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) – December 2006 to February 2007

Second Issue

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) – December 2006 to February 2007

April 2007

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Executive Summary

This is the fourth quarterly environmental monitoring and audit (EM&A) summary report presenting the progress of environmental monitoring and audit works for the reporting period between December 2006 and February 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 5.45 mg/L was recorded at WWA1 on 28 February 2007 and the lowest DO level for bottom position of 5.37 mg/L was recorded at WWA3 on 23 February 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 7.6 Nephelometric Turbidity Unit (NTU) was recorded at WWFCZ2 on 06 January 2007. There was 1 exceedance of Tby Limit Levels during the reporting period when compared with the established baseline check criteria in Section 3.3 of this report.

The highest SS level of 25.8 mg/L was recorded at WWA2 on 05 February 2007. There were 21 exceedances of SS Baseline Check Criteria and 1 exceedance 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 5.43 mg/L was recorded at WWFCZ2 on 12 February 2007 and the lowest level for bottom position of 5.32 mg/L was recorded at WWFCZ2 on 16 February 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 7.0 NTU was recorded at WWFCZ2 on 06 January 2007. There was 1 exceedance of Tby Limit Level on 06 January 2007 during the reporting period when compared with the established baseline check criteria in Section 3.3 of this report.

The highest SS level of 28.8 mg/L was recorded at WWFCZ1 on 31 January 2007. There were 7 exceedances of SS Baseline Check Criteria, 1 exceedance of Action Level and 1 exceedance 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 100.18 tonnes of Construction & Demolition (C&D) waste and 2,155.48 tonnes of C&D materials (Public Fill) 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

No environmental complaint was received during the reporting period.

Exceedance

There were no exceedances for noise monitoring during the reporting period. However, there were 33 exceedances of marine water quality monitoring during the reporting period. Investigations have been conducted for the exceedances. No dredging and reclamation works were conducted during the reporting period. Neither muddy water nor abnormal activities were observed during marine water monitoring period. Also, High levels were also recorded at respective control stations. The exceedances were unlikely related to the Project.

Notification of Summons and Successful Prosecution

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

Environmental Licences

No new environmental licence 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
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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 (MEMCL)	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 fourth 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 December 2006 to February 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 site was closed from 15 to 25 February 2007 during Chinese New Year. The major construction activities carried out by CT during the reporting period included:

- Construction of upper RC retaining wall and backfilling at Seawall A
- Installation of precast panel at Seawall A and B; and
- · Removal of stockpile at Seawall B.

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 32) 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 33). 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 #

			Monitoring locations									
Parameters		ww	A 1	WWA2		WWA3		WWF	CZ1	WWFCZ2		
		Action Level	Limit Level	Action Level	Limit Level	Action Level	Limit Level	Action Level	Limit Level	Action Level	Limit Level	
					Mid	-ebb						
DO	Surface & middle	3.5	3.5	3.5	3.4	3.4	3.3	5.0 *	5.0	5.0 *	5.0	
(mg/L)	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	
5	SS (mg/L)	25.3	26.0	22.2	23.1	24.6	25.2	26.3	30.3	22.6	22.9	
					Mid-1	flood						
DO (m m/l)	Surface & middle	3.3	3.3	3.4	3.3	3.5	3.3	5.0 *	5.0	5.0 *	5.0	
(mg/L)	Bottom	3.2	3.2	3.2	3.2	3.2	3.2	3.3	2.0	3.5	2.0	
7	Гby (NTU)	6.9	7.2	7.6	8.2	8.7	10.7	7.4	11.0	5.9	6.5	
9	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									
	raiailleteis	WWA1	WWA2	WWA3	WWFCZ1	WWFCZ2					
	Mid-ebb										
DO	Surface & middle	5.4	5.4	5.4	5.4	5.4					
(mg/L)	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-f	lood							
DO (mg/l)	Surface & middle	5.3	5.3	5.3	5.3	5.3					
(mg/L)	Bottom	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 undertaking 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 5.45 mg/L was recorded at WWA1 on 28 February 2007 and the lowest DO level for bottom position of 5.37 mg/L was recorded at WWA3 on 23 February 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 7.6 Nephelometric Turbidity Unit (NTU) was recorded at WWFCZ2 on 06 January 2007. There was 1 exceedance of Tby Limit Levels during the reporting period when compared with the established baseline check criteria in Section 3.3 of this report.

The highest SS level of 25.8 mg/L was recorded at WWA2 on 05 February 2007. There were 21 exceedances of SS Baseline Check Criteria and 1 exceedance 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 5.43 mg/L was recorded at WWFCZ2 on 12 February 2007 and the lowest level for bottom position of 5.32 mg/L was recorded at WWFCZ2 on 16 February 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 7.0 NTU was recorded at WWFCZ2 on 06 January 2007. There was 1 exceedance of Tby Limit Level on 06 January 2007 during the reporting period when compared with the established baseline check criteria in Section 3.3 of this report.

The highest SS level of 28.8 mg/L was recorded at WWFCZ1 on 31 January 2007. There were 7 exceedances of SS Baseline Check Criteria, 1 exceedance of Action Level and 1 exceedance 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 was	te or material	Disposal at	No. of loads or quantities		
C&D waste		WENT Landfill	100.18 tonnes		
C&D material	By truck	Public Filling Reception Facility in	1,147.48 tonnes		
Cad Illaterial	By barge	Tuen Mun Area 38	1,008 tonnes		
Chemical waste		Collected by licensed collector	0		

7.2 Complaint Record

There was no environmental complaint received during the reporting period.

7.3 Summary of Exceedance

There were no exceedances for noise monitoring during the reporting period.

However, there were 33 exceedances of marine water quality monitoring during the reporting period. Investigations have been conducted for the exceedances. No dredging and reclamation works were conducted during the reporting period. Neither muddy water nor abnormal activities were observed during marine water monitoring period. Also, High levels were also recorded at respective control stations. The exceedances were unlikely related to the Project.

The investigation summary of marine water quality are given in **Appendix I**. The exceedances are summarized in the **Table 7-2**.

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 7-3**. 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 December 2006 to February 2007.

		Number of exceedances									
Tide	Month	DO (mg/L)			Tby (NTU)			SS (mg/L)			Total
		Baseline Check	Action Level	Limit Level	Baseline Check	Action Level	Limit Level	Baseline Check	Action Level	Limit Level	
q	Dec	0	0	0	0	0	0	9	0	0	9
Mid-Ebb	Jan	0	0	0	0	0	1	7	0	0	8
Σ	Feb	0	0	0	0	0	0	5	0	1	6
pc	Dec	0	0	0	0	0	0	4	0	0	4
Mid-flood	Jan	0	0	0	0	0	1	1	1	1	4
	Feb	0	0	0	0	0	0	2	0	0	2
To	otal	0	0	0	0	0	2	28	1	2	33

Table 7-3: Comparison of quarterly mean and 130% of the baseline mean

Table 7-3:	Comparison o	r quarterly mean	the baseline mean			
			ebb	Mid-flo	ood	
Monitoring	g Station	130% Baseline Mean	Quarterly Mean	130% Baseline Mean	Quarterly Mean	
Impact Station	WWA1	22.1	10.0	20.9	9.5	
	WWA2	24.8	10.0	21.6	9.9	
	WWA3	22.5	9.3	22.6	10.4	
	WWFCZ1	24.6	9.2	21.6	11.9	
	WWFCZ2	22.7	9.6	22.8	12.3	
Control Station	WRA1	22.2	9.6	23.1	11.3	
	WRA2	22.5	10.3	23.2	11.8	
	WRA3	22.8	9.9	21.2	11.1	
	WFCZR1	23.4	9.7	22.5	14.2	
	WFCZR2	26.0	9.7	24.2	11.7	

7.4 Notification of Summons and Successful Prosecution

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

7.5 Environmental Licenses

No new environmental licence was granted during the reporting period. The CT applied for extension for disposal of C&D materials to PFRF at Tuen Mun Area 38 by barge and CEDD approved the application on 30 January 2007. 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-RW0326-06	09 Jun 2006	08 Dec 2006
Construction Noise Permit	GW-RW0349-06	23 Jun 2006	22 Dec 2006
Construction Noise Permit	GW-RW 0654-06	14 Nov 2006	15 Mar 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

Regarding the air quality, unpaved area within the site was observed dry and dusty. 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 clearing of mud trails.

