Maeda - CREC - SELI Joint Venture

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

Monthly EM&A Report

(October 2008)

November 2008

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Executive Summary

1. 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). Commencement of the construction work had been notified to the Environmental Protection Department (EPD) in January 2008. This Monthly EM&A Report summarises the EM&A works undertaken in October 2008.

2. 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).

3. During non-restricted hours, major construction activities undertaken by the Contractor at TWDT included site clearance at I-1, I-2, I-3 and Outfall; hoarding & fencing erection at I-3 and Outfall; tree transplanting at I-1, I-3 and Outfall; slope stabilization at Outfall; pre-construction survey at I-1, I-2, I-3 and Outfall; soil nailing at I-3;relocation of verified boulder at I-1, I-2 and Outfall; formation of access road at Outfall; and pre-bore H-piling at I-2. No construction activities were undertaken during restricted hours.

4. No exceedance has been recorded for noise monitoring during the reporting month. During the reporting month, the 2nd and 3rd measurements of 1-hr TSP monitoring at ASR 1 measured on 11 October 2008 has exceeded Action and Limit Levels respectively. In accordance with site investigation, river clearance by a small backhoe was undertaken during measurement. Some renovation works were identified within Ho Fung College and some construction materials were being deposited near our monitoring location before the measurement starts. It is believed that the abovementioned exceedances were caused by emission from the stockpiled construction material and concluded that both exceedances were not project related.

5. Exceedances for water quality monitoring are summarized in the following table:

Parameter	Action Level Exceedance	Limit Level Exceedance
DO	Nil	Nil
Turbidity	Nil	Nil
SS	One recorded on 29 October at I-2	Two recorded on 4 and 6 October at I-1 One recorded on 31 October at I-2

6. These exceedances were considered not to be project-related as no direct disturbance was observed contributed by the project construction activities. Detail interpretation of the results could be referred to Section 4.3 of this report.

7. The status of waste generation in the reporting month are:

   - A total of 232.4m^3 C&D material was disposed of to public fill at Tuen Mun and no inert C&D materials were reused in KDB 400, a line extension project of MTR Corportaion at Tai Kok Tsui;
   - About 12m^3 general waste was disposed of to NENT Landfill;
   - About 200kg of paper/cardboard was recycled;
   - No chemical waste was disposed off in the reporting month; and
   - No metal was generated in the reporting month.

8. In this reporting month, two 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.

9. As advised by the Contractor and verified by ET:

   - No non-compliance was received in the reporting month;
   - No environmental complaint was received during the reporting month; and
   - No summons and prosecution was received in this reporting month.

10. The major construction works for the upcoming three months will be:

    - Site clearance at I-1, I-2, I-3 and Outfall;
    - Hoarding & fencing erection at I-3 and Outfall;
    - Trees transplanting at I-1, I-3 and Outfall;
    - Slope stabilization at Outfall;
    - Soil nailing at I-3;
    - Pipe pile at I-1;
    - Relocation of verified boulder at I-1 and Outfall;
    - Formation of access road at Outfall; and
    - Pre-bore H-piling at I-2.

1 INTRODUCTION

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

1.1.2 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.

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

1.1.4 Hyder was commissioned by the MCSJV as the Environmental Team (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.

1.1.5 The construction works of the Project was commenced in January 2008. This is the seventh monthly EM&A report summarising the impact monitoring results and audit findings of the EM&A program in October 2008.

2 PROJECT INFORMATION

2.1 Project Organization and Management Structure

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

2.2 Construction Progress

2.2.1 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.

2.2.2 The major construction activities undertaken in the reporting month were:

- Site clearance at I-1, I-2, I-3 and Outfall;
- Hoarding & fencing erection at I-3 and Outfall;
- Tree transplanting at I-1, I-3 and Outfall;
- Slope stabilization at Outfall;

- Pre-construction survey at I-1, I-2, I-3 and Outfall;
- Soil nailing at I-3;
- Relocation of verified boulder at I-1, I-2 and Outfall;
- Formation of access road at Outfall; and
- Pre-bore H-piling at I-2.

2.2.3 No construction activities were undertaken for TWDT during the restricted hours.

2.3 Mitigation Measures

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

2.4 Status of License and Permit

2.4.1 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

Air Quality Parameters

3.1.1 1-hour Total Suspended Particulates (TSP) levels are measured at the designated air monitoring locations in accordance with the EM&A Manual. Information such as date of monitoring, duration, weather condition, equipment used and monitoring results were recorded on the field data sheet developed for the Project. The monitoring results are presented in Section 4.

Monitoring Methodology

3.1.2 1-hour TSP monitoring is carried out under typical weather conditions (with no adverse weather such as typhoon signal or rain storm warning) three times every six days using High Volume Air Samplers (HVASs). Monitoring should be conducted in accordance with 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.

3.1.3 After each 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.

3.1.4 The average concentrations of the TSP are calculated based on the following information obtained from monitoring:

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

3.1.5 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 is carried out by ALS Technichem (HK) Pty Limited (HOKLAS Registration Number 066).

Monitoring Equipment and Calibration

3.1.6 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.

3.1.7 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

Monitoring Location

3.1.8 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

Action and Limit Levels

3.1.9 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 Level in µg/m³	
	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			
	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	• Check monitoring data submitted by ET; • Check Contractor's	• Confirm receipt of notification of exceedance in writing;	• Submit proposals for remedial to SOR within 3 working days of notification;

EVENT	ACTION			
	ET	IEC	SOR	CONTRACTOR
	effectiveness of the proposed remedial measures; • Repeat measurements to confirm findings; • Increase monitoring frequency to daily; • Discuss with IEC and Contractor on remedial actions required; • If exceedance continues, arrange meeting with IEC and SOR; • If exceedance stops, cease additional monitoring.	working method; • Discuss with ET and Contractor on possible remedial measures; • Advise the ET on the effectiveness of the proposed remedial measures; • Supervise Implementation of remedial measures.	• Notify Contractor; • Ensure remedial measures properly implemented.	• Implement the agreed proposals; • Amend proposal if appropriate.
LIMIT LEVEL				
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	• Notify IEC, SOR, Contractor and EPD;	• Discuss amongst SOR, ET, and Contractor on the	• Confirm receipt of notification of exceedance in	• Take immediate action to avoid further exceedance;

EVENT	ACTION			
	ET	IEC	SOR	CONTRACTOR
samples	• Identify source; • Repeat measurement to confirm findings; • Increase monitoring frequency to daily; • Carry out analysis of Contractor's working procedures to determine possible 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.	potential remedial actions; • Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise SOR accordingly; • Supervise the implementation of remedial measures.	writing; • Notify Contractor; • In consultation with the IEC, agree with the Contractor on the remedial measures to be implemented; • 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.	• 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; • 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

Noise Parameters

3.2.1 The construction noise level is measured in terms of equivalent A-weighted sound pressure level (L_{eq}) measured in decibels (dB(A)). Monitoring of $L_{eq(30\ min)}$ 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), $L_{eq(5\ min)}$ would be employed for comparison with the Noise Control Ordinance (NCO) criteria if necessary.

3.2.2 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.

Monitoring Methodology

3.2.3 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 the measurements that are carried out under free field conditions.

3.2.4 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 present during the baseline monitoring period.

Monitoring Equipment and Calibration

3.2.5 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, are used for noise monitoring.

3.2.6 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 calibrator are calibrated annually to ensure they perform to the same level of accuracy as stated in the manufacturer's 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

Monitoring Location

3.2.7 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

Construction Groundborne Noise

3.2.8 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 will 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.

3.2.9 The criteria including Technical Memorandum 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 opened 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.

Action and Limit Levels

3.2.10 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	When one documented complaint is received	75 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	1. Notify IEC and the Contractor. 2. Carry out investigation. 3. Report the results of investigation to IEC and the Contractor. 4. Discuss with the Contractor and formulate remedial measures. 5. Increase monitoring frequency to check mitigation measures.	1. Review with analysed results submitted by ET. 2. Review the proposed remedial measures by the Contractor and advise SOR accordingly. 3. Supervise the implement of remedial measures.	1. Confirm receipt of notification of exceedance in writing. 2. Notify the Contractor. 3. Require the Contractor to propose remedial measures for the analysed noise problem. 4. Ensure remedial measures are properly implemented.	1. Submit noise mitigation proposals to IEC. 2. Implement noise mitigation proposals.
Limit Level	1. Identify the source. 2. Notify IEC, SOR, EPD and the Contractor. 3. Repeat measurement to confirm findings. 4. Increase monitoring frequency. 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented. 6. Inform IEC, SOR, and EPD the causes & actions taken for the exceedances. 7. Assess effectiveness of the Contractor's remedial actions and keep IEC, EPD and SOR informed of the results. 8. 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.	1. Confirm receipt of notification of exceedance in writing. 2. Notify the Contractor. 3. Require the Contractor to propose remedial measures for the analysed noise problem. 4. Ensure remedial measures are properly implemented. 5. If exceedance continues, consider what activity of the work is responsible and instruct the Contractor to stop that activity of work until the exceedance is abated.	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

3.3.1 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.

Water Quality Parameters

3.3.2 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.

3.3.3 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.

Monitoring Methodology

3.3.4 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.

3.3.5 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.

3.3.6 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.

Monitoring Equipment and Calibration

3.3.7 All the water samples collected should be transferred to clearly labelled and pre-cleaned sample containers with necessary preservatives immediately after collection. The sample containers should be provided by a 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.

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

3.3.8 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 re-calibrated 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.

Monitoring Location

3.3.9 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

3.3.10 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 based on the tidal information provided by the Hong Kong Observatory.

Action and Limit Levels

3.3.11 The Action and Limit levels for water quality monitoring parameters are defined in Table 3-11. In case of any exceedance, appropriate actions 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.

Table 3-11 Action/Limit Levels for Water Quality

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

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

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

1-hr TSP Monitoring

4.1.2 Results of 1-hours TSP level are shown in Table 4-1. All measurements are recorded to the nearest 0.1µg/m3 and presented in round numbers in this report. Detail results including weather conditions, and graphical presentations are presented in Appendix I.

Station	Monitoring Date	Monitoring Result (µg/m³)	Action/Limit Levels (µg/m³)
ASR 1	6-Oct-08	45	307/500
		61	
		58	
	11-Oct-08	60	
		370	
		521	
	17-Oct-08	35	
		54	
		52	
	23-Oct-08	68	
		86	
		96	
	29-Oct-08	58	
		73	
		52	
ASR 3	6-Oct-08	20	327/500
		64	
		66	
	11-Oct-08	78	
		82	
		95	
	17-Oct-08	117	
		128	
		178	
	23-Oct-08	87	
		77	
		97	
	29-Oct-08	99	
		99	
		118	

Station	Monitoring Date	Monitoring Result (µg/m³)	Action/Limit Levels (µg/m³)
ASR 8	6-Oct-08	43	337/500
		59	
		56	
	11-Oct-08	59	
		38	
		43	
	17-Oct-08	53	
		55	
		54	
	23-Oct-08	115	
		101	
		88	
	29-Oct-08	112	
		70	
		87	
ASR 9	6-Oct-08	53	329/500
		17	
		35	
	11-Oct-08	32	
		58	
		56	
	17-Oct-08	67	
		82	
		74	
	23-Oct-08	127	
		130	
		155	
	29-Oct-08	82	
		66	
		70	

Note: *Italic values indicate exceedance of Action level*

Bold indicates exceedance of **Limit Level**

Table 4-1 Air Quality Monitoring Results

4.1.3 During the reporting month, the 2nd and 3rd measurements of 1-hr TSP monitoring at ASR 1 measured on 11 October 2008 has exceeded Action and Limit Levels respectively. In accordance with site investigation, river clearance by a small backhoe was undertaken during measurement. Some renovation works were identified within Ho Fung College and some construction materials were being deposited near our monitoring location before the measurement starts. It is believed that the exceedances recorded on the 2nd and 3rd hour were caused by emission from the stockpiled construction material and concluded that both exceedances were not

project related. The Contractor has been reminded to implement dust mitigation measures for all dusty works to prevent dust generation.

