Maeda - CREC - SELI Joint Venture







Contract No. DC/2007/12 – Design and Construction of Tsuen Wan Drainage Tunnel

Monthly EM&A Report

(June 2008)

July 2008

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Monthly EM&A Report (June 2008)

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July 2008

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Contents

Exe	ecutive Summary	1
1	INTRODUCTION	3
2	PROJECT INFORMATION	3
	Project Organization and Management Structure Construction Progress Mitigation Measures Status of License and Permit	3 4
3	SUMMARY OF EM&A REQUIREMENT	4
	3.1 Air Quality 3.2 Noise 3.3 Water Quality	8
4	MONITORING RESULT	3
	 4.1 Air Quality 4.2 Noise 4.3 Water Quality Monitoring 4.4 Summary of Exceedances 	5 6
5	WASTE MANAGEMENT	24
6	NON-COMPLIANCE AND DEFICIENCY	24
	6.1 Site Audit by ET	24
7	COMPLAINT	26
8	SUMMARY OF NOTIFICATION OF SUMMONS, SUCCESSFUL P CORRECTIVE ACTIONS	
9	FUTURE KEY ISSUE	26

Appendices

Appendix A	Site Map and Works Area
Appendix B	Organization Chart
Appendix C	Construction Programme
Appendix D	Implementation Status of Environmental Mitigation Measures
Appendix E	Status of License and Permit
Appendix F	Calibration Certificates
Appendix G	Monitoring Locations
Appendix H	EM&A Schedule
Appendix I	Monitoring Results
Appendix J	Interim Notifications of Environmental Quality Limits Exceedances

List of Tables

Table 3-1	Air Quality Monitoring Equipment
Table 3-2	Air Quality Monitoring Locations
Table 3-3	Action & Limit Levels for Air Quality
Table 3-4	Event/Action Plan for Air Quality
Table 3-5	Noise Monitoring Equipment
Table 3-6	Noise Monitoring Locations
Table 3-7	Action & Limit Levels for Noise
Table 3-8	Event/Action Plan for Noise
Table 3-9	Water Quality Monitoring Equipment
Table 3-10	Water Quality Monitoring Locations
Table 3-11	Action/Limit Levels for Water Quality
Table 3-12	Event/Action Plan for Water Quality
Table 4-1	Air Quality Monitoring Results
Table 4-2	Noise Monitoring Results
Table 4-3	Water Quality Monitoring Results
Table 4-4	Summary of Exceedances
Table 5-1	Waste Generated in June 2008
Table 6-1	Site Inspection by ET
Table 7-1	Cumulative Statistic of Environmental Complaint
Table 8-1	Cumulative Statistics of notification of summons and successful prosecutions



Executive Summary

Drainage Services Department (DSD) has awarded the contract for the Design and Construction of Tsuen Wan Drainage Tunnel (hereafter referred to as the "Project") to Maeda-CREC-SELI Joint Venture (MCSJV). MCSJV has appointed Hyder Consulting Limited (HCL) as the Environmental Team (ET) to undertake the Environmental Monitoring and Audit (EM&A) works in accordance with the Environmental Monitoring and Audit Manual (EM&A Manual) and Environmental Permit (EP). Application for variation of the Further EP was submitted on 18 June 2008 (Application No VEP-266/2008) and granted on 27 June 2008 (Permit No. FEP-01/275/2007/A). The notified date of commencement work is January 2008. This Monthly EM&A Report summarises the EM&A works undertaken during the period of June 2008.

According to the EM&A Manual, there are four designated air quality monitoring locations, five designated noise monitoring locations and four water quality monitoring locations during the construction phase: (i) Sik Sik Yuen Ho Fung College (ASR 1, NSR 1 and Intake I-1); (ii) Hong Hoi Chee Hong Temple (ASR 3, NSR 3 and Intake I-2); (iii) Squatters (NSR 6 and Intake I-3); (iv) Beach Tower (Long Beach Gardens) (ASR 8, NSR 8 and Outfall O-1); and (v) Greenview Terrace (Block 1) (ASR 9, NSR 9 and Outfall O-1).

During non-restricted hours, major construction activities undertaken by the Contractor at TWDT were site clearance, hoarding & fencing erection, tree survey & transplanting, slope stabilization, site office formation, pre-construction survey, soil nailing, relocation of verified boulder. No construction activities were undertaken during restricted hours.

One exceedance of 1-hr TSP Action Level was recorded at ASR 1 on 30 June 2008. There is no evidence that the exceedance was caused by the on-site activities; indeed, it might possibly be caused by the facade renovation works at the College due to the close proximity to the monitoring station. Nevertheless, the Contractor was reminded to provide water spraying for all dusty works to minimise the fugitive dust impact. The effectiveness of the mitigation measures provided by the Contractor will be checked by the dust monitoring results of 5 July 2008.

No Action / Limit Level exceedance of DO was recorded in the reporting month. One limit level exceedance of Turbidity was recorded at I-1 on 23 June 2008; however, this exceedance might be contributed by rubbish flowing from up stream and was considered not to be project related. On the other hand, seven limit level exceedances of SS were recorded at I-3-C, I-1, I-1-C, I-2 and I-3 on 4, 10, 16 and 18 June 2008 respectively. These exceedances were either influenced by natural fluctuation or high SS level at I-1-C due to natural fluctuation. Since no construction activities were undertaken on these scheduled monitoring dates, the exceedances were not related to the Project's construction activities.

In the reporting month, no C&D material was disposed of to public fill at Tuen Mun. A total of 4.6m³ C&D waste were disposed of to NENT Landfill and no inert C&D material were reused in the Contract. A total of 150kg of paper/cardboard were recycled and no chemical waste was disposed of in the reporting month. In addition, no metals were generated.



In this reporting month, bi-weekly site inspections and monthly site audit were carried out by ET and Independent Environmental Checker (IEC) respectively to ensure proper implementation of environmental mitigation measures specified in the EM&A Manual and compliance with environmental legislation. All observations, which were recorded on the inspection checklists were passed to the Contractor together with the ET's recommendations. No non-compliance was received in the reporting month.

No environmental complaints were received during the reporting month.

No summons and prosecution were received in this reporting month.

The major construction works for the upcoming three months are:

- Site clearance;
- Hoarding & fencing erection;
- Trees survey & transplanting;
- Slope stabilization;
- Site office formation;
- Pre-construction survey;
- Soil nailing; and
- Relocation of verified boulder.



1 INTRODUCTION

The Drainage Services Department (DSD) proposes to construct a tunnel of an internal diameter of 6.5m and length 5.13km, with the purpose to alleviate the flooding risk in Tsuen Wan and Kwai Chung.

This project is a Designated Project under Schedule 2 Part I Category Q, of the Environmental Impact Assessment Ordinance (EIAO) as part of the proposed Tsuen Wan Drainage Tunnel (TWDT) passes underneath the existing Tai Mo Shan Country Park. An Environmental Impact Assessment (EIA) Study has therefore been undertaken to provide information on the nature and extent of environmental impacts arising from the construction and operation of the proposed designed project and related activities taking place concurrently. From the EIA the recommendations for monitoring contained herein, are made.

The Maeda - CREC - SELI Joint Venture (MCSJV) was awarded by DSD with the Contract – Design and Construction of Tsuen Wan Drainage Tunnel.

Hyder was commissioned by the MCSJV as the ET to implement an EM&A program in accordance with the EM&A Manual. The proposed tunnel section flows from the junction of Shing Mun Road and Wo Yi Hop Road and discharges to south of Yau Kom Tau underneath Castle Peak Road as shown in Appendix A.

The construction works of the Project commenced on January 2008. This is the third monthly EM&A report summarising the impact monitoring results and audit findings of the EM&A program during the reporting month in June 2008.

2 PROJECT INFORMATION

2.1 Project Organization and Management Structure

The organization chart and lines of communication with respect to the on-site environmental management are shown in Appendix B.

2.2 Construction Progress

This report marks the third month of the civil works contract. It is anticipated that the overall project programme from the detail design to completion of all civil works shall take approximately 54 months. The construction programme is presented in Appendix C.

The major construction activities undertaken in the reporting month are:

- Site clearance;
- Hoarding & fencing erection;
- Tree survey & transplanting;



- Slope stabilisation;
- Site office formation;
- Pre-construction survey;
- Soil nailing; and
- · Relocation of verified boulder.

As confirmed by the Contractor, there were no construction activities undertaken at TWDT during the restricted hours.

2.3 Mitigation Measures

The environmental mitigation measures implemented and their status are given in Appendix D.

2.4 Status of License and Permit

A summary of relevant permits and licences for the Project is given in Appendix E.

3 SUMMARY OF EM&A REQUIREMENT

3.1 Air Quality

3.1.1 Air Quality Parameters

1-hour Total Suspended Particulates (TSP) levels are measured at the designated air monitoring locations in accordance with the EM&A Manual. Monitoring under typical weather conditions (with no adverse weather such as typhoon signal or rain storm warning) is undertaken at each monitoring location every six days. Information such as date of monitoring, duration, weather condition, equipment used and monitoring results are recorded on the field data sheet developed for the Project. The monitoring results are presented in Section 4.

3.1.2 Monitoring Methodology

1-hour TSP monitoring is carried out three times every six days using HVASs and follows the standard sampling method as set out in High Volume Method for Total Suspended Particulates, Part 50 Chapter 1 Appendix B, Title 40 of the Code of Federal Regulations of the USEPA.

After sampling, the filter paper loaded with dust is kept in a clean and tightly sealed plastic bag. The filter paper is then re-conditioned in a dessicator for 24 hours before obtaining the weight under laboratory conditions.



The average concentration of the suspended particulates is calculated based on the following information obtained from monitoring:

- Flow rate
- Weight of the filter paper before and after sampling
- Sampling period indicated by the elapsed-time meter

All samples should be kept in good condition (i.e. stored in sealed plastic bags, with brief description of the monitoring dates and locations) for a period of 6 months before disposal. Sample analysis will be carried out by ALS Technichem (HK) Pty Limited (HOKLAS Registration Number 066).

3.1.3 Monitoring Equipment and Calibration

High Volume Air Samplers (HVASs) are used for 1-hour TSP monitoring to comply with the USEPA specifications in Appendix B Part 5 - Reference Method for the Determination of Suspended Particulate matter in the Atmosphere (High-Volume Method) of the Code of Federal Regulation dated June 1, 1991.

All HVASs are calibrated before commencement of monitoring using standard orifice 5-points calibration method with orifice calibrator to determine the actual flow rate of each HVAS. This shall be used for the calculation of the TSP level. Calibration Kit Model - TE5025A is used for calibration of the HVAS. Recalibration of the HVAS shall be carried out after motor maintenance, at least once every six months, which is about the expected life of carbon brush. The air quality monitoring equipment used during the reporting month is shown in Table 3-1 below. The calibration certificates are included in Appendix F.

Equipment Type	Model	Serial Number	Calibration Orifice Number	Location
HVAS	BM2000HX	4994	517N	ASR 1
HVAS	BM2000HX	5875	517N	ASR 3
HVAS	TE5005X	0390	517N	ASR 8
HVAS	TE5005X	0646	517N	ASR 9

Table 3-1 Air Quality Monitoring Equipment

3.1.4 Monitoring Location

Four designated air quality monitoring locations were identified in the contract specific EM&A manual. They are listed in Table 3-2 below and shown in Appendix G.

Monitoring Station ID	Name of Premises	Floor Level
ASR1 Sik Sik Yuen Ho Fung College		G/F
ASR3	Hong Hoi Chee Hong Temple	Podium
ASR8	Beach Tower (Long Beach Gardens)	G/F
ASR9	Greenview Terrace (Block 1)	G/F

Table 3-2 Air Quality Monitoring Locations

Page 5



3.1.5 Action and Limit Levels

The Action and Limit Levels for the 1-hour TSP monitoring is shown in Table 3-3. In case exceedances of Action and/or Limit levels for air quality occur, Event Contingency Plans (ECPs) would be implemented. The ECPs for Action and Limit levels exceedances are shown in Table 3-4.

Station	1-hr TSP Le	evel in µg/m³
Station	Action Level	Limit Level
ASR 1	307	500
ASR 3	327	500
ASR 8	337	500
ASR 9	329	500

Table 3-3 Action & Limit Levels for Air Quality

EVENT	ACTION			
EVENT	ET	IEC	SOR	CONTRACTOR
ACTION LEVEL				
Exceedance for one sample	 Identify source, investigate the causes of exceedance and propose remedial measures; Inform IEC and SOR; Repeat measurement to confirm finding; Increase monitoring frequency to daily. 	 Check monitoring data submitted by ET; Check Contractor's working method. 	Notify Contractor.	Rectify any unacceptable practice; Amend working methods if appropriate.
Exceedance for two or more consecutive samples	 Identify source; Inform IEC and SOR; Advise SOR on the effectiveness of the proposed remedial measures; Repeat measurements to confirm findings; Increase monitoring frequency to daily; 	 Check monitoring data submitted by ET; Check Contractor's working method; Discuss with ET and Contractor on possible remedial measures; Advise the ET on the effectiveness of the proposed remedial measures; 	 Confirm receipt of notification of exceedance in writing; Notify Contractor; Ensure remedial measures properly implemented. 	 Submit proposals for remedial to SOR within 3 working days of notification; Implement the agreed proposals; Amend proposal if appropriate.



EVENT	ACTION			
LVLINI	ET	IEC	SOR	CONTRACTOR
	 Discuss with IEC and Contractor on remedial actions required; If exceedance continues, arrange meeting with IEC and SOR; If exceedance stops, cease additional monitoring. 	Supervise Implementation of remedial measures.		
LIMIT LEVEL	, 3	1	•	1
Exceedance for one sample	 Identify source, investigate the causes of exceedance and propose remedial measures; Inform IEC, SOR, Contractor and EPD; Repeat measurement to confirm finding; Increase monitoring frequency to daily; Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and SOR informed of the results. 	 Check monitoring data submitted by ET; Check Contractor's working method; Discuss with ET and Contractor on possible remedial measures; Advise SOR on the effectiveness of the proposed remedial measures; Supervise implementation of remedial measures. 	 Confirm receipt of notification of exceedance in writing; Notify Contractor; Ensure remedial measures properly implemented. 	 Take immediate action to avoid further exceedance; Submit proposals for remedial actions to IEC within 3 working days of notification; Implement the agreed proposals; Amend proposal if appropriate.
Exceedance for two or more consecutive samples	 Notify IEC, SOR, Contractor and EPD; Identify source; Repeat measurement to confirm findings; Increase monitoring frequency to daily; Carry out analysis of Contractor's working procedures to determine possible 	Discuss amongst SOR, ET, and Contractor on the potential remedial actions; Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise SOR accordingly;	 Confirm receipt of notification of exceedance in writing; Notify Contractor; In consultation with the IEC, agree with the Contractor on the remedial measures to be implemented; 	 Take immediate action to avoid further exceedance; Submit proposals for remedial actions to IEC within 3 working days of notification; Implement the agreed proposals; Resubmit proposals if problem still not under control;



EVENT	ACTION				
EVENT	ET	IEC	SOR	CONTRACTOR	
	mitigation to be implemented; • Arrange meeting with IEC and SOR to discuss the remedial actions to be taken; • Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and SOR informed of the results; • If exceedance stops, cease additional monitoring.	Supervise the implementation of remedial measures.	Ensure remedial measures properly implemented; If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	Stop the relevant portion of works as determined by SOR until the exceedance is abated.	

Table 3-4 Event/Action Plan for Air Quality

3.2 Noise

3.2.1 Noise Parameters

The construction noise level is measured in terms of equivalent A-weighted sound pressure level ($L_{\rm eq}$) measured in decibels (dB(A)). Monitoring of $L_{\rm eq(30\ min)}$ is carried out at the noise monitoring locations on a weekly basis during normal construction working hours (0700-1900 hours from Monday to Saturday except public holidays). For all other time periods (i.e. restricted hours), $L_{\rm eq(5\ min)}$ would be employed for comparison with the Noise Control Ordinance (NCO) criteria if necessary.

The two statistical sound levels L_{10} and L_{90} : the level exceeded for 10 and 90 percent of the time respectively, are also recorded during monitoring. Major noise sources observed, both on-site and off-site, are recorded on the field data sheet. All measurements are recorded to the nearest 0.1 dB(A) and presented in round numbers in this report. Results are presented in Section 4.

3.2.2 Monitoring Methodology

Sound level meters, which comply with the International Electrotechnical Commission Publication 651: 1979 (Type 1) and 804: 1985 (Type 1) specifications as referred to the Technical Memorandum (TM) issued under the Noise Control Ordinance, are used. Noise levels for the A-weighted levels $L_{eq(30min)}$, L_{10} and L_{90} are measured throughout the impact monitoring. Average, by sound power, of six consecutive 5 minutes readings is used to provide $L_{eq(30 min)}$ for non-restricted hours (07:00-19:00



hours from Monday to Saturday except public holidays). A facade correction of 3dB(A) is applied to measurements that are carried out under free field conditions.

During the impact monitoring, parameters such as dates, weather condition, equipment used, measurement results and major noise sources are recorded on the field data record sheet. Monitoring would not be carried out in the presence of fog, rain or strong wind with a steady speed exceeding 5 m/s. In relation to the monitored noise levels, other noise sources such as road traffic might make a significant contribution to the overall noise environment. Therefore, noise monitoring activities would take into account such influencing factors, which were not presented during the baseline monitoring period.

3.2.3 Monitoring Equipment and Calibration

Bruel & Kjaer (B&K) Precision Integrating Sound Level Meters of Type 2238 in compliance with the International Electrotechnical Commission Publication 651: 1979 (Type 1) and 804: 1985 (Type 1) Specifications, stated in the Technical Memorandum (TM) issued under the NCO, is used for noise monitoring.

Prior to and following each noise measurement, the accuracy of the sound level meter is checked using an acoustic calibrator (B&K Type 4231(S/N 1770806) generating a known sound pressure level at a known frequency. Measurements are considered as valid only if the calibration levels from before and after the noise measurement agrees to within 1.0 dB(A). The sound level meters and the calibrators shall be calibrated annually to ensure they perform to the same level of accuracy as stated in the manufacturers specifications. The noise monitoring equipment used during the reporting month is shown in Table 3-5 below. The calibration certificates are included in Appendix F.

Equipment Type	Manufacturer	Type Number	Serial Number	Location
Sound Level Meter	Bruel & Kjaer	2238	2285726	NSR1, NSR3, NSR6, NSR8 and NSR9
Sound Level Calibrator	Bruel & Kjaer	4231	1770806	NSR1, NSR3, NSR6, NSR8 and NSR9

Table 3-5 Noise Monitoring Equipment

3.2.4 Monitoring Location

Five designated noise monitoring locations were identified in the contract specific EM&A manual. They are listed in Table 3-6 below and shown in Appendix G.

Monitoring Station ID	Name of Premises	Floor Level
NSR1	Sik Sik Yuen Ho Fung College	G/F
NSR3	Hong Hoi Chee Hong Temple	Podium
NSR6	Squatters	G/F
NSR8	Beach Tower (Long Beach Gardens)	G/F
NSR9	Greenview Terrace (Block 1)	G/F

Table 3-6 Noise Monitoring Locations



3.2.5 Construction Groundborne Noise

Prediction of construction groundborne noise indicates the criteria will be achieved at most NSRs except exceedances are predicted at Hong Hoi Chee Hong Temple (NSR3) and Squatters (NSR6). It is recommended to restrict the TBM operation in non-restricted period (i.e. 0700 - 1900) at these NSRs. In order to ensure proper control of groundborne noise is executed by the contractor, a monitoring requirement is recommended at the Hong Hoi Chee Hong Temple at Intake 2 and Squatters at Intake 3 for compliance checking. According to the monitoring schedule, TBM operation would be carried out for about 3 months in the vicinity of Hong Hoi Chee Hong Temple at Intake 2 and Squatters at Intake 3. If groundborne noise criterion is exceeded, the monitoring shall continue daily until acceptance has been restored against the criterion. Otherwise the monitoring can be discontinued.

The criterion include TM for the Assessment of Noise from Places other than Domestic Premises, Public Places or Construction Sites (TM-Places) under the NCO stipulates that noise transmitted primarily through the structural elements of building, or buildings, shall be 10 dB(A) less than the relevant ANLs. Daytime groundborne construction noise criterion of 60 dB(A) therefore applies with reference to TM-EIAO 70 dB(A) criterion for schools and taking account of the minus 10 dB(A) requirement under the NCO TM-Places. Following the same principle for groundborne noise criteria, groundborne construction noise levels inside domestic premises relying on open window for ventilation will be limited to 65 dB(A), with reference to the daytime airborne noise criterion of 75 dB(A) in accordance with TM-EIAO.

3.2.6 Action and Limit Levels

The Action and Limit levels for construction noise are defined in Table 3-7. If non-compliance of the criteria occurs, actions in accordance with the Action Plan in Table 3-8 would be carried out.

Time Period	Action	Limit
0700 – 1900 hrs on normal weekdays		75 dB(A)*
0700 – 2300 hrs on holidays; and	When one documented complaint is	70 dB(A)
1900 – 2300 hrs on all other days	received	
2300 - 0700 hrs of next day		55 dB(A)

For educational establishments the limit level shall be 70dB(A) and reduced to 65dB(A) during examination periods between 0700-1900 hrs on normal weekdays.

Table 3-7 Action & Limit Levels for Noise



Event	Action									
	ET Leader	IEC	SOR	Contractor						
Action Level	Notify IEC and the Contractor. Carry out investigation. Report the results of investigation to IEC and the Contractor. Discuss with the Contractor and formulate remedial measures. Increase monitoring frequency to check mitigation measures.	Review with analysed results submitted by ET. Review the proposed remedial measures by the Contractor and advise SOR accordingly. Supervise the implement 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	 Identify the source. Notify IEC, SOR, EPD and the Contractor. Repeat measurement to confirm findings. Increase monitoring frequency. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented. Inform IEC, SOR, and EPD the causes & actions taken for the exceedances. Assess effectiveness of the Contractor's remedial actions and keep IEC, EPD and SOR informed of the results. If exceedance stops, cease additional monitoring. 	1. Discuss amongst SOR, 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 SOR accordingly. 3. 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 SOR until the exceedance is abated.						

Table 3-8 Event/Action Plan for Noise



3.3 Water Quality

As there is no dredging or reclamation required for the project, the water quality impact would be insignificant with the protection measures recommended in Section 5.6 of the EIA report. However in view of the sensitive nature of the rivers/streams and bathing beaches in the Study Area, it is suggested that a programme of monitoring should be established to confirm the mitigation measures are protecting these water bodies.

3.3.1 Water Quality Parameters

Monitoring for Dissolved Oxygen (DO), temperature, turbidity, pH and suspended solids (SS) should be undertaken at designated monitoring locations. It should be noted that DO, temperature, turbidity and pH should be measured in-situ whereas SS is assayed in a laboratory.

In association with the water quality parameters, other relevant data should also be measured, such as monitoring location/position, time, weather conditions, and any special phenomena and description of work underway at the construction site etc.

3.3.2 Monitoring Methodology

In accordance with the EM&A Manual, the water quality monitoring for all specified parameters shall be measured at all designated monitoring locations including control points at an interval of 3 days per week. DO, temperature, turbidity, pH and SS shall be undertaken at designated monitoring locations.

It should be noted that water samples for all monitoring parameters should be collected, stored, preserved and analysis according to Standard Methods, APHA 17 ed. and/or methods agreed by the Director of Environmental Protection.

Each sample shall be analysed in accordance with the APHA Standard Methods for the Examination of Water and Wastewater, 18th edition, or an equivalent method approved by the EPD. If an in-house or non-standard method is proposed, details of the method verification may require to be submitted to the EPD. In any circumstance, the sample testing should comply with a comprehensive quality assurance and quality control programme. The laboratory should be prepared to demonstrate the quality programmes to the EPD when requested.

3.3.3 Monitoring Equipment and Calibration

All the water samples collected should be transferred to clearly labelled and precleaned sample containers with necessary preservatives immediately after collection. The sample containers should be provided by HOKLAS accredited laboratory. Sufficient quantity of samples should be collected for all laboratory analyses. Following sampling, samples should be stored in a cool box at temperature of between 0 and 4°C, and transported to the laboratory within the sample retention time as advised by the laboratory under proper chain-of-custody system. The water quality monitoring equipment used during the reporting month is shown in Table 3-9 below.

Page 12



Equipment Type	Manufacturer	Model	Quantity
PH / DO / Temperature Meter	WTW	PH/Oxi 340i	1
Tuibidimeter	EUTECH	TN-100	1

Table 3-9 Water Quality Monitoring Equipment

All pH meters, DO meters and turbidimeters shall be checked and calibrated prior to use. DO meters and turbidimeters shall be calibrated by a laboratory accredited under HOKLAS or any other international accreditation scheme, and subsequently recalibrated at 3 monthly intervals throughout all stages of the water quality monitoring. Responses of sensors and electrodes shall be checked with certified standard solutions before each use. Wet bulb calibrations for all DO meters shall be carried out before measurement at each monitoring location. For the on site calibration of field equipment, BS 127:1993, "Guide to field and on-site test methods for the analysis of waters" should be observed. The calibration certificates are included in Appendix F.

3.3.4 Monitoring Location

Four designated monitoring locations were identified in the contract specific EM&A Manual for water quality monitoring. While the construction of the outfall does not require dredging or reclamation, monitoring of water quality is only required during which the rip rap is placed. These four monitoring stations are listed in Table 3-10 below and shown in Appendix G.

Monitoring Station ID	Name of Premises
I-1	Intake I-1
I-1-C	Control of Intake I-1
I-2	Intake I-2
I-2-C	Control of Intake I-2
I-3	Intake I-3
I-3-C	Control of Intake I-3
O-1 (FT)	Outfall 1During Flood Tide
O-1 (ET)	Outfall 1During Ebb Tide
O-1-C (FT)	Control of Outfall O-1 During Flood Tide
O-1-C (ET)	Control of Outfall O-1 During Ebb Tide

Table 3-10 Water Quality Monitoring Locations

Note that there are two control stations for Outfall O-1, one for sampling during flood tide and one for sampling during ebb tide. Only one of those control stations for Outfall O-1 shall be sampled during each sampling. Control station to be sampled will be determined base on the tidal information provided by the Hong Kong Observatory.

July 2008



3.3.5 Action and Limit Levels

The Action and Limit levels for water quality monitoring parameters are defined in Table 3-11. In case of any exceedance, appropriate action will be undertaken in accordance with the Event and Action Plan as described in Table 3-12.

Parameters	Action	Limit
DO in mg/l (Surface, Middle & Bottom)	Surface & Middle 5%-ile of baseline data for surface and middle layer. Bottom 5%-ile of baseline data for bottom layer.	Surface & Middle 4mg/l except 5mg/l for FCZ or 1%-ile of baseline data for surface and middle layer Bottom 2mg/l or 1%-ile of baseline data for bottom layer
SS in mg/l (depth-averaged)	95%-ile of baseline data or 120% of upstream control station's SS at the same tide of the same day	99%-ile of baseline or 130% of upstream control station's SS at the same tide of the same day and specific sensitive receiver water quality requirements (e.g. required suspended solids levels for concerned sea water intakes)
Turbidity (Tby) in NTU (depth-averaged)	95%-ile of baseline data or 120% of upstream control station's Tby at the same tide of the same day	99%-ile of baseline or 130% of upstream control station's Tby at the same tide of the same day

Notes:

- For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
- For SS and Tby, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.
- All the figures given in the table are used for reference only and the EPD may amend the figures whenever it is considered as necessary.
- Effective from 26 June 2008, monitoring result shall be considered as an exceedance if it is higher than
 the Control Limit or Baseline Limit, whichever higher. A revised EM&A manual has been prepared to
 account for such changes in the Action/Limit levels, and the revised EM&A manual has been verified by
 IEC on 9 July 2008.

Table 3-11 Action/Limit Levels for Water Quality



Event		ET Leader		IEC		SOR		Contractor
Action Level being exceeded by one sampling	1.	Repeat in-situ measurement to confirm finding;	1.	Discuss with ET and Contractor on the mitigation measures;	1.	Discuss with IEC on the proposed mitigation measures; and	1.	Inform the SOR and confirm notification of the non-compliance in writing;
day	2.	Identify source(s) of impact;	2.	Review proposals on mitigation measures	2.	Make agreement on the mitigation measures to	2.	Rectify unacceptable practice;
	3.	Inform IEC and Contractor;		submitted by Contractor and advise the SOR accordingly;		be implemented.	3.	Check all plant and equipment;
	4.	Check monitoring data, all plant,	3.	and Assess the			4.	Consider changes of working methods;
		equipment and Contractor's working methods;		effectiveness of the implemented mitigation measures.			5.	Discuss with ET and IEC and propose mitigation measures to IEC and
	5.	Discuss mitigation measures with IEC and Contractor; and					6.	SOR; and Implement the agreed mitigation measures.
	6.	Repeat measurement on next day of exceedance.						imagation measures.
Action Level being exceeded by more than one	1.	Repeat in-situ measurement to confirm finding;	1.	Discuss with ET and Contractor on the mitigation measures;	1.	Discuss with IEC on the proposed mitigation measures;	1.	Inform the Engineer and confirm notification of the non-compliance in writing;
consecutive sampling day	2.	Identify source(s) of impact;	2.	Review proposals on mitigation measures	2.	Make agreement on the mitigation measures to	2.	Rectify unacceptable practice;
	3.	Inform IEC and Contractor;		submitted by Contractor and advise the SOR accordingly;	3.	be implemented; and Assess the effectiveness	3.	Check all plant and equipment;
		Check monitoring data, all plant,	3.	and Assess the		of the implemented mitigation measures.	4.	Consider changes of working methods;
		equipment and Contractor's working methods;		effectiveness of the implemented mitigation measures.			5.	Discuss with ET and IEC and propose mitigation measures to IEC and SOR
	5.	Discuss mitigation measures with IEC and Contractor;					6.	within 3 working days; and Implement the agreed
	6.	Ensure mitigation measures are implemented;						mitigation measures.
	7.	Prepare to increase the monitoring frequency to daily; and						
	8.	Repeat measurement on next day of exceedance.						



Consulting

Event		ET Leader		IEC		SOR		Contractor
Limit Level being exceeded by one sampling day	 2. 3. 4. 7. 	Repeat in-situ measurement to confirm finding; Identify source(s) of impact; Inform IEC, Contractor and EPD; Check monitoring data, all plant, equipment and Contractor's working methods; Discuss mitigation measures with IEC, SOR and Contractor; Ensure mitigation measures are implemented; and Increase the monitoring frequency to daily until no exceedance of Limit level.	 2. 3. 	Discuss with ET and Contractor on the mitigation measures; Review proposals on mitigation measures submitted by Contractor and advise the SOR accordingly; and Assess the effectiveness of the implemented mitigation measures.	 3. 4. 	Discuss with IEC, ET and Contractor on the proposed mitigation measures; and Request Contractor to critically review the working methods; Make agreement on the mitigation measures to be implemented; and Assess the effectiveness of the implemented mitigation measures.	 3. 5. 6. 	confirm notification of the non-compliance in writing; Rectify unacceptable practice; Check all plant and equipment;
Limit Level being exceeded by more than one consecutive sampling day	1. 2. 3. 4. 5.	Repeat in-situ measurement to confirm finding; Identify source(s) of impact; Inform IEC, Contractor and EPD; Check monitoring data, all plant, equipment and Contractor's working methods; Discuss mitigation measures with IEC, SOR and Contractor; Ensure mitigation measures are implemented; and Increase the monitoring frequency to daily until no exceedance of Limit level for two consecutive days.	1. 2.	Discuss with ET and Contractor on the mitigation measures; Review proposals on mitigation measures submitted by Contractor and advise the SOR accordingly; and Assess the effectiveness of the implemented mitigation measures.	 2. 4. 	Discuss with IEC, ET and Contractor on the proposed mitigation measures; and Request Contractor to critically review the working methods; Make agreement on the mitigation measures to be implemented; Assess the effectiveness of the implemented mitigation measures; and 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.	3.4.5.6.	Inform the SOR and confirm notification of the non-compliance in writing; Rectify unacceptable practice; Check all plant and equipment; Consider changes of working methods; Discuss with ET and IEC and SOR and propose mitigation measures to IEC and SOR within 3 working days; Implement the agreed mitigation measures; and As directed by the Engineer, to slow down or to stop all or part of the marine work or construction activities.

Table 3-12 Event/Action Plan for Water Quality



4 MONITORING RESULT

4.1 Air Quality

The air quality monitoring schedule of the reporting period is given in Appendix H.

4.1.1 1-hr TSP Monitoring

Results of 1-hours TSP level are shown in Table 4-1. All measurements are recorded to the nearest $0.1\mu g/m^3$ and presented in round numbers in this report. Detailed results, including weather conditions, and graphical presentations are presented in Appendix I.