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

The silt curtain at Seawall B was observed broken on 13 February 2007. The CT was advised to repair the silt curtain promptly.

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

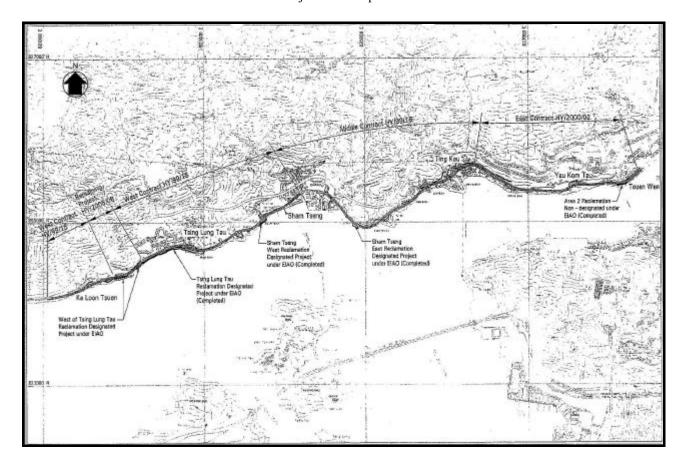
The EM&A programme was implemented during the reporting period, including marine water quality monitoring and environmental site audits. The environmental performance of the Contractor during the reporting period was in general satisfactory. Upon advised by the ET, remedial measures had been taken to 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)

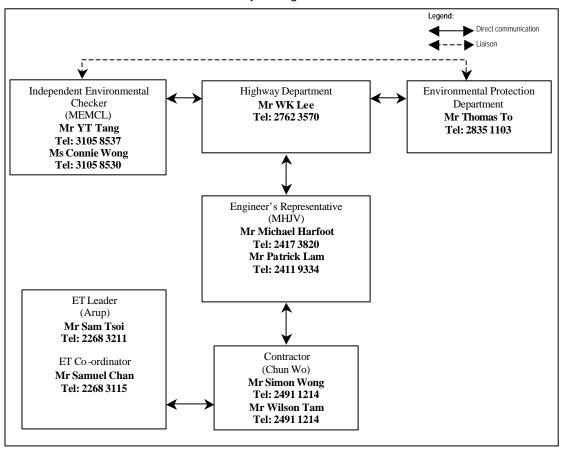
Appendix A
Project Location Plan

Project location plan



Appendix B
Project Organisation
Chart

Project Organisation



Appendix C Construction Programme

ANCHO Works to Sloce No. 65W-D/C170 EConstruct D/8 certiagensy road autabing AZA THE CONTROL PORTOGIAL WORKS to Stope No. 45 W.D.R. Divert the original read to the new road (WB) ConstructERS destingency road surfacing, 1 lane
REGISE, clear existing road surface, 1 lane
Bloonstruct EIB certispayery road surfacing, 1 fore Landscaping Worl SERE close extering road justace Construct Sip Rd authorig work MeRemedal works to Slope No. 95W-DFR89 Market Unitities Laying ErB Stip Rd: Urd drainage & utilities TALO Meeting Helip Rd: Excav & damplish add rood surface onstruct VirB, EB Korb, Barnararoad aurtacing Divert the odginal road to the new road (E,WB) West Construct With, Elis Beam Banker & Foot Ber Statifies Laying emodest works to Slope No. 65W-DTH286 INTERPRESENTATION TO STOPE NO. ESW. DIFFER V.D.: clear existing road surface, it land Sconstruct W/B carriageway road surfa THIS SEGING Propos Nivert the original road to the new lar netract W/B, E/9: U/G drafts, watermain, etc. all in Watermain Connection to Chitigs (25 m) Will SECTION MORE TO SION NO. 65W-DY39 ETRWISE Excession & joinelish adaptog road surrice

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Appendix D
Summary of EM&A
Requirements

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 min)		1
Between 1900-2300 hours on normal weekdays		Once per week	
Between 2300-0700 hours of next day	Leq(5 min)*	Office per week	3 (consecutive)
Between 0700-1900 hours on holidays			

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

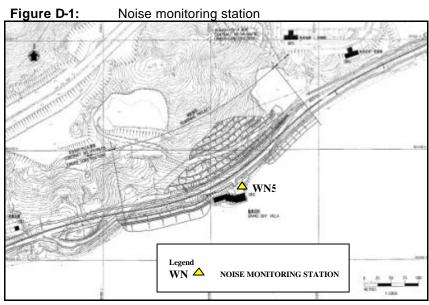
Monitoring Location

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 faç ade 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

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

Appendix E

Event and Action Plan

Construction Noise

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

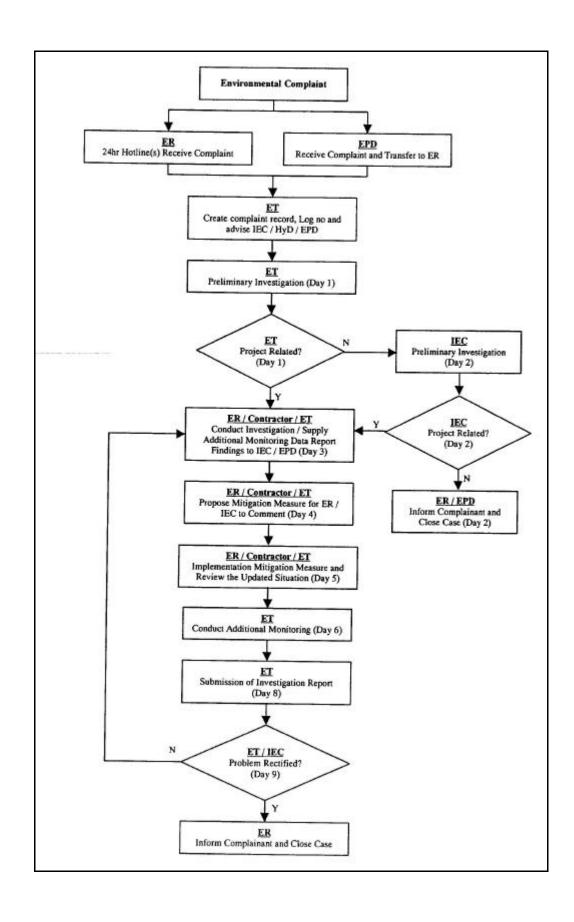
Event		Action		
Event	ET Leader	IEC	ER	Contractor
Action Level	 Notify IEC and the Contractor. Carry out investigation. Report the results of investigation to the IEC and the Contractor. Discuss with the Contractor and formulate remedial measures. Increase monitoring frequency to check mitigation effectiveness. 	 Review with the analysed results submitted by ET. Review the proposed remedial measures by the Contractor and advise ER accordingly. Supervise the implementation of remedial measures. 	 Confirm receipt of notification of exceedance in writing. Notify the Contractor. Require the Contractor to propose remedial measures for the analysed noise problem. Ensure remedial measures are properly implemented. 	Submit noise mitigation proposals to IEC. Implement noise mitigation proposals.
Limit Level	 Notify the IEC, the ER, the DEP and the Contractor. Identify the source. Repeat measurement to confirm findings. Increase monitoring frequency. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented. Inform the IEC, the ER, and the DEP the causes & actions taken for the exceedances. Assess effectiveness of the Contractor's remedial actions and keep the IEC, the DEP and the ER informed of the results. If exceedance stops, cease additional monitoring 	 Discuss amongst the ER, the ET Leader and the Contractor on the potential remedial actions. Review the Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly. Supervise the implementation of remedial measures. 	 Confirm receipt of notification of exceedance in writing. Notify the Contractor. Require the Contractor to propose remedial measures for the analysed noise problem. Ensure remedial measures are properly implemented. 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. 	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