4.1.4 Details of the investigation can be referred to the notifications of exceedances as enclosed in Appendix J.

4.1.5 No project related exceedance was recorded in the reporting month.

4.2 Noise

4.2.1 The noise monitoring schedule of the reporting period is given in Appendix H. Results of measured noise level, in terms of Leq(30min), during the construction are shown in Table 4-2. All measurements including L10 and L90 are recorded to the nearest 0.1 dB(A) and presented in round numbers in this report. Detail 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)
NSR 1	6-Oct-08	65	70
	17-Oct-08	63	
	23-Oct-08	63	
	29-Oct-08	65	
NSR 3	6-Oct-08	65	75
	17-Oct-08	63	
	23-Oct-08	64	
	29-Oct-08	73	
NSR 6	6-Oct-08	61	
	17-Oct-08	61	
	23-Oct-08	61	
	29-Oct-08	63	
NSR 8	6-Oct-08	63	
	17-Oct-08	59	
	23-Oct-08	62	
	29-Oct-08	67	
NSR 9	6-Oct-08	64	
	17-Oct-08	59	
	23-Oct-08	63	
	29-Oct-08	66	

Table 4-2 Noise Monitoring Results

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

4.3 Water Quality Monitoring

4.3.1 The water quality monitoring schedule of the reporting period is given in Appendix H. In accordance with the monitoring results, a number of exceedances were identified. Summaries of exceedances for water quality monitoring are provided in Tables 4-3 to 4-5.

Parameter	Action Level Exceedance	Limit Level Exceedance
DO	Nil	Nil
Turbidity	Nil	Nil
SS	Nil	Two recorded on 4 and 6 October
Total	Nil	Two

Table 4-3 Summary of exceedances for I-1

Parameter	Action Level Exceedance	Limit Level Exceedance
DO	Nil	Nil
Turbidity	Nil	Nil
SS	One recorded on 29 October	One recorded on 31 October
Total	One	One

Table 4-4 Summary of exceedances for I-2

Parameter	Action Level Exceedance	Limit Level Exceedance
DO	Nil	Nil
Turbidity	Nil	Nil
SS	Nil	Nil
Total	Nil	Nil

Table 4-5 Summary of exceedances for I-3

4.3.2 Results of measured water quality parameters during the reporting month are shown in Table 4-6 and detailed results including weather conditions and graphical presentations are enclosed in Appendix I.

4.3.3 The exceedance of Baseline Limit Level of SS was recorded at I-1 on 4 October. In accordance with site investigation, muddy water was observed generated from CEDD's project (Yick Hing) at upper stream. Moreover, the measured result of monitoring station was below the control station. As such, no direct disturbance was observed contributed by project construction activities. Details can be referred to Appendix J.

4.3.4 The exceedance of Control Limit Level of SS (130% higher than I-1-C) recorded at I-1 on 6 October was well below both Baseline Action & Limit Levels and no direct disturbance was observed contributed by the project construction activities. No action is taken as there is no evidence to show the exceedance is project related.

4.3.5 The exceedance of Control Action Level of SS (120% higher than I-2-C) recorded at I-2 on 29 October was well below both Baseline Action & Limit Levels and no direct disturbance was observed contributed by the project construction activities. No action is taken as there is no evidence to show the exceedance is project related.

4.3.6 The exceedance of Control Limit Level of SS (130% higher than I-2-C) recorded at 31 October at I-2 was well below both Baseline Action & Baseline Limit Levels and no direct disturbance was observed contributed by project construction activities. The Contractor was suggested to increase the frequency of cleaning the geo-textile and sandbags and to improve the efficiency of sedimentation tank. No action is taken as there is no evidence to show the exceedance is project related and no exceedance was recorded in consecutive monitoring on 4 November 2008.

4.3.7 Details of the above mentioned investigations can be referred to the notifications of exceedances as enclosed in Appendix J which have been provided to the IEC for review.

Station	Date	Temperature	DO (mg/L)	Action/Limit Level for DO (mg/L)	pH	Turbidity (NTU)	Action/Limit Level for Turbidity (NTU)	SS (mg/L)	Action/Limit Level for SS (mg/L)
I-1	2-Oct-08	26.55	5.23	3.42 / 3.34	7.82	6.38	9.75 / 12.47	6.9	8.85 / 10.17
	4-Oct-08	26.25	5.14		7.43	9.28		**77.9**	
	6-Oct-08	24.70	5.34		7.54	7.33		**5.8**	
	8-Oct-08	24.60	5.21		7.67	3.51		2.0	
	10-Oct-08	25.20	4.82		7.28	4.59		3.1	
	13-Oct-08	24.40	5.08		7.22	3.51		2.0	
	15-Oct-08	24.60	4.73		7.04	3.22		2.0	
	17-Oct-08	25.90	5.32		7.45	6.33		2.0	
	20-Oct-08	24.70	4.93		7.66	4.22		2.0	
	22-Oct-08	25.65	4.61		7.75	3.44		2.0	
	24-Oct-08	26.50	5.24		7.85	5.21		3.5	
	27-Oct-08	25.20	4.65		7.69	5.19		5.0	
	29-Oct-08	25.70	4.48		7.94	6.13		4.1	
	31-Oct-08	25.50	4.34		7.51	5.29		8.1	
I-1-C	2-Oct-08	25.60	5.45	- / -	7.23	6.43	- / -	6.7	- / -
	4-Oct-08	26.40	5.25		7.48	10.14		79.6	

Station	Date	Temperature	DO (mg/L)	Action/Limit Level for DO (mg/L)	pH	Turbidity (NTU)	Action/Limit Level for Turbidity (NTU)	SS (mg/L)	Action/Limit Level for SS (mg/L)
	6-Oct-08	24.95	5.24		7.71	8.40		4.0	
	8-Oct-08	24.45	5.09		7.63	3.59		2.0	
	10-Oct-08	25.40	4.82		7.38	4.76		3.0	
	13-Oct-08	24.60	5.16		7.36	3.74		2.0	
	15-Oct-08	24.85	5.14		7.04	3.29		2.0	
	17-Oct-08	26.25	5.13		7.44	6.32		2.0	
	20-Oct-08	25.20	4.88		7.86	4.45		2.1	
	22-Oct-08	25.30	4.75		8.06	3.47		2.0	
	24-Oct-08	26.40	5.35		7.97	5.25		3.3	
	27-Oct-08	25.30	4.67		7.73	5.28		5.5	
	29-Oct-08	25.60	4.34		7.88	6.17		4.4	
	31-Oct-08	25.60	4.48		7.56	5.35		7.6	
I-2	2-Oct-08	26.55	5.21	3.66 / 3.63	7.78	2.96	6.63 / 6.99	2.0	7.68 / 8.34
	4-Oct-08	26.10	5.22		7.76	5.43		2.0	
	6-Oct-08	24.65	5.43		7.68	5.43		2.0	
	8-Oct-08	24.40	5.03		7.56	3.44		2.0	
	10-Oct-08	25.30	4.88		7.48	3.25		2.0	
	13-Oct-08	24.60	4.66		7.62	3.24		2.0	

Station	Date	Temperature	DO (mg/L)	Action/Limit Level for DO (mg/L)	pH	Turbidity (NTU)	Action/Limit Level for Turbidity (NTU)	SS (mg/L)	Action/Limit Level for SS (mg/L)
	15-Oct-08	25.10	4.91		8.16	3.26		2.0	
	17-Oct-08	26.50	4.84		8.22	4.13		2.0	
	20-Oct-08	25.90	4.65		8.05	3.18		2.0	
	22-Oct-08	25.80	4.87		7.96	3.27		2.0	
	24-Oct-08	26.50	4.72		8.23	3.16		2.1	
	27-Oct-08	25.80	4.49		8.01	3.52		2.0	
	29-Oct-08	24.60	4.54		7.98	5.19		*6.5*	
	31-Oct-08	25.50	4.59		7.77	4.45		**3.8**	
I-2-C	2-Oct-08	26.20	5.25	- / -	7.57	3.07	- / -	2.0	- / -
	4-Oct-08	26.50	5.41		7.83	5.53		2.9	
	6-Oct-08	24.60	5.02		7.64	6.58		2.0	
	8-Oct-08	24.40	5.28		7.48	3.16		2.0	
	10-Oct-08	25.70	5.13		7.45	3.29		2.0	
	13-Oct-08	24.90	5.12		7.60	3.33		2.0	
	15-Oct-08	25.20	4.69		8.12	3.31		2.0	
	17-Oct-08	27.00	4.77		8.20	4.23		2.0	
	20-Oct-08	25.40	4.85		7.79	3.19		2.0	
	22-Oct-08	25.20	4.66		7.66	3.44		2.0	

Station	Date	Temperature	DO (mg/L)	Action/Limit Level for DO (mg/L)	pH	Turbidity (NTU)	Action/Limit Level for Turbidity (NTU)	SS (mg/L)	Action/Limit Level for SS (mg/L)
	24-Oct-08	26.10	4.26		8.06	3.24		2.4	
	27-Oct-08	25.95	5.03		7.98	3.60		2.0	
	29-Oct-08	24.75	4.42		8.00	5.24		5.0	
	31-Oct-08	25.60	4.64		7.67	4.63		2.0	
I-3	2-Oct-08	26.55	5.34	3.65 / 3.51	7.92	2.59	3.99 / 4.18	2.0	6.13 / 7.23
	4-Oct-08	26.40	5.22		7.54	3.53		2.0	
	6-Oct-08	26.60	5.33		7.52	3.14		2.0	
	8-Oct-08	24.50	5.18		7.53	3.17		2.0	
	10-Oct-08	25.80	5.24		7.53	3.50		2.0	
	13-Oct-08	24.30	5.27		7.54	3.07		2.0	
	15-Oct-08	25.50	5.06		7.72	3.22		2.0	
	17-Oct-08	26.20	4.84		7.82	3.46		2.0	
	20-Oct-08	26.30	4.87		8.42	3.22		2.0	
	22-Oct-08	24.55	5.21		7.89	3.18		2.0	
	24-Oct-08	24.60	5.19		7.67	3.61		2.0	
	27-Oct-08	25.60	4.65		8.04	3.29		2.0	
	29-Oct-08	25.70	4.78		8.02	3.37		5.6	
	31-Oct-08	25.80	5.13		7.77	3.36		2.0	

Station	Date	Temperature	DO (mg/L)	Action/Limit Level for DO (mg/L)	pH	Turbidity (NTU)	Action/Limit Level for Turbidity (NTU)	SS (mg/L)	Action/Limit Level for SS (mg/L)
I-3-C	2-Oct-08	26.50	4.98	- / -	8.05	2.63	- / -	2.0	- / -
	4-Oct-08	26.80	5.43		7.54	3.87		2.0	
	6-Oct-08	26.65	5.10		7.42	3.29		2.0	
	8-Oct-08	24.50	5.37		7.54	3.19		2.0	
	10-Oct-08	25.80	5.29		7.57	3.57		2.0	
	13-Oct-08	24.30	5.37		7.60	3.13		2.0	
	15-Oct-08	25.60	5.17		7.83	3.23		2.0	
	17-Oct-08	26.25	4.69		7.74	3.55		2.0	
	20-Oct-08	26.30	4.93		8.43	3.24		2.0	
	22-Oct-08	24.80	5.11		8.01	3.22		2.0	
	24-Oct-08	24.90	5.09		7.63	3.67		2.0	
	27-Oct-08	25.70	4.90		7.79	3.34		2.0	
	29-Oct-08	25.50	4.87		7.71	3.49		5.7	
	31-Oct-08	25.60	5.15		7.82	3.43		2.0	

Note:

1. *Italic* indicates the occurrence of exceedance of *Action level*.
2. Bold indicates the occurrence of exceedance of **Limit level**.

Table 4-6 Water Quality Monitoring Results

4.4 Summary of Project-Related Exceedances

4.4.1 Table 4-7 summarises the project-related exceedance results recorded in October 2008. Note that exceedances that are considered not related to the construction activities are not included in this table.