Station	Monitoring Date	Monitoring Result (μg/m³)	Action/Limit Levels (μg/m³)		
		126			
	06-Jun-08	11			
		71			
		121			
	12-Jun-08	86			
		107			
		118			
ASR 1	18-Jun-08	261	307/500		
		190			
		110			
	24-Jun-08	70			
		119			
		106			
	30-Jun-08				
		411			
		-			
	06-Jun-08 ⁽¹⁾	-			
		-			
		-			
	12-Jun-08 ⁽²⁾	-			
		-			
		163			
ASR 3	18-Jun-08	105	327/500		
		107			
		73			
	24-Jun-08	76			
		96			
		161			
	30-Jun-08	94			
		97			



Station	Monitoring Date	Monitoring Result (μg/m³)	Action/Limit Levels (μg/m³)			
		-				
	06-Jun-08 ⁽¹⁾	-				
		-				
		117				
	12-Jun-08	98				
		104				
		144				
ASR 8	18-Jun-08	119	337/500			
		162				
		101				
	24-Jun-08	102				
		97				
		141				
	30-Jun-08	124				
		113				
		237				
	06-Jun-08	142				
		184				
		83				
	12-Jun-08	71				
		114				
		79				
	18-Jun-08	98				
4000		136	220/500			
ASR 9		79	329/500			
	24-Jun-08 (3)	-				
		-				
		143				
	26-Jun-08 (4)					
		-]			
		131	1			
	30-Jun-08	119	1			
		108				

Note: Italic and shaded values indicate exceedance of Action level

- (1) The monitoring scheduled on 6 June was cancelled due to the Amber Rainstorm Signal.
- (2) The monitoring scheduled on 12 June at ASR 3 was cancelled because it was inaccessible on 12, 13 and 14 June.
- (3) The monitoring scheduled on 24 June at ASR 9 was stopped because of HVS malfunction after the first 1-hr TSP measurement.
- (4) Additional monitoring was taken place on 26 June at ASR 9 to compensate the unfinished monitoring on 24 June.

Table 4-1 Air Quality Monitoring Results



Consulting

One exceedance of 1-hr TSP Action Level was recorded at ASR 1 on 30 June 2008. According to the site observation, the action level exceedance might be caused by pull-out testing for soil nailing undertaken for the Project and façade renovation undertaken at Ho Fung College during monitoring. There is no evidence that the exceedance was caused by the on-site activities; indeed, it might possibly be caused by the facade renovation works at the College due to the close proximity to the monitoring station. Nevertheless, the Contractor was reminded to provide water spraying for all dusty works to minimise the fugitive dust impact. The effectiveness of the mitigation measures provided by the Contractor will be checked by the dust monitoring results of 5 July 2008.

Interim Notifications of Environmental Quality Limits Exceedances is summarized in Appendix J.

4.2 Noise

The noise monitoring schedule of the reporting period is given in Appendix H. Results of measured noise level, in terms of $L_{eq(30min)}$, during the construction are shown in Table 4-2. All measurements are recorded to the nearest 0.1 dB(A) and presented in round numbers in this report. Detailed results, including weather conditions and graphical presentation are presented in Appendix I.

Station	Monitoring Date	L _{eq (30 min)} dB(A)	Limit Levels dB(A)	L ₁₀ dB(A)	L ₉₀ dB(A)
	6-Jun-08 ⁽¹⁾	-		-	-
	12-Jun-08	62		65	60
NSR 1	18-Jun-08	57	70	60	54
	24-Jun-08	63		65	60
	30-Jun-08	64		69	58
	6-Jun-08 ⁽¹⁾	-	75	-	-
	12-Jun-08 (2)	-		-	-
NSR 3	18-Jun-08	70		75	73
	24-Jun-08	58		63	60
	30-Jun-08	62		64	58
	6-Jun-08 ⁽¹⁾	-		-	-
	12-Jun-08	62		65	59
NSR 6	18-Jun-08	63		66	60
	24-Jun-08	63		76	57
	30-Jun-08	63		64	61
	6-Jun-08 ⁽¹⁾	-		-	-
	12-Jun-08	64		66	62
NSR 8	18-Jun-08	64		66	61
	24-Jun-08	71		74	64
	30-Jun-08	65		69	59
NSR 9	6-Jun-08 (1)	-		-	-
	12-Jun-08	64		66	59
	18-Jun-08	63		62	59



_			
Co	nsu	ltir	19

Station	Monitoring Date	Leq (30 min) dB(A)	Limit Levels dB(A)	L ₁₀ dB(A)	L ₉₀ dB(A)
	24-Jun-08	63		65	60
	30-Jun-08	61		64	58

Note:

- (1) The monitoring scheduled on 6 June at all NSRs was cancelled due to the Amber Rainstorm Signal.
- (2) The monitoring scheduled on 12 June at ASR 3 was cancelled because the temple was inaccessible on 12, 13 and 14 June.

Table 4-2 Noise Monitoring Results

No exceedances of Action / Limit Level were recorded during the reporting month.

4.3 Water Quality Monitoring

The water quality monitoring schedule of the reporting period is given in Appendix H. Results of measured water quality parameters during the reporting month are shown in Table 4-3.

No Action / Limit Level exceedance of DO was recorded in the reporting month. One limit level exceedance of Turbidity was recorded at I-1 on 23 June 2008; however, this exceedance might be contributed by rubbish flowing from up stream and was considered not to be project related. On the other hand, seven limit level exceedances of SS were recorded at I-3-C, I-1, I-1-C, I-2 and I-3 on 4, 10, 16 and 18 June 2008 respectively. These exceedances were either influenced by natural fluctuation or high SS level at I-1-C due to natural fluctuation. Since no construction activities were undertaken on these scheduled monitoring dates, the exceedances were not related to the Project's construction activities. Interim Notifications of Environmental Quality Limits Exceedances is summarized in Appendix J.

Detailed results, including weather conditions, and graphical presentations are presented in Appendix I.



Station	Date	Temperature	DO (mg/L)	Action/Limit Level for DO (mg/L)	рН	Turbidity (NTU)	Action/Limit Level for Turbidity (NTU)	SS (mg/L)	Action/Limit Level for SS (mg/L)
I-1	02-Jun-08	-	-	3.42 / 3.34	-	-	9.75 / 12.47	-	8.85 / 10.17
	04-Jun-08	24.15	4.03		7.01	8.15	_	1.00	
	06-Jun-08	-	-		-	-	_	-	
	10-Jun-08	26.20	4.49		7.95	5.92	_	17.00	
	12-Jun-08	25.55	4.92		7.76	5.05	_	5.50	
	14-Jun-08	-	-		-	-	_	-	
	16-Jun-08	25.30	4.41		7.46	7.28	_	5.00	
	18-Jun-08	24.15	5.21		7.39	4.20	-	1.92	
	20-Jun-08	26.70	5.02		7.24	2.72	-	1.43	
	23-Jun-08	27.40	5.54		7.74	18.28	-	5.00	
	25-Jun-08	-	-		-	-	-	-	
	27-Jun-08	24.60	4.95		7.56	3.45		1.00	
	30-Jun-08	24.80	5.70		7.44	4.29		1.00	
I-1-C	02-Jun-08	-	-	3.76 / 3.71	-	-	10.88 / 12.95	-	6.68 / 7.34
	04-Jun-08	26.25	3.95		6.81	8.20	_	1.00	
	06-Jun-08	-	-		-	-	_	-	
	10-Jun-08	26.05	4.93		7.85	5.88	-	66.50	
	12-Jun-08	25.70	5.21		7.46	4.80	7	5.50	
	14-Jun-08	-	-		-	-		-	
	16-Jun-08	25.20	4.20		7.42	6.87		4.50	1
	18-Jun-08	24.60	5.22		7.41	4.28		1.12	
	20-Jun-08	26.55	5.24		7.31	2.99		1.52	
	23-Jun-08	27.40	5.66		7.20	5.07		1.50	



Station	Date	Temperature	DO (mg/L)	Action/Limit Level for DO (mg/L)	рН	Turbidity (NTU)	Action/Limit Level for Turbidity (NTU)	SS (mg/L)	Action/Limit Level for SS (mg/L)
	25-Jun-08	-	-		-	-		-	
	27-Jun-08	24.40	5.14	-/-	7.63	5.44	-/-	4.50	-/-
	30-Jun-08	24.90	5.77		7.68	5.31		3.50	
I-2	02-Jun-08	-	-	3.66 / 3.63	-		6.63 / 6.99	-	7.68 / 8.34
	04-Jun-08	24.95	5.35		6.95	5.24	1	1.00	
	06-Jun-08	-	-		-	-	1	-	
	10-Jun-08	25.60	4.40		8.00	4.77	1	13.00	
	12-Jun-08	25.40	5.23		7.36	5.31		2.00	
	14-Jun-08	-	-		-	-	1	-	
	16-Jun-08	25.65	4.59		7.54	6.33	1	2.00	
	18-Jun-08	24.20	5.11		7.46	3.93		1.40	
	20-Jun-08	26.40	5.15		7.05	2.97		0.80	
	23-Jun-08	27.40	5.66		7.31	2.10		1.00	
	25-Jun-08	-	-		-	-		-	
	27-Jun-08	23.90	5.53		7.19	3.69		1.00	
	30-Jun-08	24.70	5.70		7.33	3.57		1.00	
I-2-C	02-Jun-08			3.83 / 3.67		-	6.73 / 8.27	-	6.98 / 9.40
	04-Jun-08	25.30	5.53		7.20	5.31		1.50	
	06-Jun-08					-		-	
	10-Jun-08	25.05	4.89		7.95	4.56		3.50	
	12-Jun-08	25.40	4.95		7.23	5.63		2.50	
	14-Jun-08					-]	-	
	16-Jun-08	25.55	4.39		7.51	6.37]	1.00	
	18-Jun-08	24.20	4.76		7.49	3.51]	1.42	
	20-Jun-08	26.40	5.19		7.22	2.90]	1.33	

Page 8



Consulting

Station	Date	Temperature	DO (mg/L)	Action/Limit Level for DO (mg/L)	рН	Turbidity (NTU)	Action/Limit Level for Turbidity (NTU)	SS (mg/L)	Action/Limit Level for SS (mg/L)
	23-Jun-08	26.90	5.69		7.25	2.80		1.00	
	25-Jun-08					-	-	-	
	27-Jun-08	23.60	5.72	-/-	7.17	3.58	-/-	1.00	-/-
	30-Jun-08	24.50	5.58		7.25	3.30	_	1.00	
I-3	02-Jun-08	-	-	3.65 / 3.51	-	-	3.99 / 4.18	-	6.13 / 7.23
	04-Jun-08	23.40	6.49		7.21	2.83	_	6.00	
	06-Jun-08	-	-		-	-	-	-	
	10-Jun-08	21.60	4.91		8.05	3.00	-	4.00	
	12-Jun-08	26.25	4.34		7.41	3.45	-	2.00	
	14-Jun-08	-	-		-	-	-	-	
	16-Jun-08	25.40	4.83		7.71	3.38	_	1.00	
	18-Jun-08	24.50	4.33		7.64	2.40	-	0.15	
	20-Jun-08	26.00	5.63		7.18	2.34	-	1.75	
	23-Jun-08	27.50	5.55		7.40	3.11		1.00	
	25-Jun-08	-	-		-	-	-	-	
	27-Jun-08	24.30	5.28		7.46	3.71	-	1.00	
	30-Jun-08	24.90	5.84		7.34	3.99	-	2.00	
I-3-C	02-Jun-08	-	-	3.63 / 3.62	-	-	4.28 / 5.06	-	5.73 / 5.95
	04-Jun-08	23.55	7.33		8.00	2.78	-	6.00	
	06-Jun-08	-	-		-	-	-	-	
	10-Jun-08	21.85	5.07		8.20	2.71		1.50	
	12-Jun-08	26.55	4.45		7.48	3.50		2.50	
	14-Jun-08	-	-		-	-		-	
	16-Jun-08	25.40	4.78		7.51	3.79		1.00	
	18-Jun-08	24.55	4.12		7.63	2.29		0.27	



Station	Date	Temperature	DO (mg/L)	Action/Limit Level for DO (mg/L)	рН	Turbidity (NTU)	Action/Limit Level for Turbidity (NTU)	SS (mg/L)	Action/Limit Level for SS (mg/L)
	20-Jun-08	26.75	5.28		7.04	2.42		0.77	
	23-Jun-08	27.60	5.55		7.45	3.33		1.00	
	25-Jun-08	-	-		-	-		-	
	27-Jun-08	24.45	5.91	- / -	7.43	3.50	-/-	1.00	-/-
	30-Jun-08	24.80	5.65	,	7.31	3.86	,	1.50	,

Note:

- 1. Italic indicates the occurrence of exceedance of action level.
- 2. Bold indicates the occurrence of exceedance of limit level.
- 3. No monitoring was undertaken on 2, 6, 14 and 25 June 2008 due to bad weather condition.
- 4. Effective from 26 June 2008, monitoring result shall be considered as an exceedance if it is higher than the Control Limit or Baseline Limit, whichever higher.

Table 4-3 Water Quality Monitoring Results



4.4 Summary of Exceedances

Table 4-4 summarises the exceedance results recorded in June 2008. Note that exceedances that are considered not related to the construction activities are not included in the table.

Environmental Monitoring	Total No. of Measurement	Action Level Exceedance	% of Action Level Exceedance	Limit Level Exceedance	% of Limit Level Exceedance
Air Quality	51	0	0	0	0
Noise	19	0	0	0	0
Water	54	0	0	0	0

Note: Exceedances that are considered not related to the construction activities are not included in this table.

Table 4-4 Summary of Exceedances

5 WASTE MANAGEMENT

The status of waste management is summarized in Table 5-1 below.

Status of waste management	Quantity
Inert C&D Material Disposed of to Public Fill at Tuen Mun (m³)	Nil
Inert C&D Material Reused in the Contract (m³)	Nil
Metals Generated (kg)	Nil
Paper / Cardboard Packaging (kg)	150
Plastics (kg)	Nil
Chemical Waste (kg)	Nil
General Waste Disposed of to NENT Landfill (m³)	4.6

Table 5-1 Waste Generated in June 2008

6 NON-COMPLIANCE AND DEFICIENCY

6.1 Site Audit by ET

ET has carried out two bi-weekly site inspections in the reporting month. All observations together with the appropriate recommended mitigation measures where necessary were recorded in the audit checklists that were passed to the Contractor. Major environmental deficiencies observed during site inspection/audits and recommendation, which were made by the ET, are summarised in Table 6-1 below. No non-compliance was observed.



Inspection Date	Observation	Recommendation	Status
23 May 2008 Follow up observations	Stagnant water was found in U-channel at location H-1. Excavated soil was observed at location H-1. FEP was not displayed at all sites. Stagnant water was found in drip tray of generator at location I-3. Unauthorised cutting of retaining tree was found at location I-1.	1. The Contractor was reminded to remove the water immediately. 2. The Contractor was reminded to remove the soil or cover it properly. 3. The Contractor was reminded to display the FEP at all sites immediately. 4. The Contractor was reminded to remove the water in drip tray. 5. The Contractor was reminded to stop the works at once.	The follow-up actions for all items were completed on 30 May 2008. (Closed)
5 June 2008	Stagnant water was observed from drip tray of air-conditioner at location H-1. It was found that the Environmental Permit was not placed on site at location H-1 and 2. It was observed that site cleaning and tidiness near chemical toilets at location H-1 was not regularly maintained.	The Contractor was reminded to fix the problem. The Contractor was reminded to place the Environmental Permit on site. The Contractor was reminded to maintain site cleaning and tidiness regularly.	As advised by the Contractor, all follow-up actions had been completed on 13 June 2008. (Closed)
27 June 2008	Drainage Plan was not provided for site inspection. General refuse was found at Portion I. It was observed that site cleaning and tidiness at Portion I was not regularly maintained. It was found that chemical waste storage area at Portion I was not properly maintained.	The Contractor was reminded to provide Drainage Plan for site inspection. The Contractor was reminded to clear the refuse regularly. The Contractor was reminded to maintain site cleaning and tidiness regularly. The Contractor was reminded to maintain chemical waste storage area properly.	As advised by the Contractor, all follow-up actions had been completed on 4 July 2008. (Closed)

Table 6-1 Site Inspection by ET



7 COMPLAINT

No complaints were received during the reporting month. Cumulative statistics of environmental complaints are shown in Table 7-1.

Complaints Received in the Reporting Month	Cumulative Number of Complaints		
0	0		

Table 7-1 Cumulative Statistic of Environmental Complaint

8 SUMMARY OF NOTIFICATION OF SUMMONS, SUCCESSFUL PROSECUTIONS AND CORRECTIVE ACTIONS

No summons and successful prosecutions were received during the reporting month.

Cumulative statistics of Notification of Summon, Successful Prosecutions and Convictions are shown in Table 8-1.

Notificatio	n of Summons	Successful Prosecution		
June 08 Cumulative		June 08	Cumulative	
0	0	0	0	

Table 8-1 Cumulative Statistics of notification of summons and successful prosecutions

9 FUTURE KEY ISSUE

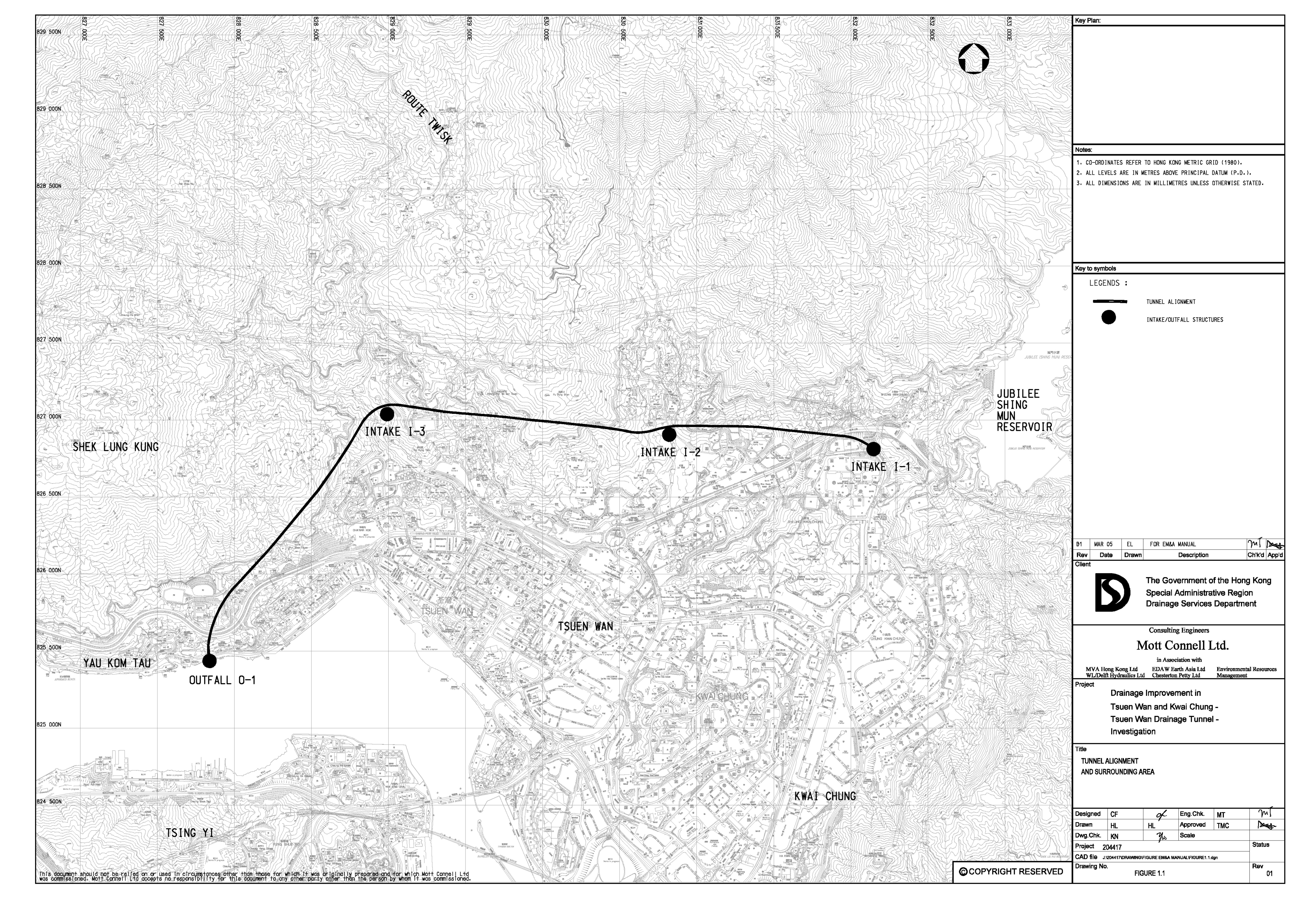
The forecast of construction works for the upcoming three months are:

- Site clearance;
- Hoarding & fencing erection;
- Trees survey & transplanting;
- Slope stabilization;
- Site office formation;
- Pre-construction survey;
- Soil nailing; and
- Relocation of verified boulder.



Appendix A

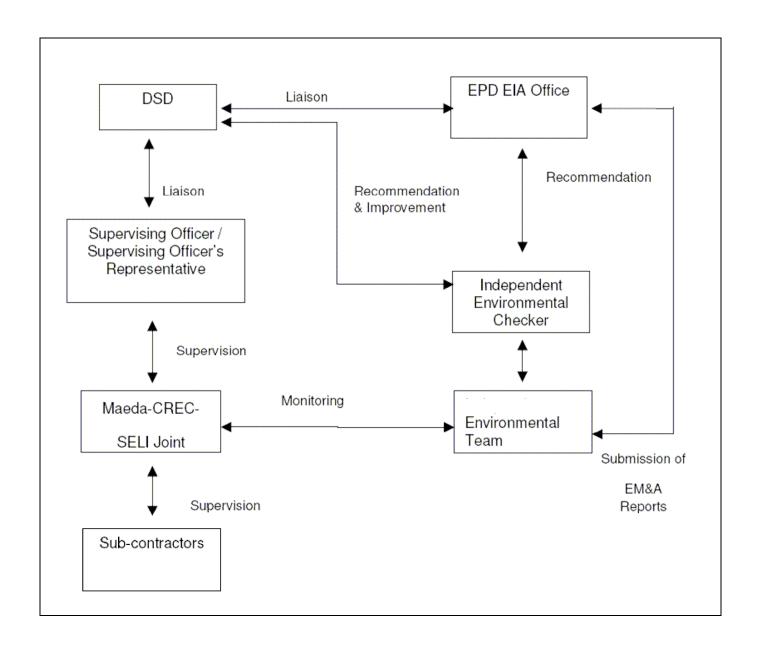
Site Map and Works Area





Appendix B

Organization Chart



document2 1:1



Appendix C

Construction Programme

Preliminaries	Start, Finish (D. Front Da	FM AMBOLA (SOUND STEM AN AN ASSOCIATION DATE MANAGEMENT OF THE MAN
01R0000002 Tender Issue Date 0 01R0000004 Tender Closing Date 0 01R0000006 Letter of Acceptance Issued Date 0 01R0000008 Contract Commencement Date 0	0	• • • • • • • • • • • • • • • • • • • •
Completion of Section 1 of the Works Completion of Section 2 of the Works Completion of Section 3 of the Works	27JUL11* 2 0 714 27JUL11* 2 0 27JUL11* 2 0	days after LOA 1308 days from DOC including DOC◆ 1308 days from DOC including DOC◆ 1308 days from DOC including DOC◆
01R0000016 Completion of Section 4 of the Works 0 01R0000018 Completion of Section 5 of the Works 0 01R0000020 Completion of Section 6 of the Works 0 01R0000022 Completion of Section 7 of the Works 0	0 0 0 0	including including including
<u> </u>	26MAR08 2 0	n.
	26MAR08 2 0 26MAR08 2 0 26MAR08 2 0 26MAR08 2 0 26MAY11 2 83 28DEC07 2 0	
01R00E0102 Possession of Portion E - 650d of DOC 0 01R00E0102 Possession of Portion E - 650d of DOC 0 01R00E0104 Handover of Portion E 0 01R00F0102 Possession of Portion F on DOC 0 01R00G0104 Handover of Portion G 0 01R00G0104 Handover of Portion G 0	4 4 61 70	
01R0010102 Possession of Portion I on DOC 0 01R0010104 Handover of Portion I 0 01R00J0102 Possession of Portion J 0 01R00J0104 Handover of Portion J 0 01R00H10102 Possession of Portion H1 on DOC 0	2 2 2 2 2	The exact date to be agreed with WSD WSD Tunnel ShutdownER 4.2.10 (6) allows 50 days from the date of
Start Date 24SEP12 Finish Date 24SEP12 Data Date 14DEC07 Recommended Bar 14DEC	TWD1 Maeda-CREC-SELI JV CONTRACT NO. DC/2007/12 Design and Construction of Tsuen Wan Drainage Tunnel Draft Works Programme	Sheet 1 of 42 Sheet 1 of 42 13FE038 Revision 1 Revision Checked Approved not

	2 0	24SEP12	26AUG12	30	Demolish & removal of Contractor's main office	01R0001408
	- 0	2541612	154 PRO8	4 504	Maintain & Service the Contractor's office	01 10001404
. 3		├	28DEC07	30		01R0001402
		1				
	2 0	24SEP12	26AUG12	30	Demolish & removal of Principle Office	01R0000320
	2 0		1	1,673	- 1	01R0000319
	2 0	25A		1,688	!	01R0000318
	2 0	25AI		1,585	1	01R0000316
	2 0	25AUG12	<u> 1</u>	1,594	. Į	01R0000314
Eswithin 1 month of DOC	2 0			30	Provide survey equipments as per App. ER,M	01R0000311
ER 12.4; 3 nos. vehicles within 14 days of DOC2 nos. vehicles after 3 months of DOC	2 0	26MAR08	28DEC07	06	Provide transport for the SO as per App. ER,M	01R0000310
Extension more than 2 months after the instruction	2 0	16MAY08	14MAR08	94	Provide secondary offices, directed by SO	01R0000308
Fermily the satisfaction of the SO	1	14APR08	28JAN08	8	Erect SO's principle office in Portion H1/H2	01R0000306
<u>.</u>	1	11MAR08	28JAN08	35	5 Erect Hoarding/Signboard/Gate/Fencing	01R0000305
To the satisfaction of SOsubmit detailed propasal within 3 weeks of LOA	2	26JAN08	28DEC07	8	Design the SO's principle office	01R0000304
to the satisfaction of the SO ER 12.3.1 refers	2 1	03JAN08	28DEC07	7	Provide temporary accommodation	01R0000302
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	, 2 , 0	25AUG12	27JUL12	30	3 S7-Maintenance Period (30 days)	01R7000228
Variable of the second	2 0	: 26JUL12	,673 28DEC07	1,673	S7-Ladscape softworks & establishment works	01R7000226
Command control of the control of th	2 0	25JUL12	27JUL11	365	4 S6-Maintenance Period (365 days)	01R60G0224
Control of the Contro	2 0	26JUL11	26NOV09	909	2 S6-Works within Portion G	01R60G0222
Comparation of the Comparation o	2 0	26JUL12	28JUL11	365	0 S5-Maintenance Period (365 days)	01R50D0220
	2	27JUL11	1,308 28DEC07	1,308	8 S5-Slope Stabilization works within Portion D	01R50D0218
The control of the co		25JUL12		365	6 S4-Maintenance Period (365 days)	01R40C0216
	2 0	26JUL11	26MAR08	1,218	4 S4-Slope Stabilization works within Portion C	01R40C0214
The Control of the Co	ļ	25.		365	2 S3-Maintenance Period (365 days)	01R30B0212
	2 0	26JUL11	26MAR08	1,218	0 S3-Stope Stabilization works within Portion B	01R30B0210
	2	25	27JUL11	365		01R20A0208
	<u> </u> 	26	1,218 26MAR08	1,218	6 S2-Slope Stabilization works within Portion A	01R20A0206
	ļ	26JUL12	28JUL11	365	4 S1-Maintenance Period (365 days)	01R1000204
	2 0	27JUL11	28DEC07	1,308	S1-Works in Portions A to F except works in S2-7	01R1000202
	2 0	24SEP12		0	4 Handover of Portion H2	01R0H20104
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01R0000902 Nominate Environmental Officer	14 14PEC07 97PEC07 0 PEC B 1 CL	
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01R0000904 Submit draft EMP	14DEC07 03.IAN08 2 0	
01R0000906 Revise draft EMP within 7 days of SO's notice	04JAN08 17JAN08 2	
01R0000908 Submit final version of EMP	14DEC07 27JAN08 2 0 Mas ne	
01R0000910 Review/update/submit EMP monthly	2 28JAN08 26JUL12 2 0	
	03JAN08 2	Owner control or and a second
01R0000914 Submit Baseline Monitoring Plan	28DEC07 17JAN08 2 0	•
01R0000915 Seek for EPD's Agreement on WQML & schedule	21 18JAN08 07FEB08 2 0 F	
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01R0001002 Nominate IIUMS co-ordinator	O the nor COO3 willish 7 Mayor of OA Isaaca 1	
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01R0001006 Submit brand name of UGS detection equipment	28DEC07 03JAN08 2	
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01R0001014 Process XP Application by HYD & others	20 01FEB08 20FEB08 2 22 EFR.B11.18A3(1); not less than 17 working days	
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	28DEC07 26JAN08 2 4 3as per ER.	
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01R0001108 Prepare/submit reports for pre-construction C.S.	72 O5FEB08 07MAY08 1 3 HERECDDA Submissión	
Traffic		
01R0001202 Appoint Traffic Consultant/Traffic Engineer	14 14DECO7 27DECO7 2 7 B	
01R0001204 Eng's Approval of Traffic Consultant	28DEC07 03JA	
01R0001206 Prepare/submit TTA Schemes (ingress & egress)	17.1AND8	
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01R0001234 Approval of TTA schemes by the Authorities	08FEB08 06MAR08 2 7	
Mark gernenkon Subasonii doioka as per Socara		
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01R0001302 Submit a Sub-contractor Management Plan	30 14DEC07 12JAN08 2 0 Fwithin 30 days of LOA	
01R0001304 Submit Quarterly the Updated SMP	1,597 12APR08 25AUG12 2 0	5 Jedanson Company Com
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01R0002402 Propose the design of web page	30 28DEC07	7 26JAN08 2 0	Ewithin 1 month from DOC
01R0002404 Produce the web page for approval of SO	30 27JAN08	1 25FEB08 2 0	within 2 months from DOC
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Ī 7	0	03JAN08 2 1,726	_ <u>`</u>
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Ţ	0	26MAR08 : 2 1,643	eland transpoert delivered for use of the SO
	О	14APR08 2 1,624	Computer facilities for use of the SO
- 1	0	25SEP09 2 1,095	Adetailed CRA incl. pre-cqndition survey
- 1	0	12MAR08 2 11,657	◆physical model completed as per ER 4.4.8
01R0002509 ;1R 9; On acceptance of 3-D Animation Model	0	12MAR08 2 1,657	◆3.D animation model completed as per ER 4.4.9
01R0002510 1R 10; On satisf. operation of CCTV for 3 mth	0	31JUL08 2 1,516	◆for 3 mit is of the remote CCTV intalled in Portions A B C & D as per ER 4.4 10.
01R0002511 1R 11; On acceptance of O&MM	0	300CT11 2 330	O&MM completed as per ER 4.4.11◆
	0	250CT11 2 335	built drwgs. completed as per ER 4.4.12
	0	26AUG11 2 395	tunnel report & vedeo & brother submitted as per ER 4.4.13
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	0	26JUN11 2 396	of all obligations by this CS 42 mths frm DOC.
1	0	25SEP11 2 305	of all obligations by this CS 45 mths frm DOC.
	0	13AUG11 2 408	of completion except Section 7.◆
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02L1DD0104 Design certification by the Design Checker	14 01FEB08 14FEB08 2 1 8
02L1DD0106 Design submission for the SO's approval	1 15FEB08 15FEB08 1
02L1DD0108 Design review by the SO	28 16FEB08 14MAR08 2 2 E
02L1DD0110 Obtain design approval from the SO	0 14MARO8 2 2 +
Boulder Assessment & Design for Stabili. Measure	
02L1DD0302 Design preparation for the AIP submission	15 31JAN08 14FEB08 2 3 B
02L1DD0304 Design (AIP) certification by the Design Checker	14 15FEB08 28FEB08 2 19 %
02L:1DD0306 Design (AIP) submission for the SO's approval	1 29FEB08 1 16
02L1DD0308 Design (AIP) review by the SO	14 01MAR08 14MAR08 2 19 E
02L1DD0310 Obtain design (AIP) approval from the SO	0 14MAR09 2 19
02L1DD0312 AIP submission for rel. authorities' approval	1 15MAR08 15MAR08 1 13
02L1DD0314 Design (AIP) review by the rel. authorities	28 16MAR08 12APR08 2 20 🖾
02L1DD0316 Obtain rel. authorities's approval for AIP	1 14APR08 14APR08 1 16
02L1DD0318 Obtain SO's consent for design (AIP)	
02L1DD0320 Design preparation for the DDA submission	30 24MAR08 22APR08 2 20 INT.
02L1DD0322 Design (DDA) certification by the Design Checker	2
02L1DD0324 Design (DDA) submission for the SO's approval	
02L1DD0326 Design (DDA) review by the SO	14 08MAY08 21MAY08 2 20
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02L1DD0336 Obtain SO's consent for design (DDA)	0 21JUN08 2 20
Site Formation Design; +69mPD to +40mPD	
02L1DD0402 Design preparation for the AIP submission	14 17JAN08 30JAN08 2 2 F
02L1DD0404 Design (AIP) certification by the Design Checker	14 27JAN08 09FEB08 2 2 PM
02L1DD0406 Design (AIP) submission for the SO's approval	1 11FEB08 1 1
02L1DD0408 Design (AIP) review by the SO	14 12FEB08 25FEB08 2 1
02L1DD0410 Obtain design (AIP) approval from the SO	0 25FEB08 2 1
02L1DD0412 AIP submission for rel. authorities' approval	1 26FEB08 26FEB08 1 1 1
02L1DD0414 Design (AIP) review by the rel. authorities	12 27FEB08 09MAR08 2 1 H
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02L1DD0424 Design (DDA) submission for the SO's approval	1 26MAR08 26MAR08 1 1
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102L1DD0428 Obtain design (DDA) approval from the SO	0 09APR08 2 1