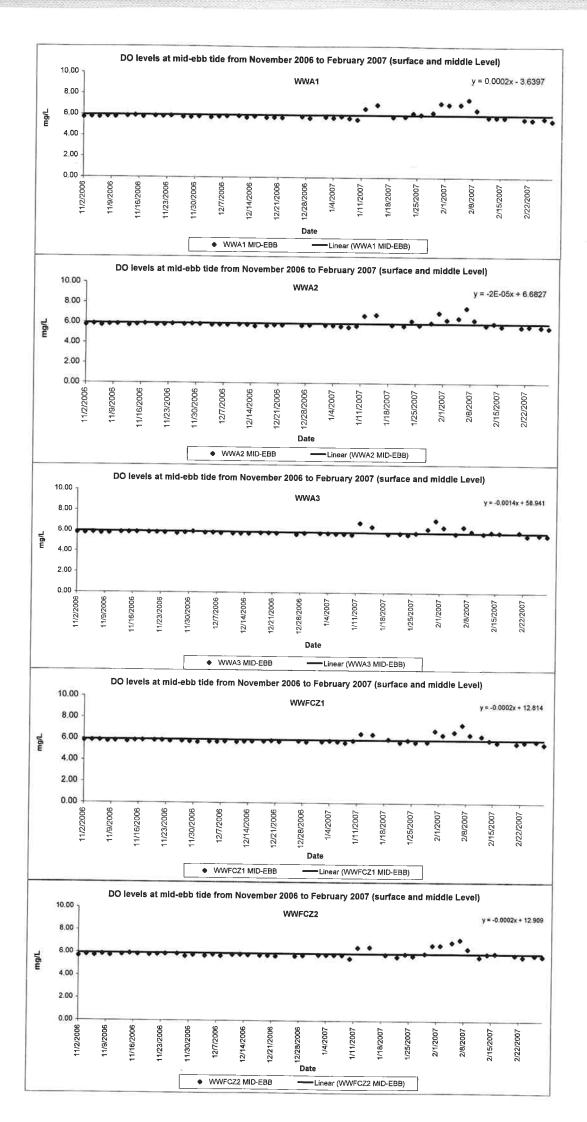
Table E-2: Event and Action plan for marine water quality

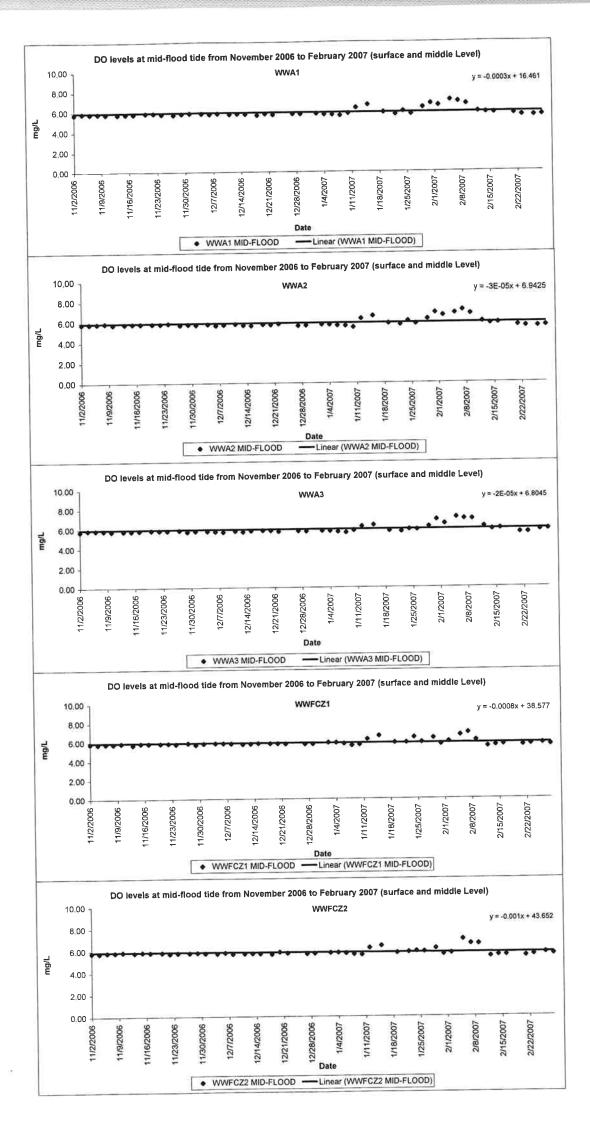
Table E-2:	Event and Action plan for marine	water quanty	Astion	
Event			Action	
A .: 1	ET Leader	IEC	ER	Contractor
Action Level Action level being exceeded by one sampling day	Repeat in-situ measurement to confirm findings. Identify source(s) of impact. Inform the IEC and the Contractor. Check monitoring data, all plant, equipment and the Contractor's working methods. Discuss mitigation measures with the IEC and the Contractor. Repeat measurement on next day of exceedance.	Discuss with the ET Leader and the Contractor on the mitigation measures. Review proposals on mitigation measures submitted by the Contractor and advised the ER accordingly. Assess the effectiveness of the implemented mitigation measures.	Discuss with the IEC on the proposed mitigation measures. Make agreement on the mitigation measures to be implemented.	Inform the ER and confirm notification of the non-compliance in writing. Rectify unacceptable practice. Check all plants and equipment. Consider changes of working methods. Discuss with the ET Leader and the IEC and propose mitigation measures to the IEC and the ER. Implement the agreed mitigation measures.
Action level being exceeded by more than one consecutive days	Repeat in-situ measurement to confirm findings. Identify source(s) of impact. Inform the IEC and the Contractor. Check monitoring data, all plant, equipment and the Contractor's working methods. Discuss mitigation measures with the IEC and the Contractor. Ensure mitigation measures are implemented. Prepare to increase the monitoring frequency to daily. Repeat measurement on next day of exceedance.	Discuss with the ET Leader and the Contractor on the mitigation measures. Review proposals on mitigation measures submitted by the Contractor and advised the ER accordingly. Assess the effectiveness of the implemented mitigation measures.	Discuss with IEC on the proposed mitigation measures. Make agreement on the mitigation measures to be implemented. Assess the effectiveness of the implemented mitigation measures.	Inform the ER and confirm notification of the non-compliance in writing. Rectify unacceptable practice. Check all plants and equipment. Consider changes of working methods. Discuss with the ET Leader and the IEC and propose mitigation measures to the IEC and the ER within 3 working days. Implement the agreed mitigation measures.
Limit Level				
Limit level being exceeded by one sampling day Limit level being	Repeat in-situ measurement to confirm findings. Identify source(s) of impact. Inform the IEC, the Contractor and the DEP. Check monitoring data, all plant, equipment and the Contractor's working methods. Discuss mitigation measures with the IEC, the ER and the Contractor. Ensure mitigation measures are implemented. Increase the monitoring frequency to daily until no exceedance of the Limit Level. Repeat in-situ measurement to confirm	Discuss with the ET Leader and the Contractor on the mitigation measures. Review proposals on mitigation measures submitted by the Contractor and advised the ER accordingly. Assess the effectiveness of the implemented mitigation measures. Discuss with the ET Leader and	Discuss with IEC, the ET Leader and the Contractor on the proposed mitigation measures. Request the Contractor to critically review the working methods. Make agreement on the mitigation measures to be implemented. Assess the effectiveness of the implemented mitigation measures. Discuss with IEC, the ET Leader and the	Inform the ER and confirm notification of the non-compliance in writing. Rectify unacceptable practice. Check all plants and equipment. Consider changes of working methods. Discuss with the ET Leader, the IEC and the ER, and propose mitigation measures to the IEC and the ER within 3 working days. Implement the agreed mitigation measures. Inform the ER and confirm notification of
exceeded by more than one consecutive days	findings. Identify source(s) of impact. Inform the IEC, the Contractor and the DEP. Check monitoring data, all plant, equipment and the Contractor's working methods. Discuss mitigation measures with the IEC, the ER and the Contractor. Ensure mitigation measures are implemented. Increase the monitoring frequency to daily until no exceedance of the Limit Level for two consecutive days.	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.	Contractor on the proposed mitigation measures. Request the Contractor to critically review the working methods. Make agreement on the mitigation measures to be implemented. Assess the effectiveness of the implemented mitigation measures. 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.	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.