Environmental Monitoring	Total No. of Measurement	Action Level Exceedance	% of Action Level Exceedance	Limit Level Exceedance	% of Limit Level Exceedance
Air Quality	60	0	0	0	0
Noise	20	0	0	0	0
Water	84	0	0	0	0

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

Table 4-7 Summary of Project-Related Exceedances

5 WASTE MANAGEMENT

5.1.1 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 (m^3)	232.4
Inert C&D Material Reused in other Contracts (m^3)	Nil
Metals Generated (kg)	Nil
Paper / Cardboard Packaging (kg)	200
Plastics (kg)	Nil
Chemical Waste (kg)	Nil
General Waste Disposed of to NENT Landfill (m^3)	12.0

Table 5-1 Waste Generated in October 2008

6 NON-COMPLIANCE AND DEFICIENCY

6.1 Site Audit by ET

6.1.1 ET has carried out two 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
3 October 2008	1. Surface runoff was observed without properly diverted to wastewater treatment facility at Outfall. 2. Open stockpiles at Outfall were observed without tarpaulin sheet. 3. Site untidiness was observed at Outfall. 4. Stagnant water was observed at Outfall. 5. Silt was observed deposited in U-channel at Outfall. 6. Lubricating oil drums were observed without drip trays at Intake 3. 7. Protected trees were observed surrounded by construction materials. 8. General refuse was observed accumulated at Intake 3.	1. The Contractor was requested to divert waster water to wastewater treatment facility. 2. The Contractor was requested to cover the stockpiles properly. 3. The Contractor was requested to provide good house keeping. 4. The Contractor was requested to remove stagnant water. 5. The Contractor was requested to remove the deposited silt to remove U-channel blockage. 6. Provision of drip tray was requested to remove oil leakage. 7. Construction materials were required to be placed away protected trees. 8. The Contractor was requested to dispose general refuse regularly.	1. No surface runoff was observed at Outfall in the site inspection on 7 November. (Closed) 2. During site inspection on 17 October, provision of tarpaulin sheet cover was observed. (Closed) 3. During site inspection on 7 November, house keeping work was implemented at Outfall. (Closed) 4. No stagnant water was observed in the site inspection on 17 October. (Closed) 5. During site inspection on 17 October, the silt deposited in U-channel was removed. (Closed) 6. No oil drum was observed in the site inspection on 17 October. (Closed) 7. Construction materials had been removed in the site inspection on 17 October. (Closed) 8. No general refuse was observed accumulated in the site inspection on 17 October. (Closed)
17 October 2008	1. Stagnant water was observed at Intake 3. 2. Intake 1 was observed without proper house keeping.	1. The Contractor was requested to prevent accumulation of stagnant water. 2. The Contractor was requested to regularly maintain site tidiness.	1. During site inspection on 7 November, no stagnant water was observed at Intake 3. (Closed) 2. During site inspection on 7 November, Intake 1 was observed site tidiness. (Closed)

Table 6-1 Site Inspection by ET

7 COMPLAINT

7.1.1 A complaint hotline at **9850 3241** of the Contractor has been established for the Project.

7.1.2 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

8.1.1 No summons and successful prosecution was received during the reporting month.

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

Notification of Summons		Successful Prosecution	
October 08	Cumulative	October 08	Cumulative
0	0	0	0

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

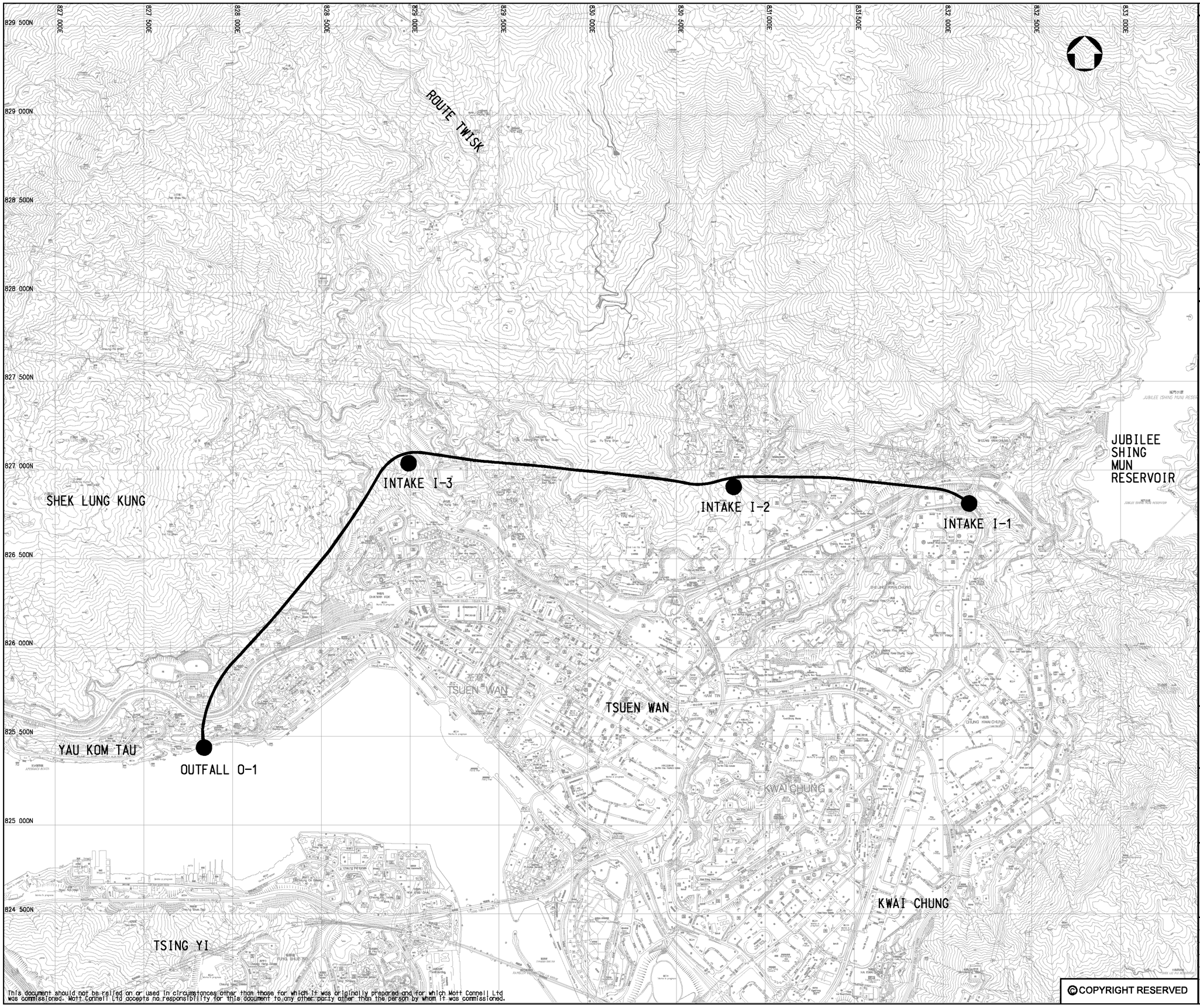
9 FUTURE KEY ISSUE

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

- Site clearance at I-1, I-2, I-3 and Outfall;
- Hoarding & fencing erection at I-3 and Outfall;
- Trees transplanting at I-1, I-3 and Outfall;
- Slope stabilization at Outfall;
- Soil nailing at I-3;
- Pipe pile at I-1;
- Relocation of verified boulder at I-1 and Outfall;
- Formation of access road at Outfall; and
- Pre-bore H-piling at I-2.

Appendix A

Site Map and Works Area



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Key Plan:

Notes:

1. CO-ORDINATES REFER TO HONG KONG METRIC GRID (1980).
2. ALL LEVELS ARE IN METRES ABOVE PRINCIPAL DATUM (P.D.).
3. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.

Key to symbols

LEGENDS :

TUNNEL ALIGNMENT

INTAKE/OUTFALL STRUCTURES

Rev	Date	Drawn	Description	Ch'k'd	App'd
B1	MAR 05	EL	FOR EM&A MANUAL	MT	

Client

The Government of the Hong Kong Special Administrative Region
Drainage Services Department

Consulting Engineers

Mott Connell Ltd.

in Association with

MVA Hong Kong Ltd
WL/Delft Hydraulics Ltd
EDAW Earth Asia Ltd
Chesterton Petty Ltd
Environmental Resources Management

Project

Drainage Improvement in Tsuen Wan and Kwai Chung - Tsuen Wan Drainage Tunnel - Investigation

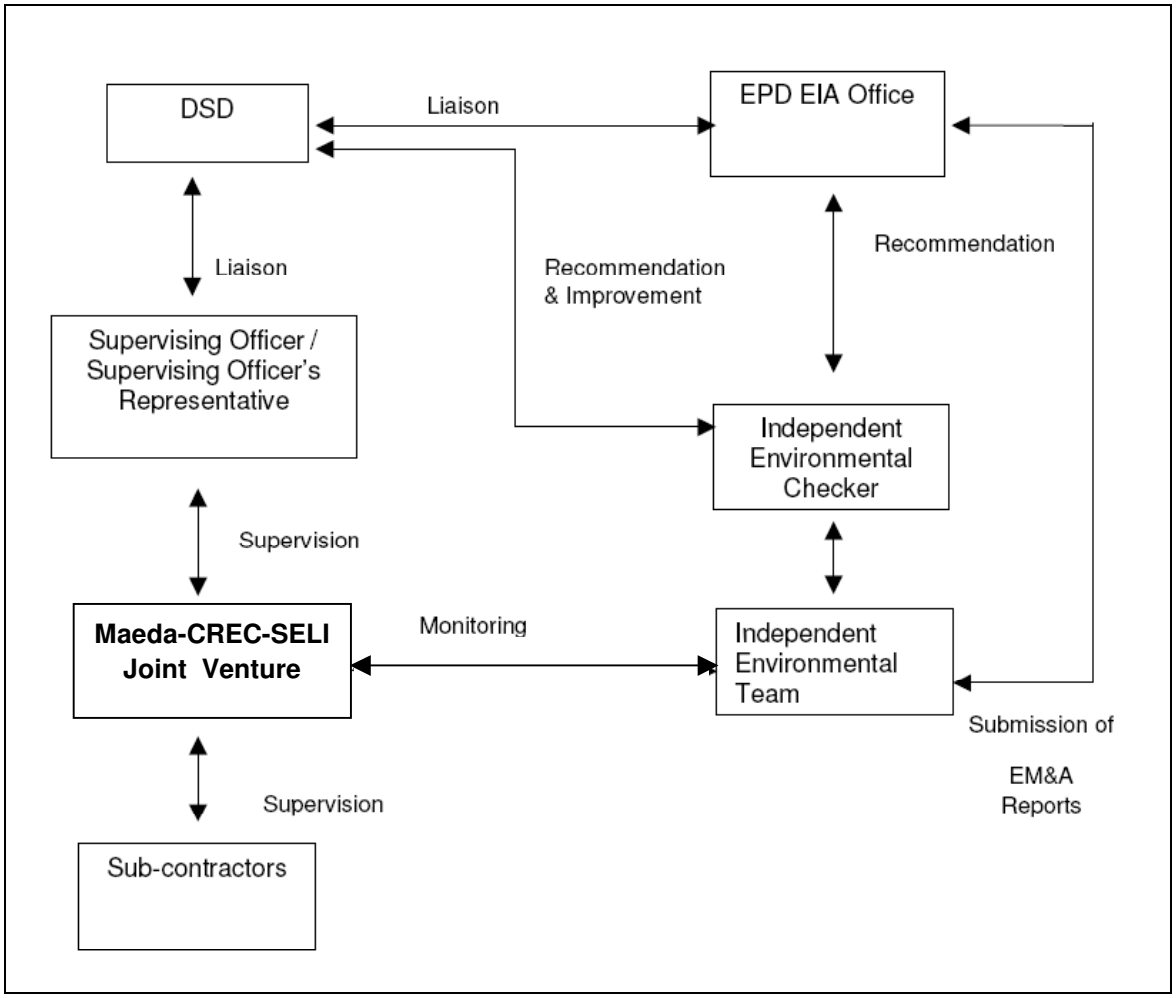
Title

TUNNEL ALIGNMENT AND SURROUNDING AREA

Designed	CF		Eng.Chk.	MT	
Drawn	HL	HL	Approved	TMC	
Dwg.Chk.	KN		Scale		
Project	204417				Status
CAD file	J:\204417\DRAWING\FIGURE EM&A MANUAL\FIGURE1.1.dgn				
Drawing No.	FIGURE 1.1				Rev 01