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021.1DD0434 Obtain rel. authorities's approval for DDA	1 23APR08	23APR08 1	
02L1DD0436 Obtain SO's consent for design (DDA)	0	24APR08 2	
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02L1DD0524 Design (DDA) submission for the SO's approval	1 14MAY08	14MAY08 1	
02L1DD0526 Design (DDA) review by the SO	14 15MAY08	28MAY08 2	250
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02L1DD0530 DDA submission for rel. authorities' approval	1 29MAY08 29M	29MAY08 1	
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02L1DD0536 Obtain SO's consent for design (DDA)	0	21JUN08 2	*
Site Formation Design; +24mPD to 14mPD			
02L1DD0602 Design preparation for the AIP submission	14 29FEB08	29FEB08 13MAR08 2	22
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02L1DD0624 Design (DDA) submission for the SO's approval	1 05JUN08 05JU	N08 1	62
02L1DD0626 Design (DDA) review by the SO	14 06JUN08	19JUN08 2	24
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02L1DD0702 Design preparation for the AIP submission	15 14MAR08 28MAR08 2 36 B	P1 to ABOU
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02L1DD0716 Obtain ref. authorities's approval for AiP	1 13JUN08 13JUN08 1 29	
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02L1DD0736 Obtain SO's consent for design (DDA)	0 06SEP08 2 36	
Hopper Foundation Design		
02L1DD0802 Design preparation by the Designer	ļ	
3 1	15 12JUN08 26JUN08 2 77	
02L1DD0806 Design submission for the SO's approval	١.,	
02L1DD0808 Design review by the SO	30 28JUN08 27JUJ.08 2 77	
02L1DD0810 Obtain design approval from the SO	27JUL.08	
Steel Platform & Hopper Design		
- 1	30 12JUN08 11JUL08 2 47	
	26JUL08	
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02L1DD0910 Obtain design approval from the SO	0 :27AUG08 2 46	
Overhead Gantry Support & Noise Enclosure Design		
	30 28APR08 27MAY08 2 47	·
- 1	11JUN08 2	
1	1 12JUN08 1 50	
02L1DD1008 Design review by the SO	30 13JUN08 12JUL08 2 60 E	
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02L1DD1012 Design submission for rel. authorities' approval	1 14JUL08 14JUL08 1 51	
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02L1DD1018 Obtain SO's consent for design	0 13AUG08 2 60	

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ELS Design for Spiral Ramp & Vehicular Access		10. 11. 41. 51. 14. 15. 15. 15. 15. 15. 15. 15. 15. 15. 15
02L1DD1102 Design preparation for the AIP submission	30 29MAR08 27APR08 2 47	
02L1DD1104 Design (AIP) certification by the Design Checker	21 28APH08 18MAY08 2 130	
02L1DD1106 Design (AIP) submission for the SO's approval	1 19MAY08 19MAY08 1 109	
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02L1DD1112 AIP submission for rel, authorities' approval	1 19JUL08 19JUL08 1 108	
02L1DD1114 Design (AIP) review by the rel. authorities	21 20JUL08 09AUG08 2 130	
02L1DD1116 Obtain rel. authorities's approval for AIP	1 11AUG08 11AUG08 1 108	
02L1DD1118 Obtain SO's consent for design (AIP)	0 12AUG08 2 129	•
02L1DD1120 Design preparation for the DDA submission	30 21JUL08 19AUG08 2 129	
02L1DD1122 Design (DDA) certification by the Design Checker	28 20AUG08 16SEP08 2 129	
02L1DD1124 Design (DDA) submission for the SO's approval	1 17SEP08 17SEP08 1 106	
02L1DD1126 Design (DDA) review by the SO	60 18SEP08 16NOV08 2 130	
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02L1DD1130 DDA submission for rel. authorities' approval	17NOV08 17NOV08 1 106	
02L1DD1132 Design (DDA) review by the rel. authorities	28 18NOV08 15DEC08 2 130	
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ELS Design for Box Culvert & Open Channel		The state of the s
021.10D1202 Design preparation for the AIP submission	30 12JUL08 10AUG08 2 262	
02L1DD1204 Design (AIP) certification by the Design Checker	09SEP08 2	
02L1DD1206 Design (AIP) submission for the SO's approval	1 10SEP08 10SEP08 1 209	
02L1DD1208 Design (AIP) review by the SO	60 11SEP08 09NOV08 2 263	
02L1DD1210 Obtain design (AIP) approval from the SO	0 09NOV08 2 263	
02L1DD1212 AIP submission for rel. authorities' approval	1 10NOV08 10NOV08 1 212	
02L1DD1214 Design (AIP) review by the rel. authorities	28 11NOV08 08DEC08 2 263	
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02L1DD1218 Obtain SO's consent for design (AIP)	0 10DEC08 2 264	
02L1DD1220 Design preparation for the DDA submission	30 18NOV08 17DEC08 2 264	
02L1DD1222 Design (DDA) certification by the Design Checker	30 18DEC08 16JAN09 2 264	2
02L1DD1224 Design (DDA) submission for the SO's approval	1 17JAN09 17JAN09 1 213	
02L1DD1226 Design (DDA) review by the SO	. 60 18JAN09 18MAR09 2 264	
02L1DD1228 Obtain design (DDA) approval from the SO	0 18MAR09 2 264	
02L1DD1230 DDA submission for rel. authorities' approval	1 19MAR09 19MAR09 1 215	
02L1DD1232 Design (DDA) review by the rel. authorities	28 20MAR09 16APR09 2 264	£
02L1DD1234 Obtain rel. authorities's approval for DDA	1 17APR09 17APR09 1 216	
02L1DD1236 Obtain SO's consent for design (DDA)	0 18APR09 2 264	
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021.1FF0328 Obtain design (DDA) approval from the SO	0 26AUG08 2 3 •	
02L1FF0330 DDA submission for rel. authorities' approval	1 27AUG08 27AUG08 1 3	
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02L1FF0336 Obtain SO's consent for design (DDA)	0 26SEP08 2 5	
Impact Assessment on KCRC West Rail Tunnel		
02L1FF0402 Design preparation for the AIP submission	30 08APR08 07MAY08 2 190	
02L1FF0404 Design (AIP) certification by the Design Checker	AY08	
02L1FF0406 Design (AIP) submission for the SO's approval	1 23MAY08 23MAY08 1 158	
02L1FF0408 Design (AIP) review by the SO	60 24MAY08 22JUL08 2 191	
02L1FF0410 Obtain design (AIP) approval from the SO	0 22JUL08 2 191 ��	
02L1FF0412 AIP submission for rel. authorities' approval	ļ	
02L1FF0414 Design (AIP) review by the rel. authorities	28 24JUL08 20AUG08 2 191	
02L1FF0416 Obtain rel. authorities's approval for AIP	21 AUG08	
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02L1FF0420 Design preparation for the DDA submission	30 31JUL08 29AUG08 2 192	
02L1FF0422 Design (DDA) certification by the Design Checker	15 30AUG08 13SEP08 2 192	5
02L1FF0424 Design (DDA) submission for the SO's approval	1 16SEP08 16SEP08 1 155	
102L1FF0426 Design (DDA) review by the SO	60 17SEP08 15NOV08 2 190	
102L1FF0428 Obtain design (DDA) approval from the SO	0 15NOV08 2 190	
02L1FF0430 DDA submission for rel. authorities' approval	1 17NOV08 17NOV08 1 150	
02L1FF0432 Design (DDA) review by the rel. authorities	28 18NOV08 15DEC08 2 189	
02L1FF0434 Obtain rel. authorities's approval for DDA	1 16DEC08 16DEC08 1 149	
02L1FF0436 Obtain SO's consent for design (DDA)	0 17DEC08 2 189	
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02L1FF0510 Obtain design (AIP) approval from the SO	0 22AUG08 2 250	
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02L1FF0526 Design (DDA) review by the SO	60 17OCT08 15DEC08 2 251	
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02L1AA0110 Obtain design approval from the SO	0 04APR08 2 29	
ELS Design for Spiral Ramp/Cascade/Box Culvert		
02L1AA0202 Design preparation for the AIP submission	15 22FEB08 07MAR08 2 22 8	
02L1AA0204 Design (AIP) certification by the Design Checker	15 08MAR08 222	
02L1AA0206 Design (AIP) submission for the SO's approval		
02L1AA0208 Design (AIP) review by the SO	21 26MAR08 15APR08 2 20 🕮	
02L1AA0210 Obtain design (AIP) approval from the SO	0 15APP08 2 20	
02L1AA0212 AIP submission for rel. authorities' approval	-	
02L1AA0214 Design (AIP) review by the rel. authorities	21 17APR08 07MAY08 2 20	
02L1AA0216 Obtain rel. authorities's approval for AIP	1 08MAY08 08MAY08 1 16	
02L1AA0218 Obtain SO's consent for design (AIP)	0 09MAY08 2 20	
02L1AA0220 Design preparation for the DDA submission	30 17APR08 16MAY08 2 20 1 🖾	
02L1AA0222 Design (DDA) certification by the Design Checker	15 17MAY08 31MAY08 2 20 H	
02L1AA0226 Design (DDA) submission for the SO's approval	1 02JUN08 02JUN08 1 16	
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02L1AA0238 Obtain SO's consent for design (DDA)	0 17JUL08 2 20 🔷	
Temp. Platform Design for H-Piling		
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02L1AA0306 Design submission for the SO's approval	1 25MAR08 25MAR08 1 1,312	
02L1AA0308 Design review by the SO	28 26MAR08 22APR08 2 1,616 部	
Cascade & Box Culver Design for Portion A		
021.1AA0402 Design preparation for the AIP submission	30 08MAR08 06APR08 2 627 图	

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	28 16JUL08 12AUG08 2 321	02L1CC0732 Design (DDA) review by the rel. authorities
	1 15JUL08 15JUL08 1 259	02L1CC0730 DDA submission for rel. authorities' approval
•	0 14JUL08 2 321	02L1CC0728 Obtain design (DDA) approval from the SO
	28 17JUN08 14JUL08 2 321	02L1CC0726 Design (DDA) review by the SO
	1 16JUN08 16JUN08 1 259	02L1CC0724 Design (DDA) submission for the SO's approval
200	15 31MAY08 14JUN08 2 319	02L1CC0722 Design (DDA) certification by the Design Checker
	30 01MAY08 30MAY08 2 319	02L1CC0720 Design preparation for the DDA submission
	0 23MAY08 2 319	02L1CC0718 Obtain SO's consent for design (AIP)
	1 22MAY08 22MAY08 1 261	02L1CC0716 Obtain rel. authorities's approval for AIP
	28 24APR08 21MAY08 2 319	02L1CC0714 Design (AIP) review by the rel. authorities
	1 23APR08 23APR08 1 260	02L1CC0712 AIP submission for rel. authorities' approval
	0 22APR08 2 318	02L1CC0710 Obtain design (AIP) approval from the SO
	28 26MAR08 22APR08 2 318	02L1CC0708 Design (AIP) review by the SO
	1 25MAR08 25MAR08 1 259	02L1CC0706 Design (AIP) submission for the SO's approval
622	15 09MAR08 23MAR08 2 319	02L1CC0704 Design (AIP) certification by the Design Checker
	15 23FEB08 08MAR08 2 262	02L1CC0702 Design preparation for the AIP submission
		Boulder Assessment & Design for Stabili. Measure
•	0 02FEB09 2 413	02L1CC0636 Obtain SO's consent for design (DDA)
	1 31JAN09 31JAN09 1 337	02L1CC0634 Obtain rel. authorities's approval for DDA
	28 03JAN09 30JAN09 2 413	02L1CC0632 Design (DDA) review by the rel. authorities
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	28 03DEC08 30DEC08 2 464	102L1FE0132 Design (DDA) review by the rel. authorities
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	30 02NOV08 01DEC08 2 464	02L1FE0126 Design (DDA) review by the SO
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	170CT08 310CT08 2	1
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	30 01AUG08 30AUG08 2 466	02L1FE0108 Design (AIP) review by the SO
	1 31JUL08 31JUL08 1 379	02L1FE0106 Design (AIP) submission for the SO's approval
22	15 16JUL08 30JUL08 2 466	02L1FE0104 Design (AIP) certification by the Design Checker
2.5	15 01JUL08 15JUL08 2 466	02L1FE0102 Design preparation for the AIP submission
		Design for Communication System
		Design Replace for Extit Works
•	0 07FEB09 2 631	02L1GG0328 Obtain design (DDA) approval from the SO
	28 11JAN09 07FEB09 2 631	02L1GG0326 Design (DDA) review by the SO
	1 10JAN09 10JAN09 1 510	021.1GG0324 Design (DDA) submission for the SO's approval
	26DEC08 09JAN09 2	02L1GG0322 Design (DDA) certification by the Design Checker
	2	02L1GG0320 Design preparation for the DDA submission
	11DEC08 2	02L1GG0310 Obtain design (AIP) approval from the SO
	14NOV08 11DEC08 2	02L1GG0308 Design (AIP) review by the SO
	1 13NOV08 13NOV08 1 509	02L1GG0306 Design (AIP) submission for the SO's approval
	2	02L1GG0304 Design (AIP) certification by the Design Checker
	15 14OCT08 28OCT08 . 2 630	02L1GG0302 Design preparation for the AIP submission
		ELS Design for Pipe Jacking at Portion G
•	0 24JAN09 2 438	02L1GG0228 Obtain design (DDA) approval from the SO
	28 28DEC08 24JAN09 2 438	02L1GG0226 Design (DDA) review by the SO
	1 27DEC08 27DEC08 1 354	02L 1GG0224 Design (DDA) submission for the SO's approval
	15 11DEC08 25DEC08 2 439	02L1GG0222 Design (DDA) certification by the Design Checker
	2	02L1GG0220 Design preparation for the DDA submission
	2	02L1GG0210 Obtain design (AIP) approval from the SO
	2	02L1GG0208 Design (AIP) review by the SO
	-	02L1GG0206 Design (AIP) submission for the SO's approval
		02L1GG0204 Design (AIP) certification by the Design Checker
	30 14SEP08 13OCT08 2 439	02L1GG0202 Design preparation for the AIP submission
		Temp. Platform Design for H-Piling at Portion G
	0 09APR09 2 323	02L1GG0136 Obtain SO's consent for design (DDA)
250 100 100 100 100 100 100 100 100 100 1	08APH09 1	02L1GG0134 Obtain rel. authorities's approval for DDA
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	•	1,529	18JUL08 2	ļ	0	- 1
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		11,363	31DEC08 2		0	
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	•				0	02L10D1008 2L 4; On acceptance of AIP by the SO; Portion A
	•	1	808		0	02L10D1006 2L 3; On submission of AIP to the SO; Portion A
	•	1	H08		0	02L10D1004 2L 2; On acception of PDP by the SO
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						Sonediie o Milestotes Ton 6051: Centra No. 21:
	•	818	29OCT08 2		0	102L1FE0228 Obtain design (DDA) approval from the SO
	區	818	29OCT08 2	30SEP08	8	
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	NW.	ļ	80,	14SEP08	15	
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	•	-	30AUG08 2		0	02L1FE0210 Obtain design (AIP) approval from the SO
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	EX	818	15JUL08 2	01JUL08	15	02L1FE0202 Design preparation for the AIP submission
						Design for Flow Measurement System
		2 464	601		0	02L1FE0136 Obtain SO's consent for design (DDA)
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State State from teacher formation of many control of 13,10km 12,10km 12,10k	4250 EEO Concurrent with TBM advances: WSD T3/Pe	2 0	27APR09	l i
WISD Turnel statis operation 0 1,3,10/NB 7 1000 1		00 2 00	11JUN09 12JU	- 1
Control growth (•	2	<u> </u>	WSD Tunnel starts operation
Curry out grouting fields from the surface at F1				nowski hijahokimis kosy imework
Fight inflate assembly & state-up sets Figh inflate assembly & st		OCT	I OS : BUNANAC	Carry out arouting trials from the surface at E1
TBM advances; CH-8005-3005	5), within 6 months of DOCTOT the design of pre-excavation grouning at F1	000	1000000	
Install book-up system (13 deds + 2 pateromes)		0	09DEC08	TBM mobilization to tunnel face (CH5085)
ITAM advances: CH 5005-5075 ITAM		1	11DEC08	Install back-up system (3 decks + 3 platforms)
TBM advances; P7 CH5075-5033		-	19DEC08	TBM advances; CH5085-5075
Install back-up system (6 decks)	ult. P7; CH5075-5033	0	22DEC08	TBM advances; P7 CH5075-5033
IRBM advances; PF CH8032 6005		: : - -	07JAN09	Install back-up system (6 decks)
Install back-up system (1 decks)	P7; CH5033	0	19JAN09	TBM advances; P7 CH5033-5005
TBM advances; CH 5005-5000		 - -	30JAN09	Install back-up system (1 decks)
TBM advances; WSDYKWTW/Fig. CH5000-4963 9 02FEB06 11FEB09 1 0		-	31JAN09	TBM advances; CH 5005-5000
Conveyor belt sys Conveyor belt sys Conveyor belt sys	NSD Yau Kom Water Treatment Works & Fault F6c	0	02FEB09	TBM advances; WSDYKWTW/F6c CH5000-4963
Install noise enclosure 19 17 14 15 15 15 15 15 15 15		1 0	12FEB09	Conveyor belt sys
Page		0 1	12FEB09	Install noise enclosure
Pappy to EPD for CNP for 24 hrs. turnel work 14 23OCT08 05NOV08 2 76 EPD process/approve CNP application 45 06NOV08 20DEC08 2 76 EPD process/approve CNP application 45 06NOV08 20DEC08 2 76 EPD process/approve CNP application 45 06NOV08 20DEC08 2 76 EPD process/approve CNP application 45 06NOV08 20DEC08 2 76 EPD process/application 45 06NOV08 20DEC08 2 24APPRO9 2 24APRO9 2 24APPRO9 2 24APPRO9 2 24APPRO9 2 24APPRO9 2 24APRO9 2 24APPRO9 2 24APPRO9 2 24APPRO9 2 24APPRO9 2 24APRO9 2 24APPRO9 2 24APPRO9 2 24APPRO9 2 24APPRO9 2 24APRO9 2 24APPRO9 2 24APPRO9 2 24APPRO9 2 24APPRO9 2 24APRO9 2 24APPRO9 2 24APPRO9 2 24APPRO9 2 24APPRO9 2 24APRO9 2 24APPRO9 2 24APPRO9 2 24APPRO9 2 24APPRO9 2 24APRO9 2 24APPRO9 2 24APPRO9 2 24APPRO9 2 24APPRO9 2 24APRO9 2 24APPRO9 2 24APPRO9 2 24APPRO9 2 24APPRO9 2 24APRO9 2 24APPRO9 2 24APPRO9 2 24APPRO9 2 24APPRO9 2 24APRO9 2 24APPRO9 2 24AP				ELWEIKS Day FNIGHTWORK
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TBM advances; WSD YKTWTW/F6c CH4963-4830 16 07MAR109 25MAR109 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		2 76	ţ	EPD process/approve CNP application
TBM advances; CH4830-4760 3 30MAR09 1 6 17APR09 1 0 1	Rore-excavation grouting (@20m/1.5dayexdayation/nea-graye)/Ining (@21m/day	1 0	ļ	TBM advances; WSD YKTWTW/F6c CH4963-4830
TBM advances; F6b CH4760-4740 3 30MAR09 01APR09 1 0 0 4)	0 1	26MAR09	TBM advances; CH4830-4760
TBM advances; CH4740-4555 9 02APR09 16APR09 1 0 17APR09 1 0 10 10 10 10 10 10	tion grouting @ 20m/1	0	†	TBM advances; F6b CH4760-4740
TBM advances; Pea CH4555-4510 6 17APR09 23APR09 1 0 0 0 TBM advances; CH4510-4460 36 27APR09 10_UN09 1 0 0 TBM advances; CH4250-4220 4 11_UN09 15_UU09 1 0 TBM advances; Pe CH4260-4250 4 11_UN09 15_UU09 1 0 TBM advances; Pe CH420-3840 18 16_UN09 10_UL09 1 8 TBM advances; Pe CH3575-3525 6 25_UL09 1 8 TBM advances; Pe CH3575-3525 13 13AUG09 1 8 TBM advances; CH3525-3308 10 01AUG09 1 8 TBM advances; CH3525-3308 10 01AUG09 1 8 TBM advances; Pa CH3143-3125 2 04SEP09 1 8 TBM advances; Pa CH3145-3125 2 04SEP09 2 2 TBM advances; Pa CH3145-3125 2 04SEP09 2 2 TBM advances; Pa CH3145-3125 2 04SEP09 2 2 TBM advances; Pa CH3145-3125 2 2 2 2 2 TBM advances; Pa CH3145-3125 2 2 2 2 2 TBM advances; Pa CH3145-3125 2 2 2 2 2 2 TBM advances; Pa CH3145-3125 2 2 2 2 2 2 TBM advances; Pa CH3145-3125 2 2 2 2 2 2 2 TBM advances; Pa CH3145-3125 2 2 2 2 2 2 2 2 TBM advances; Pa CH3145-3125 2 2 2 2 2 2 2 2 2	₩@ 21m/day	0	ļ	TBM advances; CH4740-4555
TBM advances; CH4510-4460 2 24APR09 10 UlN09 1	Fault F6a; CH4555-4510pre-excavation grouting @ 20m/1.5day	0 1	17APR09	TBM advances; F6a CH4555-4510
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TBM advances; CH3220-3840 18 16JUN09 07JUL09 1 6 16JUN09 1 8 Example of the excavation grouting and the excavation grounded group and the excavation	Fault P6 CH4250-4220pre-excavation grouting @ 20m/1,5day	-	11JUN09	TBM advances; P6 CH4250-4220
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1 DW advances, CH3123-2870	#@ 21rh/day	- 8	7 07SEP09 14SEP09	TBM advances; CH3125-2970
3AL1FT0840 TBM advances; WSD WS Reservior CH2970-2865 13 15SEP09 29SEP09 1 8 pre-excavation grounting @ 2bm/1.5day#	2bm/1.5dayR	4	j · · ·	

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CH 2865-2970 Tsugn Wan West Service Reservior Group	2	29SEP09	0	6aR 14; On completion of grouting wks at WSD's	6AR1FT0928
	N	05SEP09	0	6aR 13; On completion of grouting wks at P3	- 1
•	09 2 1,151	31700	0	6aR 12; On completion of grouting wks at P4	7
•	87	10JUL09	0	6aR 11; On completion of grouting wks at P5	
•	2	15JUN09	0	6aR 10; On completion of grouting works at P6	6AR1FT0920
•	8	90NUC30	0	6aR 9; On completion of 80% grout by Ith at P6	6AR1FT0918
•	2	26MAY09	0	6aR 8; On completion of 60% grout by Ith at P6	6AR1FT0916
	2	16MAY09	0	6aR 7; On completion of 40% grout by Ith at P6	6AR1FT0914
•	09 2 1,236	07MAY09	0	6aR 6; On completion of 20% grout by Ith at P6	6AR1FT0912
•	ļ	10JUN09	0	6aR 5; On completion of grouting at WSD T. 3	6AR1FT0910
•	09 2 1,250	23APR09	0	6aR 4; On completion of grouting at F6a	6AR1FT0908
•	2	01APR09	0	6aR 3; On completion of grouting at F6b	6AR1FT0906
	2	25MAH09	0	6аR 2; On completion of grouting at F6c	- 1
	N09 2 1.334	29JAN	0	6aR 1; On completion of grouting at P7	. ,
	B11 2 577	OSFEB11 25FEE	24	SO issues completion certificate	3AL1FT0888
	-	28JA	0	Handover of Portion F	3AL1FT0886
	2 5	04FE	7	Contractor serve notice for Works completion	3AL1FT0884
	-	04DEC10 28JAN11	45	Authorities' inspection/remedial works; daytime	3AL1FT0882
	-		788	Testing & Commissioning; daytime	3AL1FT0880
	+-	0110	06	Installation of communication system (Daytime)	3AL1FT0878
rpoor comprehensive comprehensive comprehensive comprehensive γ supprehensive comprehensive compreh	-	24SE	98	Complete maintennce access & dry weather channel	3AL1FT0876
W. 740% 181 7001	-	22DEC08 20MAY10	414	Back grouting (daytime); CH5100-00	3AL1FT0874
	-	15MAY10 15JUI	£0\$	Desembly & demobilization of TBM	3AL1FT0873
Dre-excavation months (2) 20 m/4 Educates	-	14M	37	TBM advances; F1 CH300-0	3AL1FT0872
74	-	15MAR10 26MA	=	TBM advances; CH530-300	3AL1FT0870
Ago, Zi Myoay	-	13MAR10 13MA	+	TBM advances; P1 CH540-530	3AL1FT0868
	-	12M	1	TBM advances; CH770-540	3AL1FT0866
Gre-excavation grainting @ 20m/1.5Hm.4		÷	6	TBM advances; P2 CH795-770	3AL1FT0864
ASSOCIATION OF BUILDING OF BUI	-	24F	2	TBM advances; CH1230-795	3AL1FT0862
pre-exception arouting a some interest			က	TBM advances; F2 CH1250-1230	3AL1FT0860
I plvv advance rate 10.5m/day=i BW operates 0700 to 1900	- 1 -	- +	2	TBM advances; CH1295-1250	3AL1FT0858
Town Advanced of the Company of the		05JAN10 21JAN10	15	TBM advances; Noise sesitive area CH1449-1295	3AL1FT0856
Portocavation is usually and the control of the con		20NOV09 04.IAN10	36	TBM advances; CH2205-1449	3AL1FT0854
ma expanding and the Source of the Company	- -	·	9		3AL1FT0852
September 1 Allow 1 Al	- -	•	13	TBM advances; CH2535-2255	3AL1FT0850
Dre-excevation grounding @ 20m/4 Edwar	-	21OCT09 28OCT09	9		3AL1FT0848
	T09 1 8	12OCT09 20OCT09	8	-	3AL1FT0846
Dre-lexnavation months @ Dom (+ Education and provided an	-	08OCT09 10OCT09	က		3AL1FT0844
8.19.10.11.13.11.13.10.17.19.19.19.19.19.19.19.19.19.19.19.19.19.	-	0.20	5	TBM advances; CH286	3AL1FT0842
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6AR1FT0934 6aR 17; On completion of grouting wks at F3 0	-	19NOV09 2	1,040		
6AR1FT0936 6aR 18; On completion of grouting wks at F2 0	2	27JAN10 2	97.1	•	
	N I	27FEB10 2	940	•	
	-	13MAR10 2	926		
1	e	31MAR10 2	908		
	0		668	•	
6aR 23; On completion of	-	14APR10 2	894		
6aR 24; On completion of			888	•	
6aR 25; On completion of	2	710	885	•	,
F	2	28APR10 2	880	•	
6AR1FT0954 6aR 27; On completion of 70% grout by Ith at F1	· · ·	04MAY10 2	874	•	
		10MAY10 2	898	•	
6AR1FT0958 6aR 29; On completion of 90% grout by Ith at F1 0	-	11MAY10 2	867	•	
6AR1FT0960 6aR 30; On completion of grouting works at F1	÷	14MAY10 2	864	•	
6AR1FT0970 6aR 31; On completion of all works under this CC 0	2	20MAY10 2	828	Sunder this Cast Centre	
Santedule on Wilestrones to recommend and remittents					
3AL1FT1002 3aL 1; On providing evidence of procuring TBM 0		19JAN08 2	1,710	•	
3AL1FT1004 3aL 2; On providing evidence of TBM Factory Test 0	0	P08	1,481	•	
3AL1FT1006 3aL 3; On delivery of all parts of TBM to the Si	ŏ	09NOV08 2	1,415		
3AL1FT1008 3aL 4; On completion of site comm. & test. of TB 0	ð	800	1,386	•	
3AL1FT1010 3aL 5; On completion of 5% perm. tunnel lining	Š	25MAR09 2	1,279		
3AL1FT1012 3aL 6; On completion of 10% perm. tunnel lining 0	ŏ	09APR09 2	1,264	•	
3AL1FT1014 3aL 7; On completion of 15% perm. tunnel lining 0	ίδ.	22MAY09 2	1,22.1	•	
3AL1FT1016 3aL 8; On completion of 20% perm. tunnel lining 0	8	22JUN09 2	1,190	•	
3AL1FT1018 3aL 9; On completion of 25% perm. tunnel lining 0	_	10JUL09 2	1,172	•	
3AL1FT1020 :3aL 10; On completion of 30% perm. tunnel lining	α.	24JUL09 2	1,158	•	
3AL1FT1022 3aL 11; On completion of 35% perm. tunnel lining 0	1(L	1,141	•	
3AL1FT1024 3aL 12; On completion of 40% perm, tunnel lining 0	ŏ	09SEP09 2	1,1,1	•	
3aL 13; On completion of 45% perm. tunnel lining	ö		1,087	•	
	č.		1,066	•	
3AL1FT1030 3aL 15; On completion of 55% perm. tunnel lining 0	0	09NOV09 2	1,050	•	
3AL1FT1032 3aL 16; On completion of 60% perm. tunnel lining	2	27NOV09 2	1,032	•	
3AL1FT1034 3aL 17; On completion of 65% perm. tunnel lining	ŏ	CJ	1,020	•	
3AL1FT1036 3aL 18; On completion of 70% perm. tunnel lining	. 27	21DEC09 2	1,008	•	
3AL1FT1038 3aL 19; On completion of 75% perm. tunnel lining	72	22JAN10 2	926	•	
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	0.	07APR10 2	901	•	
3AL1FT1048 3aL 24; On completion of perm. tunnel lining	4	14MAY10 2	864	•	
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	03MAY08 27JUN12 1 24	1,230 031	ATTIUS i Monitorreport Geotechnical Instrumentation
	02MAY08 1	30 27	3DL1Al1106 Installation of Geotechnical Instrumentation
	26MAR08 2 29	† †	7
	27MAR08 23JUN08 1 73	72 27	16R7Al1102 Tree transplanting; 4 nos.
	03MAY08 11JUL11 2 16	1,165 03	1
	27MAR08 02MAY08 1 12	30 27	01R1Al1122 Install remote control CCTV as per ER 4.4.10
	1	24 03	01R1AI1117 Erect temp. steel decking spanning Shing M. Nul.
	27MAR08 02MAY08 1 31	30 27	01R1Al1116 Site clearance
	27MAR08 02MAY08 1 31	30 27	01R1Al1114 Site establishment
♦ 90d after DOC	26MAR08 1 12	0 28	
	07MAR08 2 59	0 07	
	26MAR08 2 90	0	01R1Al1108 Obtain tree felling permit
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			Construction of Intake I-1
 tunnel after completion of strengtheing works 	18FEB09 2 1,314	0	10AR1JT137 10aR 7; On recharge of the water after wrk comp
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	i	0	- 1
	1	0	10AR1JT134 10aR 4; On completion of 50% strengthening wks
	7	0 8	10AR1JT133 10aR 3; On completion of 25% strengthening wks
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	03DEC08 2 11,391	0	
			Sarettle of Milestones (directles) per mal/lor (di
under this Cost Centre	26JUL12 2 60	0	3DL10T1224 3dL 12; On completion of all works under this CC
flow monitoring to issue of Maint. Certificate	26JUL12 2 60	0	- 1
flow measurement devices for Portion D.	19MAY11 2 . 494	0	- 1
flow measurement devices for Portion C.	05MAR11 2 569	0	
flow measurement devices for Portion B.	10JUN11 2 472	0	
flow measurement devices at Portion A.	12MAR11 2 562	0	
monitoring for installed instruments	26JUL12 2 60	0	
installed instruments for 48 months from DOC.	26DEC11 2 273	0	
Installed instruments for 36 months from DOC.	26DEC10 2 638	0	Ť
Installed Instruments for 24 months from DOC	1	0	
Sinstalled instruments for 12 months from DOC	26DEC08 2 1,368	0	\neg
• deptechnical instruments	02SEP09 2 11,118	0	
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07R1Al1608 Pre-handover inspections and remedial works	14MAB11 13MAY11 1	Total Carlo
07R1Al1610 Contractor serve notice for Works completion	14MAY11 20MAY11 2 4	
07R1A11612 SO issues completion certificate	10JUN11 2	
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16R7Al1604 Establishment Works at Portion A	365 14MAY11 12MAY12 2 75	
3DL1AI1602 Install flow measurement devices at Intake I-1	12MAR11 1	
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04L1Al1802 4L 1; On completion of 50% excavation	0 24APBng 2 1.249	A CONTRACTOR OF THE PROPERTY O
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04L1Al1808 4L 4; On completion of 50% concreting	0 26AUG10 2 760	Pro Cascade at Intake 1-1
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i	0 19OCT09 2 1,071	Spox culvert at Intake I-1
04L1Al1816 4L 8; On completion of all works under this CC	0 13MAY11 2 500	entrantic Cost