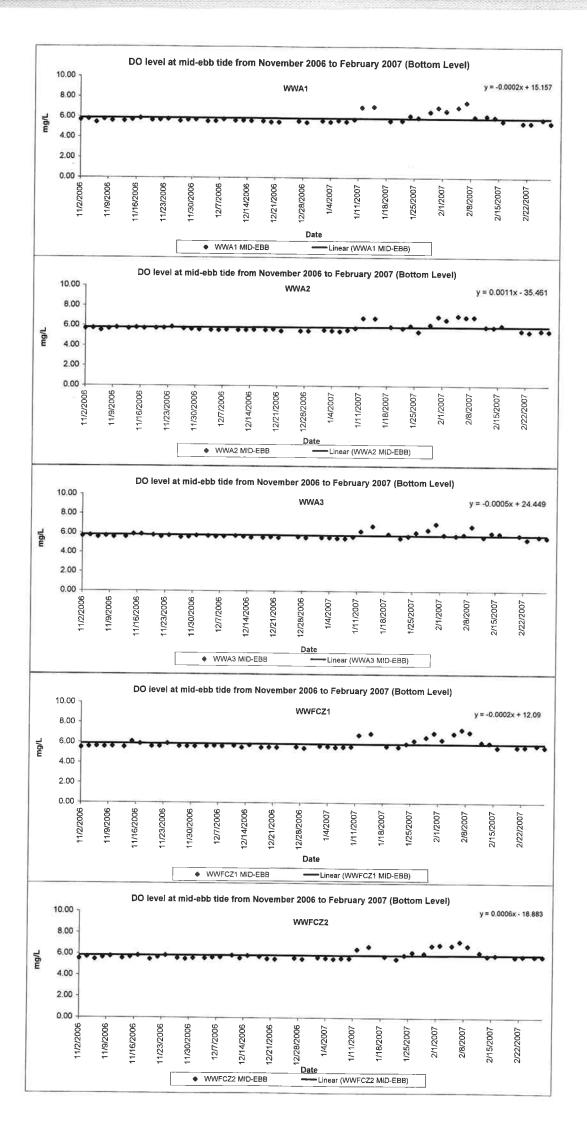
Appendix F
Complaint Procedures

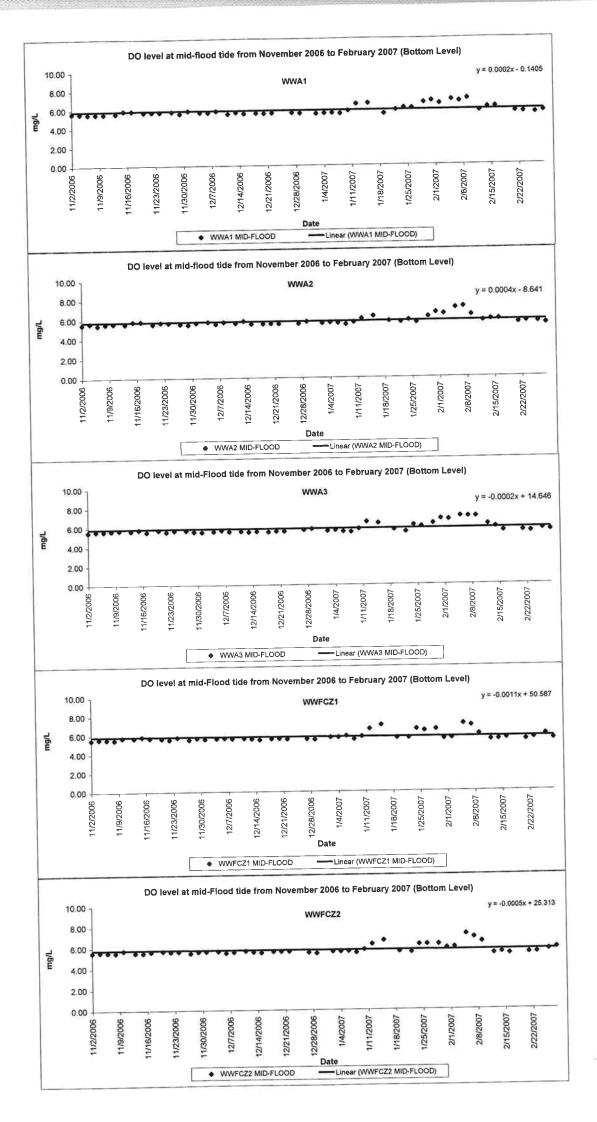


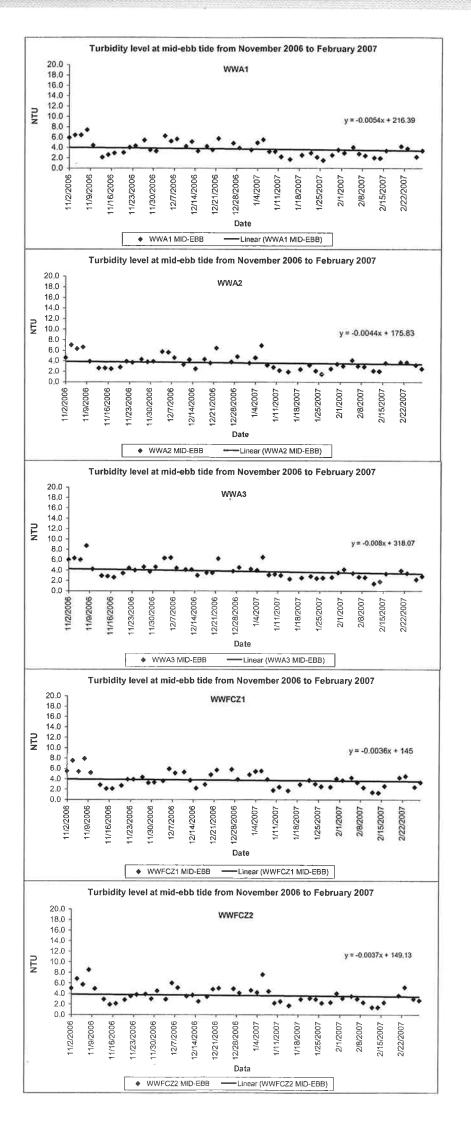
Appendix G
Graphical Presentation
of Marine Water
Monitoring Results