Appendix B

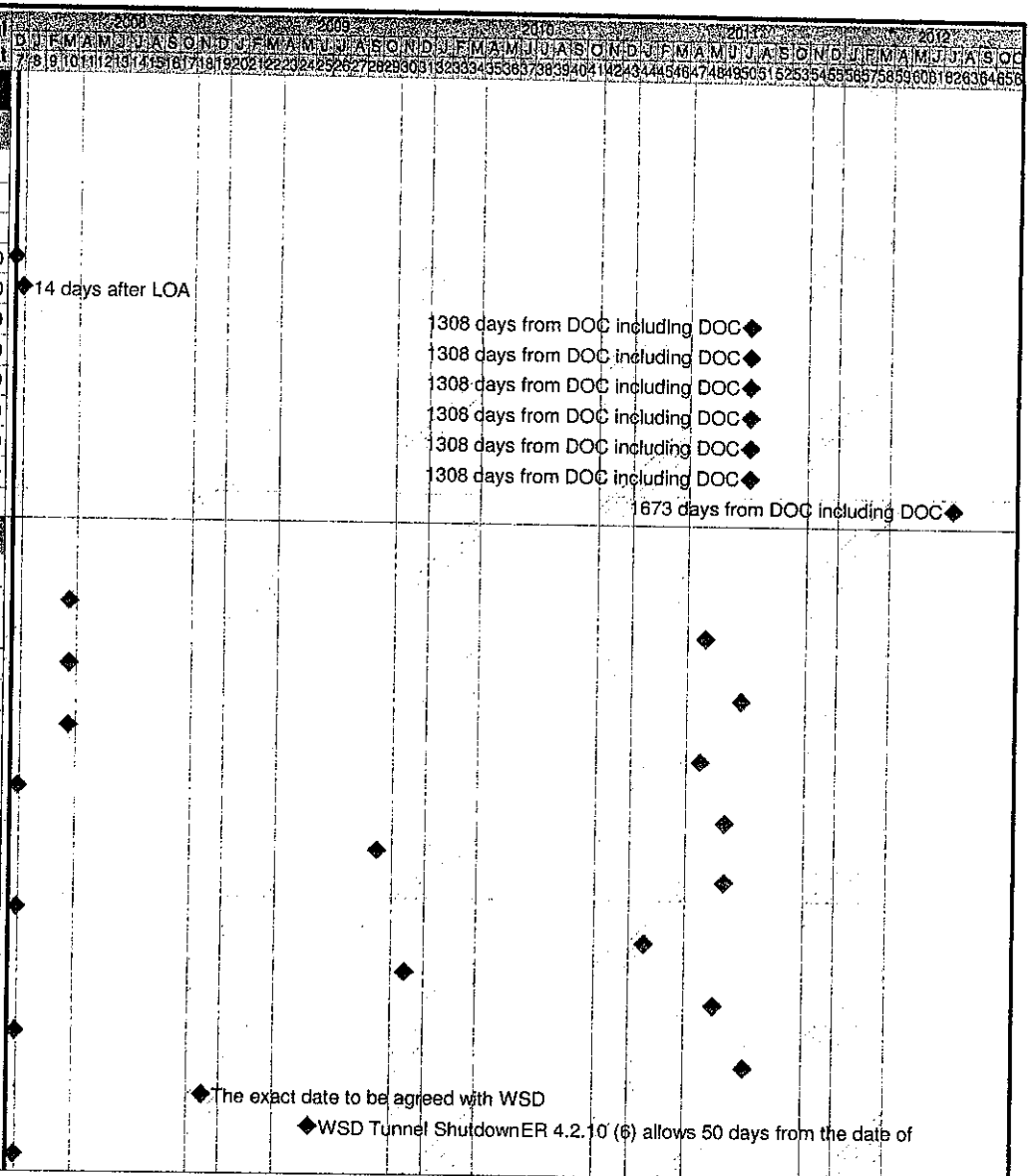
Organization Chart


DSD
Liaison
EPD EIA Office
Liaison
Recommendation
& Improvement
Recommendation
Supervising Officer /
Supervising Officer's
Representative
Independent
Environmental
Checker
Supervision
Maeda-CREC-SELI
Joint Venture
Monitoring
Independent
Environmental
Team
Submission of
EM&A
Reports
Supervision
Sub-contractors

Appendix C

Construction Programme

ID	Activity Description	Orig Dur	Early Start	Early Finish	Cal ID	Total Float
Preliminaries						
Project Dates						
01R0000002	Tender Issue Date	0	26JUN07A		2	
01R0000004	Tender Closing Date	0	05OCT07A		2	
01R0000006	Letter of Acceptance Issued Date	0	14DEC07		2	0
01R0000008	Contract Commencement Date	0	28DEC07		2	0
01R0000010	Completion of Section 1 of the Works	0		27JUL11*	2	0
01R0000012	Completion of Section 2 of the Works	0		27JUL11*	2	0
01R0000014	Completion of Section 3 of the Works	0		27JUL11*	2	0
01R0000016	Completion of Section 4 of the Works	0		27JUL11*	2	0
01R0000018	Completion of Section 5 of the Works	0		27JUL11*	2	0
01R0000020	Completion of Section 6 of the Works	0		27JUL11*	2	0
01R0000022	Completion of Section 7 of the Works	0		26JUL12*	2	0
Possession of Area						
01R00A0102	Possession Portion A - 90d of DOC	0	26MAR08		2	0
01R00A0104	Handover of Portion A	0		13MAY11	2	75
01R00B0102	Possession of Portion B - 90d of DOC	0	26MAR08		2	0
01R00B0104	Handover of Portion B	0		16JUL11	2	11
01R00C0102	Possession of Portion C - 90d of DOC	0	26MAR08		2	0
01R00C0104	Handover of Portion C	0		05MAY11	2	83
01R00D0102	Possession of Portion D on DOC	0	28DEC07		2	0
01R00D0104	Handover of Portion D	0		17JUN11	2	40
01R00E0102	Possession of Portion E - 650d of DOC	0	07OCT09		2	0
01R00E0104	Handover of Portion E	0		17JUN11	2	40
01R00F0102	Possession of Portion F on DOC	0	28DEC07		2	0
01R00F0104	Handover of Portion F	0		28JAN11	2	180
01R00G0102	Possession of Portion G - 700d of DOC	0	26NOV09		2	0
01R00G0104	Handover of Portion G	0		02JUN11	2	55
01R00I0102	Possession of Portion I on DOC	0	28DEC07		2	0
01R00I0104	Handover of Portion I	0		27JUL11	2	0
01R00J0102	Possession of Portion J	0	01DEC08*		2	0
01R00J0104	Handover of Portion J	0		12JUN09*	2	0
01R0H10102	Possession of Portion H1 on DOC	0	28DEC07		2	0



Start Date	29JUN07
Finish Date	24SEP12
Data Date	14DEC07
Run Date	13FEB08 17:51

Early Bar
Progress Bar
Critical Activity

TWD1

Sheet 1 of 42

Maeda-CREC-SELI JV
CONTRACT NO. DC/2007/12
Design and Construction of
Tsuen Wan Drainage Tunnel
Draft Works Programme