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15 nos. pre-bored H-piles at southern end 10 13MAY08 22MAY08 1 13 Remove southern access ramp (tail) 12 24MAY08 06JUN08 1 13 Remaining 44 nos. pre-bored H-piles 30 07JUN08 14JUL08 1 298 Demolize piling rig 1 15JUL08 1 298 Excavate for skin wall & remove temp, access 40 16JUL08 1 298	15 nos. pre-bored H-piles at southern end 10 13MAY08 22MAY08 1 13 Remave southern access ramp (tail) 12 24MAY08 06JUN08 1 13 Remaining 44 nos. pre-bored H-piles 30 07JUN08 14JUL08 1 298 Demolize piling rig 1 15JUL08 1 298 Excavate for skin wall & remove temp, access 40 16JUL08 1 298	10MAY08 1 13	Ø
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Remaining 44 nos. pre-bored H-piles 30 07JUN08 14JUL08 1 298 Demolize piling rig 1 15JUL08 15JUL08 1 298 Excavate for skin wall & remove temp. access 40 16JUL08 1 298	Remaining 44 nos. pre-bored H-piles 30 07JUN08 14JUL08 1 298 Demolize piling rig 1 15JUL08 15JUL08 1 298 Excavate for skin wall & remove temp. access 40 16JUL08 30AUG08 1 298	06JUN08 1 13	12
Demolize piling rig 1 15JUL08 15JUL08 1 298 Excavate for skin wall & remove temp, access 40 16JUL08 30AUG08 1 298	Demolize piling rig 1 15JUL08 15JUL08 1 298 Excavate for skin wall & remove temp, access 40 16JUL08 30AUG08 1 298	14JUL08 1 298	30
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		30AUG08 1 298	40

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Phase 1. Sto 3-Flatten exist Stream Red at West	000	20010000000000000000000000000000000000
	200000000000000000000000000000000000000	
Construct temp. concrete block bund	12 01NOV08* 14NOV0R 1	
Excavate for new low flow channel	15NOV08 : 28NOV08 1 236	-provision of water pump
Construct new low flow channel	29NOV08 29DEC08 1 236	
Remove temp, concrete block bund	30DEC08 13JAN09 1 236	
Phase 2, Stg 1- Const. Approach Channel at East		
Construct temp, concrete block bund	6 02NOV09* 07NOV09 1	
Excavate for L-shaped retaining wall	09NOV09 21NOV09 1	Provision of water pump
Construct L-shaped retaining wall	, 18 23NOV09 12DEC09 1 175	32 E
Excavate eastern portion of guide wall & slab	29DEC09 1	
Construct eastern portion of guide wall & slab	30DEC09 20JAN10 1	
Remove temp. concrete blook bund	21JAN10 27JAN10 1	c
Phase 2, Stg 2- Const Approach Channel at West		
Construct temp, concrete block bund	A 1 08 IANAO 100EEDAO	
Excavate for western portion guide wall & stab	CONTINUO CONTENIO	Eprovision of water pump
Construct western portion of mide wall a state	04rebio 20rebio 1	25
Remove concrete block bush	22FEB10 20MAR10 1	
Ding place place build	6 ZZMAR10 Z7MAR10 1 175	
Place 4- Construct Remaining Approach Channel		
Construct temp, concrete block bund	1	78
Complete guide wall between A.C. & V.S.	12 28APR11 12MAY11 1 8	
Remove temp. conctete block bund	6 13MAY11 19MAY11 1 8	mArter Construction of Outfall 0-1
Dicebaic a Construit Voirevibrop Shaff		
Phase 1, Stg 2- Form temp. access ramp to VS		
Setting up	6 05SEP08 11SEP08 1 13	
Probing & curtain grouting around shaft	12SEP08 13OCT08 1 13	
Construct ELS around shaft	03NOV08 1 13	
Phase 3, Stg 1- Const. Vortex Shaft/Trash Grill		
Construct temp. concrete block bund	6 01NOV10" 06NOV10 1 0	
Excavate for vortex shaft & guide wall	24 27NOV10 24DEC10 1 13	provision of water bump
Construct vortex shaft & guide wall		9154 924
Construct trash grill		1075 B
Construction of boulder traps; 7nos.	-	
Phase 3, Stg 2- Construct Rem. West. Guide Wall		
Relocate temp, concrete block bund	4 12MAR11 16MAR11 1 13	3
Excavate/const. rem. western guide wall	17MAR11 02APB11 1	· E
Remove temp, concrete block bund	04APR11 11APR11 1	
Mechanical excavation for drop shaft; 32m	160 11NOV08 30MAY09 1 13	720 E171 E171 E171 E171 E171 E171 E171 E17

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	365 17JUL11 15JUL12 2 11	Establishment Works at Portion B	16R7BI2104
Projection:		Landscaping works at Portion B	16R7BI2102
	21 24JUL11 13AUG11 2 348	SO issues completion certificate	08R1BI2105
	17JUL11	Contractor serve notice for Works completion	08R1BI2104
Manager Control of the Control of th		Pre-handover inspections and remedial works	08R1BI2103
	48 18APR11 17JUN11 1 8	Finishing & reinstatement works; Portion B	08R1Bl2102
		Renizintig Warks Pridric Handover)
5 bays, invert, walls & toof 3 pours each bay感动	36 27NOV10 11JAN11 1 38	Construct man access tunnel; 35m	051.1812806
	30AUG10	Mechanical excavation breakthrough	05L1BI2804
国の表示の記念の記念の記念 @ 0.15m/day	240 06NOV09 28AUG10 1 109	Mechanical excavation for Man Access Tunnel	05L1BI2802
		excevere woonshippen access hunde	
(認証(ryert, wall & ropf	36 26JAN11 11MAR11 1 38	Construct collar between MT & AT	3BL1B12108
18@ 0,3m/day	25JAN11 1	Mechanical excavation breakthrough	3BL1BI2106
Manage bays, invert, walls & roof 8 pours @ bay 51 d	50 14JUL10 09SEP10 1 13	Construct adit tunnel; 60m	3BL1Bl2104
SESTING SESTION © 0.3m/day	200 06NOV09 13JUL10 1 13	Mechanical excavation for Adit Tunnel	3811812102
		Excavate o Gonstruct Aul Funnell	EX(0.01/2)
IIIII 2 walls & roof total 32 days	32 10SEP10 20OCT10 1 13	Construct de-aeration chamber	05L1BI2604
2832m3, 2@ 20m3/day	132 01JUN09 05NOV09 1 13	Mechanical excavation for chamber; 22.5m	051,1812602
		encevare a construction de deration chamides	(*) (*) (*)
EGATING 4m/8days	76 27NOV10 02MAR11 1 67	Construct man access shaft including stairs; 38m	05L1Bl2514
Exercise Control of Smiday	190 30DEC08 21AUG09 1 443	Mechanical excavation for man access shaft; 38m	05L1BI2512
	24 29NOV08 29DEC08 1 443	Probing & curtain grouting around shaft	051.1812504
₹335mm dfa. temp. pipe pile wall	24 01NOV08* 28NOV08 1 0	Construct ELS around shaft	0511812502
		Excavate Goostfloot/Nart Access Shaff	
©a [®] @4m/4days	34 27NOV10 08JAN11 1 67	Construct air vent shaft; 34m	3BL1B12412
	6 04NOV08 10NOV08 1 13	Dismante & remove temp platform	05L1BI2410
provision of TTA	1 04SEP08 04SEP08 1 13	Demobilize RCD	05L1B12408
图 图	34 26JUL08 03SEP08 1 13	Excavate by RCD; 34m @ 1m/day	05L1BI2406
Provision of TTA	6 19JUL08 25JUL08 1 13	Mobilize & set up plants for RCD excavation	05L1BI2404
	10 08JUL08 18JUL08 1 13	Construct temp. platform for RCD	05L1BI2402
	24 07JUN08 07JUL08 1 13	Form temp, access ramp; Lo Wai Rd to Drop Shaft	05L1BI2302
		Phase 1, Stg 2- Form temp. access ramp to VS	Phase 1, St
		Szcavaler z construct arriventshaft	The system
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◆traps at Intake -2		2	11MAR11	0	12R3bl2Sub 12R 3; On completion of boulder traps
	wall at Intake I-2	13SEP08 2 1,472	13SE	0	Ţ.
	♦wall at Intake I-2	14JUL08 2 1,533	14.11	0	\Box T
♦under this Cost Centre		16JUL11 2 436	16J	0	CONTROLL TO GARAS, OF COMPREHEND OF All WORKS UNder This CC
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channel and assiciated decking at fritake 1-2.	chan	AY11 2 501	12MA	0	
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◆adit at Intake F-2		2	011	0	OF TRIOMOD RI 10: On completion of all marks and
Shaft at Intake I-2		~	02M	0	OSE REIGHTE SE 8; On completion of man access shaft
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			11JUN11	365	3DL1BI2105 Maintain & monitor flow monitoring

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	CONSINUING FOWER PAIL OF ACCESS HORIS			
09R1Cl3402	1 [60 13MAY09	09 23JUL09 1 274	
09R1Cl3406		60 24JUL09	02OCT09 1	
09R1CI3408	ı	30 03OCT	03OCT09 09NOV09 1 274	
09R1Cl3410		32 10NOV	-	
09R1Cl3412		32 17DEC	-	
09R1Cl3414	†	48 27JAN10	26MAR10 1	
13R1Cl3402		112 28AUG	28AUG08 12JAN09 1 288	
13R1Cl3404	Excavate & install soil nail (NW Turning Area)		-	
13R1CI3406		+	12MAY09 1	Example of the state of the sta
16R7Cl3402		 -	24FEB09 1	100 I 00 I 100 I 1
Excervate	Skeavare & Construction in Vent Share			
Phase 1	A CONTRACTOR OF THE PROPERTY O			
06L1Cl3502	Modify & flatten the stream bed	6 26NOV08	02DFC08 1	
06L1Cl3504	Construct temporary concrete block wall bund	1	· 🛉	
06L1Cl3506	Mobilization & setting up of RCD rig	+		
06L1Cl3508	Drilling for air vent shaft	+:	20JAN09	MA American
06L1Cl3510	Construction of air vent shaft	14 21 JAN09	09FFB09 1 1	1/m long for the day and a containing AIP 107 design submission
	Excelvate & Construction Shart			The months of the same of the
Phase 1	ALE PROMISSION CONTRACTOR AND THE PROMISSION OF			
06L1Cl3602	Probing & curtain grouting	18 21JAN09	9 13FEB09 1 71	
06L1Cl3604	Construct temp. rain shelter & bund	24 21JAN0	20FEB09 1	
06L1Cl3606	Bulk excavation for Vortex (southern portion)		-	27 July 198m 3 10m 2 10 July 1 57
06L1Cl3608	Bulk excavation for drop shaft	60 27APH09	09JUL09 1	
06L1Cl3610	Construction of vortex (southern portion)	24 10JUL09	9 06AUG09 1 71	
Phase 2				
06L1Cl3612	Construction of drop shaft	12 19FEB10 04MA	0 04MAR10 1 83	3004m/4riavs
Phase 3				
06L1Cl3614	Bulk excavation for Vortex (northern portion)	37 21SEP1	21SEP10 05NOV10 1 106	27 - vehicle 10m3/day - 27
06L1Cl3616	Construction of vortex (northern portion)	24 06NOV1	06NOV10 03DEC10 1 106	
06L1Cl3618	Relocate flood wall within vortex	4 04DEC10	0 08DEC10 : 1 106	
06L1Cl3620	Construct remaining of the vortex	24 09DEC10	08JAN11 1	
) 	A constition Mail Access Shall			
Phase 1				
06L1Cl3706	Bulk excavation for man access shaft	110 14FEB09	30JUN09 1 170	Waterway 22m, @0.2m/dav
06L1Cl3708	Construction of man access shaft	44 30SEP09	3 23NOV09 1 170	6*4 cycle each cycle 4 days@@22m @ 4m/8days including stairs
	Well Reniement Stream Beach (Day Season) (not ks)			
Phase 2				
09R1Cl3802	Construct temporary sand bag bund	6 02NOV09* 07NO	1 07NOV09 1 07NOV09	

09R1CI3804 09R1CI3806 09R1CI3808		THE PARTY NAMED IN			1031 7 8 9	
09R1CI3806 09R1CI3808 09R1CI3810	Removal of large boulders	01	60AON60	19NOV09		88.9 P. 01.11.21.31.41.51.61.77.08 P. 92021 P. 22021 P. 2
09R1CI3808 09R1CI3810	Excavation of the stream bed	36	20NOV09		1 67	2
09R1Cl3810	Laying of granular filter	42	05JAN10	05JAN10 01FEB10	16	
(T (C () T () () T () T	Laying of rock armour	24	05JAN10	05JAN10 · 01FEB10	1 67	
09R1CI3812	Construction of boulder trap; 7 nos.	24	02FEB10	04MAR10	1 67	
09R1Cl3814	Removal of sand bag bund	4	05MAR10		1 67	3
09R1Cl3816	Construct temporary concrete block bund	8	10MAR10	10MAR10 30MAR10	1 67	
E.G. Valle	Aceivate a Gunstraki Approach Channel					
Phase 3	Sira habara kakana kaka da kata ka	N. C.	THE STATE OF THE S			
09R1Cl3902	Excavation of the Stream Bed	54	31MAR10	31MAR10 08JUN10	1 67	
09R1CI3904	Laying Granular Filter within Stream Bed	18	09JUN10 - 30JU	30JUN10	1 67	
09R1Cl3908	Open excavation for Approach Channel	69	02JUL10	20SEP10	1 67	
09R1Cl3910	Construction of Approach Channel	122	21SEP10	21SEP10 : 19FEB11	1 67	
09R1Cl3912	Construction of trash grill	12	14FEB11	26FEB11	1 67	
0CR1Cl3914	Removal of concrete bolck bund	9	28FEB11	05M	1 67	
	excavate & Construct Delacration Spanioer					
Phase 2	erronen en elektrikarian kanales esta elektrikarian interesta en elektrikarian kanales esta elektrikarian kana		A 10 TO 10 T		· · · · · · · · · · · · · · · · · · ·	
06L1Cl3102	Excavation for de-aeration chamber	87	10JUL09	21OCT09	1 83	23 - 125 m 3 0 0 m 3/Hav - 124 byce
06L1Cl3104	Construction of de-aeration chamber	32	09JAN10	18FEB10	- 83	A Jours & week days invert drave walls 向 ave a succession of
	a cavaler v Goresii i jora oliminin nei					<u> </u>
Phase 2	ocai alesa taran esperiaces esperiaces esperiación de esperiación de esperiación de esperiación de esperiación					
3CL1Cl3102	Mechanical excavation for Adit Tunnel	40	22OCT09	22OCT09 08DEC09	1 83	web/me @ udtm
3CL1Cl3104	Construction of Adit Tunnel	24	09DEC09	08JAN10	1 83	Sill Davis Books
3CL1Cl3106	Mechanical excavation breakthrough	12	22JUN10	22JUN10 06JUL10	1 206	
3CL1Cl3108	Construct collar between MT & AT	36	07JUL10	17AUG10	1 206	Mainvert, wall & roof
	Excavate to constitute Matrix cossistimates					
Phase 2	CALLY CALLY THE PROPERTY OF TH	A COLUMN TO THE	Decada Garage Grand Control	A THE PROPERTY OF THE PROPERTY		
06L1Cl3122	Mechanical excavation for man access tunnel	53	02JUL09	01SEP09	1 170	mocking out access經過8m (@0.15m/dav
06L1Cl3124	Construction of man access tunnel	24	02SEP09	29SEP09	1 170	Sign Spays: 6 pours
	Aquianny Volks Pricing handoverny dienk					
09R1Cl3142	Finishing & reinstatement works; Portion C	48	07FEB11 02AP	02APR11	1 67	
09R1Cl3143	Pre-handover inspections and remedial works	48	O7MAR11 O5MA	05MAY11	1 67	
09R1Cl3144	Contractor serve notice for Works completion	2	06MAY11	12MA	2 480	
09R1Cl3146	SO issues completion certificate	21	13MAY11	02JUN11	2 480	
16R7Cl3142	Landscaping works at Portion C	120	06DEC10 05MA	05MAY11	1 68	
	Establishment Works at Portion C	365	06MAY11	04MAY12	2 83	
	Install flow measurement devices at Intake I-3	24	07FEB11 05MA	05MAR11	1 88	· · · · · · · · · · · · · · · · · · ·
3DL1Cl3143	Maintain & monitor flow monitoring	365	06MAR11 04MA	04MAR12	2 144	

| 13R 1; On completion of 30% soil natiling 0 28AUG08 2 1,488 ◆at intake I-3 13R 2; On completion of 60% soil natiling 0 25NOV08 2 1,399 ◆at intake I-3 13R 3; On completion of all soil nating works 0 12MAY09 2 1,231 ◆at intake I-3 13R 4; On completion of 10% piles by number 0 26MAY08 2 1,582 ◆at intake I-3 | 0 19FEB11 2 583 | channel 0 21JAN11 2 612 | G.L 0 24FEB09 2 1,308 | G.L 0 05SEP08 2 1,480 | 0 26MAR10 2 913
 |
 | 0 05MAY11 2 508 | 0 293EP09 2 1,091 | 0 23NOV09 2 1,036
 | 0 09FEB09 2 1,323 | n chamber 0 18FEB10 2 949 | 0 08.JAN11 2 625 | 0 21OCT09 2 1,069 Helmin C 1
 | | C 0 17AUG10 2 769 | 0 08JAN10 2 990 | 31DEC09 2 998
 | 0 : 28DEC09 2: 1,001 | 0 22DEC09 2 1,007 | 0 18DEC09 2 1,011 | 0 15DEC09 2 11.014 | 11DEC09 2 1.018 | 0 210CT09: 2 1,069 | | ### Part Process Control of Contr | 109 2 1,018 109 2 1,014 109 2 1,011 109 2 1,001 100 2 1,001 100 2 1,001 100 2 1,001 100 2 1,001 100 2 1,001 100 2 1,009 100 2 1,036 100 2 1,036 100 2 1,036 100 2 1,036 11 2 1,031 11 2 1,159 12 1,159 13 2 1,159 14 2 1,159 15 2 1,159 15 2 1,159 15 2 1,159 15 2 1,159 15 2 1,159 15 2 1,159 15 2 1,159 15 2 1,159 15 2 1,159 16 2 1,159 17 2 1,159 18 2 1,159 19 <td< th=""><th></th><th>3CL1CI3A02 3CL1; On establishing tunnelling equipments 3CL1CI3A04 3cL 2; On completion of 12.5% perm. tunnel lining 3CL1CI3A08 3cL 4; On completion of 25% perm. tunnel lining 3CL1CI3A10 3cL 5; On
completion of 50% perm. tunnel lining 3CL1CI3A11 3cL 5; On completion of 50% perm. tunnel lining 3CL1CI3A12 3cL 6; On completion of 50% perm. tunnel lining 3CL1CI3A14 3cL 7; On completion of 50% perm. tunnel lining 3CL1CI3A18 3cL 9; On completion of 62.5% perm. tunnel lining 3CL1CI3A18 3cL 9; On completion of 62.5% perm. tunnel lining 3CL1CI3A18 3cL 9; On completion of 62.5% perm. tunnel lining 3CL1CI3A18 3cL 9; On completion of 60.5% perm. tunnel lining 3CL1CI3A18 3cL 9; On completion of 60.5% perm. tunnel lining 3CL1CI3A18 3cL 9; On completion of 60.5% perm. tunnel lining 3CL1CI3A18 3cL 9; On completion of 60.5% perm. tunnel lining 3CL1CI3A18 3cL 9; On completion of 60.5% perm. tunnel lining 3CL1CI3A18 3cL 9; On completion of forexavation works 3CL1CI3A18 3cL 9; On completion of forexavation of 60.5% of excavation 3CL1CI3A18 3cL 9; On completion of forex shaft 3CL1CI3A18 3cL 9; On completion of forex shaft 3CL1CI3A18 3cL 9; On completion of forex shaft 3CL1CI3A18 3cL 9; On completion of forex shaft 3CL1CI3A18 3cL 9; On completion of forex shaft 3CL1CI3A18 3cL 9; On completion of forex shaft 3CL1CI3A18 3cL 9; On completion of forex shaft 3CL1CI3A18 3cL 9; On completion of 60.5% of excavation at G.L 3CL1CI3A18 3cL 9cl 9cl 9cl 9cl 9cl 9cl 9cl 9cl 9cl 9cl</th></td<> | | 3CL1CI3A02 3CL1; On establishing tunnelling equipments 3CL1CI3A04 3cL 2; On completion of 12.5% perm. tunnel lining 3CL1CI3A08 3cL 4; On completion of 25% perm. tunnel lining 3CL1CI3A10 3cL 5; On completion of 50% perm. tunnel lining 3CL1CI3A11 3cL 5; On completion of 50% perm. tunnel lining 3CL1CI3A12 3cL 6; On completion of 50% perm. tunnel lining 3CL1CI3A14 3cL 7; On completion of 50% perm. tunnel lining 3CL1CI3A18 3cL 9; On completion of 62.5% perm. tunnel lining 3CL1CI3A18 3cL 9; On completion of 62.5% perm. tunnel lining 3CL1CI3A18 3cL 9; On completion of 62.5% perm. tunnel lining 3CL1CI3A18 3cL 9; On completion of 60.5% perm. tunnel lining 3CL1CI3A18 3cL 9; On completion of 60.5% perm. tunnel lining 3CL1CI3A18 3cL 9; On completion of 60.5% perm. tunnel lining 3CL1CI3A18 3cL 9; On completion of 60.5% perm. tunnel lining 3CL1CI3A18 3cL 9; On completion of 60.5% perm. tunnel lining 3CL1CI3A18 3cL 9; On completion of forexavation works 3CL1CI3A18 3cL 9; On completion of forexavation of 60.5% of excavation 3CL1CI3A18 3cL 9; On completion of forex shaft 3CL1CI3A18 3cL 9; On completion of forex shaft 3CL1CI3A18 3cL 9; On completion of forex shaft 3CL1CI3A18 3cL 9; On completion of forex shaft 3CL1CI3A18 3cL 9; On completion of forex shaft 3CL1CI3A18 3cL 9; On completion of forex shaft 3CL1CI3A18 3cL 9; On completion of forex shaft 3CL1CI3A18 3cL 9; On completion of 60.5% of excavation at G.L 3CL1CI3A18 3cL 9cl |
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H2*40*4m2	12 18AUG10 31AUG10 1 8	10R1D00704 Drive temp, sheet piles along footpath
310	12 04AUG10 17AUG10 1 8	10R1DO0702 Form temp. working platorm
		Constitute carcade v. Upper Pan Box Guivan
81 0	24 07JUL10 03AUG10 1 8	3AL1DO0606 Construct portal head wall
#For TBM Launching Chamber	12 22JUN10 06JUL10 1 8	3AL1DO0604 Construct permanent lining for CH5100-5085
Eminal gantry crane	30 15MAY10 21JUN10 1 8	
3.6	12 18DEC10 04JAN11 1 8	
	48 04AUG10 29SEP10 1 74	10R1DO0604 Construct tapered open channel
86	24 07JUL10 03AUG10 1 8	10R1DC0602 Excavation/formation for tapered open channel
		construct Panel Read & Lesocrated Shartness
6.50	6 01MAR11 07MAR11 1 39	10R1D00528 Reinstate existing outfall "W"
	-	10R1D00526 Construct open channel at 2.3 mPD
	24 14JAN11 14FEB11 1 39	10R1DC0524 Construct channel toe below 2.3mPD
	24 30DEC10 27JAN11 1 39	10R1D00522 Excavate for open channel
	-	10R1D00520 Construt wall & roof of box culvert; 2 cells
Cardy a decorate a february	19OCT10 10NOV10 1	10R1D00518 Construct base slabs of box culvert; 2 cells
Security Collision of the Collision of t	25AUG10 18OCT10 1	10R1D00516 Excavate for box-culvert; 2 cells
	40 TIMAY10 28JUN10 1 39	10R1D00515 Install 273mm dia temp. pile for nine modina
™Concete 160m3	16APR10 10MAY10 1	10H10U0512 Construct base slabs of box culvert; 2 cells
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Manager 2 cells: 105 rios.	48 18DEC09 18FEB10 1 39	
20440E	24 20NOV09 17DEC09 1 39	10R1DO0506 Excavate & form pipe roofing platform @+2.3mPD
	36 08OCT09 19NOV09 1 39	10R1DO0504 Divert exist. outfall "W" under CPR arch bridge
	0 08OCT09 2 47	10R1D00502 Site possession of Portion E-650d of DOC
		Constate EnwersPansBo Colliver & Open Channel
	12 11JUN10 25JUN10 1 40	10R1D00424 Commission of Spiral Ramp
	24 13MAY10 10JUN10 1 40	10R1D00422 Construct vehicular access bet, tunnel & s. ramp
	27NOV09 27APR10 1	10H10U0416 Construct spiral ramp; +4.5 to +24mPD at 0-1
	16 24OCT09 12NOV09 1 40	-
	8 15OCT09 23OCT09 1 40	10R1DO0410 Construct base for vehicular access
sheet pile roofing & lagging ~180m2@also; 640m3	48 18AUG09 14OCT09 1 40	10R1DO0408 Excavation for vehicular access underneath CPR
740ft3 soil & 4000m3 rock隔离高高加口cluding terms supports mesures	120 21MAR09 17AUG09 1 40	10R1DO0404 Mechanical excavation for spiral ramp
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10R1DO0706 Excavate for box culvert (upper part)	_	Miles Sol 5400m3
10R1DO0708 Construct box-culvert (upper part)	15OCT10 04JAN11 1	Emerge concrete 1830m3
10R1DO0710 Excavate for cascade construction	05JAN11	##Soi 840m3, rock 600m3
10R1D00712 Construct cascade	48 19FEB11 16APR11 1 8	Emilia concrete 950m3
10B1D00714 Construct retaining wall, baffle, railing etc.	48 19FEB11 16APR11 1 33	
Seabeathratestion Wolks		
10R1DO0804 Excavate & formation for 100m*16m slab	72 11MAY10 05AUG10 1 93	IMMERICASION 4000m3
10R1DO0806 Construct concrete apron with pre-cast RC slabs	26MAY10 19AUG10 1	[国际][1] [1] [1] [1] [1] [1] [1] [1] [1] [1]
10R1D00808 Installtion of precast stepped blocks	144 06AUG10 27JAN11 1 93	pre-cast panel 2340m2, granular filter 700m3 Francisco and control of 300mm granular fill & geotextile
10RtDO0810 Removal of platform & formation	12 08MAR11 21MAR11 1 39	128
10H1D00812 Install remain. Concrete apron for rem. Area	04APR11 1	
14R5DO0802 Removal of sea wall armour	72 26APR10 22JUL10 1 93	[3] [3] [3] [3] [3] [3] [3] [4] [4] [4] [4] [4] [4] [4] [4] [4] [4
Repellings Works, Enton of Ednolover		
10R1DO0904 Finishing & reinstatement works; Portion D	48 19MAR11 19MAY11 1 33	
10R1DO0906 Pre-handover inspections and remedial works	48 18APR11 17JUN11 1 33	
10R1DO0908 Contractor serve notice for Works completion	7 18JUN11 24JUN11 2 437	
10R1DO0910 SO issues completion certificate	21 25JUN11 15JUL11 2 437	£32
i 16R7DO0902 Landscaping works at Portion D	120 19JAN11 17JUN11 1 33	
16R7DO0904 Establishment Works at Portion D	365 18JUN11 16JUN12 2 40	
3DL1D00902 Install flow measurement devices at Outfall O-1	24 18APR11 19MAY11 1 29	
37L1DO0904 Maintain & monitor flow monitoring	365 20MAY11 18MAY12 2 69	
Schedule of Milestones/forcoshicemne No. 105		
110R1DO1002 10R 1; On completion of 20% excavation works	0 09JUL08 2 1,538	♦Outfli O-1
10R1DO1004 10R 2; On completion of 40% excavation works		♦Outral O-1
10R1DO1006 10R 3; On completion of 60% excavation works	08NOV08 2	♦Outfall Q-1
10R1DO1008 10R 4; On completion of 80% excavation works	14OCT09 2 11	Ontial Oil
10R1DO1010 10R 5; On completion all excavation works	18FEB11	◆at Outfall 0-1
10B1DO1014 10B 7: On completion of caircle structure	u 0	
10R1DO1016 10R 8; On completion of spiral access ramp	25JUN10 2	◆at Outfall O-1
10R1DO1018 10R 9; On completion box-culvert & open channel	į	and open channel underneath CPR
10R1DO1020 10R 10; On completion of seabed protection wks	0 04APR11 2 539	Protection works at Outfall O-1
10R1DO1022 10R 11; On completion of all works under this CC	0 17JUN11 2 465	♦ under this Cost Centre
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Appendix D

Implementation Status of Environmental Mitigation Measures

IMPLEMENTATION SCHEDULE

EIA Ref.	Recommended Mitigation Measures	Who to implement the measure?	Location of the measure	What requirements or standards for the measure to achieve ?	Status
Air Q	uality				
3.6.1	As mentioned in Section 3.5, exceedances of 1-hour and 24-hour average TSP guideline levels have been predicted at most of the ASRs. Hence, mitigation measures are considered necessary in order to suppress the potential dust impact.	DSD's Contractor	Construction Work Sites	Air Pollution Control (Construction Dust) Regulation	N/A
	The dust suppression measures set out in the <i>Air Pollution Control (Construction Dust)</i> Regulation, in fact, are more extensive. Therefore, it is expected that with watering the construction site every four times daily together with strict implementation of dust suppression measures as stipulated in the <i>Air Pollution Control (Construction Dust)</i> Regulation, the dust level is expected to be reduced by over 75%.				N/A
	General To further ensure compliance with the guideline and AQO limit at the ASRs at all time, it is recommended to implement the <i>Air Pollution Control (Construction Dust) Regulation</i> and include good site practice in the contract clauses to minimize cumulative dust impact.In addition, a comprehensive dust monitoring and audit programme is recommended to ensure proper implementation of the identified mitigation measures. Details of the monitoring and audit requirements are provided in a separate EM&A Manual. • effective dust screens, sheeting or netting should be provided to enclose the scaffolding				
	from the ground floor level of the building or if a canopy is provided at the first floor level, from the first floor level, up to the highest level of the scaffolding where a scaffolding is erected around the perimeter of a building under construction;				N/A
	 dump truck for material transport should be totally enclosed by impervious sheeting; any excavated dusty materials or stockpile of dusty materials should be covered entirely by impervious sheeting or sprayed with water so as to maintain the entire surface wet, and recovered or backfilled or reinstated within 24 hours of the excavation or unloading; 				√
	 stockpile of dusty materials should not extend beyond the pedestrian barriers, fencing or traffic cones; dusty materials remaining after a stockpile is removed should be wetted with water and cleared from the surface of roads; 				√

EIA Ref.	Recommended Mitigation Measures	Who to implement the measure ?	Location of the measure	What requirements or standards for the measure to achieve ?	Status
3.6.1	• the area where vehicle washing takes place and the section of the road between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores;	DSD's Contractor	Construction Work Sites	Air Pollution Control (Construction Dust) Regulation	✓
	 where a site boundary adjoins a road, street or other area accessible to the public, hoarding of not less than 2.4m high from ground level should be provided along the entire length except for a site entrance or exit; 				✓
	• every main haul road should be scaled with concrete and kept clear of dusty materials or sprayed with water so as to maintain the entire road surface wet;				✓
vehicle entrance or exit should be kept clear of dusty materials;	• the portion of road leading only to a construction site that is within 30m of a designated vehicle entrance or exit should be kept clear of dusty materials;				✓
	stockpile of dusty materials should be either covered entirely by impervious sheeting, placed in an area sheltered on the top and the 3 sides; or sprayed with water so as to maintain the entire surface wet;				✓
	all dusty materials should be sprayed with water prior to any loading, unloading or transfer operation so as to maintain the dusty material wet;				✓
	vehicle speed should be limited to 10 kph except on completed access roads;				✓
	• every vehicle should be washed to remove any dusty materials from its body and wheels before leaving the construction sites;				✓
	the load of dusty materials carried by vehicle leaving a construction site should be covered entirely by clean impervious sheeting to ensure that the dusty materials do not leak from the vehicle; and				✓
	• the working area of excavation should be sprayed with water immediately before, during and immediately after the operations so as to maintain the entire surface wet.				✓
Noise					
4.6.1	During Construction Appropriate mitigation measures such as the use of quiet equipment and movable barriers will be developed to ensure that noise can be reduced to acceptable levels without causing programme delays	DSD's Contractor	Construction Work Sites	PN 2/93 Noise from Construction Activities & EIAO	N/A
	Good Site Practice Good site practice and noise management can significantly reduce the impact of construction site activities on nearby NSRs. The following package of measures should be followed during construction:				
	 only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction works; 				✓
	 machines and plant that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum; 				✓

