto	
14-May-07	Mid-flood	WWA2	-	-	-	-	-	-	-	-	-	-	17.0	11.8	17.2	Ditto	Ditto	Ditto	
16-May-07	Mid-ebb	WWA1	-	-	-	-	-	-	-	-	-	-	13.0	7.8	17.0	Ditto	Ditto	Ditto	
16-May-07	Mid-ebb	WWA2	-	-	-	-	-	6.5	4.9	6.8	-	-	13.0	10.8	14.8	Ditto	Ditto	Ditto	
16-May-07	Mid-ebb	WWFCZ2	-	-	-	-	-	-	-	-	-	-	13.0	10.0	13.7	Ditto	Ditto	Ditto	
16-May-07	Mid-flood	WWA2	-	-	-	-	-	-	-	-	-	-	17.0	10.7	17.7	Ditto	Ditto	Ditto	

Appendix J

**Statistical Analysis of
SS Monitoring Data**

Statistical Analysis for Mid-Ebb Tide

Station WWA1

Mann-Whitney Rank Sum Test

Normality Test: Failed (P < 0.050)

Group Name	N	Missing	Median	25%	75%
130% Baseline Mean	16	0	16.917	13.417	21.083
Quarterly Mean	38	0	9.000	7.000	13.167

n(small)= 16 n(big)= 38 (P = <0.001)

Results:

T = 627.000

There is a statistically significant difference between two groups. (P = <0.001).

Station WWA2

t-Test

Normality Test: Passed (P = 0.084)

Equal Variance Test: Passed (P = 0.626)

Group Name	N	Missing	Mean	Std Dev	SEM
130% Baseline Mean	16	0	19.104	3.341	0.835
Quarterly Mean	38	0	10.548	4.639	0.753

Difference 8.556

Results:

t = 6.669 with 52 degrees of freedom (P = <0.001)

There is a statistically significant difference between two groups (P = <0.001).

Station WWA3

Mann-Whitney Rank Sum Test

Normality Test: Passed (P < 0.050)

Group	N	Missing	Median	25%	75%
130% Baseline Mean	16	0	16.667	13.750	21.167
Quarterly Mean	38	0	9.000	7.000	12.167

n(small)= 16 n(big)= 38 (P = <0.001)

Results

T = 668.500

There is a statistically significant difference between two groups (P = <0.001).

WWFCZ1

Mann-Whitney Rank Sum Test

Normality Test: Failed (P < 0.050)

Group	N	Missing	Median	25%	75%
130% Baseline Mean	16	0	18.250	14.892	21.917
Quarter Mean	38	0	8.250	6.833	9.667

n(small)= 16 n(big)= 38 (P = <0.001)

Results:

T = 722.000

There is a statistically significant difference between two groups (P = <0.001).

WWFCZ2

Mann-Whitney Rank Sum Test

Normality Test: Failed (P < 0.050)

Group	N	Missing	Median	25%	75%
130% Baseline Mean	16	0	16.692	14.167	20.917
Quarter Mean	38	0	7.667	6.667	10.500

n(small)= 16 n(big)= 38 (P = <0.001)

Results:

T = 723.000

There is a statistically significant difference (P = <0.001).

Statistical Analysis for Mid-Flood Tide

WWA1

Mann-Whitney Rank Sum Test

Normality Test: Failed (P < 0.050)

Group Name	N	Missing	Median	25%	75%
130% Baseline Mean	16	0	15.333	12.433	19.750
Quarterly Mean	38	0	9.083	7.833	12.000

n(small)= 16 n(big)= 38 (P = <0.001)

Results:

T = 637.000 (P = <0.001)

There is a statistically significant difference between the input groups (P = <0.001).

WWA2

Mann-Whitney Rank Sum Test

Normality Test: Passed (P < 0.050)

Group Name	N	Missing	Median	25%	75%
130% Baseline Mean	16	0	16.750	13.558	21.000
Quarterly Mean	38	0	9.917	6.333	12.333

n(small)= 16 n(big)= 38 (P = <0.001)

Results:

T = 636.000 (P = <0.001)

There is a statistically significant difference between the input groups (P = <0.001).

WWA3

t-test

Normality Test: Passed (P = 0.145)

Equal Variance Test: Passed (P = 0.410)

Group Name	N	Missing	Mean	Std Dev	SEM
130% Baseline Mean	16	0	17.386	4.337	1.084
Quarterly Mean	38	0	9.974	3.741	0.607

Difference 7.413

Results:

t = 6.342 with 52 degrees of freedom. (P = <0.001)

There is a statistically significant difference between the input groups (P = <0.001).

WWFCZ1

Mann-Whitney Rank Sum Test

Normality Test: Passed (P = 0.134)
Equal Variance Test: Failed (P < 0.050)

Group Name	N	Missing	Median	25%	75%
130% Baseline Mean	16	0	15.367	12.642	21.250
Quarter Mean	38	0	8.083	6.000	10.167

n(small)= 16 n(big)= 38 (P = <0.001)

Results:

T = 704.000 (P < 0.001)

There is a statistically significant difference between the input groups (P < 0.001)).

WWFCZ2

Mann-Whitney Rank Sum Test

Normality Test: Passed (P < 0.050)

Group Name	N	Missing	Median	25%	75%
130% Baseline Mean	16	0	16.833	14.000	20.417
Quarter Mean	38	0	8.250	6.500	10.333

n(small)= 16 n(big)= 38 (P = <0.001)

Results:

T = 701.500 (P < 0.001)

There is a statistically significant difference between the input groups (P < 0.001).