Draft Works Programme

Date	Revision	Checked	Approved
13FEB08	Revision 1		

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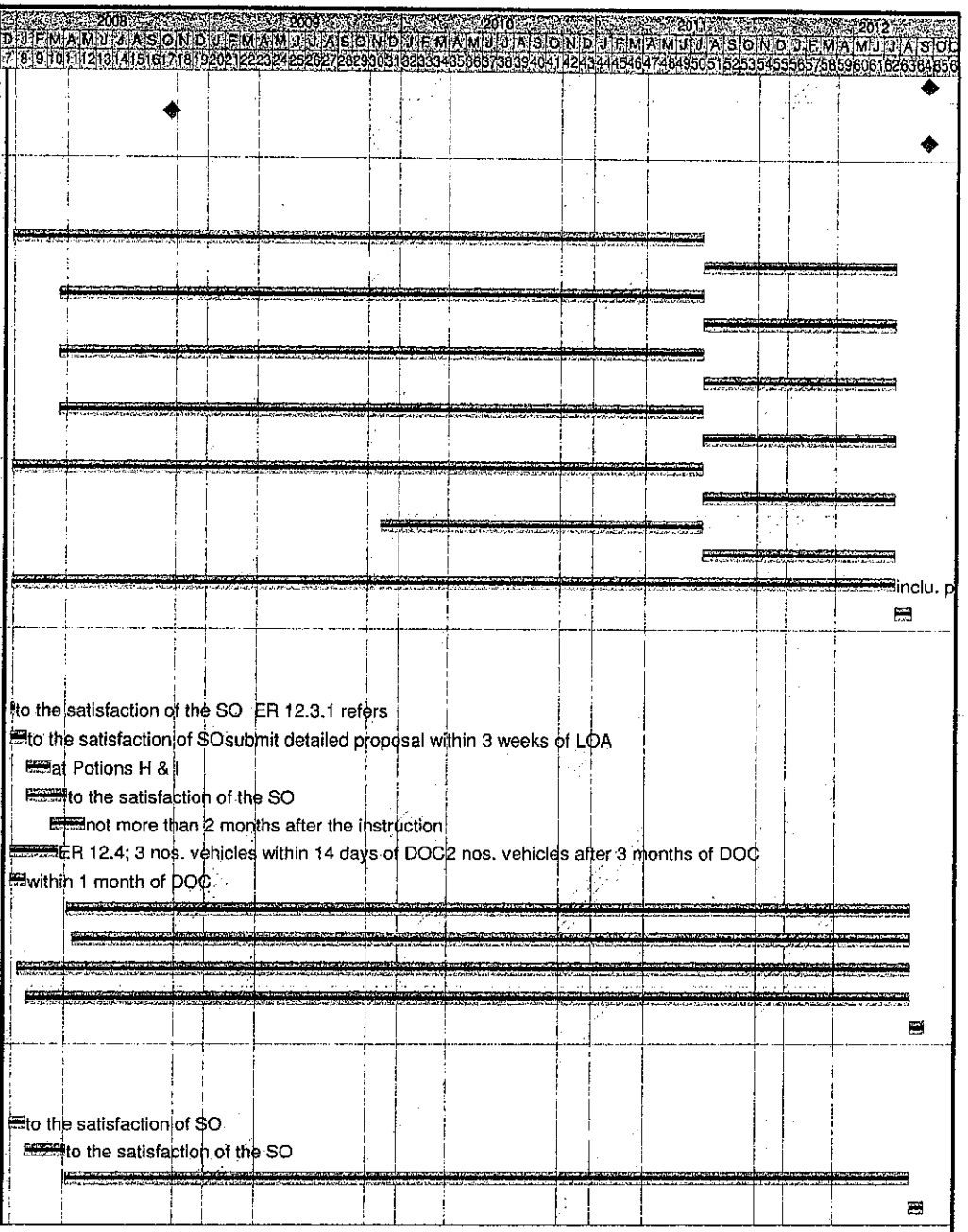
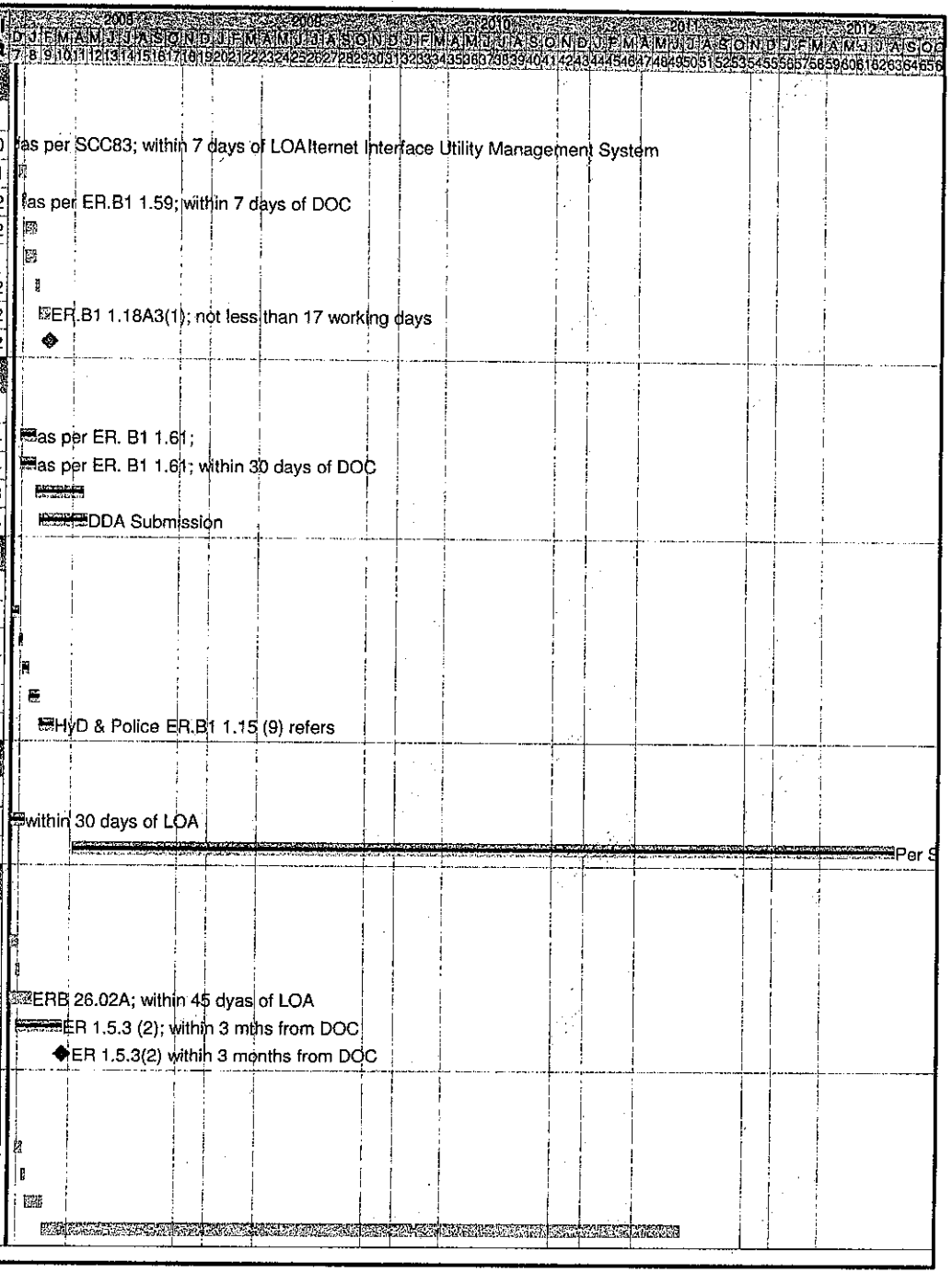
ID	Activity Description	Orig Dur	Early Start	Early Finish	Cal ID	Total Float
01R0H10104	Handover of Portion H1	0		24SEP12	2	0
01R0H20102	Possession of Portion H2 - 300d of DOC	0	22OCT08		2	0
01R0H20104	Handover of Portion H2	0		24SEP12	2	0
Section of Works - DOP to Completion						
01R1000202	S1-Works in Portions A to F except works in S2-7	1,308	28DEC07	27JUL11	2	0
01R1000204	S1-Maintenance Period (365 days)	365	28JUL11	26JUL12	2	0
01R20A0206	S2-Slope Stabilization works within Portion A	1,218	26MAR08	26JUL11	2	0
01R20A0208	S2-Maintenance Period (365 days)	365	27JUL11	25JUL12	2	0
01R30B0210	S3-Slope Stabilization works within Portion B	1,218	26MAR08	26JUL11	2	0
01R30B0212	S3-Maintenance Period (365 days)	365	27JUL11	25JUL12	2	0
01R40C0214	S4-Slope Stabilization works within Portion C	1,218	26MAR08	26JUL11	2	0
01R40C0216	S4-Maintenance Period (365 days)	365	27JUL11	25JUL12	2	0
01R50D0218	S5-Slope Stabilization works within Portion D	1,308	28DEC07	27JUL11	2	0
01R50D0220	S5-Maintenance Period (365 days)	365	28JUL11	26JUL12	2	0
01R60G0222	S6-Works within Portion G	608	26NOV09	26JUL11	2	0
01R60G0224	S6-Maintenance Period (365 days)	365	27JUL11	25JUL12	2	0
01R7000226	S7-Ladscape softworks & establishment works	1,673	28DEC07	26JUL12	2	0
01R7000228	S7-Maintenance Period (30 days)	30	27JUL12	25AUG12	2	0
Facilities for the SO as per ER12						
01R0000302	Provide temporary accommodation	7	28DEC07	03JAN08	2	1
01R0000304	Design the SO's principle office	30	28DEC07	26JAN08	2	1
01R0000305	Erect Hoarding/Signboard/Gate/Fencing	35	28JAN08	11MAR08	1	0
01R0000306	Erect SO's principle office in Portion H1/H2	60	28JAN08	14APR08	1	0
01R0000308	Provide secondary offices, directed by SO	64	14MAR08	16MAY08	2	0
01R0000310	Provide transport for the SO as per App. ER,M	90	28DEC07	26MAR08	2	0
01R0000311	Provide survey equipments as per App. ER,M	30	28DEC07	26JAN08	2	0
01R0000314	Maintain & Service the Principle Office	1,594	15APR08	25AUG12	2	0
01R0000316	Maintain & Service the Secondary Office	1,585	24APR08	25AUG12	2	0
01R0000318	Maintain & Service the transportation	1,688	12JAN08	25AUG12	2	0
01R0000319	Maintain & Service the survey equipments	1,673	27JAN08	25AUG12	2	0
01R0000320	Demolish & removal of Principle Office	30	26AUG12	24SEP12	2	0
Contractor's Accommodation as per ER B						
01R0001402	Design Contractor's main office	30	28DEC07	26JAN08	2	1
01R0001404	Erect Contractor's main office in Portion H1/H2	60	28JAN08	14APR08	1	0
01R0001406	Maintain & Service the Contractor's office	1,594	15APR08	25AUG12	2	0
01R0001408	Demolish & removal of Contractor's main office	30	26AUG12	24SEP12	2	0

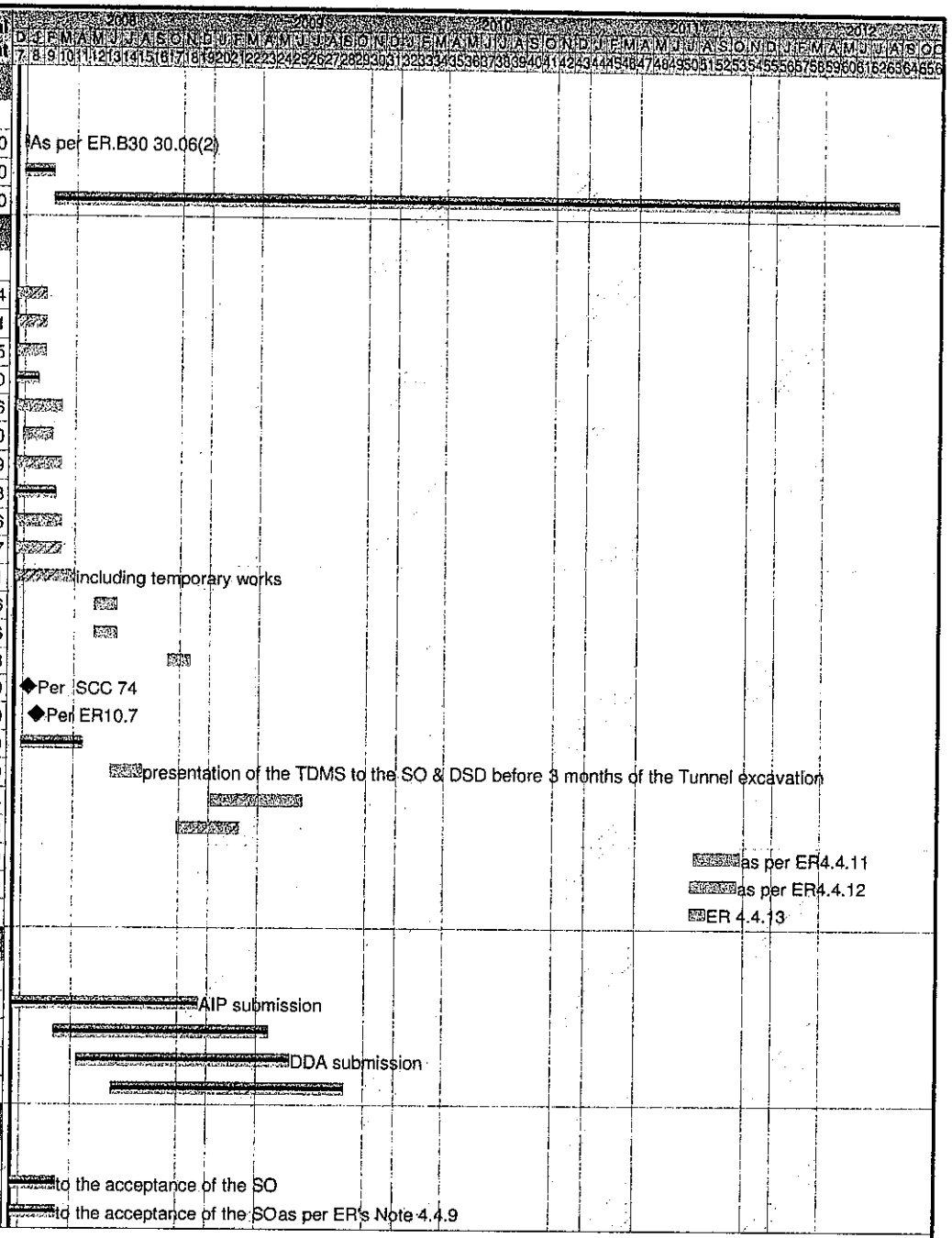


ID	Activity Description	Orig Dur	Early Start	Early Finish	Cal. ID	Total Float	
Works Programme & Monthly Report as per SCC 27							
01R0000502	Prepare/Submit draft Works Programme	7	14DEC07	20DEC07	2	0	
01R0000504	SO's review/comment on draft Works Programme	14	21DEC07	03JAN08	2	0	
01R0000506	Prepare/Submit 1st 3-Month Rolling Programme	14	14DEC07	27DEC07	2	7	
01R0000508	Submit Detailed Works Programme	7	04JAN08	10JAN08	2	0	
01R0000510	SO's Approval of Works Programme	7	11JAN08	17JAN08	2	0	
01R0000512	Monthly Update for all Programme	1,682	18JAN08	25AUG12	2	0	
01R0000514	Contractor's Monthly Progress Report	1,678	22JAN08	25AUG12	2	0	to be
Safety Plan as per SCC 35							
01R0000602	Submit draft Safety Plan	14	14DEC07	27DEC07	2	0	within 14 days of LOA
01R0000604	Hold an ad hoc meeting with RE on Safety Plan	7	28DEC07	03JAN08	2	7	within 7 days from the submission of DSP
01R0000606	Submit 6 copies of the Safety Plan	35	14DEC07	17JAN08	2	0	within 35 days of LOA
01R0000608	Submit updated safety orgainiza. chart monthly	1,682	18JAN08	25AUG12	2	0	
17R0000602	Fulfill all relevant safety obligation	1,703	28DEC07	25AUG12	2	0	
Contractor's All Insurances							
01R0000704	Submit documents for all insurances are effected	21	14DEC07	03JAN08	2	0	as per SCC9, SCC10 & SCC45
Quality System as per ER 9.3							
01R0000802	Appoint a Quality Manager	14	28DEC07	10JAN08	2	0	as per SCC 74 within 14 days of DOC
01R0000804	Submit proposed Quality System for SO's consent	28	14DEC07	10JAN08	2	0	within 28 days of LOA
01R0000806	Submit QSSP for approval of the SO	28	28DEC07	24JAN08	2	0	within 28 days of DOC
01R0000808	Maintain & update Quality System	1,675	25JAN08	25AUG12	2	0	
Environment							
01R0000902	Nominate Environmental Officer	14	14DEC07	27DEC07	2	0	as per ER B.1 Clause 1.74A1(2)
01R0000903	Establish a billing account for disposal	21	14DEC07	03JAN08	2	0	per Notes to Tenderer (AA)
01R0000904	Submit draft EMP	21	14DEC07	03JAN08	2	0	SCC69, within 21 days of LOA
01R0000906	Revise draft EMP within 7 days of SO's notice	14	04JAN08	17JAN08	2	0	as per SCC69
01R0000908	Submit final version of EMP	45	14DEC07	27JAN08	2	0	as per SCC69, within 45 days of LOA
01R0000910	Review/update/submit EMP monthly	1,642	28JAN08	26JUL12	2	0	
01R0000912	Employ IET	21	14DEC07	03JAN08	2	0	to the approval of the SO
01R0000914	Submit Baseline Monitoring Plan	21	28DEC07	17JAN08	2	0	for approval of the SO & EPD
01R0000915	Seek for EPD's Agreement on WQML & schedule	21	18JAN08	07FEB08	2	0	
01R0000916	Carry out baseline monitoring	37	31JAN08	07MAR08	2	0	
01R0000918	Prepare/submit reports for baseline monitoring	20	27FEB08	17MAR08	2	0	for approval of the SO
01R0000920	Impact monitoring & reporting	1,592	18MAR08	26JUL12	2	0	
17R0000902	Fulfill all relevant environmental obligation	1,673	28DEC07	26JUL12	2	0	