EIA Ref.	Recommended Mitigation Measures	Who to implement the measure ?	Location of the measure	What requirements or standards for the measure to achieve ?	Status
4.6.1	• plant known to emit noise strongly in one direction should, where possible, be orientated to direct noise away from the NSRs;	DSD's Contractor	Construction Work	Air Pollution Control (Construction Dust)	✓
	mobile plant should be sited as far away from NSRs as possible; and		Sites	Regulation	\checkmark
	• material stockpiles and other structures should be effectively utilised, where practicable, to screen noise from on-site construction activities.				✓
	 For Drill and Blast Works Charge mass per delay should be decreased by minimising the number of blastholes firing on each delay. 				N/A
	Smaller blasthole patterns and longer delays should be used between dependent charges.				N/A
	Times of blasting should be established to suit the situation and firing blasts when neighbours are busy with their daily tasks (and at a regular time such as lunch time).				N/A
	 For TBM Tunnelling For the tunnel excavation, it is anticipated that beyond the initial length (say within 30m), excavation will be carried out well within the tunnel and door should be provided to further minimize the noise nuisance to the nearby receivers. 				N/A
4.6.2	During Operation	DSD's Contractor	Project Area	NCO & EIAO	
	Good site practice and noise management can significantly reduce the impact of maintenance activities on nearby NSRs. The following package of measures should be followed during construction				
	only well-maintained plant should be operated on-site;				N/A
	machines and plant that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum; and				N/A
	• plant known to emit noise strongly in one direction should, where possible, be orientated to direct noise away from the NSRs.				N/A
	Quality		1		
5.9.1	During Construction	DSD's Contractor	Construction Work Sites	Practice Note for Professional Persons with	N/A
	Mitigation measures and a spill control and response plan have been prepared for works at the intakes and work sites.			regard to site drainage (ProPECC PN 1/94) and	
	Precautions to be taken at any time of year when rainstorms are likely:			WQO	✓
	 Temporarily exposed surfaces should be covered e.g. by tarpaulin. Temporary access roads should be protected by crushed stone or gravel. 				N/A
	Trenches should be dug and backfilled in short sections. Measures should be taken to minimize the ingress of rainwater into trenches.	-			√ · · · · · · · · · · · · · · · · · · ·
	Actions to be taken when a rainstorm is imminent or forecast: • Silt removal facilities, should be checked to ensure that they can function properly.				✓

EIA Ref.	Recommended Mitigation Measures	Who to implement the measure ?	Location of the measure	What requirements or standards for the measure to achieve ?	Status
5.9.1	• Open stockpiles of construction materials on site should be covered with tarpaulin or similar fabric.	DSD's Contractor	Construction Work Sites	WQO	✓
	All temporary covers to slopes and stockpiles should be secured.				
	 Actions to be taken during or after rainstorms: Silt removal facilities should be checked and maintained to ensure satisfactory working conditions. 				✓
	Spill Control and Response Plan				
	1 Prevention and Precaution Measures				
	General Precautions				
	 No discharge of silty water into watercourses. 				N/A
	All materials to be used during construction and operation shall be identified and their hazard potential evaluated.				N/A
	 Maintenance of vehicles and equipment involving activities with potential for leakage and spillage shall only be undertaken with the areas appropriately equipped to control these discharges. 				N/A
	 Any soil contaminated with chemicals/oils shall be removed from site and the void created shall be filled with suitable materials. 				N/A
	 Any construction plant which causes pollution to catchwaters or water gathering ground due to leakage of oil or fuel shall be removed off-site immediately. 				N/A
	 Suitable containers shall be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport 				N/A
	• Chemical waste containers shall be suitably labelled to notify and warn the personnel who are handling the wastes to avoid accidents.				N/A
	Storage areas shall be selected at safe locations on site and adequate space shall be allocated to the storage area.				N/A
	Prevent obstructions and tripping hazards.				N/A
	 Storage Precautions All chemical storage containers shall be correctly labelled. 	-			N/A
	Solid and impermeable enclosure walls or storage shelves shall be used.				N/A
	Only compatible chemical wastes shall be stored in the same storage area.				N/A
	The storage areas shall be inspected to detect any leakages or defective containers on a regular basis.				N/A
	The storage areas shall be inspected to detect any leakages or defective containers on a regular basis.				N/A
	• Suitable notices warning of hazards, emergency response plans, telephone numbers etc shall be posted around the site, including storage areas.	1			N/A
	Large and heavy containers shall be stored at ground level.				N/A

EIA Ref.	Recommended Mitigation Measures	Who to implement the measure ?	Location of the measure	What requirements or standards for the measure to achieve?	Status	
	• Chemical waste containers shall be stored below eye level.				N/A	
5.9.1	Adequate space for handling of the containers shall be provided	DSD's	Construction		N/A	
	• Spill response kits shall be located adjacent/near to the storage areas.	Contractor	Work Sites		N/A	
	• A log of chemical wastes shall be maintained.				N/A	
	Incompatible chemicals shall be stored separately.				N/A	
	2 Responses/Action Plan					
	All Workers shall be made aware of emergency telephone numbers and the location of all relevant pollution control equipment. Training be given in emergency response/action plans. The action include the following steps:				N/A	
	• Only trained personnel who are equipped with protective clothing and equipment shall be allowed to enter the spillage area for clean up.					N/A
	• Spills shall be transferred appropriate back into containers using suitable equipment.				N/A	
	 Absorbent materials shall be used to clean up the spills and shall be disposed of as chemical wastes. 				N/A	
	 Where appropriate suitable solvents may be used to clean the contaminated area after removal of all contaminated materials. 				N/A	
	 All necessary protective devices, safety equipment, containers and clean up materials for emergency use shall be maintained to a high standard. 				N/A	
	3 Spill Clean Up and Disposal	_				
	Effect the response plan.				N/A	
	Control the leakage and absorb the spillage using suitably absorbent materials.				N/A	
	Provide safety equipment and personal protective equipment for handling of chemical wastes would be similar to that for handling of chemicals.				N/A	
	Safety equipment includes but is not limited to: • Fire extinguishers.				N/A	
	• Spades, brushes, dustpan, mop and bucket (or similar readily available on site).				N/A	
	 Absorbent material such as dry sand, tissues and toweling (all materials readily available on-site). 				N/A	
	• Containers including plaster bags, drums, etc.				N/A	
	Absorbing materials.				N/A	
	Pumps.				N/A	
	Personal protective equipment includes as appropriate: • First-aid kits.				N/A	
	Safety helmet and goggles.				N/A	
	Gloves which can resist chemical reaction.				N/A	

EIA Ref.	Recommended Mitigation Measures	Who to implement the measure?	Location of the measure	What requirements or standards for the measure to achieve ?	Status
	Protective boot and clothing.	DSD's	Construction	WQO	N/A
5.9.1	Respirators and gas masks.	Contractor	Work Sites		IV/A
	Face visor and masks.]			N/A
5.9.2	Emergency Responses to Spillages				
	Emergency plans and clean up procedures will need to be provided by the Contractor recognising his specific working methods and construction programme, activities and sequences. Agreement must be sought prior to commencement of the construction work but the following principles should be considered.				N/A
	The emergency plans should include the procedures for:	1			N/A
	spill prevention and precaution;				IV/A
	response actions; and				N/A
	spill clean up and disposal.				N/A
	Spill prevention and precaution embraces good site practice and covers:				N/A
	good housekeeping practices;				IV/A
	chemical storage requirements; and				N/A
	chemical transfer and transport.				N/A
5.9.3	During Operation	DSD's Contractor	Project Area		
	Regular inspection of the tunnels is essential to monitor the structural integrity and proper functioning of the drainage tunnel, which allows repairing of structural deterioration when it begins to develop. It is recommended that routine inspection shall be carried out at least two times per year for the drainage tunnel at the beginning and end of wet season from April to September.				N/A
Waste	Management				
6.5.1	Vegetation Removed from Site Clearance Wastes generated from site clearance shall be sorted and excavated topsoil segregated from	DSD's Contractor	Construction Work Sites	Waste Disposal Ordinance (Cap.354); Waste Disposal (Chemical Wastes) (General) Regulation (Cap	√
	roots for re-use in landscaping works, thus eliminating the need for off-site disposal. Construction and Demolition Materials The Contractor should reuse any C&D material on-site. C&D waste should be segregated and stored in different containers to other wastes to encourage the re-use or recycling of materials and their proper disposal. The use of wooden hoardings shall not be allowed. An alternative material, which can be reused or recycled, for example, metal (aluminium, alloy, etc) shall be used.			354) and ETWBTC No. 15/2003, Waste anagement on Construction Site	✓

EIA Ref.	Recommended Mitigation Measures	Who to implement the measure ?	Location of the measure	What requirements or standards for the measure to achieve ?	Status
6.5.1	project is suitable for public fill. The public fill reception facility at Tuen Mun Area 38 provides a suitable facility for the reuse of surplus inert C&D material generated from the project.		Construction Work Sites	WDO (Cap.354), ETWBTC No. 15/ 2003, ETWBTC No. 12/2002 and ETWBTC No. 31/2004	
	Under the contract, the contractor will be required to minimise the generation of C&D material and reuse it on site through the following:	-			,
	(a) to plan in the design and construction, methods to minimise the generation of C&D material;				V
	(b) to submit a Waste Management Plan (WMP) in accordance with Environment Transport and Works Bureau Technical Circular (ETWBTC) No. 15/2003 or any superseding circular(s);				✓
	(c) to reuse recycled aggregates in accordance with ETWBTC No. 12/2002 or any superseding circular(s);	-			✓
	(d) to observe the requirements of the Trip-Ticket System, stipulated in ETWBTC No. 31/2004 or any superceding circular(s), for disposal of C&D material;				✓
	(e) to incorporate a Waste Management System into the WMP for effective management and control of C&D materials to avoid/reduce/minimise the generation of C&D material during construction.				✓
	The contractor will be required to properly sort into inert C&D materials, metals, timber and other non-inert C&D material in the workplace to prevent cross-contamination.				\checkmark
	In addition, DSD will conduct site inspection to monitor the contractors' performance in the implementation of the WMP and other relevant specified requirements.	DSD	Construction Work Sites	WDO (Cap.354) and ETWBTC No. 15/2003	✓
	Excavated Materials Excavated materials should be segregated from other wastes to avoid contamination thereby ensuring acceptability at public filling areas and avoiding the need for disposal at landfill. Municipal Waste	DSD's Contractor	Construction Work Sites	WDO (Cap.354) and ETWBTC No. 15/2003	√
	Temporary refuse collection facilities should be set-up by the contractor and wastes should be stored in appropriate containers prior to collection and disposal.				\checkmark
	Domestic effluent generated by the workforce will be directed to foul sewer or chemical toilets if public facilities are not available.				✓
6.5.1	Waste Management Plan A Waste Management Plan (WMP) for the construction of the Project should be prepared as part of the contractors submission. It will provide recommendations for appropriate recycling or disposal route and should include method statement for stockpiling and transportation of the excavated material and other construction wastes should also be included in the WMP and approved before the commencement of construction. All mitigation measures arising from the approved WMP shall be fully implemented.	DSD's Contractor	Construction Work Sites	WDO (Cap.354), ETWBTC No. 15/2003 and ETWBTC No. 33/2002	✓

EIA Ref.	Recommended Mitigation Measures	Who to implement the measure ?	Location of the measure	What requirements or standards for the measure to achieve ?	Status
	For the purpose of enhancing the management of C&D material including rock, and to minimize its generation at source, a C&D Material Management Plan (C&DMMP) has been prepared for this project and would be processed in accordance with the Environment, Transport and Works Bureau Technical Circular (Works) No. 33/2002 - Management of Construction and Demolition Material Including Rock.				N/A
Ecology					
7.7.1	Avoidance The surface structures are located mainly on existing disturbed areas (ie pollution and urbanisation) and have generally avoided the natural stream sections of higher species diversity and abundance of aquatic organisms.	DSD's Contractor	Construction Work Sites	EIAO	N/A
	The major construction activities at streams are scheduled to avoid wet season of high water flow which may adversely affect the downstream natural habitats due to the construction runoff.				N/A
7.7.2	Minimisation The previous discussion in Section 7.6.4 has indicated that the impacts on ecological resources due to the construction and operation of the proposed Project are generally expected to be low. The following mitigation measures to minimise impacts and disturbance to the surrounding habitats, are recommended. Measures for Construction Runoff				N/A
	Install sheet piles/cofferdam/weir along the boundary of the works area within the stream habitats in particular Sam Dip Tam Stream and Tso Kung Tam Stream before the commencement of works to prevent construction runoff during construction. Provision of adequate designed sand/ silt removal facilities such as sand traps, silt traps and sediment basin in the areas which could potentially be affected may be required. Good Construction Practice				N/A N/A
	Erect fences along the boundary of the works area before the commencement of works to prevent tipping, vehicle movements, and encroachment of personnel onto adjacent areas, particularly the stream habitats.	DSD's Contractor	Construction Work Sites	EIAO	N/A
	Avoid any damage and disturbance, particularly those caused by filling and illegal dumping, to the remaining and surrounding natural stream habitats. Regularly check the work site boundaries to ensure that they are not breached and that no damage occurs to surrounding areas.				N/A N/A
	Prohibit and prevent open fires within the site boundary during construction and provide temporary fire fighting equipment in the work areas. Treat any damage that may have occurred to individual major trees in the adjacent area with surgery.				N/A N/A

EIA Ref.	Recommended Mitigation Measures	Who to implement the measure?	Location of the measure	What requirements or standards for the measure to achieve?	Status
	Reinstate temporary work sites/disturbed areas, particularly stream of natural bottom and bank, plantation, intertidal habitat, and the areas located within the proposed Ecological Park, immediately after completion of the construction works, ie through on-site tree/shrub planting and reprovision of natural or semi-natural bottom (also refer to Section 7.7.3), in order to facilitate the recolonisation of the wildlife recorded during the baseline surveys. Tree/shrub species used should make reference from those in the surrounding area	DSD's Contractor	Construction Work Sites	EIAO	N/A
7.7.3	Compensation Provide natural stream bed (approximately 0.03 ha) for the new Dry Weather Flow Channel (created from village-orchard) by laying natural stones at Intake I-2 (Figure 7.7). The reinstated stream bed shall mimic the existing natural conditions with certain portion of big boulders creating the lentic and lotic zones for the aquatic fauna, and while it will be developed during detailed design may draw on concepts shown in Figure 2.18. Provide natural stream bed (approximately 0.5 ha,) for the Approach Channel and Dry				N/A
	Weather Flow Channel by laying natural stones at Intake I-3 (Figure 7.8). The reinstated stream bed shall mimic the existing natural conditions (rocky bottom with very limited aquatic plants) with certain portion of big boulders creating the lentic and lotic zones for the aquatic fauna, and while it will be developed during detailed design may draw on concepts shown in Figure 2.18.				N/A
	Provide natural bottom (ie retain the existing stream bed or reinstate the stream bed by providing boulders/ rocks, riprap or gabion) for the affected stream sections (Figure 7.8) in order to allow natural colonisation of aquatic fauna. Provide at least 2.2 ha of compensatory planting on the permanent and temporary affected				N/A
	plantation areas, particularly the slopes along access road and adjacent to Intake I-3 and cascade at Outfall O-1, after construction to stabilise the slope to present soil erosion and consequent stream sedimentation. Among the 2.2 ha compensatory planting, at least 0.5 ha of compensatory tree planting on the new formed slope along the access road of the Intake I-3 and 0.5 ha of compensatory tree planting over the cascade (by constructing intermediate platform) at Outfall O-1 will be provided (location refer to Figures 7.4 – 7.6). Species used for planting should take reference from the species identified in Appendix F and be native to Hong Kong or South China region.				N/A
	Provide armour rocks for the affected intertidal habitat in order to allow natural colonisation of intertidal organisms.]			N/A

EIA Ref.	Recommended Mitigation Measures	Who to implement the measure ?	Location of the measure	What requirements or standards for the measure to achieve ?	Status
Cultura	<u>Heritage</u>				
8.6	As no impacts on recorded archaeological sites or area with archaeological potential were identified within the Study Area, no mitigation measure for archaeological resources is considered necessary.				N/A
	The construction methods to be employed should seek to avoid potential vibration impacts to Kuen Yuen Tung Monastery at Lo Wai, the Western Monastery, Yuen Yuen Home for the Aged, Hong Hoi Chee Hong Temple, Chiu Yum Tsing Yuen, Tse's Grave, Wan Lin Bridge and Sam Dip Tam Rock Carving in Sam Dip Tam and the Tin Hau Temple, Yam Kom Tau Village Rural Committee and the Yeung's Ancestral Hall in Yau Kom Tau as these sites fall within 50 m of the Preferred Option of the drainage tunnel alignment or associated Intakes/Outfall construction activities. Construction works that generates excessive vibration in close proximity to these sites should be restricted to protect the building from adverse vibration impacts and to ensure that the building structures will not be damaged as a result of these impacts.	DSD's Contractor	Construction Work Sites	EIAO	N/A
	In order to ensure that no structural or superficial damage will be caused by the construction activities, a precautionary approach involving a pre-construction condition survey and establishment of appropriate vibration limits for the potentially impacted structures should be adopted. Protection measures for the potentially impacted structures, if considered necessary from the pre-construction condition survey, should be implemented prior to the commencement of construction works. Vibration monitoring during the construction phase should be undertaken as part of the EM&A programme.	Qualified archaeologist/ built heritage specialist	Construction Work Sites	EIAO	N/A
<u>Fisherie</u>		•		· · ·	
10.6	In accordance with the guidelines in the <i>EIAO-TM</i> on fisheries impact assessment the general policy for mitigating impacts to fisheries, in order of priority are avoidance, minimization and compensation.	DSD's Contractor	Construction Work Sites	EIAO	N/A
	Impacts to fisheries resources and fishing operations have largely been avoided during the construction and operation of the drainage tunnel through the avoidance of dredging, reclamation and filling activities. Good construction practice and associated measures were recommended in Water Quality Assessment in Section 5 to control water quality impacts to within acceptable levels and are also expected to control impacts to fisheries resources. Hence, no fisheries-species mitigation measures are required during construction and operation of the drainage tunnel.				N/A

Remarks:

√ x Compliance of mitigation measure Non-compliance of mitigation measure Not applicable

N/A



Appendix E

Status of License and Permit







Updated Status of Environmental Permit & Licence

Application Date	Issued Date	Due Date	Environmental Permit / Licence	Ref No.	Account No.	Remarks
2-Jan-2008	3-Jan-2008		Registration as a Waste Producer	001026707		Contractor had received the acknowledge receipt on 3 Jan 2008.
2-Jan-2008	26-Feb-2008		Waste Disposal (Chemical Waste) (General) - Chemical Waste Producer		5111-324-M2703-01	
2-Jan-2008	17-Jan-2008		Waste Disposal (Charges for Disposal of Construction Waste) Regulation - Billing Account		7006574	
10-Jan-2008	10-Jan-2008		Notification Pursuant to Section 3(1) of the Air Pollution Control (Construction Dust) Regulation	001026901		Contractor had received the acknowledge receipt on 10 Jan 2008.
25-Feb-2008			Water Pollution Control Ordinance – Outfall 1	001028154		Contractor had received the acknowledge receipt on 3 March 2008. Public Notice had been issued on 16 June 2008. Waiting for EPD further notification.
9-Apr-2008	29-Apr-2008		Notification of Change in the Registration of Chemical Waste Producer		5111-324-M2703-01	MCSJV's Managing Director had been changed from Mr. Richard Myrans to Mr. Christopher Shaw.
10-Apr-2008	6-May-2008		Further Environmental Permit	FEP-088/2008	FEP-01/275/2007	Contractor had received the acknowledge receipt on 17 April 2008. FEP had been issued on 6 May 2008.
11-Apr-2008	30-May-2008		Application for Issuance of Chits for Disposal of Construction Waste for Existing Account Holder		7006574	Contractor had applied extra 200 chits for further usage. Chits had been received on 10 June 2008.
18-Apr-2008	19-Jun-2008	30-Jun-2013	Water Pollution Control Ordinance – Intake 1	001029978	Licence No.: EP760/327/013315I	Contractor had received the acknowledge receipt on 8 May 2008. Application fees had been paid on 13 June 2008. Licence had been issued on 19 June 2008.
18-Apr-2008			Water Pollution Control Ordinance – Intake 2	001029959		Contractor had received the acknowledge receipt on 8 May 2008. Application fees had been paid on 26 June 2008. Waiting for EPD further notification.
18-Apr-2008			Water Pollution Control Ordinance – Intake 3	001029960		Contractor had received the acknowledge receipt on 8 May 2008. Public Notice had been issued on 16 June 2008. Waiting for EPD further notification.
18-Apr-2008	26-Jun-2008	30-Jun-2013	Water Pollution Control Ordinance – Portion I	001029974	Licence No.: EP760/350/013334I	Contractor had received the acknowledge receipt on 8 May 2008. Application fees had been paid on 13 June 2008.
18-Jun-2008	27-Jun-2008		Variation of Environmental Permit	VEP-266/2008	FEP-01/275/2007/A	Contractor had received the acknowledge receipt on 23 June 2008.



Appendix F

Calibration Certificates

Project Title:

Design and Construction of Tsuen Wan Drainage Tunnel

Monitoring Location:

Long Beach Gardan

Calibration Date: Calibration Due Date 08-Apr-08

Time:

08-Jun-08 08:45

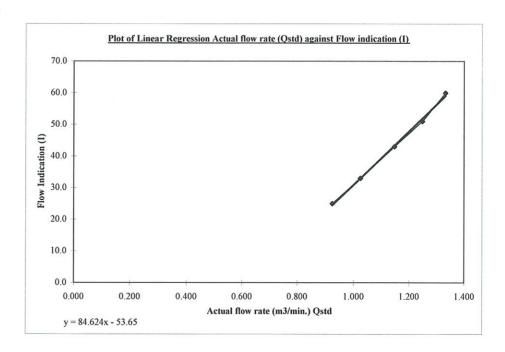
Sampler Model:	TE5005X
Serial No.:	0390
Calibrator Orifice no.:	517N
Slope (m):	2.02842
Intercept (b):	-0.01789
Correction coeff. (r)	0.9999

$$Flow(corrected) = \sqrt{H \times \frac{Pa}{Pstd} \times \frac{Tstd}{Ta}}$$

Oatd	$=\frac{1}{m}\times(\sqrt{1})$	п.,	Pa	Tstd	4.
Qsia	$= - \times ($	пх	Pstd	Ta	-0)

Sample no.	Pressure Drop (H), inch	Flow (corrcted), m3/min	Actual flow rate (Qstd), m3/min	Flow indication (I), arbitrary
1	7.3	2.684	1.332	60.0
2	6.4	2.513	1.248	51.0
3	5.4	2.308	1.147	43.0
4	4.3	2.060	1.024	33.0
5	3.5	1.858	0.925	25.0

Correlation Coefficient: 0.9987



Remark

1HPa = 0.750062 mmHg

Calibrated by:

Hui Chun Ming

)

)

Date: 9-4.08

Checked by:

Tang Hiu Yeung

Date: 9-4-08

Project Title:

Design and Construction of Tsuen Wan Drainage Tunnel

Monitoring Location:

Greenview Terrance

Calibration Date:

08-Apr-08

Calibration Due Date Time:

08-Jun-08 08:30

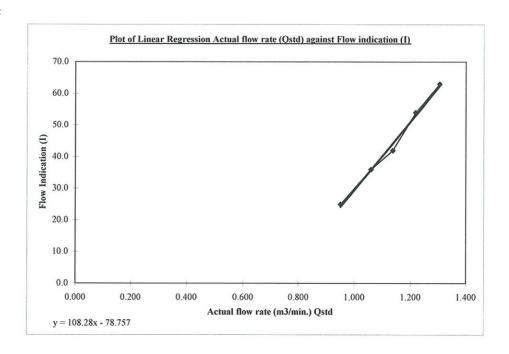
Sampler Model:	TE5005X
Serial No.:	0646
Calibrator Orifice no.:	517N
Slope (m):	2.02842
Intercept (b):	-0.01789
Correction coeff. (r)	0.9999

$$Flow(corrected) = \sqrt{H \times \frac{Pa}{Pstd} \times \frac{Tstd}{Ta}}$$

$$Qstd = \frac{1}{m} \times (\sqrt{H \times \frac{Pa}{Pstd} \times \frac{Tstd}{Ta}} - b)$$

Sample no.	Pressure Drop (H), inch	Flow (corrcted), m ³ /min	Actual flow rate (Qstd), m ³ /min	Flow indication (I), arbitrary
1	7.0	2.628	1.304	63.0
2	6.1	2.453	1.218	54.0
3	5.3	2.287	1.136	42.0
4	4.6	2.130	1.059	36.0
5	3.7	1.911	0.951	25.0

Correlation Coefficient: 0.9962



Remark

1HPa = 0.750062 mmHg

Calibrated by:

Hui Chun Ming

Date: 9 . 4 . 0 8

Checked by:

Tang Hiu Yeung

)

Date: 9 - 4 - 08

Project Title:

Design and Construction of Tsuen Wan Drainage Tunnel

Monitoring Location:

Greenview Terrance

Calibration Date: Calibration Due Date 11-Jun-08 11-Aug-08 16:28

Time:

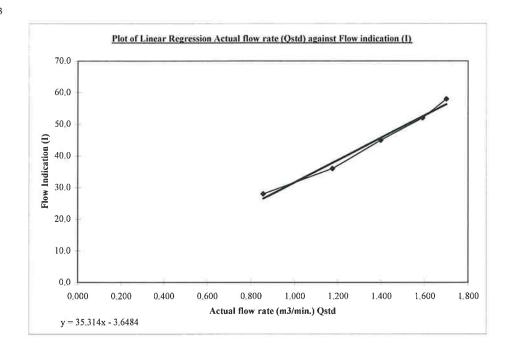
Sampler Model:	TE5005X
Serial No.:	0646
Calibrator Orifice no.:	517N
Slope (m):	2,02953
Intercept (b):	-0.01939
Correction coeff. (r)	0.9999

$$Flow(corrected) = \sqrt{H \times \frac{Pa}{Pstd} \times \frac{Tstd}{Ta}}$$

$$Qstd = \frac{1}{m} \times (\sqrt{H \times \frac{Pa}{Pstd} \times \frac{Tstd}{Ta}} - b)$$

Sample no.	Pressure Drop (H), inch	Flow (corrcted), m ³ /min	Actual flow rate (Qstd), m ³ /min	Flow indication (I), arbitrary
1	12.0	3.431	1,700	58.0
2	10.5	3.209	1.591	52,0
3	8.1	2.818	1.398	45.0
4	5,7	2.364	1,175	36.0
5	3,0	1.715	0,855	28.0

Correlation Coefficient: 0,9923



Remark

1HPa = 0.750062 mmHg

Calibrated by:

Hui Chun Ming

Date: 12 - 6 - 08

Checked by:

Tang Hiu Yeung

Date: 12-6-08

Project Title:

Design and Construction of Tsuen Wan Drainage Tunnel

Monitoring Location:

Long Beach Gardan

Calibration Date: Calibration Due Date 11-Jun-08 11-Aug-08

Calibrati Time:

15:40

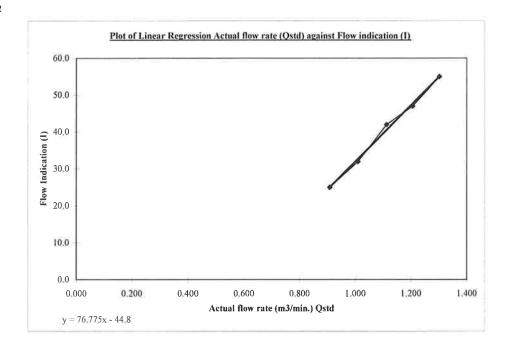
Sampler Model:	TE5005X
Serial No.:	0390
Calibrator Orifice no.:	517N
Slope (m):	2,02953
Intercept (b):	-0.01939
Correction coeff. (r)	0.9999

$$Flow(corrected) = \sqrt{H \times \frac{Pa}{Pstd} \times \frac{Tstd}{Ta}}$$

Oold	$=\frac{1}{m}\times$	(HV	Pa	Tstd	- b)
Qsia	m	Au v	Pstd ^	Ta	-0)

Sample no.	Pressure Drop (H), inch	Flow (correted), m3/min	Actual flow rate (Qstd), m3/min	Flow indication (I), arbitrary
î	7,0	2,620	1.301	55.0
2	6,0	2,426	1,205	47.0
3	5.1	2.236	1.112	42.0
4	4.2	2,030	1.010	32.0
5	3.4	1,826	0,909	25.0

Correlation Coefficient: 0,9972



Remark 1HPa = 0.750062 mmHg

Calibrated by:

Hui Chun Ming

Date: _______

Checked by:

Tang Hiu Yeung

Project Title:

Design and Construction of Tsuen Wan Drainage Tunnel

Monitoring Location:

Ho Fung College

Calibration Date:

08-Apr-08

Calibration Due Date

08-Jun-08

Time:

17:30

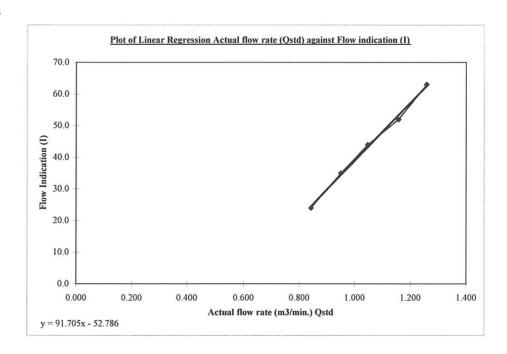
Sampler Model:	BM2000HX
Serial No.:	4994
Calibrator Orifice no.:	517N
Slope (m):	2.02842
Intercept (b):	-0.01789
Correction coeff. (r)	0.9999

$$Flow(corrected) = \sqrt{H \times \frac{Pa}{Pstd} \times \frac{Tstd}{Ta}}$$

$$Qstd = \frac{1}{m} \times (\sqrt{H \times \frac{Pa}{Pstd} \times \frac{Tstd}{Ta}} - b)$$

Sample no.	Pressure Drop (H), inch	Flow (corrcted), m3/min	Actual flow rate (Qstd), m ³ /min	Flow indication (I), arbitrary
1	6.5	2.532	1.257	63.0
2	5.5	2.329	1.157	52.0
3	4.5	2.107	1.048	44.0
4	3.7	1.911	0.951	35.0
5	2.9	1.691	0.843	24.0

Correlation Coefficient: 0.9983



Remark

1HPa = 0.750062 mmHg

Calibrated by:

Hui Chun Ming

Checked by:

Tang Hiu Yeung

Date: 9-4-08

Project Title: Design and Construction of Tsuen Wan Drainage Tunnel

Monitoring Location: Ho Fung College
Calibration Date: 11-Jun-08
Calibration Due Date 11-Aug-08
Time: 17:28

Sampler Model:	BM2000HX
Serial No.:	4994
Calibrator Orifice no.:	517N
Slope (m):	2.02953
Intercept (b):	-0.01939
Correction coeff. (r)	0,9999

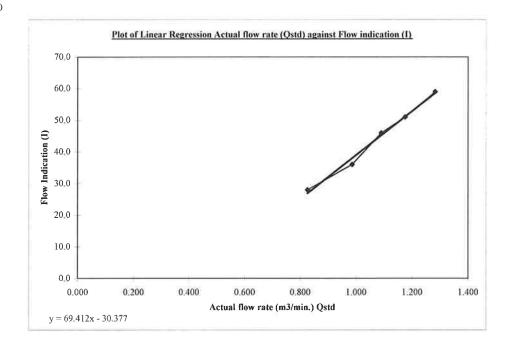
Standard pressure (mmHg) Pstd:	756.9	
Standard temp. (K) Tstd:	297.18	
Calibration pressure (mmHg) Pa:	756,5	Ξ
Calibration temp. (K) Ta	303.7	

$$Flow(corrected) = \sqrt{H \times \frac{Pa}{Pstd} \times \frac{Tstd}{Ta}}$$

$$Qstd = \frac{1}{m} \times (\sqrt{H \times \frac{Pa}{Pstd} \times \frac{Tstd}{Ta}} - b)$$

Sample no.	Pressure Drop (H), inch	Flow (correted), m3/min	Actual flow rate (Qstd), m3/min	Flow indication (I), arbitrary
1	6.8	2,582	1.282	59.0
2	5.7	2.364	1.175	51.0
3	4.9	2,192	1.090	46.0
4	4.0	1,981	0.985	36.0
5	2.8	1,657	0,826	28.0

Correlation Coefficient: 0.9950



Remark 1HPa = 0.750062 mmHg

Calibrated by: Hui Chun Ming

Date: 12-6-08

Checked by:

Tang Hiu Yeung

Date: 12 - 6 - 08

Project Title: Design and Construction of Tsuen Wan Drainage Tunnel

Monitoring Location: Heng Hoi Chi Hong Ship Temple

Calibration Date: 08-Apr-08 **Calibration Due Date** 08-Jun-08 Time: 13:00

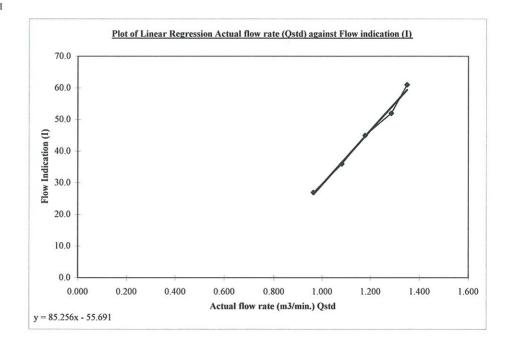
Sampler Model:	BM2000HX
Serial No.:	5875
Calibrator Orifice no.:	517N
Slope (m):	2.02842
Intercept (b):	-0.01789
Correction coeff. (r)	0.9999

$$Flow(corrected) = \sqrt{H \times \frac{Pa}{Pstd} \times \frac{Tstd}{Ta}}$$

$$Qstd = \frac{1}{m} \times (\sqrt{H \times \frac{Pa}{Pstd} \times \frac{Tstd}{Ta}} - b)$$