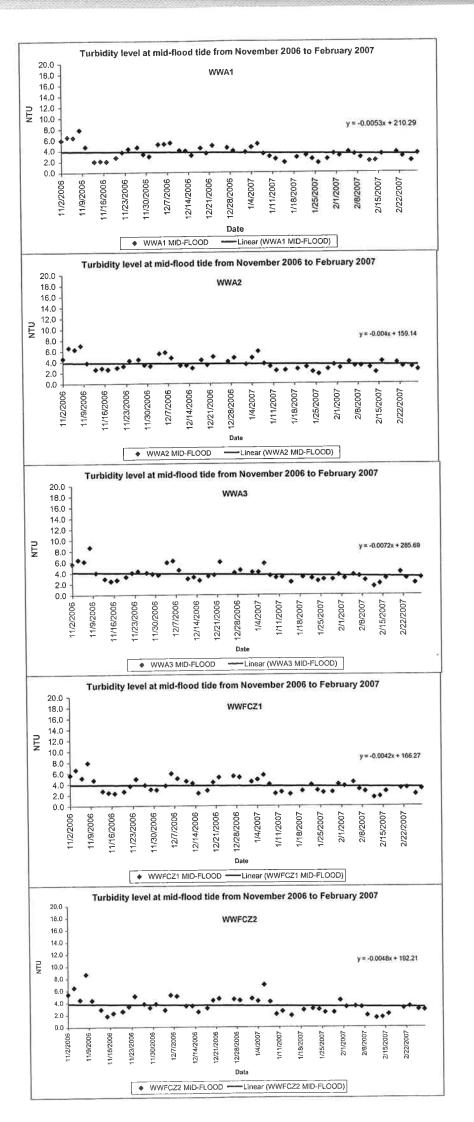


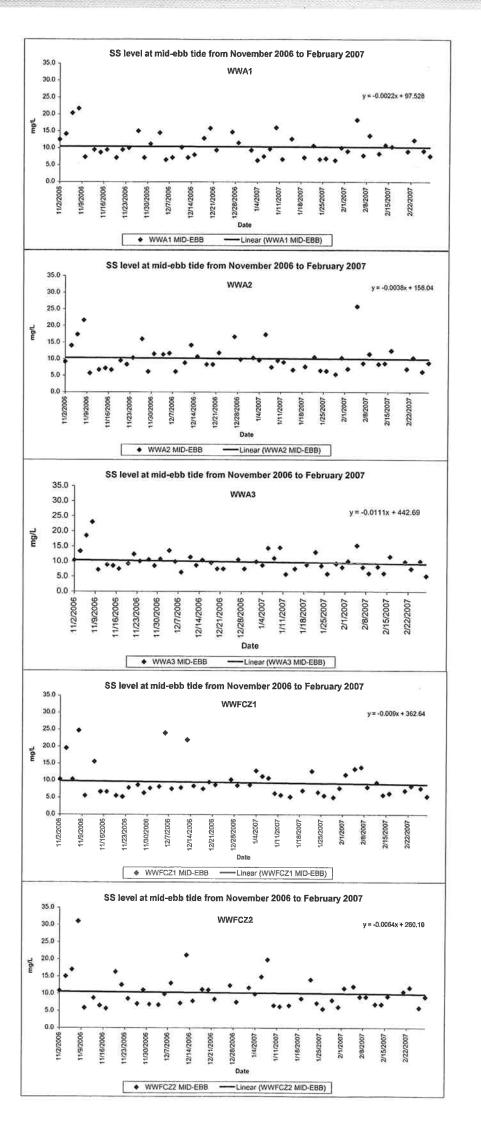


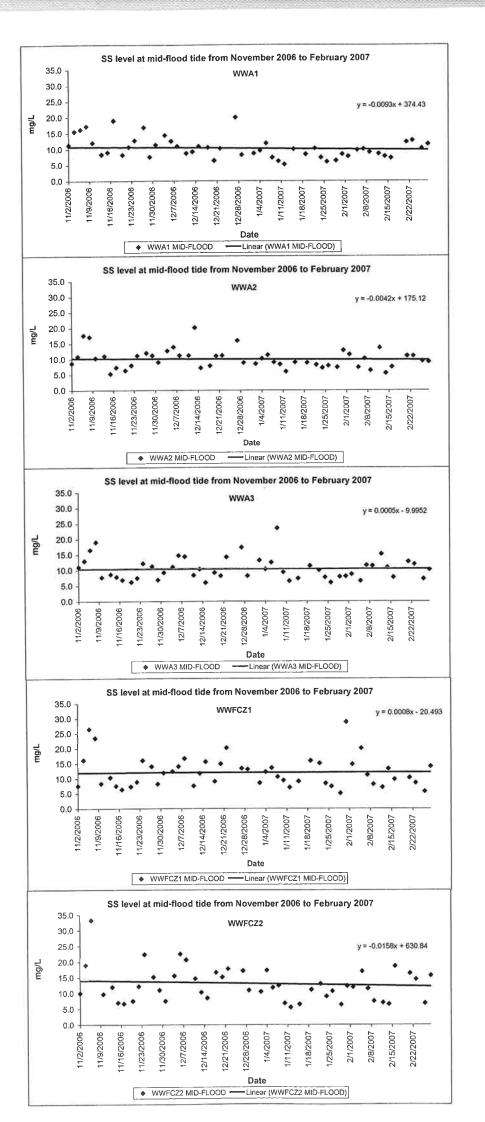












Appendix H
Implementation Status
on Environmental **Protection** Requirements

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

	Location/	Implementation	Relevant Standard or		Implement	ation Stages		Implementation	
Environmental Protection Measures	Timing	Agent	Requirement	Design	Construction	Operation	Decommission	Status	
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: • 5m high temporary noise barriers with a material surface density of at least 7 kg/m² shall be erected to screen the faç ade of along Castle Peak Road and the Western end faç ade. • 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.	Tau Reclamation	Contractor	Environmental Permit No. 219/2005 Condition 3.11		•			To be implemented when Grand Bay Villa becomes occupied	

	Location/	Implementation	Relevant Standard or		Implement	tation Stages		Implementation
Environmental Protection Measures	Timing	Agent	Requirement	Design	Construction	Operation	Decommission	Status
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.	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

Contract No. HY/2005/06 Castle Peak Road Improvement - West of Tsing Lung Tau (EP No. EP-219/2005) Marine Water Exceedance Investigation Summary

		Remark	Refer to ET's field record & CT's daily records.	Ditto
		Closing Date	2-Jan-07	Ditto
		CT's action	No action	Ditto
		ET's investigation	Neither muddy water nor abnormal activities which would likely cause deterioration of water quality were observed at all impact monitoring stations on 04 Dec 2006 by ET's field staff. No marine works were being conducted on the same day. The exceedances were marginal against the Baseline Check Criteria, High levels of SS were also recorded at respective control stations. The exceedances are considered unlikely due to the construction activities of the Project. The Contractor, however, was reminded to maintain regular clearance of perimeter channels at site boundaries to intercept stormwater entering the site and implement appropriate mitigation measures to minimize run-off of muddy site effluent into storm drains.	Ditto
	SS (mg/L)	Level at Impact Station	4.	13.5
H		Control	10.5	7.5
		Baseline Check	13.0	13.0
Data		Level at Impact Station	ı	ě
f Monitoring	Tby (NTU)	Control		
Exceedance of Monitoring Data		Baseline Check		æ
3		Level at Impact Station		
	DO (mg/L)	Control	.	1
) oa	Baseline Check		
		Position	,	,
	location		WWA1	WWA3
	Tide		Mid-ebb	mid-ebb
	Date		4-Dec-06	4-Dec-06

Contract No. HY/2005/06 Castle Peak Road Improvement - West of Tsing Lung Tau (EP No. EP-219/2005) Marine Water Exceedance Investigation Summary

	Remark		Refer to ET's field record & CT's daily records.
	Closing Date		2-Jan-07
	CTe action		No action
ET's Investigation			Neither muddy water nor abhormal activities which would likely cause deterioration of water quality were observed at all impact monitoring stations on 06 Dec 2006 by ET's field staff. No manine works were being conducted on the same day. The location of WWFCZ1 is far away from the construction site and no exceedances were recorded at WWA1, WWA2, and WWA3, which are closer to the construction site. The exceedance was unlikely due to the construction of marine water. The Contractor, however, was reminded to maintain regular dearance of perimeter channels at site boundaries to intercept stormwater entering the site and implement appropriate mitigation measures to minimize run-off of muddy site effluent into storm drains.
		Level at Impact Station	0. 5.95 × 0.0 × 1.0 · 5.0 × 0.0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
	SS (mg/L)	Control	11.3
		Baseline Check	13.0
Data		Level at Impact Station	·
f Monitoring	Tby (NTU)	Control	,
Exceedance of Monitoring Data		Baseline Check	1
3		Level at Impact Station	
	DO (mg/L)	Control	
	00	Baseline Check	
		Position	TT .
		Location	WWFGZ1
	Tide		mid-ebb
		Date	90-0-09 -0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0