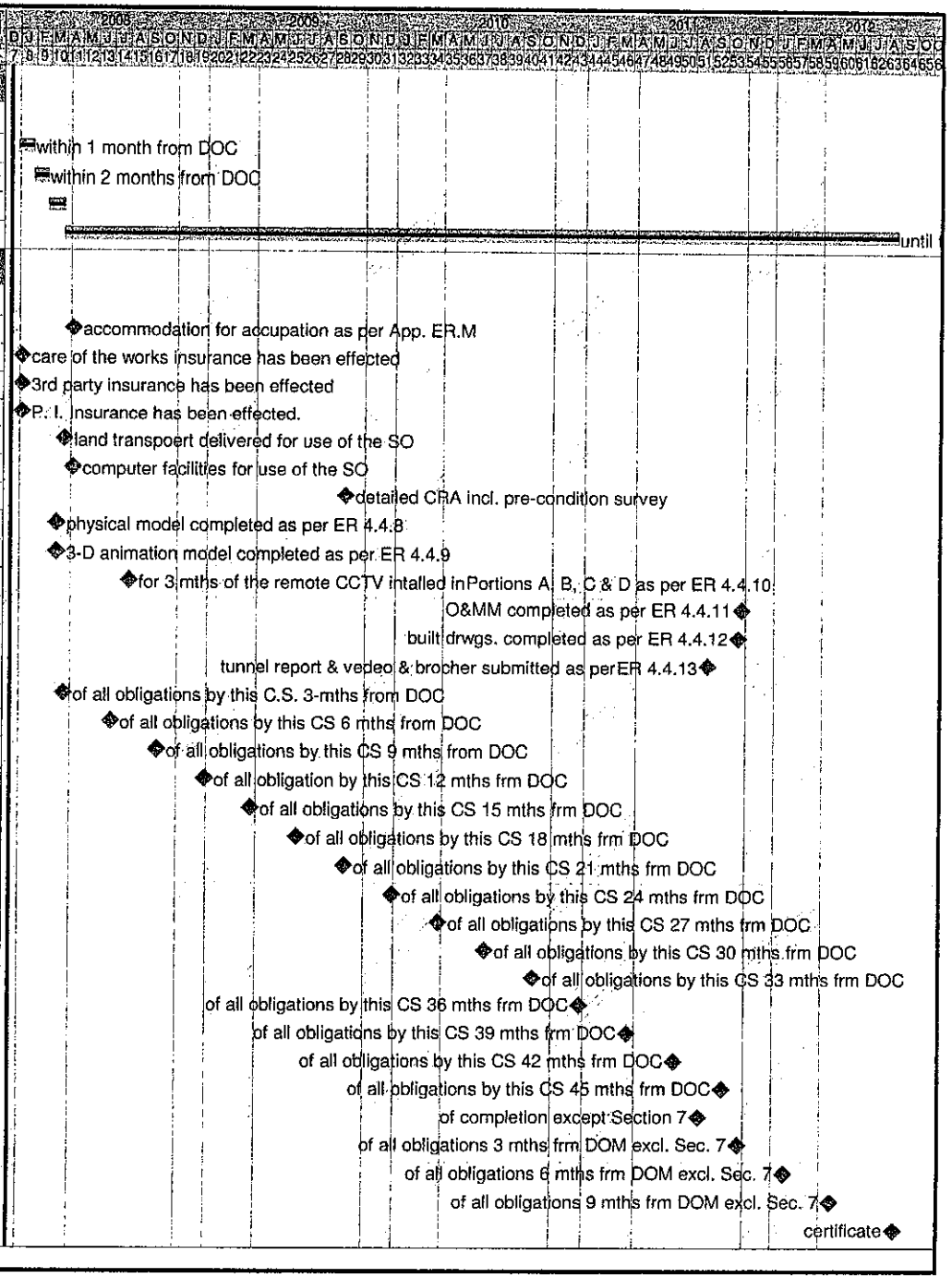
ID	Activity Description	Orig Dur	Early Start	Early Finish	Cal ID	Total Float
Excavation Permit/Utilities per SCC 54 & SCC 83						
01R0001002	Nominate IIUMS co-ordinator	7	14DEC07	20DEC07	2	0
01R0001004	SO approve IIUMS co-ordinator	14	21DEC07	03JAN08	2	21
01R0001006	Submit brand name of UGS detection equipment	7	28DEC07	03JAN08	2	22
01R0001008	Utilities detection & report to the SO	21	04JAN08	24JAN08	2	22
01R0001010	Liaison with UUs prior to apply XP	21	04JAN08	24JAN08	2	21
01R0001012	Application of XP through the SO/DSD	7	25JAN08	31JAN08	2	22
01R0001014	Process XP Application by HYD & others	20	01FEB08	20FEB08	2	22
01R0001016	Issue of XP	0		20FEB08	2	22
Pre-construction Condition Survey						
01R0001102	Appoint a Aualified Structural Engineer	30	28DEC07	26JAN08	2	4
01R0001104	Submit nos. & extent of the affected EBS	30	28DEC07	26JAN08	2	4
01R0001106	Carry out pre-construction condition survey	72	28JAN08	28APR08	1	3
01R0001108	Prepare/submit reports for pre-construction C.S.	72	05FEB08	07MAY08	1	3
Traffic						
01R0001202	Appoint Traffic Consultant/Traffic Engineer	14	14DEC07	27DEC07	2	7
01R0001204	Eng's Approval of Traffic Consultant	7	28DEC07	03JAN08	2	7
01R0001206	Prepare/submit TTA Schemes (ingress & egress)	14	04JAN08	17JAN08	2	7
01R0001216	Obtain endorsement of TTA schemes from TMLG	21	18JAN08	07FEB08	2	7
01R0001234	Approval of TTA schemes by the Authorities	28	08FEB08	06MAR08	2	7
Management of Sub-contractors as per SCC 44						
01R0001302	Submit a Sub-contractor Management Plan	30	14DEC07	12JAN08	2	0
01R0001304	Submit Quarterly the Updated SMP	1,597	12APR08	25AUG12	2	0
Trees						
01R0001502	Appoint Landscape Specialist Contractor	14	14DEC07	27DEC07	2	83
01R0001504	SO's Approval of Landscape Contractor	7	28DEC07	03JAN08	2	83
01R0001506	Nominate competent person to oversee tree works	45	14DEC07	27JAN08	2	59
01R0001510	Obtain Tree Removal Permit by Others	90	28DEC07	26MAR08	2	0
01R0001512	Remove / Transplant Trees start	0	27MAR08		2	0
Survey						
01R0001602	Appoint Surveyors	14	28DEC07	10JAN08	2	17
01R0001604	SO's Approval of Surveyor	7	11JAN08	17JAN08	2	17
01R0001608	Initial Survey	28	18JAN08	22FEB08	1	14
01R0001610	Maintain & carry out survey works	1,000	23FEB08	11JUL11	1	14



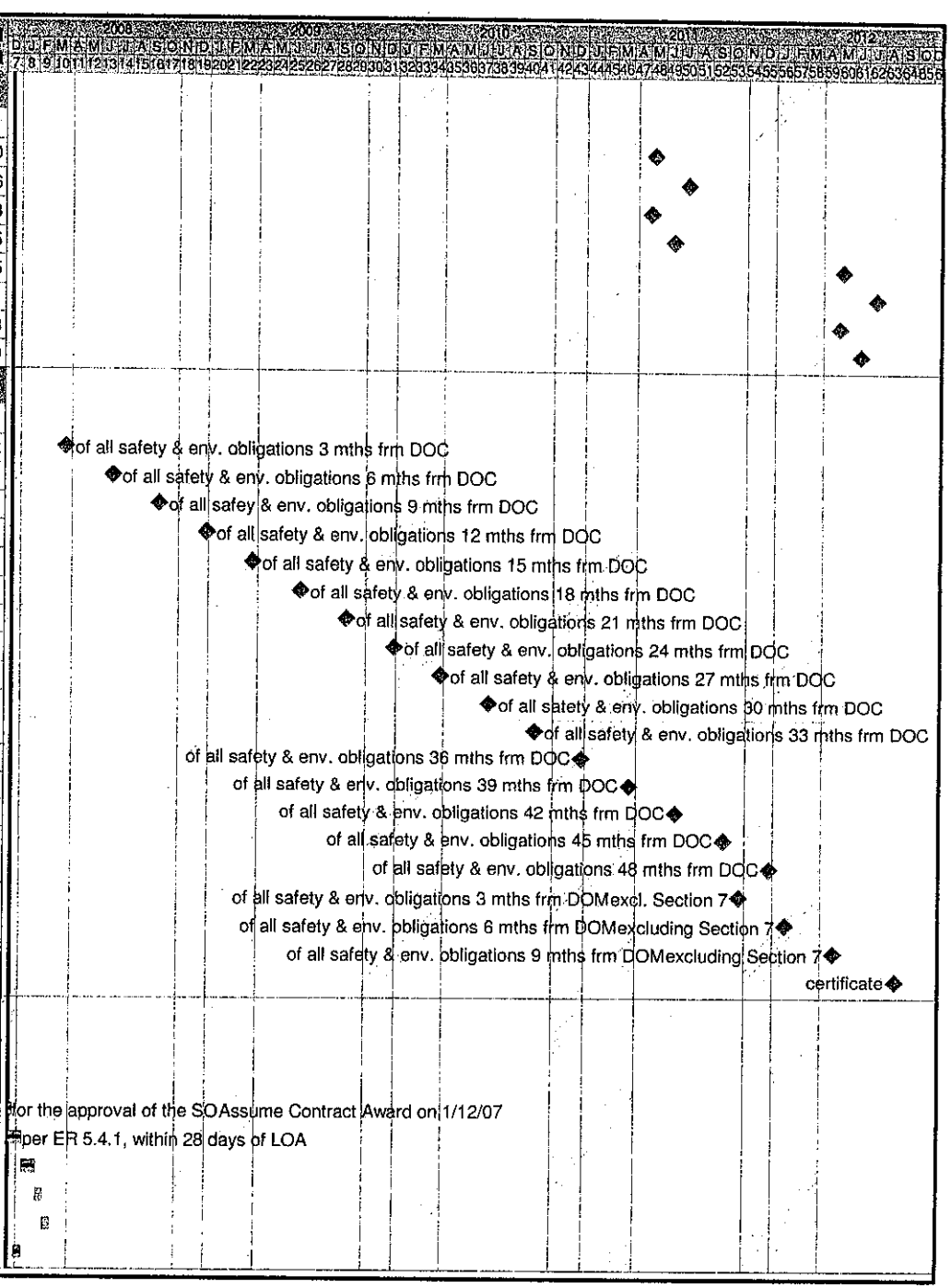
ID	Activity Description	Orig Dur	Early Start	Early Finish	Cal ID	Total Float
Smart Card System as per ER B.30						
01R0001802	Submit Smart Card Sys for SO's Approval	7	28DEC07	03JAN08	2	0
01R0001804	Install & start Operating Smart-Card System	60	28DEC07	25FEB08	2	0
01R0001806	Operate & Maintain Smart-Card System	1,643	26FEB08	25AUG12	2	0
Others						
01R0001902	Procurement of G.I./Grouting Sub-contractor	60	14DEC07	11FEB08	2	74
01R0001904	Procurement of Spoil Disposal Sub-contractor	60	14DEC07	11FEB08	2	31
01R0001906	Procurement of Earthwork Sub-contractor	60	14DEC07	11FEB08	2	35
01R0001908	Procurement of Concrete Supplier	45	14DEC07	27JAN08	2	0
01R0001910	Procurement of Re-bar Supplier	90	14DEC07	12MAR08	2	506
01R0001912	Procurement of Soil Nailing Sub-contractor	60	28DEC07	25FEB08	2	30
01R0001914	Procurement of Piling Sub-contractor	90	14DEC07	12MAR08	2	119
01R0001916	Procurement of Pre-cast Lining Sub-contractor	80	14DEC07	02MAR08	2	8
01R0001918	Procurement of R.C. Works Sub-contractor	90	14DEC07	12MAR08	2	506
01R0001920	Procurement of Drainage works Sub-contractor	90	14DEC07	12MAR08	2	837
01R0001922	Procurement of Steelworks Sub-contractor	90	14DEC07	08APR08	1	51
01R0001924	Procurement of Comm. Syst. Sub-contractor	45	17MAY08	30JUN08	2	466
01R0001925	Procurement of Flow Monit. Syst. Sub-contractor	45	17MAY08	30JUN08	2	816
01R0001926	Procurement of Pipe Jacking Sub-contractor	45	09OCT08	22NOV08	2	708
01R0001928	Submit Contractor's Management Team	0		10JAN08	2	0
01R0001930	Submit Photographer for Monthly Progress Photo	0	27JAN08		2	0
01R0001932	Install Project Signboards at Potions A,B,C & D	120	28DEC07	25APR08	2	0
01R0001934	Develop/implement TDMS	60	22JUN08	20AUG08	2	30
01R0001936	Procurement & delivery of Communication System	180	03JAN09	01JUL09	2	464
01R0001938	Procurement/delivery of Flow Monitoring Devices	120	30OCT08	26FEB09	2	818
01R0001940	Prepare/submit Operation & Maintenance Manual	90	02AUG11	30OCT11	2	330
01R0001942	Prepare/submit As-built Drawings	90	28JUL11	25OCT11	2	335
01R0001944	Produce 2 documentary video for tunnel	30	28JUL11	26AUG11	2	395
Construction Risk Assessment (CRA) as per ER 7						
01R0002202	Prepare/submit preliminary CRA	366	14DEC07	13DEC08	2	9
01R0002204	SO's acceptance of preliminary CRA	420	08MAR08	01MAY09	2	9
01R0002206	Prepare/submit detailed CRA	418	20APR08	11JUN09	2	9
01R0002208	SO's acceptance of detailed CRA	455	28JUN08	25SEP09	2	9
Physical Models & Other Material Display						
01R0002302	Prepare/submit a physical model as per ER 4.4.8	90	14DEC07	12MAR08	2	0
01R0002304	Prepare/submit a 3-D animation model	90	14DEC07	12MAR08	2	0