Sample no.	Pressure Drop (H), inch	Flow (corrcted), m3/min	Actual flow rate (Qstd), m3/min	Flow indication (I), arbitrary
1	7.5	2.720	1.350	61.0
2	6.8	2.590	1.286	52.0
3	5.7	2.371	1.178	45.0
4	4.8	2.176	1.082	36.0
5	3.8	1.936	0.963	27.0

Correlation Coefficient: 0.9951



Remark

1HPa = 0.750062 mmHg

Calibrated by:

Hui Chun Ming

)

)

Checked by:

Tang Hiu Yeung

Project Title:

Design and Construction of Tsuen Wan Drainage Tunnel

Monitoring Location:

Heng Hoi Chi Hong Ship Temple

Calibration Date: Calibration Due Date 11-Jun-08

Time:

11-Aug-08 08:28

30.	6
303.	7

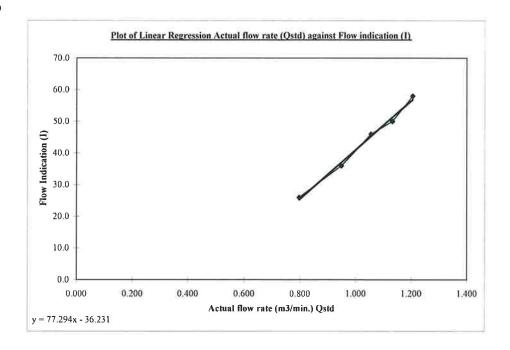
Sampler Model:	BM2000HX
Serial No.:	5875
Calibrator Orifice no.:	517N
Slope (m):	2,02953
Intercept (b):	-0.01939
Correction coeff. (r)	0.9999

 $Flow(corrected) = \sqrt{H \times \frac{Pa}{Pstd} \times \frac{Tstd}{Ta}}$

$Ostd = \frac{1}{2}$	l. In	Pa	Tstd	
$Qsta = -\frac{1}{n}$,×(\/	$\times \frac{Pa}{Pstd} \times$	Ta	- D)

Sample no.	Pressure Drop (H), inch	Flow (corrcted), m ³ /min	Actual flow rate (Qstd), m ³ /min	Flow indication (I), arbitrary
1	6,0	2,426	1.205	58.0
2	5,3	2,280	1.133	50.0
3	4.6	2.124	1.056	46.0
4	3.7	1.905	0.948	36.0
5	2,6	1.597	0.796	26.0

Correlation Coefficient: 0.9960



Remark 1HPa = 0.750062 mmHg

Calibrated by:

Hui Chun Ming

Checked by:

Tang Hiu Yeung



TISCH ENVIROMENTAL, INC. 145 SOUTH MIAMI AVE. VILLAGE OF CLEVES, OH 45002 513.467.9000 877.263.7610 TOLL FREE 513.467.9009 FAX WWW.TISCH-ENV.COM

AIR POLLUTION MONITORING EQUIPMENT

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

	=========	==========	=======	========	========	======
PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	DIFF TIME (min)	METER DIFF Hg (mm)	ORFICE DIFF H2O (in.)
1 2 3 4 5	NA NA NA NA	NA NA NA NA	1.00 1.00 1.00 1.00	1.4040 0.9940 0.8860 0.8450 0.6980	3.2 6.4 7.9 8.8 12.8	2.0 4.0 5.0 5.5 8.0

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)		Va	(x axis) Qa	(y axis)
0.9883 0.9841 0.9820 0.9809 0.9756	0.7039 0.9901 1.1084 1.1608 1.3977	1.4090 1.9926 2.2278 2.3365 2.8179		0.9957 0.9915 0.9894 0.9882 0.9829	0.7092 0.9975 1.1167 1.1695 1.4082	0.8889 1.2570 1.4054 1.4740 1.7777
Qstd slo intercer coeffici	ot (b) = ient (r) =	2.02953 -0.01939 0.99999	 'a)]	Qa slop intercep coeffici	t (b) =	0.99999

CALCULATIONS

Vstd = Diff. Vol[(Pa-Diff. Hg)/760](298/Ta)
Qstd = Vstd/Time

Va = Diff Vol [(Pa-Diff Hg)/Pa] Qa = Va/Time

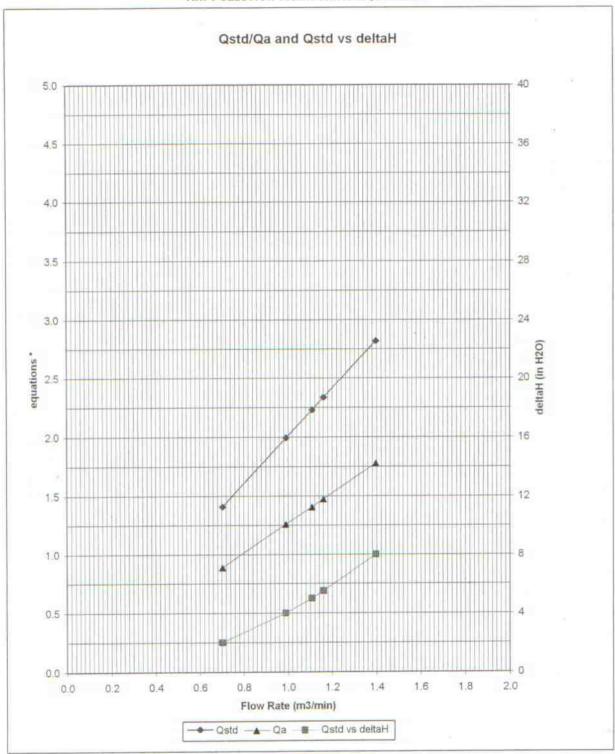
For subsequent flow rate calculations:

Qstd = $1/m\{ [SQRT (H2O (Pa/760) (298/Ta))] - b\}$ Qa = $1/m\{ [SQRT H2O (Ta/Pa)] - b\}$



TISCH ENVIROMENTAL, INC. 145 SOUTH MIAMI AVE. VILLAGE OF CLEVES, OH 45002 513.467.9000 877.263.7610 TOLL FREE 513.467.9009 FAX WWW.TISCH-ENV.COM

AIR POLLUTION MONITORING EQUIPMENT



* y-axis equations:

Qstd series:

$$\sqrt{\Delta H \left(\frac{P a}{P s t d}\right) \left(\frac{T s t d}{T a}\right)}$$

Qa series:

$$\sqrt{(\Delta H (Ta / Pa))}$$

#517N



Certificate No.

80026

Page

3 Pages

Customer: Hyder Consulting Limited

Address:

Room 3801., Hopewell Centre, 183 Queen's Road East, Wan Chai, Hong Kong

Order No.:

Q72325

Date of receipt

3-Jan-08

Item Tested

Description: Sound Level Meter

Manufacturer: B&K

Model

: 2238

Serial No.

: 2285726

Test Conditions

Date of Test: 17-Jan-08

Supply Voltage

Ambient Temperature:

 $(23 \pm 3)^{\circ}C$

Relative Humidity: (50 ± 25) %

Test Specifications

Calibration check.

Calibration procedure:

Z01.

Test Results

All results were within the IEC 651 Type 1 & IEC 804 Type 1 specification.

The results are shown in the attached page(s).

Main Test equipment used:

Equipment No. Description

Cert. No.

Due Date

Traceable to

S017

Multi-Function Generator

C071115

14-Mar-08

SCL-HKSAR

S024

Sound Level Calibrator

71791

16-Jul-08

NIM-PRC & SCL-HKSAR

The values given in this Calibration Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environmental changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Hong Kong Calibration Ltd. shall not be liable for any loss or damage resulting from the use of the equipment.

The test equipment used for calibration are traceable to International System of Units (SI). The test results apply to the above Unit-Under-Test only

Calibrated by:

This Certificate is issued by:

Hong Kong Calibration Ltd.

Date:

17-Jan-08

Unit 8B, 24/F., Well Fung Industrial Centre, No. 58-76, Ta Chuen Ping Street, Kwai Chung, NT, Hong Kong Tel: 2425 8801 Fax: 2425 8646



Certificate No. 80026

Page 2 of 3 Pages

Results:

1. SPL Accuracy

	UUT Setting			Applied Value	UUT Reading
Range	Freq. Wgt.	Bandwith	Center Freq.	(dB)	(dB)
$20 \sim 100$	A	BB/F		94.03	93.9
	A	BB/S			93.9
	C	BB/F			93.9
40 ~ 120	A	BB/F		94.03	94.0
	A	BB/F	-	113.97	113.8

IEC 651 Type 1 Spec. : \pm 0.7 dB

Uncertainty: ± 0.1 dB

2. Level Stability: 0.0 dB

IEC 651 Type 1 Spec. : \pm 0.3 dB

Uncertainty: ± 0.01 dB

3. Linearity

3.1 Level Linearity

	Applied	UUT Reading	Variation	IEC 651 Type 1 Spec.
UUT Range	Value (dB)	(dB)	(dB)	(Primary Indicator Range)
140	114.0	114.0	0.0	± 0.7 dB
130	104.0	104.0	0.0	
120	94.0	94.0 (Ref.)		3
110	84.0	84.0	0.0	
100	74.0	74.0	0.0	
90	64.0	64.0	0.0	
80	54.0	54.0	0.0	

Uncertainty: ± 0.1 dB

3.2 Differential level linearity

J.Z Differen	itiai ievei iiiieai			
	Applied	UUT Reading		
UUT Range	Value (dB)	(dB)	Variation (dB)	IEC 651 Type 1 Spec.
120	84.0	84.0	0.0	± 0.4 dB
	94.0	94.0 (Ref.)		
	95.0	95.0	0.0	± 0.2 dB
	104.0	103.9	0.1	± 0.3 dB
	105.0	104.9	0.1	± 1.0 dB

Uncertainty: ± 0.1 dB



Certificate No.

80026

Page 3 of 3 Pages

4. Frequency Weighting

A weighting

Freque	ency	Attenuation (dB)	IEC 651 Type 1 Spec.
31.5	Hz	- 39.3		- 39.4 dB, ± 1.5 dB
63	Hz	- 26.1		- 26.2 dB, ± 1.5 dB
125	Hz	- 16.1		- 16.1 dB, ±1 dB
250	Hz	- 8.7		- 8.6 dB, ± 1 dB
500	Hz	- 3.2		- 3.2 dB, ± 1 dB
1	kHz	0.0	(Ref)	$0 \text{ dB}, \pm 1 \text{ dB}$
2	kHz	+ 1.2		+ 1.2 dB, \pm 1 dB
4	kHz	+ 1.0		+ 1.0 dB, \pm 1 dB
8	kHz	- 1.1		- 1.1 dB , + $1.5 \text{ dB} \sim -3 \text{ dB}$
16	kHz	- 6.7		- 6.6 dB, + 3 dB \sim - ∞

Uncertainty: ± 0.1 dB

5. Time Averaging

Applied Burst duty Factor	Applied Leq Value (dB)	UUT Reading (dB)	IEC 804 Type 1 Spec.
continuous	40.0	40.0	
1/10	40.0	39.9	± 0.5 dB
$1/10^2$	40.0	39.6	
$1/10^3$	40.0	39.4	± 1.0 dB
1/10 ⁴	40.0	39.1	

Uncertainty: ± 0.1 dB

Remarks: 1. UUT: Unit-Under-Test

2. The uncertainty claimed is for a confidence probability of not less than 95%.

3. Atmospheric pressure: 1 015 hPa.

----- END -----



Certificate No.

80027

1 Page

of 2 Pages

Customer: Hyder Consulting Limited

Address : Room 3801., Hopewell Centre, 183 Queen's Road East, Wan Chai, Hong Kong

Order No.:

Date of receipt

3-Jan-08

Item Tested

Description : Sound Level Calibrator

Manufacturer: B&K

Model

: Type 4231

Serial No.

: 1770806

Test Conditions

Date of Test: 17-Jan-08

(23 ± 3)°C

Supply Voltage

Relative Humidity: (50 ± 25) %

Ambient Temperature : **Test Specifications**

Calibration check.

Calibration procedure:

F21, Z02.

Test Results

All results were within the IEC 942 Class 1 specification.

The results are shown in the attached page(s).

Main Test equipment used:

Man 1991 - 4-1		O4 No	Due Date	Traceable to
Equipment No.	Description .	<u>Cert. No.</u>	Due Date	
	Spectrum Analyzer	73602	7-Ju l-08	NIM-PRC & SCL-HKSAR
S014	Spectrum Analyzer		40 1 1 00	NIM-PRC & SCL-HKSAR
S024	Sound Level Calibrator	717 91	16-J⊔I-08	MIM-PRC & SCL-IIIVOVIV
3024	County Estat Calibrat		22 Aug 08	SCL-HKSAR
S041	Universal Counter	73453	22-Aug-08	30E-111(0)11(

The values given in this Calibration Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environmental changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Hong Kong Calibration Ltd. shall not be liable for any loss or damage resulting from the use of the equipment.

The test equipment used for calibration are traceable to International System of Units (SI). The test results apply to the above Unit-Under-Test only

Calibrated by

17-Jan-08

This Certificate is issued by:

Hong Kong Calibration Ltd.

Date:

Unit 88, 24F., Well Fung Industrial Centre, No. 58-75, Ta Chuen Ping Street, Kwai Chung, NT, Hong Kong.

The copyright of this cartificate is owned by Hong Kong Calibration Ltd., It may not be reproduced accept in full.



Manufacturer's Test Certificate Hersteller - Prüfzertifikat

Product / Produkt:

Multi-parameter instrument / Mehrparameter-Meßgerät

Model / Modell:

pH/Oxi 340i

Serial no. / Serien-Nr.

08101283

The a.m. product has been checked by us and complies with the demanded specifications.

Das oben genannte Produkt wurde von uns geprüft und entspricht den geforderten Spezifikationen.

Accuracy of the pH measurement: $\leq 0.01 \text{ pH} \pm 1 \text{ digit}$

Genauigkeit der pH-Messung: ≤ 0,01 pH ± 1 Digit

Accuracy of the voltage measurement: ≤1 mV ± 1 digit Genauigkeit der Spannungsessung: ≤ 1 mV ± 1 Digit

Accuracy of the oxygen measurement: ≤0,5% of measured value ± 1 digit Genauigkeit der Sauerstoff-Messung: ≤ 0,5% vom Meßwert ± 1 Digit

Accuracy of the temperature measurement: ≤ 0,1 K ± 1 digit Genauigkeit der Temperaturmessung: ≤ 0,1 K ± 1 Digit

The test equipment used for checking is regularly calibrated by means of a precision multimeter (HP 3458A, Ser.-No. 2823 A 09038) which itself is annually calibrated in a laboratory accredited to the national German Calibration Service DKD (EADS Deutschland GmbH, DKD-K-01901). This ensures the traceability to national and international standards.

Die zur Prüfung eingesetzten Prüfmittel werden regelmäßig anhand eines Präzisionsmultimeters (HP 3458A, Ser.-Nr. 2823 A 09038) kalibriert, das seinerseits jährlich in einem DKD-Labor kalibriert wird (EADS Deutschland GmbH, DKD-K-01901). Damit ist der Anschluß an nationale und internationale Normale gewährleistet.

Weilheim, 07.04.2008
WISSENSCHAFTLICH-TECHNISCHE WERKSTÄTTEN GMBH
Dr.K,Löhnert
Quality Manager / Leiter Qualitätssicherung

⁻ This document has been generated using electronic data processing and is valid without signature - Dieses Dokument wurde mittels EDV erstellt und ist ohne Unterschrift gueltig -

TEST REPORT

Report No.

: 106189N

Project Name

: Calibration of Field measurement equipment

Customer

: Hyder Consulting Limited

Address

: 47/F, Hopewell Centre, 183 Queen's Road East, Wanchai, Hong Kong

Lab Job No.

: J651

Lab Sample No.

: 20840/1

Sample Description Sample Receipt Date

One Turbidimeter and four turbidity standards. : 21/4/2008

Test Period

: 21/4/2008

Test Information

Test Parameter	Test Procedure
Calibraion of Turbidimeter and Turbidity Standard	In-house Method IC 42

- Notes : 1. This report shall not be reproduced, except in full, without prior written approval from Lam Laboratories Limited.
 - 2. Results related to sample(s) as received.
 - 3. Results satisfy all in-house QA/QC protocols as attached.

Authorized Signatory

NG Yau Tim

Issue Date

21/4/2008

Lam Laboratories Limited

Room 1412, Honour Industrial Centre, 6 Sun Yip Street, Chai Wan, Hong Kong Tel: (852) 2897 3282

(Operation Manager)

Fax: (852) 2897 5509 e-mail:

info@lamlab.com

TEST REPORT

Report No.

: 106189N

: J651

Project Name

: Calibration of Field measurement equipment

Customer

: Hyder Consulting Limited

Lab Job No.

Lab Sample No. : 20840/1

Test Results

Value re-assigmnemt for Turbidity Standards:

Customer Ref.	Measured value
Customer Rei.	(NTU)
STD 1	0.01
STD 2	19.52
STD 3	103
STD 4	883

Linearity check for Turbidimeter:

Serial No.	Linearity range
Serial No.	(NTU)
215619	0-100

- End of Report -



Appendix G

Monitoring Locations

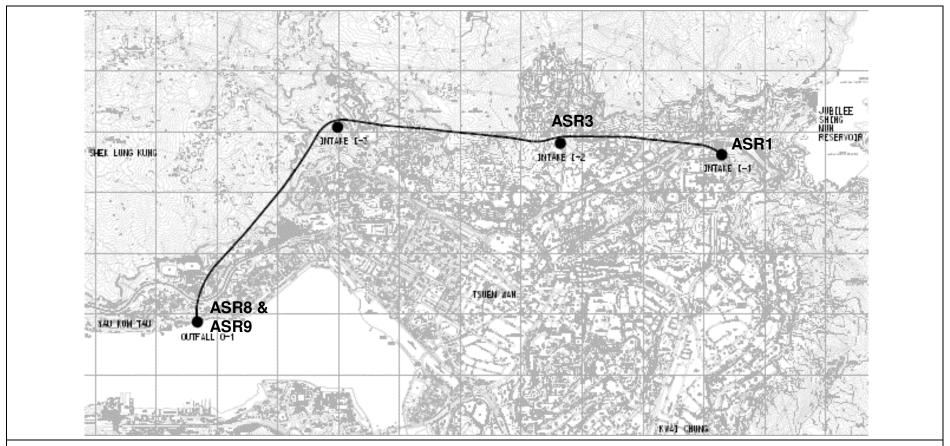


Figure 1 Air Quality Monitoring Stations

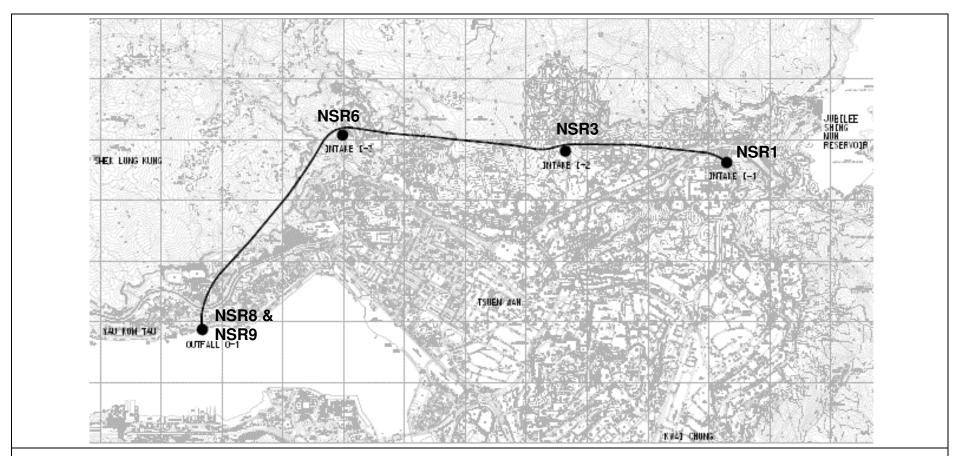


Figure 2 Noise Monitoring Stations

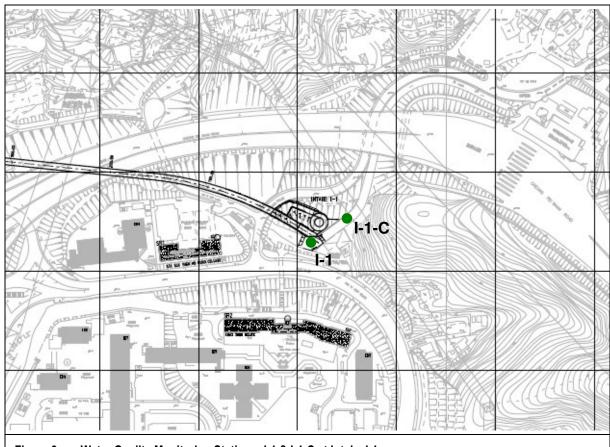
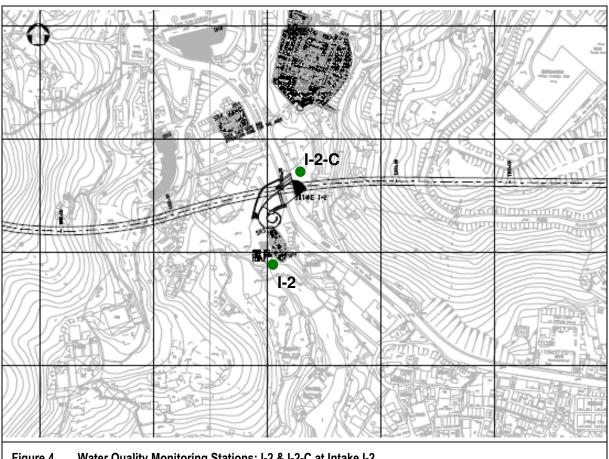
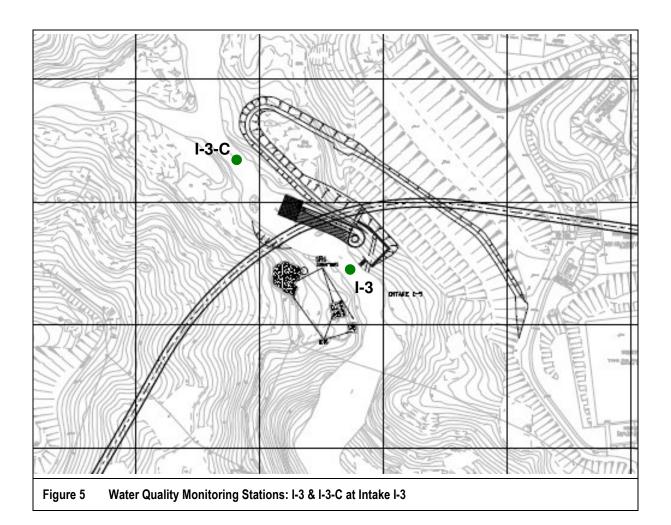


Figure 3 Water Quality Monitoring Stations: I-1 & I-1-C at Intake I-1



Water Quality Monitoring Stations: I-2 & I-2-C at Intake I-2 Figure 4



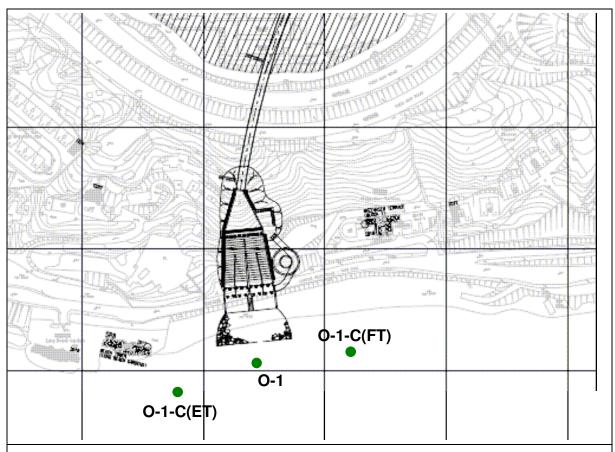


Figure 6 Water Quality Monitoring Stations: O-1, O-1-C(ET) & O-1-C(FT) at Outfall O-1



Appendix H

EM&A Schedule

Contract No. DC/2007/12 – Design and Construction of Tsuen Wan Drainage Tunnel Impact Monitoring Programme – June 2008

Date		Air	Noise	Water
01-Jun-08	Sun			
02-Jun-08	Mon			✓
03-Jun-08	Tue			
04-Jun-08	Wed			✓
05-Jun-08	Thu			
06-Jun-08	Fri	✓	✓	✓
07-Jun-08	Sat			
08-Jun-08	Sun			
09-Jun-08	Mon			
10-Jun-08	Tue			✓
11-Jun-08	Wed			
12-Jun-08	Thu	✓	✓	✓
13-Jun-08	Fri			
14-Jun-08	Sat			✓
15-Jun-08	Sun			
16-Jun-08	Mon			✓
17-Jun-08	Tue			
18-Jun-08	Wed	√	✓	✓
19-Jun-08	Thu			
20-Jun-08	Fri			✓
21-Jun-08	Sat			
22-Jun-08	Sun			
23-Jun-08	Mon			✓
24-Jun-08	Tue	✓	✓	
25-Jun-08	Wed			✓
26-Jun-08	Thu			
27-Jun-08	Fri			✓
28-Jun-08	Sat			
29-Jun-08	Sun			
30-Jun-08	Mon	√	✓	✓

Note:

Shaded area indicates public holiday.

Air – Monitoring of three times for 1-hour TSP per every six days

Noise – Noise measurements once every week at (0700-1900 Monday to Saturday)

Water – Water measurements takes three times per week

Contract No. DC/2007/12 – Design and Construction of Tsuen Wan Drainage Tunnel Impact Monitoring Programme – July 2008

Date		Air	Noise	Water				
01-Jul-08	Tue							
02-Jul-08	Wed			✓				
03-Jul-08	Thu							
04-Jul-08	Fri			✓				
05-Jul-08	Sat	✓						
06-Jul-08	Sun							
07-Jul-08	Mon			✓				
08-Jul-08	Tue							
09-Jul-08	Wed			✓				
10-Jul-08	Thu							
11-Jul-08	Fri	✓	✓	✓				
12-Jul-08	Sat							
13-Jul-08	Sun							
14-Jul-08	Mon			✓				
15-Jul-08	Tue							
16-Jul-08	Wed			✓				
17-Jul-08	Thu	✓	✓					
18-Jul-08	Fri			✓				
19-Jul-08	Sat							
20-Jul-08	Sun							
21-Jul-08	Mon			✓				
22-Jul-08	Tue							
23-Jul-08	Wed	✓	✓	✓				
24-Jul-08	Thu							
25-Jul-08	Fri			✓				
26-Jul-08	Sat							
27-Jul-08	Sun							
28-Jul-08	Mon	✓	✓	✓				
29-Jul-08	Tue							
30-Jul-08	Wed			✓				
31-Jul-08	Thu							

Note:

Shaded area indicates public holiday.

Air – Monitoring of three times for 1-hour TSP per every six days

Noise - Noise measurements once every week at (0700-1900 Monday to Saturday)

Water – Water measurements takes three times per week

Contract No. DC/2007/12 – Design and Construction of Tsuen Wan Drainage Tunnel Impact Monitoring Programme – August 2008

Date		Air	Noise	Water
01-Aug-08	Fri			✓
02-Aug-08	Sat	✓		
03-Aug-08	Sun			
04-Aug-08	Mon			✓
05-Aug-08	Tue			
06-Aug-08	Wed			✓
07-Aug-08	Thu			
08-Aug-08	Fri	✓	✓	✓
09-Aug-08	Sat			
10-Aug-08	Sun			
11-Aug-08	Mon			✓
12-Aug-08	Tue			
13-Aug-08	Wed			✓
14-Aug-08	Thu	✓	✓	
15-Aug-08	Fri			✓
16-Aug-08	Sat			
17-Aug-08	Sun			
18-Aug-08	Mon			✓
19-Aug-08	Tue			
20-Aug-08	Wed	✓	✓	✓
21-Aug-08	Thu			
22-Aug-08	Fri			✓
23-Aug-08	Sat			
24-Aug-08	Sun			
25-Aug-08	Mon			✓
26-Aug-08	Tue	✓	✓	
27-Aug-08	Wed			✓
28-Aug-08	Thu			
29-Aug-08	Fri			✓
30-Aug-08	Sat			
31-Aug-08	Sun			

Note:

Shaded area indicates public holiday.

Air – Monitoring of three times for 1-hour TSP per every six days

Noise - Noise measurements once every week at (0700-1900 Monday to Saturday)

Water – Water measurements takes three times per week

k:\eb000364 tsuen wan drainage tunnel\f-reports\monitoring schedule\monitoring_schedule jun08-sep08.doc

Contract No. DC/2007/12 – Design and Construction of Tsuen Wan Drainage Tunnel Impact Monitoring Programme – September 2008

Date		Air	Noise	Water				
01-Sep-08	Mon	✓	√	✓				
02-Sep-08	Tue							
03-Sep-08	Wed			✓				
04-Sep-08	Thu							
05-Sep-08	Fri			✓				
06-Sep-08	Sat	✓						
07-Sep-08	Sun							
08-Sep-08	Mon			✓				
09-Sep-08	Tue							
10-Sep-08	Wed			✓				
11-Sep-08	Thu							
12-Sep-08	Fri	✓	✓	✓				
13-Sep-08	Sat							
14-Sep-08	Sun							
15-Sep-08	Mon							
16-Sep-08	Tue			✓				
17-Sep-08	Wed			✓				
18-Sep-08	Thu	✓	✓					
19-Sep-08	Fri			✓				
20-Sep-08	Sat							
21-Sep-08	Sun							
22-Sep-08	Mon			✓				
23-Sep-08	Tue							
24-Sep-08	Wed	✓	✓	✓				
25-Sep-08	Thu							
26-Sep-08	Fri			✓				
27-Sep-08	Sat							
28-Sep-08	Sun							
29-Sep-08	Mon			✓				
30-Sep-08	Tue	✓	✓					

Note:

Shaded area indicates public holiday.