		Remark	Refer to ET's field record & CT's daily records.
		Closing Date	21-Dec-06
		GTs action	No action
		ET's investigation	No muddy water and abnormal activities were observed by our field staff during marine water quality monitoring. The location of WWFCZ2 is far away from the construction sites and no exceedances were recorded at other impact monitoring stations (WWA1, WWA2 and WWA3), which are closer to the construction site, on 08 December 2006. In addition, higher level of SS (19.8 mg/L) was also recorded at control station, WFCR2. Hence, the exceedance is construction activities of the Project. However, the Contractor was reminded to maintain regular clearance of perimeter channels at site boundaries to intercept stormwater entering the site and implement appropriate mitigation measures to minimize run-off of muddy site effluent into storm drains.
		Level at Impact Station	20.70 20.00
100	SS (mg/L)	Control	0. 8.
MINISTER IN		Baseline Check	13.0
Data		Level at Impact Station	
of Monitoring	Tby (NTU)	Control	
Exceedance of Monitoring I		Baseline Check	
3		Level at Impact Station	,
	DO (mg/L)	Control	
	00	Baseline Check	,
		Position	6
	Location	To a second	Mid-ebb WWFCZZ
	Tide		Mid-ebb
	Date		8-Dec-06

Contract No. HY/2005/06 Castle Peak Road Improvement - West of Tsing Lung Tau (EP No. EP-219/2005) Marine Water Exceedance Investigation Summary

	Remark		Refer to E1's field record & CT's daily records.	Ditto	Ditto
3			2-Jan-07	Ditto	Ditto
		No action		Ditto	Ditto
			Neither muddy water nor abnormal activities which would abnormal activities which would likely cause deterioration of water quality were observed at all impact monitoring stations on 13 Dec 2006 by ET's field staff. No marine works were being conducted on the same day. High levels of SS were also recorded at respective control stations. The exceedances are considered unlikely due to the construction activities of the Project. The Contractor, however, was reminded to maintain regular clearance of perimeter channels at site boundaries to intercept stormwater entering the site and implement appropriate mitigation measures to minimize run-off of muddy site effluent into storm drains.	Ditto	Ditto
	SS (mg/L)	Level at Impact Station	24	22.0	20.2
		Control	27.38	11.5	12.2
		Baseline Check	13.0	13.0	17.0
Data		Level at Impact Station		136	**
f Monitoring	Tby (NTU)	Control		1	
Exceedance of Monitoring Data		Baseline Check	i		•
3		Level at Impact Station			
	DO (mg/L)	Control			
	00	Baseline Check			э
		Position	,	,	
		Location	WWA2	Mid-flood WWFCZ1	WWA2
Date Tide L		Tide	Mid-ebb	Mid-flood	Mid-ebb
		Date	13-Dec-06	13-Dec-06	13-Dec-06

Sontract No. HY/2005/06	istle Peak Road Improvement - West of Tsing Lung Tau (EP No. EP-219/2005)	trine Water Exceedance Investigation Summary
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	2		Refer to ET's field record & CT's daily records.	Refer to ET's field record & CT's daily records,
			5-Jan-07	5-Jan-07
			No action	No action
		ET's investigation	Neither muddy water nor abnormal activities which would likely cause deterioration of water quality were observed at all impact monitoring stations on 20 Dec 2006 by ET's field staff. No marine works were being conducted on the same day. High levels of SS were also recorded at control station, WRA1. The exceedance is considered unlikely due to the construction activities of the Project. The Contractor, however, was reminded to maintain regular clearance of perimeter channels at site boundaries to intercept stormwater entering the site and implement appropriate mitigation measures to minimize nun-off of muddy site effluent into storm drains.	Neither muddy water nor abnormal activities which would likely cause deterioration of water quality were observed at all impact monitoring stations on 22 Dec 2006 by ET's field staff. No marine works were being conducted on the same day. In addition, the loaction of WWFCZ2 is far away from the the construction sites. High level of SS was also recorded at control station, WFCZR2. The exceedance is considered at control station, WFCZR2. The exceedance is considered onlikely due to the construction activities of the Project. The Contractor, however, was clearance of perimeter channels at site boundaries to intercept stormwater entering the site and implement appropriate mitigation measures to minimize run-off of muddy site effluent into storm drains.
		Level at Impact Station	80 80	82
	SS (mg/L)	Control	12.7	14.2
		Baseline Check	13.0	13.0
Data		Level at Impact Station	6.	*
f Monitoring	Tby (NTU)	Control		Α.
Exceedance of Monitoring		Baseline Check		•
		Level at Impact Station	ı.	
	DO (mg/L)	Control	TV.	
	00	Baseline Check	je .	
		Position		ri .
	Location		WWA1	Mid-flood WWFCZ2
	Tide		Mid-ebb	Mid-flood
	Date		20-Dec-06	22-Dec-06

Contract No. HY/2005/06 Castle Peak Road Improvement - West of Tsing Lung Tau (EP No. EP-219/2005) Marine Water Exceedance Investigation Summary

	Remark	Î.	Keter to E. is field record & CT's daily records,	Ditto	Ditto	Ditto			
2		5-Jan-07		Ditto	Ditto	Ditto			
			No action		Ditto	Ditto			
			Neither muddy water nor behomen activities which would likely cause deterioration of water quality were observed at all impact monitoring stations on 22 Dec 2006 by ET's field staff. No marine works were being conducted on the same day. High level of SS was also recorded at control station, WFCZR2. In addition, the loaction of WWFCZ2 is far away from the the construction sites. The exceedances are considered unlikely due to the construction activities of the Project. The Contractor, however, was reminded to maintain regular clearance of perimeter channels at site boundaries to intercept shoundaries to intercept and implement appropriate mitigation measures to maintains for medians.		Ditto	Ditto			
	Tby (NTU) SS (mg/L)				Level at Impact Station	7. 5. 45 2 8 9 8 7 9 7 5 7 4 8 9 9 7 7 7 7 4 8 9 9 7 7 7 7 8 9 9 7 9 7 7 7 7 8 9 9 7 9 7	16.7	20.0	17.2
		Control	10.2	8,5	14.8	12,5			
		Baseline Check	13.0	13.0	17.0	17.0			
Data		Level at Impact Station	.4.)		l.	6.			
Exceedance of Monitoring Data		Control		ı	DE .				
xceedance o		Baseline Check	0	ii!					
Ù		Level at Impact Station							
	DO (mg/L)	Control	,						
	J) OQ	Baseline Check			h				
		Position	,			- 2			
		Location	WWA1	WWA2	WWA1	Mid-flood WWFCZ2			
		4 9E	Mid-ebb	Mid-ebb	Mid-flood	Mid-flood			
		Date	27-Dec-06	27-Dec-06	27-Dec-06	27-Dec-06			

		Remark	Refer to ET's field record & CT's daily records.
		Closing Date	18-Jan-07
		CT's action	No action
		E i s investigation	Neither muddy water nor abnormal activities which would likely cause deterioration of water quality were observed at all impact another stations on 04 January 2007 by ET's field staff. The location of WWFC22 is far away from the construction sites and no exceedances were recorded at other impact monitoring stations (WWAA1, WWA2 and WWAA2), which are closer to the construction site. In addition, high level of SS (17.2 mg/L) was recorded at control station, WFCR2. No marine works were being conducted during monitoring period. The exceedance is considered unlikely due to the construction activities of the Project. The Contractor, however, was reminded to maintain regular clearance of perimeter channels at site boundaries to intercept stormwater entering the site and implement appropriate mitigation measures to minimize run-off of muddis site edifluent into storm
		Level at Impact Station	
	SS (mg/L)	Control	17.2
		Baseline Check	17.0
Data		Level at Impact Station	
F Monitoring	Tby (NTU)	Control	
Exceedance of Monitoring		Baseline Check	
		Level at Impact Station	
	DO (mg/L)	Control	
	00	Baseline Check	
		Position	9
	Location		Mid-flood WWFCZZ
	F		Mid-flood
	\$		4-Jan-07