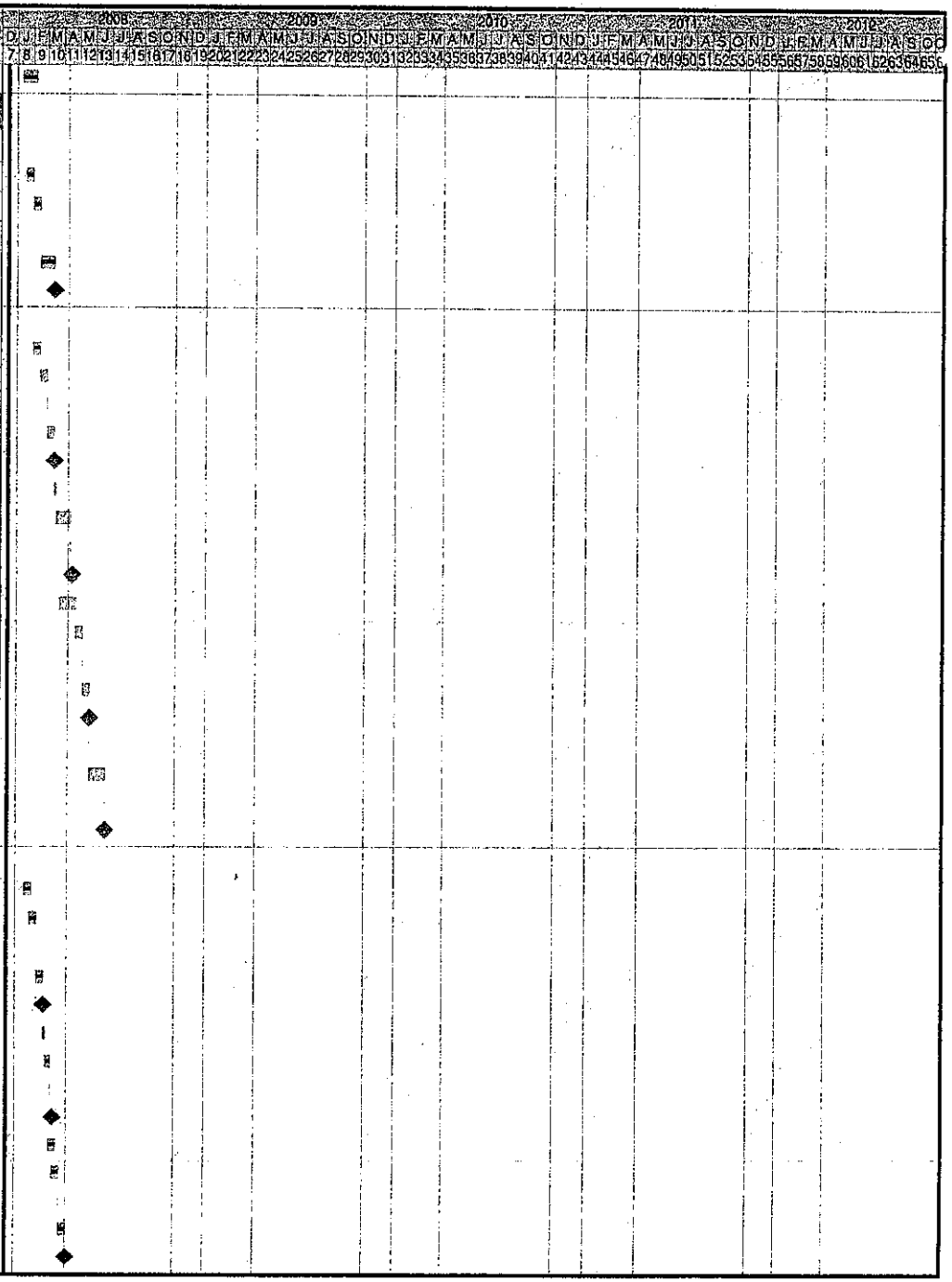
ID	Activity Description	Orig Dur	Early Start	Early Finish	Cal ID	Total Float
Internet Website as per ER 4.4.7						
01R0002402	Propose the design of web page	30	28DEC07	26JAN08	2	0
01R0002404	Produce the web page for approval of SO	30	27JAN08	25FEB08	2	0
01R0002406	SO's approval of web page	30	26FEB08	26MAR08	2	0
01R0002408	Submit updated web pages monthly	1,613	27MAR08	25AUG12	2	0
Schedule of Milestones for Cost Centre No. 1R						
01R0002501	1R 1; On provision of SO's Accommodation	0		14APR08	2	1,624
01R0002502	1R 2; On providing documents of effected CWI	0		03JAN08	2	1,726
01R0002503	1R 3; On providing documents of effected TPI	0		03JAN08	2	1,726
01R0002504	1R 4; On Pproviding documents of effected PII	0		03JAN08	2	1,726
01R0002505	1R 5; On delivery of all Land Transport for SO	0		26MAR08	2	1,643
01R0002506	1R 6; On install. of computer facilities for SO	0		14APR08	2	1,624
01R0002507	1R 7; On accept. of detailed CRA incl. PCS	0		25SEP09	2	1,095
01R0002508	1R 8; On acceptance of Physical Model by the SO	0		12MAR08	2	1,657
01R0002509	1R 9; On acceptance of 3-D Animation Model	0		12MAR08	2	1,657
01R0002510	1R 10; On satisf. operation of CCTV for 3 mth	0		31JUL08	2	1,516
01R0002511	1R 11; On acceptance of O&MM	0		30OCT11	2	330
01R0002512	1R 12; On acceptance of as-built drwgs.	0		25OCT11	2	335
01R0002513	1R 13; On acceptance of T.R/Video/Brouchure	0		26AUG11	2	395
01R0002514	1R 14; On complete all wks for 3 mth frm DOC	0		27MAR08	2	1,582
01R0002515	1R 15; On complete all wks for 6 mth frm DOC	0		26JUN08	2	1,491
01R0002516	1R 16; On complete all wks for 9 mth frm DOC	0		25SEP08	2	1,400
01R0002517	1R 17; On complete all wks for 12 mth frm DOC	0		26DEC08	2	1,308
01R0002518	1R 18; On complete all wks for 15 mth frm DOC	0		27MAR09	2	1,217
01R0002519	1R 19; On complete all wks for 18 mth frm DOC	0		26JUN09	2	1,126
01R0002520	1R 20; On complete all wks for 21 mth frm DOC	0		25SEP09	2	1,035
01R0002521	1R 21; On complete all wks for 24 mth frm DOC	0		26DEC09	2	943
01R0002522	1R 22; On complete all wks for 27 mth frm DOC	0		27MAR10	2	852
01R0002523	1R 23; On complete all wks for 30 mth frm DOC	0		26JUN10	2	761
01R0002524	1R 24; On complete all wks for 33 mth frm DOC	0		25SEP10	2	670
01R0002525	1R 25; On complete all wks for 36 mth frm DOC	0		26DEC10	2	578
01R0002526	1R 26; On complete all wks for 39 mth frm DOC	0		27MAR11	2	487
01R0002527	1R 27; On complete all wks for 42 mth frm DOC	0		26JUN11	2	396
01R0002528	1R 28; On complete all wks for 45 mth frm DOC	0		25SEP11	2	305
01R0002529	1R 29; On issuance of completion certificates	0		13AUG11	2	408
01R0002530	1R 30; On complete all wks for 3 mth frm CMP	0		26OCT11	2	334
01R0002531	1R 31; On complete all wks for 6 mth frm CMP	0		25JAN12	2	243
01R0002532	1R 32; On complete all wks for 9 mth frm CMP	0		25APR12	2	152
01R0002533	1R 33; On issuance of maintenance certificate	0		25AUG12	2	30