Air – Monitoring of three times for 1-hour TSP per every six days

Noise – Noise measurements once every week at (0700-1900 Monday to Saturday)

Water – Water measurements takes three times per week



Appendix I

Monitoring Results

Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel

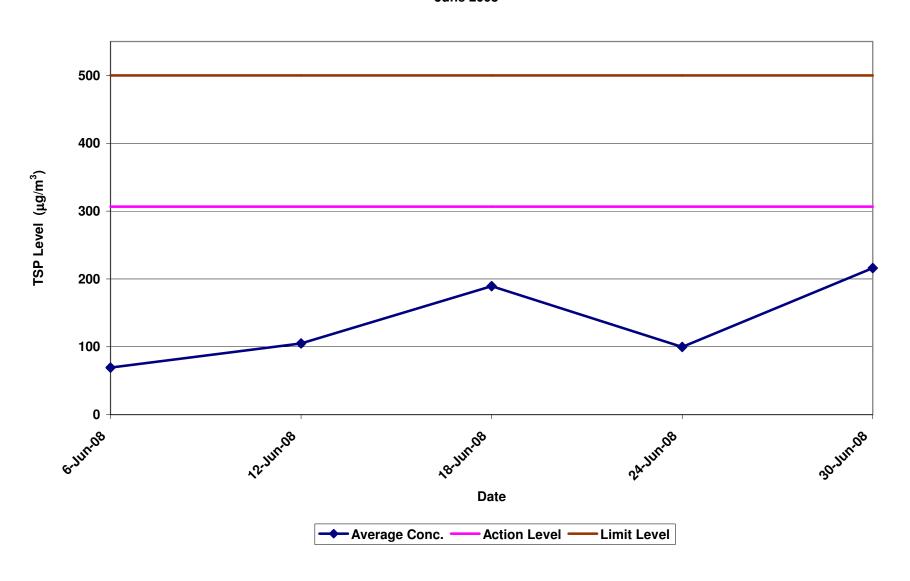
Air Quality Impact Monitoring Results (1-Hour TSP)

Location	Monitoring Date	Weather Conditions	Wind Speed with Direction	Temp (°C)	Timer-I	Timer-F	Time (mins)	Flow-I (CFM)	Flow-F (CFM)	Flow-I (m³/min)	Flow-F (m³/min)	Flow-avg (m³/min)	Volume (m³)	Weight-I (g)	Weight-f (g)	Weight-diff. (g)	1-hr TSP (µg/m³)	Average 1-Hr TSP (µg/m³)	Action/Limit Levels	Observation / Site Condition	Remark
		Conditions	(m/s)	(-0)				(CFM)	(CFW)	(111 /111111)	(111 /11111)	(111 /111111)	(111)				(µ g/III)	(µ g/iii)	(μg/m³)	Site Colluition	
Sik Sik Yuen Ho Fung		Rainy	0.5E	25	555952	556045	55.8	38	38	1.08	1.08	1.08	60.43	2.808	2.8156	0.0076	125.8				
College	6-Jun-08	Rainy	0.5E	25	556045	556142	58.2	38	38	1.08	1.08	1.08	63.03	2.8063	2.8070	0.0007	11.1	69.3		N/A	
Intake (ASR1)		Rainy	0.5E	25	556142	556239	58.2	39	38	1.09	1.08	1.09	63.38	2.7763	2.7808	0.0045	71.0			-	
	12-Jun-08	Cloudy	0.3NE 03NE	29	556239 556337	556337 556435	58.8	40 38	40	1.11	1.11	1.11	65.07	2.717	2.7249	0.0079	121.4 86.4	105.1		N/A	
	12-0011-00	Cloudy	0.3NE	29 29	556435	556531	58.8 57.6	38	38	1.08	1.08	1.08	63.68	2.7342	2.7397 2.7488	0.0055 0.0067	107.4	103.1		14/6	
		Cloudy	0.4E	26	556531	556630	59.4	38	38	1.08	1.08	1.08	64.33	2.8122	2.8198	0.0076	118.1				
	18-Jun-08	Cloudy	0.4E	26	556630	556725	57.0	38	38	1.08	1.08	1.08	61.73	2.8055	2.8216	0.0161	260.8	189.5	306.6/500	N/A	
		Cloudy	0.4E	26	556725	556820	57.0	38	38	1.08	1.08	1.08	61.73	2.7863	2.7980	0.0117	189.5		300.0/300		
		Cloudy	0.5E	28	556831	556932	60.6	39	39	1.09	1.09	1.09	66.35	2.7968	2.8041	0.0073	110.0				
	24-Jun-08	Cloudy	0.5E	28	556932	557035	61.8	40	40	1.11	1.11	1.11	68.39	2.8078	2.8126	0.0048	70.2	99.7		N/A	
		Cloudy	0.5E	28	557035	557137	61.2	39	40	1.09	1.11	1.10	67.37	2.8039	2.8119	0.0080	118.8				
		Cloudy	0.5E	27	557137	557238	60.6	40	40	1.11	1.11	1.11	67.06	2.7405	2.7476	0.0071	105.9				The exceedance might be caused by pull-out testing for soil
	30-Jun-08	Cloudy	0.5E	27	557238	557339	60.6	40	40	1.11	1.11	1.11	67.06	2.7448	2.7536	0.0088	131.2	216.1		N/A	nailing undertaken for the Project and façade renovation undertaken at Ho Fung College during monitoring
		Cloudy	0.5E	27	557339	557439	60.0	40	40	1.11	1.11	1.11	66.40	2.7485	2.7758	0.0273	411.1				undertaken at no rung odiege duning monitoring
Hong Hoi Chee Hong		Rainy		-		-	-	-	-	-		-	-	-	-		-				The monitoring was cancelled due to the Amber Rainstorm
Temple Intake (ASR3)	6-Jun-08	Rainy Rainy		-	-	-	-	-	-	-	- :	-	-	-		-	- :	-		N/A	Signal
Intake (ASH3)		. ,	-	-		-	-	-	-	-	<u> </u>	-	-	-	-	-	-		ł		
	12-Jun-08	Cloudy	-	-	-	-	-	-	-				-		-	-	<u> </u>			N/A	The monitoring was cancelled because the Temple was
		Cloudy		-	-		-	-	-				-				-				inaccessible on 12, 13 & 14 of June
		Cloudy	0.5E	28	525094	525194	60.0	40	40	1.10	1.10	1.10	65.82	2.7953	2.8060	0.0107	162.6		İ	4/500 N/A	
	18-Jun-08	Cloudy	0.5E	28	525194	525294	60.0	40	40	1.10	1.10	1.10	65.82	2.7631	2.7700	0.0069	104.8	106.0	327.4/500		
		Cloudy	0.5E	28	525294	525389	57.0	40	40	1.10	1.10	1.10	62.53	2.7958	2.8025	0.0067	107.1				
		Sunny	0.5E	30	525389	525489	60.0	40	40	1.10	1.10	1.10	65.82	2.8067	2.8115	0.0048	72.9	81.5			
	24-Jun-08	Sunny	0.5E 0.5E	30 30	525489 525589	525589 525689	60.0 60.0	40 40	40 40	1.10	1.10 1.10	1.10	65.82 65.82	2.7734 2.7677	2.7784 2.7740	0.0050 0.0063	76.0 95.7			N/A	
		Cloudy	0.5E	27	525689	525789	60.0	40	40	1.10	1.10	1.10	65.82	2.7622	2.7728	0.01063	161.0				
	30-Jun-08	Cloudy	0.4E	27	525789	525789	60.0	40	40	1.10	1.10	1.10	65.82	2.7596	2.7658	0.0166	94.2			N/A	
		Cloudy	0.4E	27	525889	525989	60.0	40	40	1.10	1.10	1.10	65.82	2.7679	2.7743	0.0064	97.2				
Long Beach Gardens		Rainy					-													_	The monitoring was cancelled due to the Amber Rainstorm
Outfall (ASR8)	6-Jun-08	Rainy Rainy		-	-		-	-	-	-			-	-	-		-	-	106.5	N/A N/A	Signal
		Fine	0.4F	30	579895	579996	60.6	41	40	1.11	1.10	1.10	66.76	2.8189	2.8267	0.0078	116.8				-
	12-Jun-08	Fine	0.4E	30	579996	580098	61.2	40	40	1.10	1.10	1.10	67.14	2.8152	2.8218	0.0066	98.3	106.5			
		Fine	0.4E	30	580098	580198	60.0 59.4	40	41	1.10	1.11	1.10	66.10	2.8137	2.8206	0.0069	104.4				
	18-Jun-08	Rainy Rainy	0.5E 0.5E	25 25	580198 580297	580297 580399	59.4 61.2	40 41	40 40	1.10	1.10	1.10	65.17 67.42	2.7818	2.7912 2.7796	0.0094 0.0080	114.2	141.6			
	10 0011 00	Rainy	0.5E	25	580399	580499	60.0	40	41	1.10	1.11	1.10	66.10	2.7567	2.7674	0.0107	161.9	141.0	000.01000	1471	
		Cloudy	0.5NE	28	580499	580600	60.6	41	41	1.11	1.11	1.11	67.04	2.7946	2.8014	0.0068	101.4				
	24-Jun-08	Cloudy	0.5NE 0.5NE	28 28	580600 580700	580700 580802	60.0 61.2	39 40	40 40	1.09	1.10 1.10	1.09	65.55 67.14	2.7999 2.7599	2.8066 2.7664	0.0067 0.0065	102.2 96.8	100.2		N/A	
		Sunny	0.7SW	31	580802	580904	61.2	39	39	1.09	1.09	1.09	66.57	2.766	2.7754	0.0094	141.2				
	30-Jun-08	Sunny	0.7SW	31	580904	581006	61.2	38	39	1.08	1.09	1.08	66.29	2.7386	2.7468	0.0082	123.7	125.8		N/A	
Greenview Terrance		Sunny Rainy	0.7SW 0.7E	31 26	581006 551266	581104 551367	58.8 60.6	39 40	39 39	1.09	1.09	1.09	63.96 66.20	2.8392 2.8196	2.8464 2.8353	0.0072 0.0157	112.6 237.2				
Outfall (ASR9)	6-Jun-08	Rainy	0.7E	26	551367	551463	57.6	40	40	1.10	1.10	1.10	63.19	2.7753	2.8353	0.0157	142.4	187.9		N/A	
		Rainy	0.7E	26	551463	551565	61.2	40	39	1.10	1.09	1.09	66.86	2.7927	2.8050	0.0123	184.0				
		Fine	0.6E	30 30	551591 551694	551694	61.8	39 40	40 40	1.09	1.10	1.09	67.51	2.786 2.7898	2.7916	0.0056	82.9 70.8				
	12-Jun-08	Fine Fine	0.6E 0.6E	30	551694	551797 551899	61.8 61.2	39	39	1.10	1.10 1.09	1.10	67.80 66.57	2.7898	2.7946 2.8166	0.0048 0.0076	70.8 114.2	89.3		N/A	
		Rainy	0.7E	25	551899	552000	60.6	39	38	1.09	1.08	1.08	65.64	2.7862	2.7914	0.0052	79.2				
	18-Jun-08	Rainy	0.7E	25	552000	552103	61.8	39	39	1.09	1.09	1.09	67.23	2.7946	2.8012	0.0066	98.2	104.3		N/A	
		Rainy	0.7E 0.8NE	25 28	552103 552208	552207 552300	62.4 55.2	39 40	39 40	1.09	1.09	1.09	67.88 60.56	2.7862 2.7944	2.7954 2.7992	0.0092 0.0048	135.5 79.3	329.2/50	329.2/500		
	24-Jun-08	Cloudy -	U.OINE	-	552208	- 332300	- 35.2	- 40	- 40	1.10	1.10	1.10		- 2./344		0.0040	79.3		l	N/A	The monitoring was stopped because of HVS malfunction
	** **					-	-	-	-	-		-	-			-					after the first 1-hr TSP measurement
	00 1 00	Rainy	0.7E	27	552300	552400	60.0	40	40	1.10	1.10	1.10	65.82	2.7743	2.7837	0.0094	142.8	133.8	l	ALVA	The average 1-hr TSP was calculated using the three sets
	26-Jun-08	Rainy	0.7E	27	552400	552500	60.0	40	40	1.10	1.10	1.10	65.82	2.7864	2.7982	0.0118	179.3		l	N/A	of data obtained on 24 & 26 June respectively
		Sunny	0.8SW	31	552500	552600	60.0	40	40	1.10	1.10	1.10	65.82	2.8173	2.8259	0.0086	130.7	1	ĺ		
	30-Jun-08	Sunny	0.8SW	31	552600	552700	60.0	40	40	1.10	1.10	1.10	65.82	2.766	2.7738	0.0078	118.5	119.0		N/A	
		Sunny	0.8SW	31	552700	552800	60.0	40	40	1.10	1.10	1.10	65.82	2.782	2.7891	0.0071	107.9	<u> </u>	l		l

Note: Italic font and yellow shaded indicates an exceedance of Action Level Bolld font and red shaded area indicates an exceedance of Limit Level

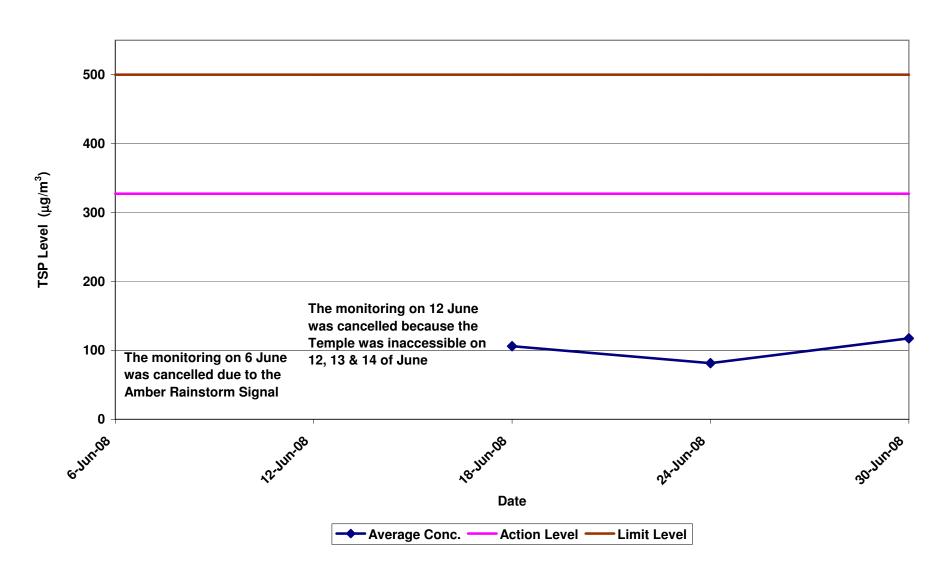
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel Air Quality Monitoring (1-hr TSP) Results at Sik Sik Yuen Ho Fung College (ASR1)

June 2008



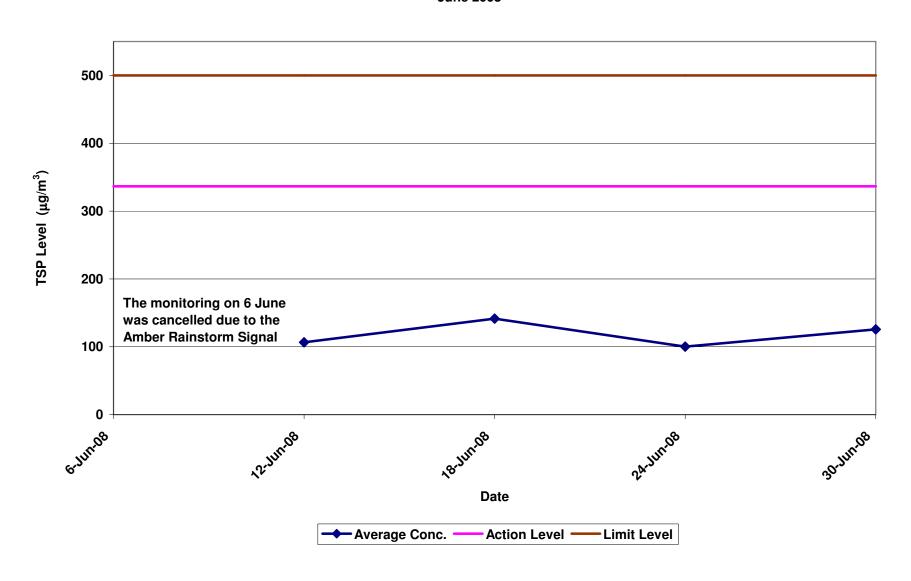
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel Air Quality Monitoring (1-hr TSP) Results at Hong Hoi Chee Hong Temple (ASR3)

June 2008



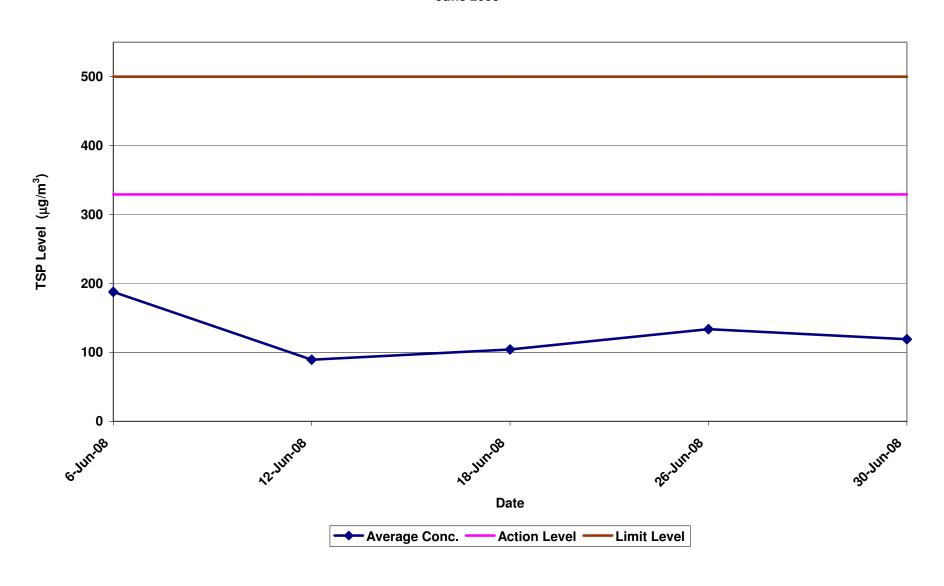
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel Air Quality Monitoring (1-hr TSP) Results at Long Beach Gardens (ASR8)

June 2008



Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel Air Quality Monitoring (1-hr TSP) Results at Greenview Terrace (ASR9)

June 2008



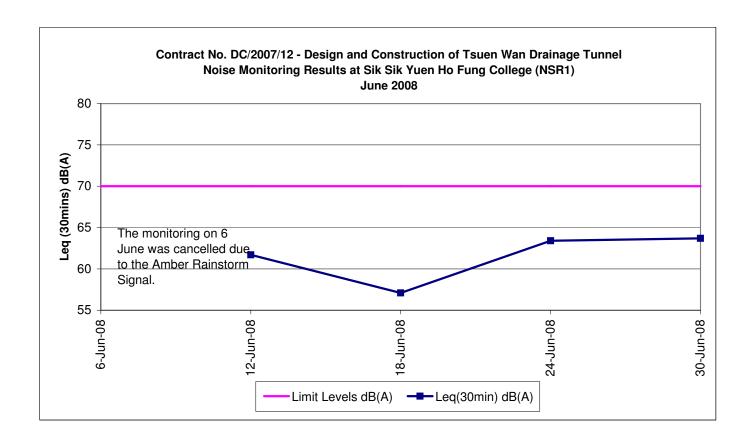
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel

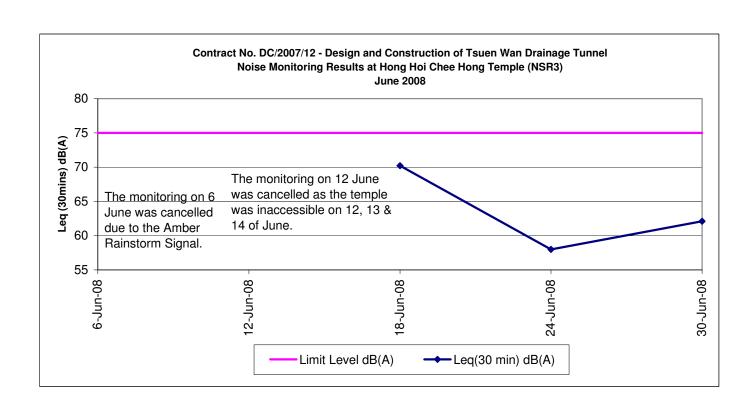
Noise Impact Monitoring Results

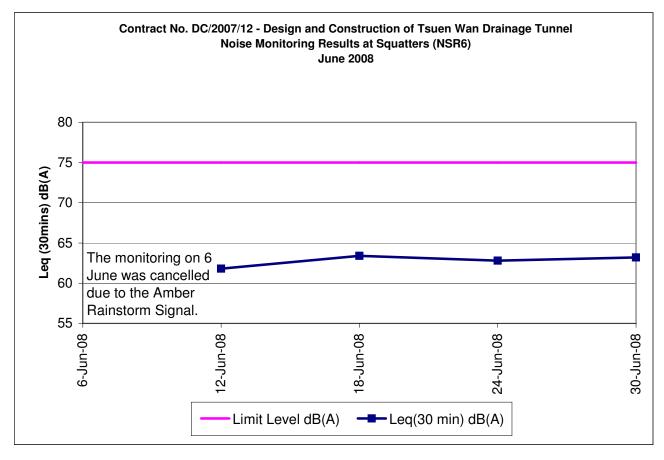
Monitoring	Date	Weather	Temperature	Wind Speed	Wind	Start	End	Limit Levels	L _{eq(30min)}	L _{10(30min)}	L _{90(30min)}	Observation /	Remark
Locations		Conditions	(°C)	(m/s)	Direction	Time	Time	dB(A)	dB(A)	dB(A)	dB(A)	Site Condition	
Sik Sik Yuen Ho Fung College	6-Jun-08	·	-	-	-	ı	ı		1	i	i	-	The monitoring was cancelled due to the Amber Rainstorm Signal. All parties were informed on 6/6.
NSR 1	12-Jun-08	Cloudy	29	0.3	NE	8:30	9:00		61.7	64.8	59.5	Traffic and human noise	
	18-Jun-08	Cloudy	26	0.4	E	8:30	9:00	70	57.1	59.5	53.5	Traffic and human noise	
	24-Jun-08	Cloudy	28	0.5	E	8:30	9:00	70	63.4	65.0	59.8	Traffic noise, human noise and backhoe excavator	
	30-Jun-08	Cloudy	28	0.5	E	11:30	12:00		63.7	68.5	58.0	Headhold breaker and traffic noise	
Hong Hoi Chee	6-Jun-08	-	-	-	-	-	-		-	-	-	-	The monitoring was cancelled due to the Amber Rainstorm Signal. All parties were informed on 6/6.
Hong Temple	12-Jun-08	-	-	-	-	-	-	75	-	-	-	-	The monitoring was cancelled as the temple was inaccessible on 12, 13 & 14 of June.
NSR 3	18-Jun-08	Cloudy	26	0.5	E	11:00	11:30		70.2	75.3	73.2	Waterfall	
	24-Jun-08	Sunny	28	0.5	E	10:55	11:25		58.0	62.7	60.2	Waterfall, bird and insect noise	
	30-Jun-08	Cloudy	27	0.4	E	11:00	11:30		62.1	63.5	57.9	Waterfall, bird and insect noise	
Squatters	6-Jun-08	-	-	-	-	-	-		-	-	-	-	The monitoring was cancelled due to the Amber Rainstorm Signal. All parties were informed on 6/6.
NSR 6	12-Jun-08	Cloudy	28	0.3	E	17:00	17:30		61.8	64.7	58.6	Dog darking and air traffic noise	
	18-Jun-08	Cloudy	29	0.3	E	11:30	12:00	75	63.4	65.8	60.1	Dog barking	
	24-Jun-08	Sunny	28	0.4	E	13:30	14;00	75	62.8	75.5	57.0	Waterfall, bird, insect noise and dog barking	
	30-Jun-08	Cloudy	27	0.3	E	15:40	16:10		63.2	63.9	61.2	Waterfall, bird, insect noise and dog barking	
Long Beach Gardens	6-Jun-08	-	-	-	-	-	-		-	-	-	-	The monitoring was cancelled due to the Amber Rainstorm Signal. All parties were informed on 6/6.
NSR 8	12-Jun-08	Fine	30	0.4	E	16:40	17:10		64.4	66.3	62.0	Power generator and traffic noise	
	18-Jun-08	Rainy	25	0.5	E	16:40	17:10	75	63.9	66.3	60.7	Headhold breaker and traffic noise	
	24-Jun-08	Cloudy	28	0.5	NE	13:00	13:30		70.6	74.3	64.3	Backhoe breaker, headhold breaker and traffic noise	
	30-Jun-08	Sunny	31	0.7	SW	16:40	17:10		65.1	68.6	59.2	Traffic noise and backhoe breaker	
Greenview Terrace	6-Jun-08	-	-	-	-	-	-		-	-	-	-	The monitoring was cancelled due to the Amber Rainstorm Signal. All parties were informed on 6/6.
NSR 9	12-Jun-08	Fine	30	0.6	Е	13:00	13:30	75	63.6	66.1	58.9	Traffic and bird noise	,
	18-Jun-08	Rainy	25	0.7	E	13:00	13:30	/5	63.1	62.0	58.5	Traffic and air noise	
	24-Jun-08	Cloudy	28	0.8	NE	15:00	15:30		63.4	65.0	59.8	Traffic noise and other site	
	30-Jun-08	Sunny	31	0.8	SW	13:00	13:30		61.2	63.9	57.7	Traffic noise and bird noise	

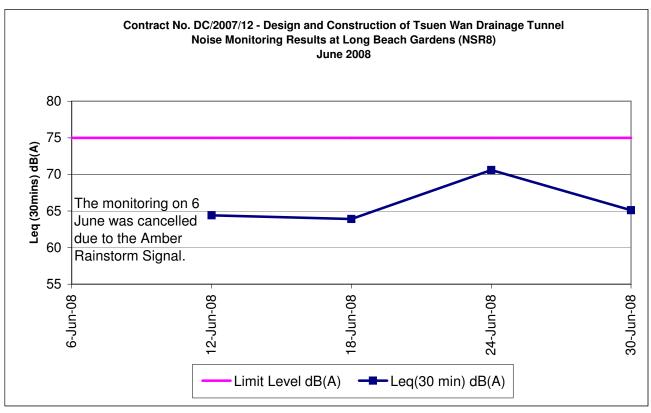
Note

The limit level of NSR1 is 65dB(A) during school examination period.









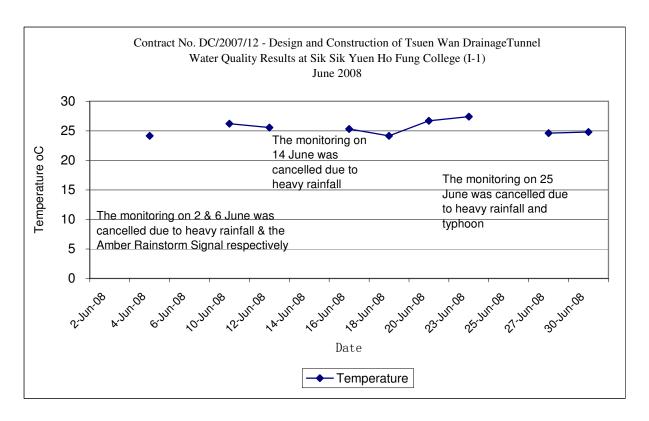
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel

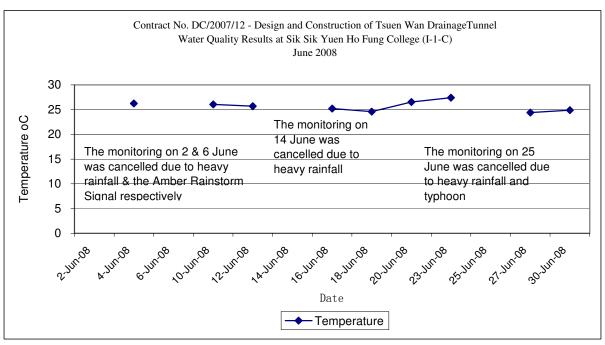
Water Quality Impact Monitoring Results

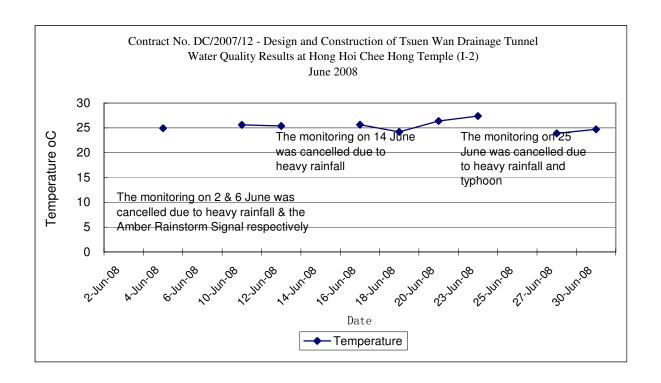
Monitoring Locations	Date	Start	Weather	Water		Temp		DO(mg/L	\	Action/Limit		На		Turki	dity(NTU)	I A	ction/Limit	SS (mg/l		ction/Limit	Remarks:
Monitoring Locations		Time	weather	Depth(m)	1		Avg	1 2 A	vg	Level of DO(mg/L)	1	2 A	Avg	1	2 Avg		evel of Tby	1 2	Avg L	evel of SS(mg/L)	
Sik Sik Yuen Ho Fung College	2-Jun-08 4-Jun-08	11:30	Cloudy	<1	24.10	24.20	24.15	4.02 4.03	4.03		7.01	7.00	7.01 8	.15 8	3.14	8.15		1.00 1.00	1.00		Cancelled due to heavy rainfall & Thunderstorm Warning
	6-Jun-08	11.30	Cioudy		24.10	24.20	24.15	4.02 4.03			7.01	7.00						1.00	1.00		Cancelled due to the Amber Rainstorm Signal
	10-Jun-08		Fine	<1	26.30	26.10		4.48 4.50	4.49		7.90	8.00				5.92		15.00 19.00	17.00		
	12-Jun-08 14-Jun-08	15:21	Fine	<1	25.60	25.50	25.55	4.75 5.08	4.92		7.76	7.75	7.76 5	.07 5	5.02	5.05		3.00 8.00	5.50		Cancelled due to heavy rainfall & Thunderstorm Warning
	16-Jun-08	11:55	Cloudy	<1	25.30	25.30		4.42 4.39	4.41	3.42 / 3.34	7.47	7.44					9.75 / 12.47	6.00 4.00	5.00	8.85 / 10.17	
	18-Jun-08 20-Jun-08		Cloudy	<1 <1	24.30 26.80	24.00		5.21 5.20 5.07 4.96	5.21		7.39	7.38				4.20 2.72		1.83 2.00 1.75 1.10	1.92 1.43		
	23-Jun-08	14:40	Sunny	<1	27.40	27.40		5.51 5.56	5.54		7.72	7.75				8.28		6.00 4.00	5.00		
	25-Jun-08 27-Jun-08	13:30	Cloudy	<1	24.70	24.50	24.60	4.88 5.02	4.95		7.57	7.54	7.56 3	.42 3	3.48	3.45		1.00 1.00	1.00		Cancelled due to heavy rainfall & typhoon
	30-Jun-08		Cloudy	<1	24.70	24.80		5.73 5.67	5.70		7.43	7.45				4.29		1.00 1.00	1.00		
Sik Sik Yuen Ho Fung College	2-Jun-08																				Cancelled due to heavy rainfall & Thunderstorm Warning
I-1-C	4-Jun-08 6-Jun-08	11:15	Cloudy	<1	26.20	26.30	26.25	3.95 3.94	3.95		6.80	6.81	6.81 8	.20 8	3.19	8.20		1.00 1.00	1.00		Cancelled due to Amber Rainstorm Signal
	10-Jun-08	13:00	Fine	<1	25.80	26.30		4.93 4.92	4.93		7.80	7.90		.87 5		5.88		89.00 44.00	66.50		
	12-Jun-08 14-Jun-08	15:15	Fine	<1	25.70	25.70	25.70	5.15 5.27	5.21		7.47	7.45	7.46 4	.58 5	5.01	4.80		4.00 7.00	5.50		Cancelled due to heavy rainfall & Thunderstorm Warning
	16-Jun-08	11:50	Cloudy	<1	25.20	25.20		4.17 4.22	4.20	3.76 / 3.71	7.38	7.45					0.88 / 12.95		4.50	6.68 / 7.34	Cancelled due to neavy railiali & Thunderstofff warning
	18-Jun-08	9:25	Cloudy	<1	24.60	24.60		5.23 5.20	5.22		7.40	7.42				4.28		0.63 1.60	1.12		
	20-Jun-08 23-Jun-08	14:46	Fine Sunny	<1	26.50 27.50	26.60 27.30		5.52 4.95 5.64 5.67	5.24 5.66		7.24	7.37			3.03 5.11	2.99 5.07		1.80 1.23 2.00 1.00	1.52		
	25-Jun-08																				Cancelled due to heavy rainfall & typhoon
	27-Jun-08 30-Jun-08			<1 <1	24.40	24.40		5.13 5.14 5.79 5.75	5.14		7.63	7.62				5.44		5.00 4.00 3.00 4.00	4.50 3.50		
Hong Hoi Chee Hong Temple	2-Jun-08	13.20	Cidddy	- `				0.70													Cancelled due to heavy rainfall & Thunderstorm Warning
1-2	4-Jun-08	9:15	Cloudy	<1	25.00	24.90	24.95	5.35 5.35	5.35		6.90	7.00	6.95 5	.25 5	5.23	5.24		1.00 1.00	1.00		Cancelled due to Amber Rainstorm Signal
	6-Jun-08 10-Jun-08	15:00	Fine	<1	25.60	25.60	25.60	4.38 4.41	4.40		8.00	8.00	8.00 4	.78 4	1.75	4.77		10.00 16.00	13.00		Carcelled due to Amber Hairistorm Signal
	12-Jun-08	11:47	Cloudy	<1	25.40	25.40	25.40	5.18 5.27	5.23		7.37	7.35	7.36	.39 5	5.23	5.31		2.00 2.00	2.00		
	14-Jun-08 16-Jun-08	13:55	Cloudy	<1	25.70	25.60	25.65	4.60 4.58	4.59	3.66 / 3.63	7.53	7.55	7.54	.35 6	5.30	6.33	6.63 / 6.99	2.00 2.00	2.00	7.68 / 8.34	Cancelled due to heavy rainfall & Thunderstorm Warning
	18-Jun-08	8:30	Cloudy	<1	24.20	24.20	24.20	4.70 5.52	5.11		7.46	7.45	7.46	.87	3.99	3.93		0.50 2.30	1.40		
	20-Jun-08 23-Jun-08	17:20 15:27	Fine Sunny	<1	26.40 27.30	26.40 27.50		5.18 5.12 5.60 5.72	5.15 5.66		7.01	7.09				2.97		0.73 0.87 1.00 1.00	0.80		
	25-Jun-08			,																	Cancelled due to heavy rainfall & typhoon
	27-Jun-08 30-Jun-08	12:00	Cloudy	<1	23.90	23.90		5.52 5.54 5.69 5.70	5.53 5.70		7.17 7.32	7.20				3.69		1.00 1.00 1.00 1.00	1.00		
Hong Hoi Chee Hong Temple	2-Jun-08		Cidddy																		Cancelled due to heavy rainfall & Thunderstorm Warning
I-2-C	4-Jun-08 6-Jun-08	9:00	Cloudy	<1	25.30	25.30	25.30	5.54 5.52	5.53		7.20	7.19	7.20 5	.32 5	5.30	5.31		1.00 2.00	1.50		Cancelled due to Amber Rainstorm Signal
	10-Jun-08	14:30	Fine	<1	24.80	25.30	25.05	4.88 4.89	4.89		7.90	8.00	7.95 4	.53 4		4.56		2.00 5.00	3.50		Cancelled due to Alliber Hallistofff Signal
	12-Jun-08	11:43	Cloudy	<1	25.40	25.40	25.40	5.08 4.82	4.95		7.23	7.22	7.23 5	.64 5	5.61	5.63		2.00 3.00	2.50		Oracellad destablished to be acceptable 10 Three destates Western
	14-Jun-08 16-Jun-08	13:48	Cloudy	<1	25.60	25.50	25.55	4.42 4.36	4.39	3.83 / 3.67	7.46	7.55	7.51 6	.41 6	5.32	6.37	6.73 / 8.27	1.00 1.00	1.00	6.98 / 9.4	Cancelled due to heavy rainfall & Thunderstorm Warning
	18-Jun-08	8:37	Cloudy	<1	24.20	24.20	24.20		4.76		7.48	7.50	7.49	.50 3	3.52	3.51		1.20 1.63	1.42		
	20-Jun-08 23-Jun-08			<1 <1	26.30 26.90	26.50 26.90		5.07 5.30 5.68 5.70	5.19		7.26 7.27	7.18		.97 2		2.90		1.83 0.83 1.00 1.00	1.33		
	25-Jun-08																				Cancelled due to heavy rainfall & typhoon
	27-Jun-08 30-Jun-08	11:55	Cloudy	<1 <1	23.60 24.50	23.60	23.60	5.57 5.87 5.53 5.62	5.72 5.58		7.18	7.15	7.17 3 7.25 3		3.93	3.58		1.00 1.00 1.00 1.00	1.00		
Squatters	2-Jun-08	11.50	Cidddy		24.00	L4.00	24.00	0.00	0.00		7.20	7.24	7.20	, .	J.U.L.	0.00		1.00	1.00		Cancelled due to heavy rainfall & Thunderstorm Warning
1-3	4-Jun-08 6-Jun-08	10:15	Cloudy	<1	23.40	23.40	23.40	6.50 6.48	6.49		7.21	7.20	7.21 2	.82 2	2.83	2.83		5.00 7.00	6.00		Cancelled due to Amber Rainstorm Signal
	10-Jun-08	17:00	Fine	<1	21.60	21.60		4.93 4.89	4.91		8.00	8.10				3.00		4.00 4.00	4.00		Cancered due to Amber manistorm bignar
	12-Jun-08 14-Jun-08	13:37	Cloudy	<1	26.20	26.30	26.25	4.37 4.31	4.34		7.42	7.40	7.41 3	.52 3	3.37	3.45		2.00 2.00	2.00		Cancelled due to heavy rainfall & Thunderstorm Warning
	14-Jun-08 16-Jun-08		Cloudy	<1	25.40	25.40	25.40	4.81 4.85	4.83	3.65 / 3.51	7.72	7.69	7.71 3	.32 3	3.44	3.38	3.99 / 4.18	1.00 1.00	1.00	6.13 / 7.23	Cancened due to neavy raintali & Thunoerstorm warning
	18-Jun-08			<1	24.50	24.50	24.50	4.35 4.31	4.33		7.65	7.63	7.64 2	.43 2	2.36	2.40		0.23 0.07	0.15		
	20-Jun-08 23-Jun-08		Fine Sunny	<1 <1	26.00 27.40	26.00 27.60		5.64 5.62 5.52 5.58	5.63 5.55		7.18	7.17				2.34 3.11		2.47 1.03 1.00 1.00	1.75		
	25-Jun-08		·																		Cancelled due to heavy rainfall & typhoon
	27-Jun-08 30-Jun-08			<1 <1	24.30	24.30 24.90		5.23 5.32 5.84 5.83	5.28 5.84		7.43	7.48	7.46 3 7.34 4			3.71		1.00 1.00 2.00 2.00	1.00 2.00		
Squatters	2-Jun-08																				Cancelled due to heavy rainfall & Thunderstorm Warning
I-3-C	4-Jun-08 6-Jun-08	10:00	Cloudy	<1	23.50	23.60	23.55	7.33 7.33	7.33		8.00	8.00	8.00 2	.78 2	2.77	2.78		5.00 7.00	6.00		Cancelled due to Amber Rainstorm Signal
	10-Jun-08	16:30		<1	21.90	21.80			5.08		8.20	8.20				2.71		1.00 2.00	1.50		Canadada da la Amber Hamstofff digital
	12-Jun-08	13:30	Cloudy	<1	26.70	26.40	26.55	4.45 4.30	4.38		7.48	7.47	7.48 3	.44 3	3.56	3.50		2.00 3.00	2.50		Concelled due to began validal 9. Thursdevetove Warning
	14-Jun-08 16-Jun-08	13:05	Cloudy	<1	25.40	25.40	25.40	4.78 4.88	4.83	3.63 / 3.62	7.45	7.57	7.51 3	.75 3	3.82	3.79	4.28 / 5.06	1.00 1.00	1.00	5.73 / 5.95	Cancelled due to heavy rainfall & Thunderstorm Warning
	18-Jun-08			<1	24.50	24.60		4.12 4.23	4.18		7.62	7.64				2.29		0.00 0.53	0.27		
	20-Jun-08 23-Jun-08	15:59 16:19		<1	27.00 27.60	26.50 27.60		5.28 5.27 5.55 5.62	5.28 5.59		7.04 7.44	7.04	7.04 2 7.45 3		2.55 3.28	3.33		0.83 0.70 1.00 1.00	0.77 1.00		
	25-Jun-08		·																		Cancelled due to heavy rainfall & typhoon
	27-Jun-08 30-Jun-08			<1 <1	24.40	24.50 24.80		5.91 5.77 5.65 5.67	5.84 5.66		7.49	7.36				3.50		1.00 1.00 2.00 1.00	1.00		
	JU-0011-00	10.13	Oluuy	, N	24.00	24.00	44.00	0.00 0.07	J.00		7.54	7.20	7.011 0			0.00		2.00 1.00	1.00		