Contract No. HY/2005/06 Castle Peak Road Improvement - West of Tsing Lung Tau (EP No. EP-219/2005) Marine Water Exceedance Investigation Summary

	Remark		Refer to ET's field record & CT's daily records.	Ditto	Ditto	Ditto						
			22-Jan-07	Ditto	Ditto	Ditto						
	CT's action	No action		Ditto	Ditto	Ditto						
ETs investigation			Neither muddy water nor abnormal activities which would likely cause deterioration of water quality were observed at all impact another stations on 06 January 2007 by ET's field staff. Higher levels of SS field staff. Higher levels of the control stations. In addition, the location of WWP/CZ2 is far away from the construction sites. No marine works were being conducted on the same day. The exceedances are considered unlikely due to the construction activities of the Project. The Contractor, however, was reminded to however, was reminded to however, was reminded to however, was reminded to however, and repropriate and implement appropriate and implement appropriate and implement appropriate minigation measures to	Ditto	Ditto	Ditto						
	SS (mg/L)							Level at Impact Station	6.77	14.3	14.8	
		Control	12.8	14.2	10.8	ī						
400		Baseline Check	13.0	13.0	13.0							
Data	Tby (NTU)	Level at Impact Station	·	34	9.7	7.0						
Exceedance of Monitoring Data		Control			5,5	5.7						
xceedance		Baseline Check	·		6.5	6,5						
		Level at Impact Station		i.		·						
	DO (mg/L)	Control			*	t						
	n) og	Baseline Check		0	×							
		Position				,						
Date Tide Location		Location	WWA2	WWA3	WWFGZ2	Mid-flood WWFCZ2						
		#Ide	Mid-ebb	Mid-ebb	Mid-ebb	Mid-flood						
		Date	6-Jan-07	6-Jan-07	6-Jan-07	6-Jan-07						

Contract No. HY/2005/06 Castle Peak Road Improvement - West of Tsing Lung Tau (EP No. EP-219/2005) Marine Water Exceedance Investigation Summary

		Remark	Refer to ET's field record & CT's daily records.	Ditto
		Closing Date	22-Jan-07	Ditta
		CT's action	No action	Ditto
		ET's investigation	Neither muddy water nor abnormal activities which would likely cause deterioration of water quality were observed at all impact monitoring stations on 08 January 2007 by ET's field staff. No marine works were being conducted on the same day. In addition, the location of WWFCZ2 is far away from the construction sites. The exceedances are considered unlikely due to the construction activities of the Project. The Contractor, however, was reminded to maintain regular clearance of perimeter channels at site boundaries to intercept stormwater entering the site and implement appropriate mitigation measures to minimize run-off of muddy site effluent into storm drains.	Ditto
		Level at Impact Station	φ. (i)	23.5
	SS (mg/L)	Control	10.8	8.8
		Baseline Check	0.00	17.0
Data		Level at Impact Station	e'	
f Monitoring	Tby (NTU)	Control	·	
Exceedance of Monitoring Data		Baseline Check	ř	3
		Level at Impact Station	·	ı
	DO (mg/L)	Control		E.
	00	Baseline Check		
		Position		Ę.
	acitero		Mid-ebb WWFCZ2	WWA3
	Tide		Mid-ebb	Mid-flood
	d et e		8-Јап-07	8-Jan-07

Contract No. HY/2005/06 Castle Peak Road Improvement - West of Tsing Lung Tau (EP No. EP-219/2005) Marine Water Exceedance Investigation Summary

Closing Date			26-Jan-07 Refer to ET's field record & CT's daily records.			
						No action
			Neither muddy water nor abnormal activities which would likely cause deterioration of water quality were observed at all impact monitoring stations on 10 January 2007 by ET's field staff. No marine works were being conducted on the same day. High SS levels (+10mgL), were also recorded at respective control stations. The exceedances are considered unlikely due to the construction activities of the Project. The Contractor, however, was reminded to maintain regular clearance of perimeter channels at site boundaries to intercept stormwater entering the site and implement appropriate mitigation measures to minimize run-off of muddy site effluent into storm drains.	Ditto		
				SS (mg/L)	Level at Impact Station	0.00
	Control	10.2	13.5			
	Baseline Check	13.0	13.0			
Data	Tby (NTU)	Level at Impact Station				
Monitoring		Control				
Exceedance of Monitoring Data		Baseline Check		4		
	DO (mg/L)	Level at Impact Station		\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\		
		Control		,		
		Baseline Check	i			
		Position				
		Location	WWA1	WWA3		
		Tide e	Mid-ebb	Mid-ebb		
		Date	10-Jan-07	10-Jan-07		

Contract No. HY/2005/06 Castle Peak Road Improvement - West of Tsing Lung Tau (EP No. EP-219/2005) Marine Water Exceedance Investigation Summary

THE PERSON IN		Remark	Refer to ET's field record & CT's daily records.
		Closing Date	2-Feb-07
		CTs action	No action
		ETs Investigation	Neither muddy water nor abnormal activities which would likely cause deterioration of water quality were observed at all impact amonitoring stations by ET's fied staff on 22 January 2007. No marine works was conducted during monitoring period. The location of wWAFCZ2 is far away from the construction site and no exceedances were recorded at other impact monitoring stations (WWAA), which are closer to the construction site. The exceedance is considered unlikely due to the construction activities of the Project. The Contractor, however, was reminded to maintain ragular clearance of perimeter channels at site boundaries to intercept stormwater entering the site and implement appropriate mitigation measures to minimize run-off of muddy site effluent into storm drains.
		Level at Impact Station	0.
	SS (mg/L)	Control	5.8
		Baseline Check	13.0
g Data		Level at Impact Station	
of Monitoring	Tby (NTU)	Control	V .
Exceedance of Monitoring		Baseline Check	1.
		Level at Impact Station	
	DO (mg/L)	Control	9
	00	Baseline Check	· c
		Position	i
	Location	Location	Mid-ebb WWFCZ2
	Tide	2	Mid-ebb
Date			22-Jan-07

Contract No., HY/2005/06 Castle Peak Road Improvement - West of Tsing Lung Tau (EP No. EP-219/2005) Marine Water Exceedance Investigation Summary

Remark			Refer to ET's field record & CT's daily records.	Refer to ET's fileld record & CT's daily records.		
	Closing Date	200	8-Feb-07 Refer to field rec CTS dai records,	15-Feb-07 Refe	Ditto	
n CTs action			No action	No action	Ditto	
			Neither muddy water nor abnormal activities were observed by our field staff during marine water quality monitoring. The silt curtain at Seawall B and desitting facilities were properly installed. No marine works was conducted during monitoring station, WWVFCZ1, is located far away from the sile. SS Levels at other impact monitoring stations (WWMA), locating closer to the construction sile, were well within the Action/ Limit Levels. It is likely that the exceedance on 31 Jan 2007 was attributed to an unidentified source near WWMCZ1, and not related to the construction activities of the Project. Subsequent marine water quality monitoring was conducted on 02 February 2007, the Action/Limit Level was satisified at all impact monitoring stations.	The silt curtain at Seawall B and desilting facilities were properly installed during monitoring period. Neither muddy water nor abnormal activities were observed by our field staff on 05 February 2007. No marine works was conducted during monitoring period. In addition, high SS levels were recorded at respective control stations (9,5 evels were recorded at erespective control stations (9,5 evesedances were likely attributed from an unidentified source, and not related to the construction activities of the proportion.		
		Level at Impact Station	28.8	8.5 6.	25.8	
Data		Control	ω. σ	17.3	12.7	
		Baseline Check	17.0	13.0	13.0	
		Level at Impact Station		v.		
Exceedance of Monitoring		Control	î .	ř.	ç	
xceedance		Baseline Check		k		
9	(mg/L)	Level at Impact Station	•	·	Ē.	
		Control	r.	,	eg:	
		Baseline Check	· ·	8	U.	
		Position	į.		ě.	
		Location	Mid-flood WWFCZ1	WWA1	b WWA2	
	F			Mid-ebb	Mid-ebb	
	oto C		31-Jan-07	5-Feb-07	5-Feb-07	