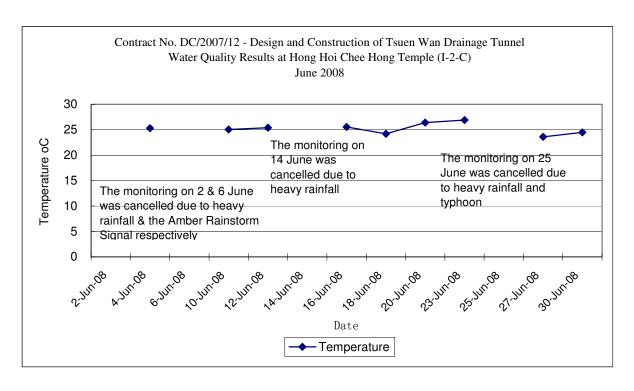
Note:
Blue Italic indicates an exceedance of Action Level
Red Bold indicates an exceedance of Limit Level

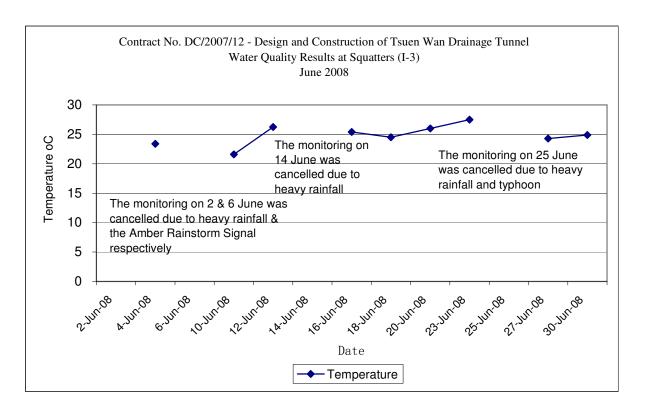
Please input at light green box only

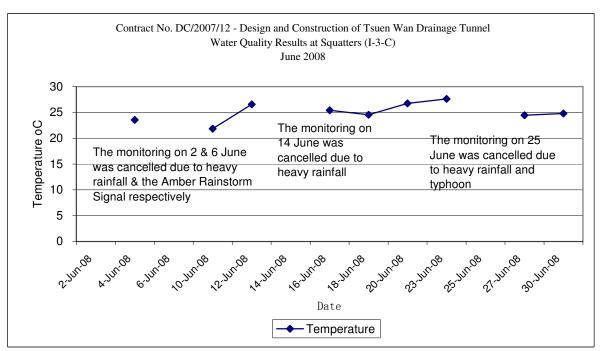


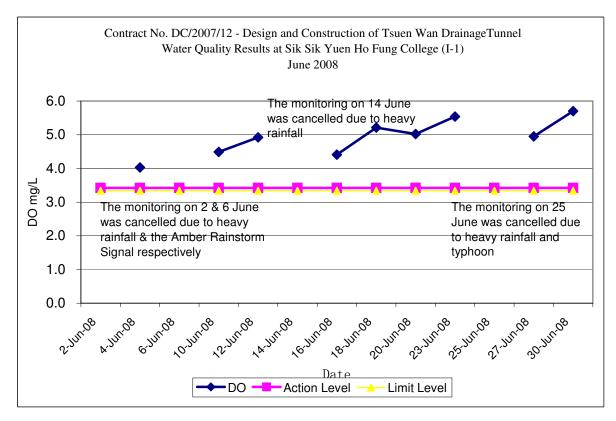


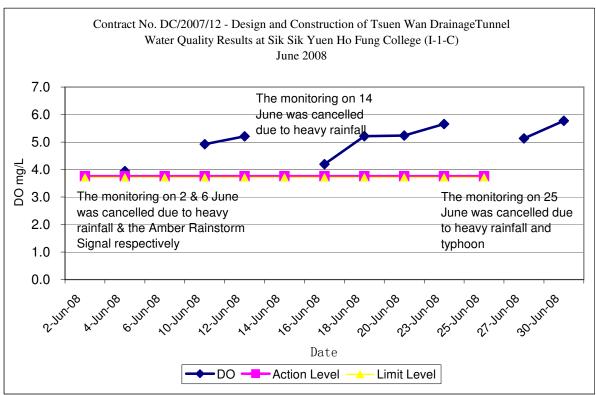




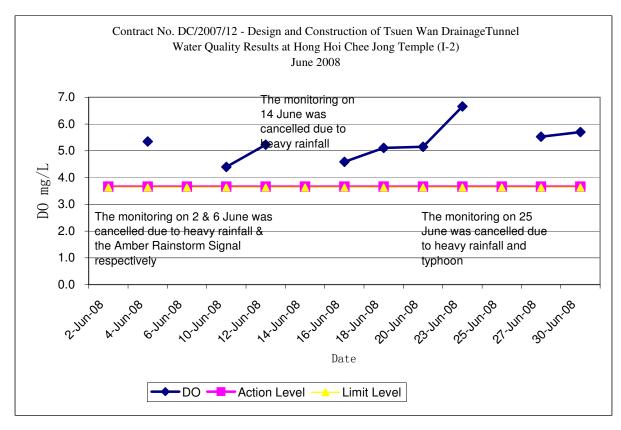


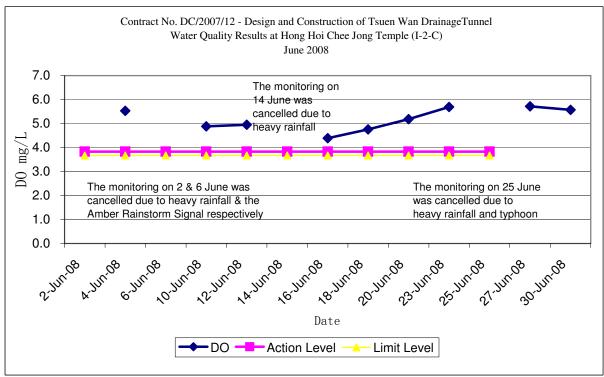


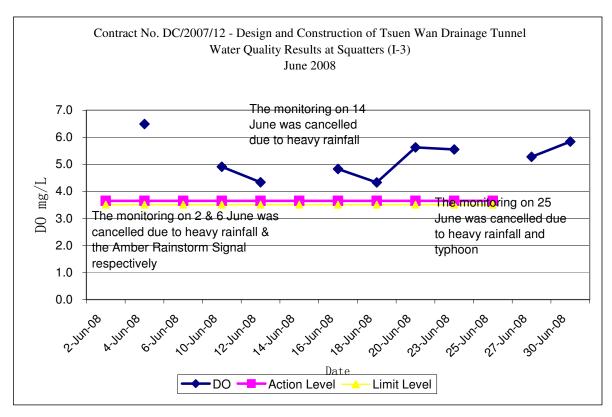


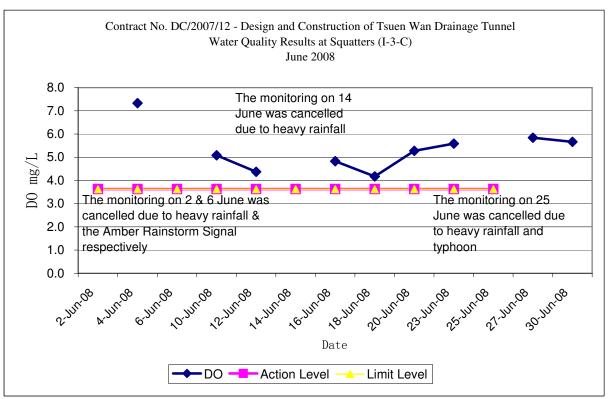


Note: Exceedances of Action / Limit Levels occur when the levels of DO are below the respective limit levels.

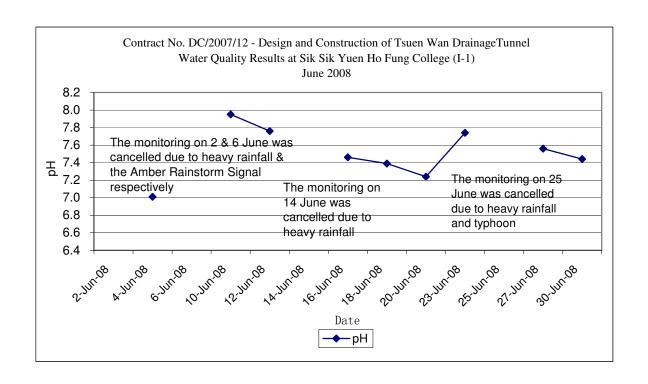


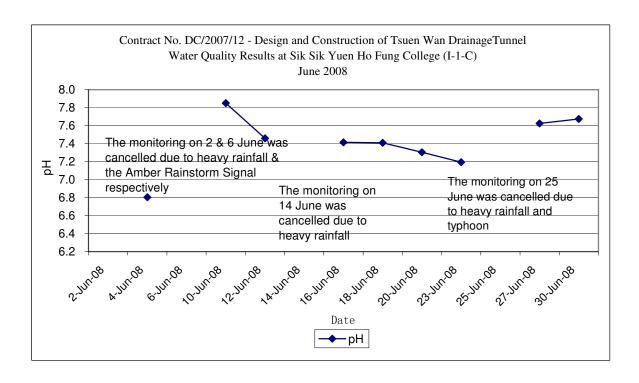


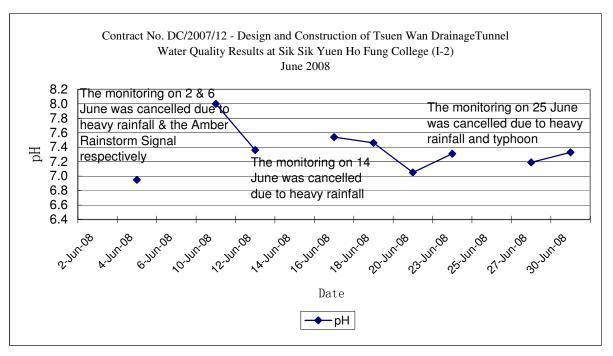


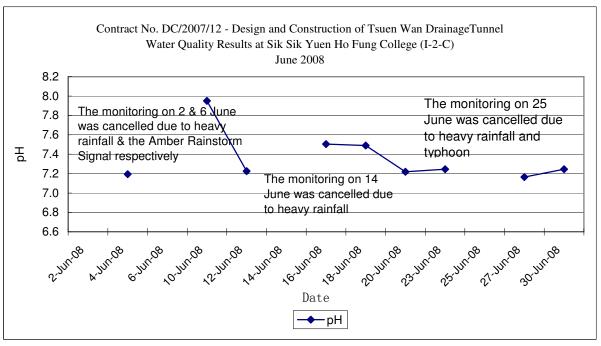


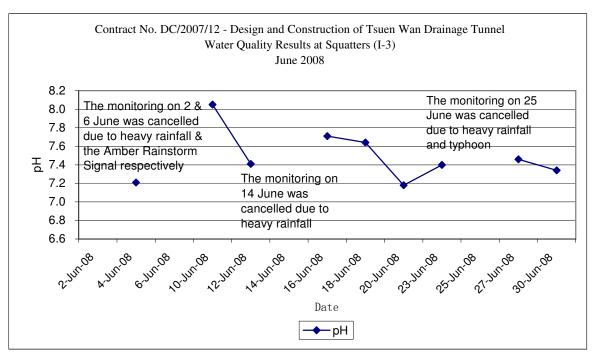
Note: Exceedances of Action / Limit Levels occur when the levels of DO are below the respective limit levels.

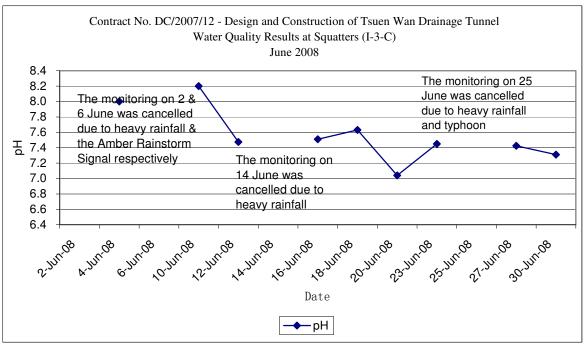


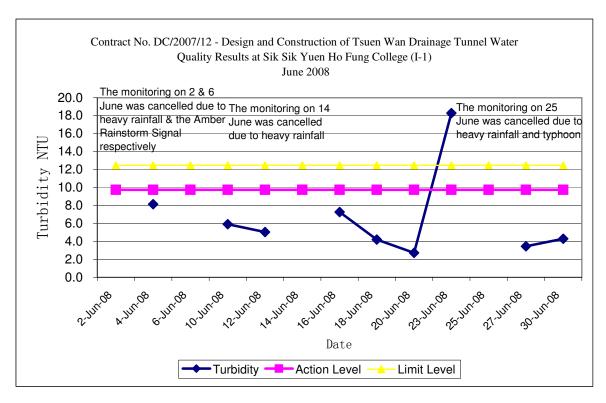


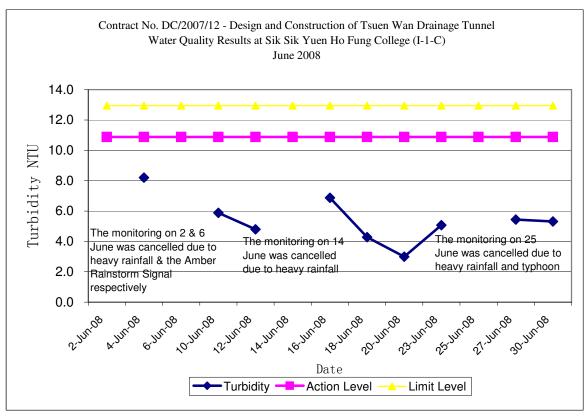


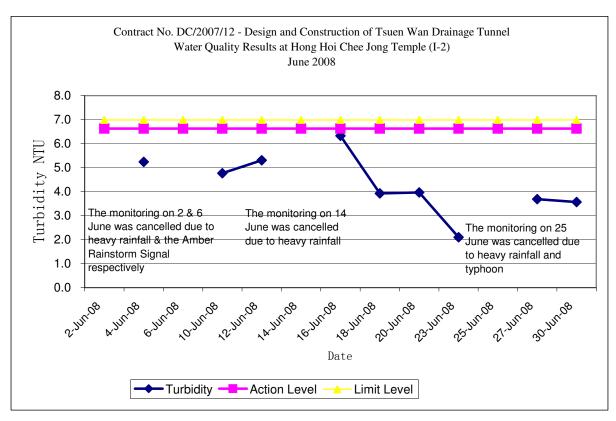


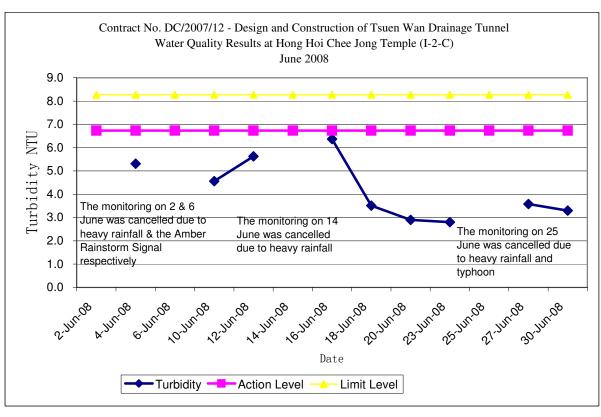


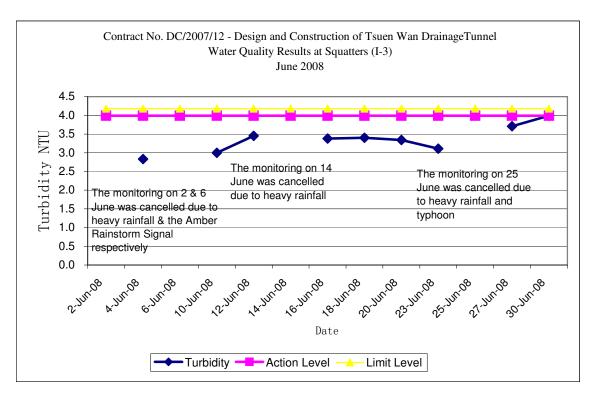


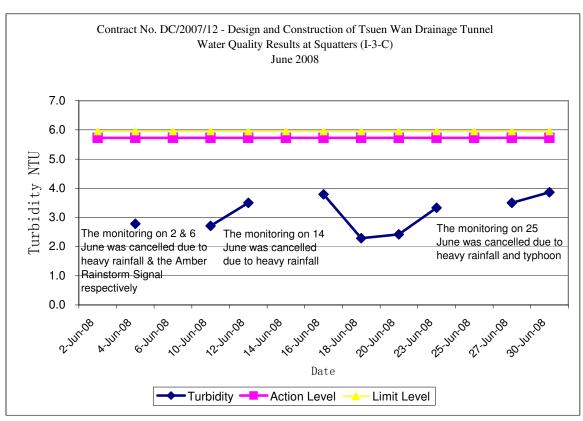


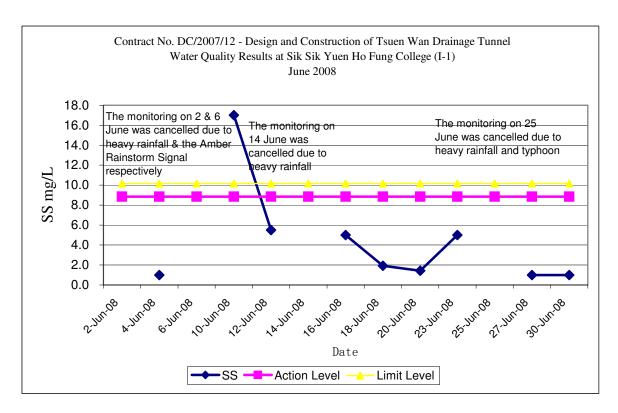


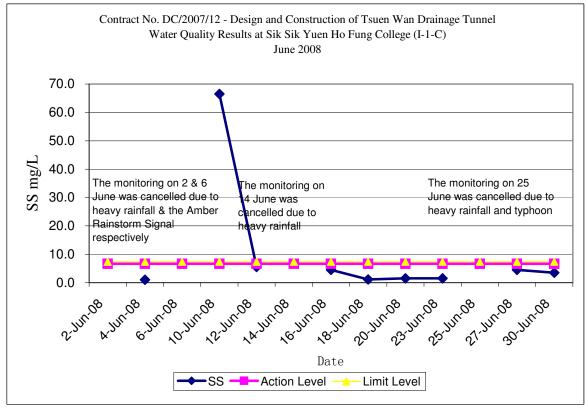


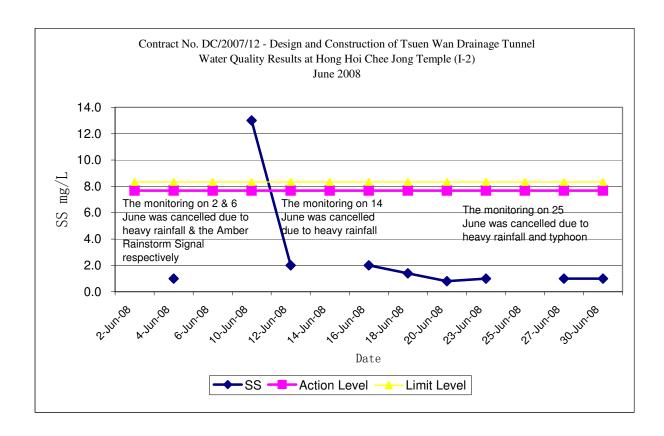


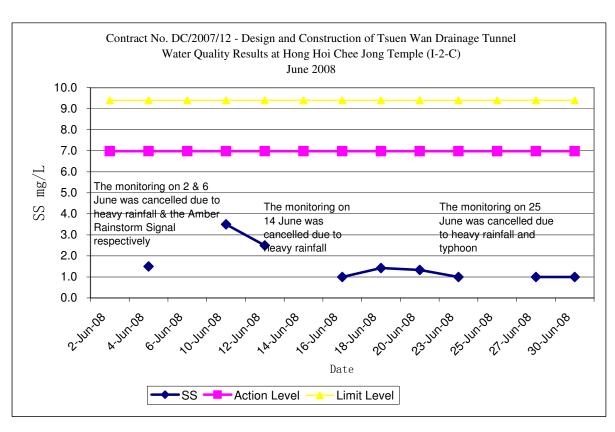


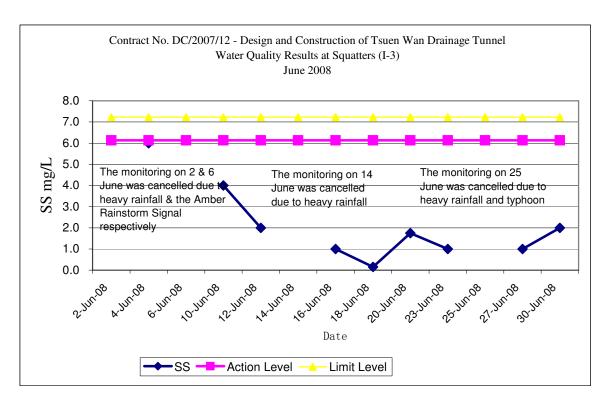


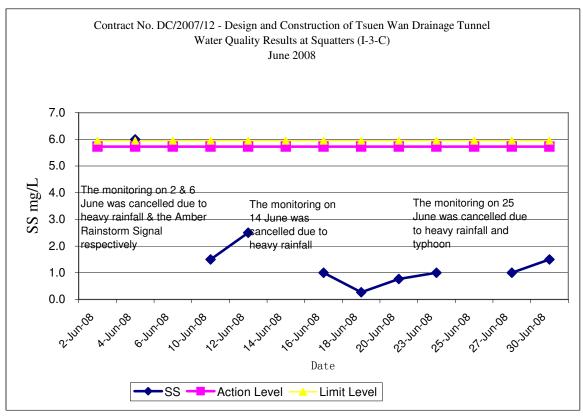














Appendix J

Interim Notifications of Environmental Quality Limits
Exceedances

Incident Report on Action Level or Limit Level Non-compliance

Project	Tsuen Wan Drainage Tunnel	
Date	4-Jun-08	
Time	10am	
Monitoring Location	Squatters Control (I-3-C)	
Parameter	SS	
Action & Limit Levels	5.73/5.95	
Measured Level	6	
Possible reason for Action or Limit Level Non-compliance	Natural Fluctuation	
Actions taken / to be taken	No construction activitiy is recorded. Exceedances is not project related. No follow up action.	
Remarks	Nil	

Designation:	Environmental Consultant
Signature:	Soumond Chan.

11-Jun-08

Desmond Chan

Prepared by:

Incident Report on Action Level or Limit Level Non-compliance

Project	Tsuen Wan Drainage Tunnel	
Date	10-Jun-08	
Time	01:30 PM	
Monitoring Location	Sik Sik Yuen Ho Fung College (I-1)	
Parameter	SS	
Action & Limit Levels	8.85 / 10.17	
Measured Level	17	
Possible reason for Action or Limit Level Non-compliance	Influence by high SS level measured at I-1-C due to natural fluctuation	
Actions taken / to be taken	No construction activitiy is recorded. Exceedances is not project related. No follow up action.	
Remarks	Nil	

Prepared by:	Desmond Chan
Designation:	Environmental Consultant
Signature: —	Desmort Chan

17-Jun-08

Incident Report on Action Level or Limit Level Non-compliance

Project	Tsuen Wan Drainage Tunnel	
Date	10-Jun-08	
Time	01:00 PM	
Monitoring Location	Sik Sik Yuen Ho Fung College (I-1-C)	
Parameter	ss	
Action & Limit Levels	6.68 / 7.34	
Measured Level	66.5	
Possible reason for Action or Limit Level Non-compliance	Natural fluctuation	
Actions taken / to be taken	No construction activitiy is recorded. Exceedances is not project related. No follow up action.	
Remarks	Nil	

Designation:	Environmental Consultant
Signature:	Dasword Chan

17-Jun-08

Desmond Chan

Prepared by:

Incident Report on Action Level or Limit Level Non-compliance

Project	Tsuen Wan Drainage Tunnel	
Date	10-Jun-08	
Time	03:00 PM	
Monitoring Location	Hong Hoi Chee Hong Temple (I-2)	
Parameter	SS	
Action & Limit Levels	7.68 / 8.34	
Measured Level	13	
Possible reason for Action or Limit Level Non-compliance	Influence by high SS level measured at I-1-C due to natural fluctuation	
Actions taken / to be taken	No construction activitiy is recorded. Exceedances is not project related. No follow up action.	
Remarks	Nil	

Prepared by:	Desmond Chan
Designation:	Environmental Consultant
Signature:	Bomord Chan
Date:	17-Jun-08

Incident Report on Action Level or Limit Level Non-compliance

Project	Tsuen Wan Drainage Tunnel	
Date	10-Jun-08	
Time	03:00 PM	
Monitoring Location	Squatters (I-3)	
Parameter	SS	
Action & Limit Levels	6.13 / 7.23	
Measured Level	4 (higher than 130% of control control station's SS)	
Possible reason for Action or Limit Level Non-compliance	Natural fluctuation	
Actions taken / to be taken	No construction activitiy is recorded. Exceedances is not project related. No follow up action.	
Remarks	No exceedance is recorded on 12-Jun-08.	

Prepared by:

Desmond Chan

Designation:

Environmental Consultant

Signature:

Date:

Incident Report on Action Level or Limit Level Non-compliance

Project	Tsuen Wan Drainage Tunnel	
Date	16-Jun-08	
Time	01:55 PM	
Monitoring Location	Hong Hoi Chee Hong Temple (I-2)	
Parameter	SS	
Action & Limit Levels	7.68 / 8.34	
Measured Level	2 (higher than 130% of control control station's SS)	
Possible reason for Action or Limit Level Non-compliance	Natural fluctuation	
Actions taken / to be taken	No construction activitiy is recorded. Exceedances is not project related. No follow up action.	
Remarks	No exceedance is recorded on 18-Jun-08.	

Prepared	l by:
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Desmond Chan

Designation:

Environmental Consultant

Demond Chan

Signature:

Date:

Incident Report on Action Level or Limit Level Non-compliance

Project	Tsuen Wan Drainage Tunnel	
Date	18-Jun-08	
Time	09:34 AM	
Monitoring Location	Sik Sik Yuen Ho Fung College (I-1)	
Parameter	SS	
Action & Limit Levels	8.85/10.17	
Measured Level	1.92 (higher than 130% of control control station's SS)	
Possible reason for Action or Limit Level Non-compliance	Natural fluctuation	
Actions taken / to be taken	No construction activitiy is recorded. Exceedances is not project related. No follow up action.	
Remarks	Nil	

Prep	ared	by:
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Desmond Chan

Designation:

Environmental Consultant

Downed Cha

Signature:

Date:

Incident Report on Action Level or Limit Level Non-compliance

Project	Tsuen Wan Drainage Tunnel
Date	23-Jun-08
Time	02:40 PM
Monitoring Location	Sik Sik Yuen Ho Fung College (I-1)
Parameter	Turbidity
Action & Limit Levels	9.75/12.47
Measured Level	18.28
Possible reason for Action or Limit Level Non-compliance	Exceedance of turbidity was contributed by rubbish flowing from upper stream (refer to attached site photo).
Actions taken / to be taken	Exceedances is not project related. No follow up action.
Remarks	Nil

Prepare	d by:
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Desmond Chan

Designation:

Environmental Consultant

Signature:

Domond Chan

Date:

Incident Report on Action Level or Limit Level Non-compliance

Project	Tsuen Wan Drainage Tunnel
Date	30-Jun-08
Time	10:30am - 11:30 am
Monitoring Location	Sik Sik Yuen Ho Fung College (ASR1)
Parameter	TSP
Action & Limit Levels	306.6/500
Measured Level	411.1
Possible reason for Action or Limit Level Non-compliance	The action level exceedance might be caused by pull-out testing for soil nailing undertaken for the project and façade renovation undertaken at Ho Fung College during monitoring.
Actions taken / to be taken	There is no evidence that the exceedance was caused by the onsite activities. The exceedance might possibly be caused by the facade renovation works at the College due to the close proximity to the monitoring station. Nevertheless, the Contractor was reminded to provide water spraying for all dusty works to minimise the fugitive dust impact. The effectiveness of the mitigation measures provided by the Contractor will be checked by the dust monitoring results of 05-Jul-08.
Remarks	The action level exceedance is considered not to be project-related.

Prepared by:	Desmond Chan
Designation:	Environmental Consultant
Signature:	Domond Chan

07-Jul-08