Contract No. HY/2005/06 Castle Peak Road Improvement - West of Tsing Lung Tau (EP No. EP.219/2005) Marine Water Exceedance Investigation Summary

_			-	-	_		
Remark			Ditto	Ditto	Ditto	Refer to ET's field record & CT's daily records.	Refer to ET's field record & CT's daily records.
	Closing Date			Difto	Ditto	15-Feb-07	23-Feb-D7
	CT's action			Ditto	Ditto	No action	No action
		El s mesugation	Ditto	Ditto	Ditto	Neither muddy water nor abnormal activities were observed by our field staff on OT February 2007. No marine works was conducted during monitoring period, the monitoring station, WWFCZ1, is located far away from the site. SS Levels at other impact monitoring stations (WWA1, WWA2 and WWA3), locating closer to the construction site, were well within the Action/Limit Levels. The exceedance was likely attributed from an unidentified source, and not related to the construction activities of the Project.	No marine works was conducted during monitoring period. Neither muddy water nor abnormal activities were observed by our field staff during marine water quality monitoring. In addition, high SS levels were recorded at respective control station (10.8 mg/L). The excedances were likely attributed from an unidentified source, and not related to the construction activities of the Project.
N. S. Salukani	SS (mg/L)	Level at Impact Station	15.2	13.3	20.0	& E.	7.6
		Control	10.2	9.5	16.5	9.2	10.8
i i		Baseline Check	13,0	13.0	17,0	13.0	13.0
) Data	Tby (NTU)	Level at Impact Station					
Exceedance of Monitoring Data		Control		•	ı		
		Baseline Check	1040		ű.	,	l _e
	DO (mg/L)	Level at Impact Station	60	è	9	j.	
		Control	390	a	31	,	,
		Baseline Check	ē.			or.	,
		Position	•	,	ì	×	
	Location			WWFCZ1	WWFCZ1	WWFCZI	WWA1
	Пde	ESTA ESTA	Mid-ebb	Mid-ebb	Mid-flood WWFCZ1	Mid-ebb WWFCZ1	Mid-ebb
Date			5-Feb-07	5-Feb-07	5-Feb-07	7-Feb-07	9-Feb-07

Contract No. HY/2005/06 Castle Peak Road Improvement - West of Tsing Lung Tau (EP No. EP-219/2005) Marine Water Exceedance Investigation Summary

	Remark		Refer to ET's field record & CT's daily records.					
	Closing Date		2-Mar-07					
	CTe action		No action					
	ETe investigation		The site was closed during Chinese New Year. No marine works was conducted during monitoring period. The location of WWFCZ2 is far away from the construction site and SS Levels at other impact monitoring stations (WWA1, WWA2 and WWA3). locating closer to the construction site, were well within the Action* Limit Levels. It is likely that the exceedance on 16 February 2007 was attributed to an unidentified source, and not related to the construction activities of the Project, however, the Contractor was reminded to repair the site curtain promptly to prevent the propagation of sediment plume.					
	SS (mg/L)	Level at Impact Station	1.85 1.03 1.03 1.03 1.03 1.03 1.03 1.03 1.03					
		Control	ro us					
		Baseline Check	17.0					
Data	Tby (NTU)	Level at Impact Station	r.					
Monitoring		Control						
Exceedance of Monitoring Data		Baseline Check	,					
ũ	DO (mg/L)	Level at Impact Station						
		Control	r					
		Baseline Check	·					
		Position						
		Location	WWFGZ2					
		9	Mid-flood WWFCZZ					
Date			16-Feb-07					

Appendix J
Statistical Analysis of SS Monitoring Data

Statistical Analysis for Mid-Ebb Tide

Station WWA1

Mann-Whitney Rank Sum Test

Normality Test: Passed (P = 0.184)Equal Variance 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 37 0 9.333 7.417 11.708 n(small) = 16 n(big) = 37 (P = < 0.001)

Results:

T = 649.500

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

Station WWA2

t-Test

Normality Test: Passed (P = 0.196)Equal Variance Test: Passed (P = 0.558)

Group Name	\mathbf{N}	Missing	Mean	Std Dev	SEM
130% Baseline Mean	16	0	19.104	3.341	0.835
Quarterly Mean	37	0	10.009	3.799	0.625
Difference 9.095					

Results:

t = 8.282 with 51 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 = 0.665)Equal Variance Test: Failed (P < 0.050)

Group N Missing 25% 75% Median 130% Baseline Mean 16 0 16.667 13.750 21.167 Quarterly Mean 37 0 9.167 7.500 10.542 n(small) = 16 n(big) = 37 (P = < 0.001)

Results

T = 698.000

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 51 0 8.000 6.875 10.292 n(small) = 16 n(big) = 37 (P = < 0.001)

Results:

T = 695.500

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 37 0 9.000 6.833 11.542 Quarter Mean n(small) = 16 n(big) = 37 (P = <0.001)

Results:

T = 685.000

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

Statistical Analysis for Mid-Flood Tide

WWA1

Mann-Whitney Rank Sum Test

Normality Test: Passed (P = 0.260)Equal Variance Test: Failed (P < 0.050)

Group Name N Missing 25% Median 75% 16 130% Baseline Mean 0 15.333 12.433 19.750 Quarterly Mean 37 0 9.167 7.667 10.833 n(small) = 16 n(big) = 37 (P = < 0.001)

Results:

T = 653.000 (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 = 0.088)Equal Variance Test: Failed (P < 0.050)

 \mathbf{N} Group Name Missing Median 25% 75% 130% Baseline Mean 16 0 16.750 13.558 21.000 Quarterly Mean 0 37 9.000 7.833 11.167 n(small) = 16 n(big) = 37 (P = < 0.001)

Results:

T = 672.500 (P = < 0.001)

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

WWA3

t-test

Normality Test: Passed (P = 0.363)Equal Variance Test: Passed (P = 0.240)

Group Name Missing Mean Std Dev SEM 130% Baseline Mean 16 0 17.386 4.337 1.084 Quarterly Mean 37 0 10.441 3.553 0.584 Difference 6.945

Results:

t = 6.107 with 51 degrees of freedom, (P = <0.001)

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

WWFCZ1

t-test

Normality Test: Passed (P = 0.259)Equal Variance Test: Passed (P = 0.526)

SEM Missing Std Dev \mathbf{N} Mean **Group Name** 4.957 1.239 16.593 130% Baseline Mean 16 0 0 11.905 4.675 0.768 **Ouarter Mean** 37 Difference 4.687

Results:

t = 3.292 with 51 degrees of freedom. (P = 0.002)

There is a statistically significant difference between the input groups (P = 0.002).

WWFCZ2

t-test

Normality Test: Passed (P = 0.401)Equal Variance Test: Passed (P = 0.829)

Missing Mean Std Dev SEM **Group Name** 17.507 4.365 1.091 130% Baseline Mean 16 0 12.311 4.460 0.733 Quarter Mean 37 0

Difference 5.196

Results:

t = 3.918 with 51 degrees of freedom. (P <= 0.001)

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