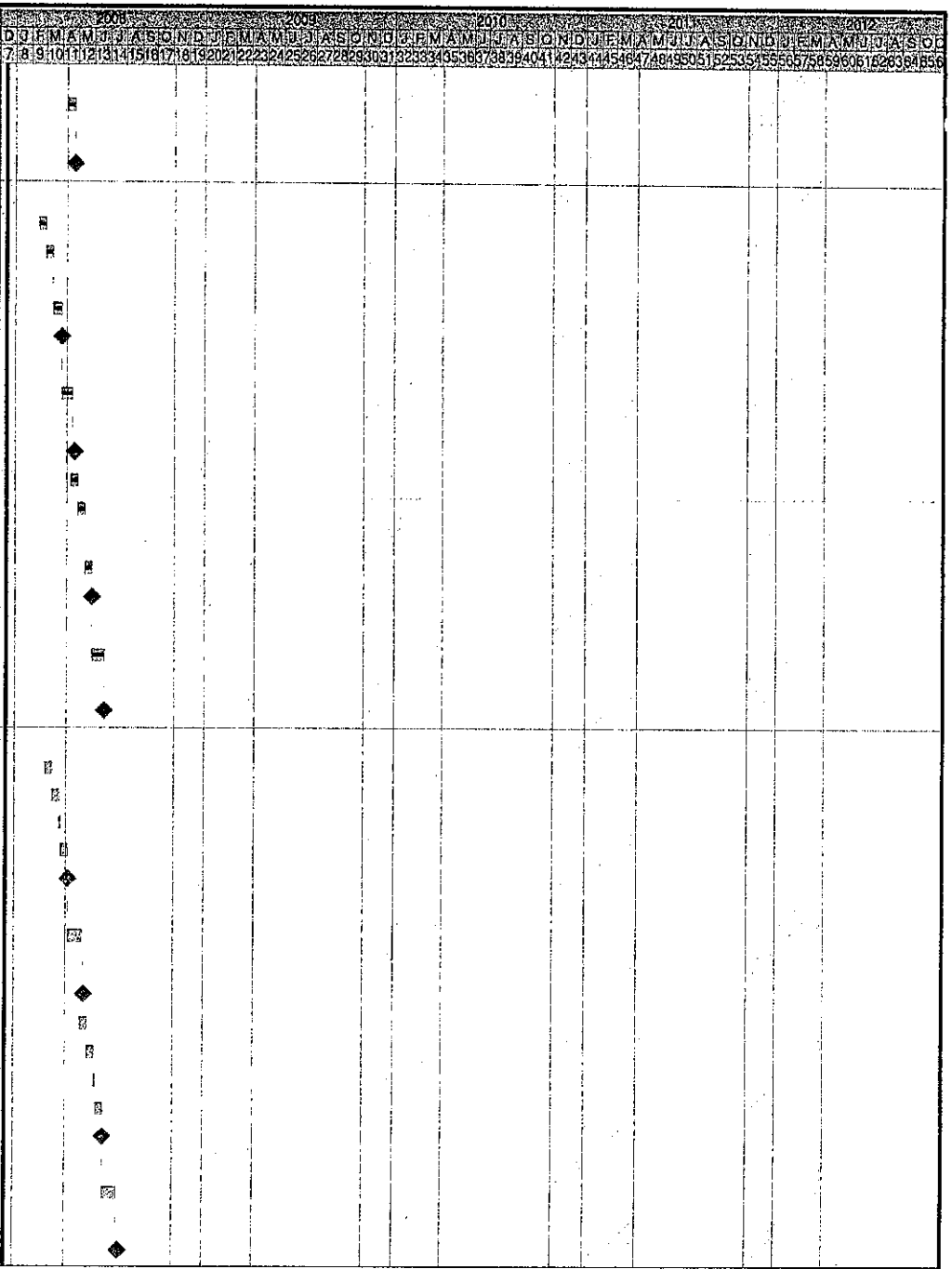
ID	Activity Description	Orig Dur	Early Start	Early Finish	Cal ID	Total Float
Schedule of Milestones for Cost Centre No. 16R						
16R7003001	16R 1; On completion of landscape wks; Portion A	0		13MAY11	2	500
16R7003002	16R 2; On completion of landscape wks; Portion B	0		16JUL11	2	436
16R7003003	16R 3; On completion of landscape wks; Portion C	0		05MAY11	2	508
16R7003004	16R 4; On completion of landscape wks; Portion D	0		17JUN11	2	465
16R7003005	16R 5; On completion of establish wks; Portion A	0		12MAY12	2	135
16R7003006	16R 6; On completion of establish wks; Portion B	0		15JUL12	2	71
16R7003007	16R 7; On completion of establish wks; Portion C	0		04MAY12	2	143
16R7003008	16R 8; On completion of establish wks; Portion D	0		16JUN12	2	100
Schedule of Milestones for Cost Centre No. 17R						
17R0003101	17R 1; On complet of all wks for 3 mth frm DOC	0		27MAR08	2	1,642
17R0003102	17R 2; On complet of all wks for 6 mth frm DOC	0		26JUN08	2	1,551
17R0003103	17R 3; On complet of all wks for 9 mth frm DOC	0		26SEP08	2	1,459
17R0003104	17R 4; On complet of all wks for 12 mth frm DOC	0		26DEC08	2	1,368
17R0003105	17R 5; On complet of all wks for 15 mth frm DOC	0		27MAR09	2	1,277
17R0003106	17R 6; On complet of all wks for 18 mth frm DOC	0		27JUN09	2	1,185
17R0003107	17R 7; On complet of all wks for 21 mth frm DOC	0		26SEP09	2	1,094
17R0003108	17R 8; On complet of all wks for 24 mth frm DOC	0		26DEC09	2	1,003
17R0003109	17R 9; On complet of all wks for 27 mth frm DOC	0		28MAR10	2	911
17R0003110	17R 10; On complet all wks for 30 mth frm DOC	0		27JUN10	2	820
17R0003111	17R 11; On complet all wks for 33 mth frm DOC	0		26SEP10	2	729
17R0003112	17R 12; On complet all wks for 36 mth frm DOC	0		26DEC10	2	638
17R0003113	17R 13; On complet all wks for 39 mth frm DOC	0		28MAR11	2	546
17R0003114	17R 14; On complet all wks for 42 mth frm DOC	0		27JUN11	2	455
17R0003115	17R 15; On complet all wks for 45 mth frm DOC	0		26SEP11	2	364
17R0003116	17R 16; On complet all wks for 48 mth frm DOC	0		26DEC11	2	273
17R0003117	17R 17; On complet of all wks for 3 mth frm CMP	0		26OCT11	2	334
17R0003118	17R 18; On complet of all wks for 6 mth frm CMP	0		25JAN12	2	243
17R0003119	17R 19; On complet of all wks for 9 mth frm CMP	0		26APR12	2	151
17R0003120	17R 20; On issuance of maintenance certificate	0		25AUG12	2	30
Design/Design Check for Permanent Works						
Preliminaries & Project Design Plan						
02L10D0102	Employ Independent Designer	7	14DEC07	20DEC07	2	2
02L10D0104	Prepare & submit Project Design Plan (PDP)	28	14DEC07	10JAN08	2	2
02L10D0106	SO's review & comment on PDP	28	11JAN08	07FEB08	2	2
02L10D0108	Provide further information of (PDP)	14	08FEB08	21FEB08	2	17
02L10D0110	SO approves PDP	14	22FEB08	06MAR08	2	17
02L10D0112	Employ Independent Design Checker	14	28DEC07	10JAN08	2	1



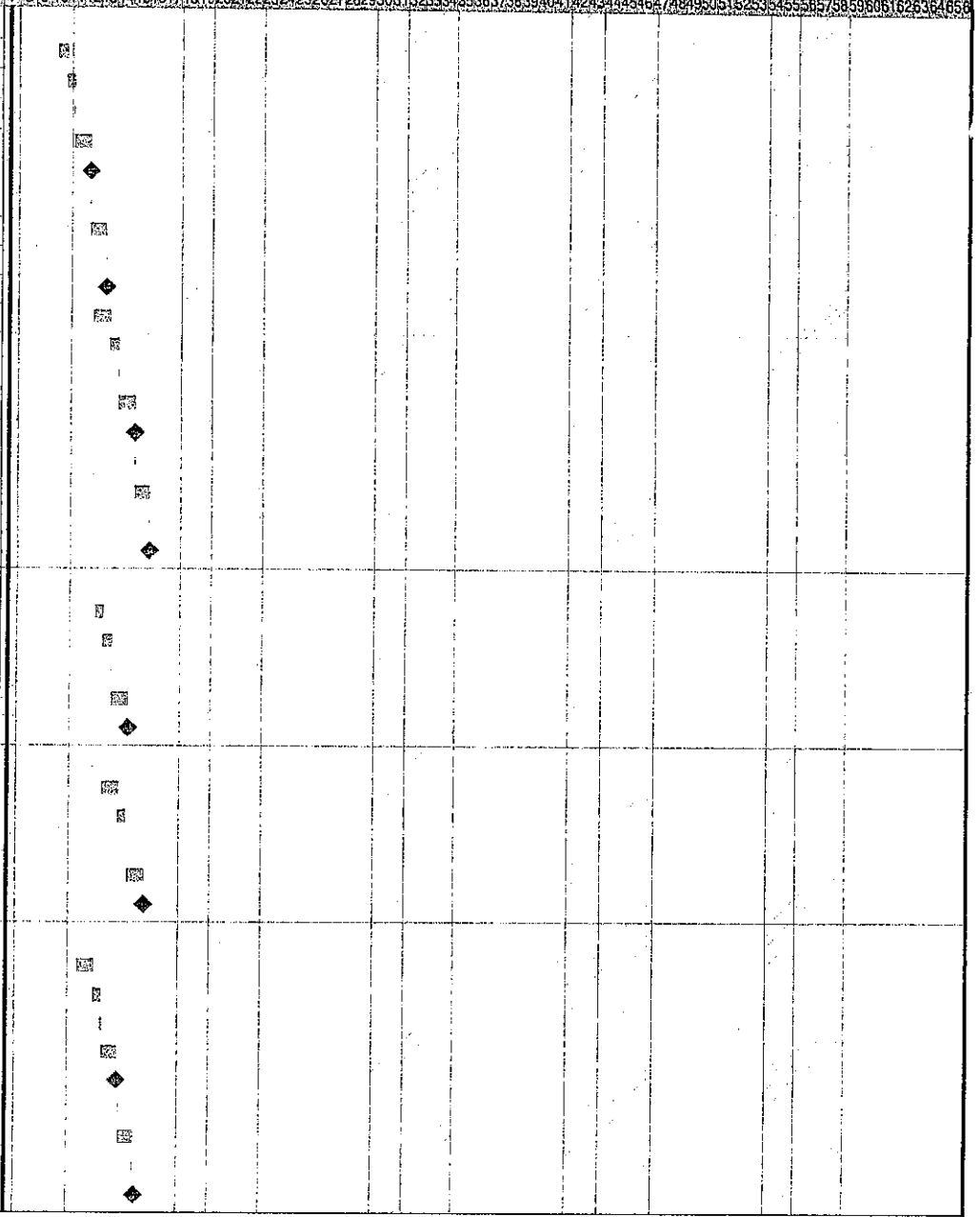
ID	Activity Description	Orig Dur	Early Start	Early Finish	Cal ID	Total Float
02L10D0114	Approval of Design Checker by the SO	28	11JAN08	07FEB08	2	1
Design Packages for Works in Portion D						
Temp. Access Rd Design at P. D; +14mPD to +69mPD						
02L1DD0102	Design preparation by the Designer	14	17JAN08	30JAN08	2	2
02L1DD0104	Design certification by the Design Checker	14	01FEB08	14FEB08	2	1
02L1DD0106	Design submission for the SO's approval	1	15FEB08	15FEB08	1	1
02L1DD0108	Design review by the SO	28	16FEB08	14MAR08	2	2
02L1DD0110	Obtain design approval from the SO	0		14MAR08	2	2
Boulder Assessment & Design for Stabili. Measure						
02L1DD0302	Design preparation for the AIP submission	15	31JAN08	14FEB08	2	3
02L1DD0304	Design (AIP) certification by the Design Checker	14	15FEB08	28FEB08	2	19
02L1DD0306	Design (AIP) submission for the SO's approval	1	29FEB08	29FEB08	1	16
02L1DD0308	Design (AIP) review by the SO	14	01MAR08	14MAR08	2	19
02L1DD0310	Obtain design (AIP) approval from the SO	0		14MAR08	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)	0		15APR08	2	20
02L1DD0320	Design preparation for the DDA submission	30	24MAR08	22APR08	2	20
02L1DD0322	Design (DDA) certification by the Design Checker	14	23APR08	06MAY08	2	20
02L1DD0324	Design (DDA) submission for the SO's approval	1	07MAY08	07MAY08	1	16
02L1DD0326	Design (DDA) review by the SO	14	08MAY08	21MAY08	2	20
02L1DD0328	Obtain design (DDA) approval from the SO	0		21MAY08	2	20
02L1DD0330	DDA submission for rel. authorities' approval	1	22MAY08	22MAY08	1	16
02L1DD0332	Design (DDA) review by the rel. authorities	28	23MAY08	19JUN08	2	20
02L1DD0334	Obtain rel. authorities's approval for DDA	1	20JUN08	20JUN08	1	16
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
02L1DD0404	Design (AIP) certification by the Design Checker	14	27JAN08	09FEB08	2	2
02L1DD0406	Design (AIP) submission for the SO's approval	1	11FEB08	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
02L1DD0414	Design (AIP) review by the rel. authorities	12	27FEB08	09MAR08	2	1
02L1DD0416	Obtain rel. authorities's approval for AIP	1	10MAR08	10MAR08	1	1
02L1DD0418	Obtain SO's consent for design (AIP)	0		11MAR08	2	1
02L1DD0420	Design preparation for the DDA submission	14	05MAR08	18MAR08	2	1
02L1DD0422	Design (DDA) certification by the Design Checker	14	12MAR08	25MAR08	2	1
02L1DD0424	Design (DDA) submission for the SO's approval	1	26MAR08	26MAR08	1	1
02L1DD0426	Design (DDA) review by the SO	14	27MAR08	09APR08	2	1
02L1DD0428	Obtain design (DDA) approval from the SO	0		09APR08	2	1



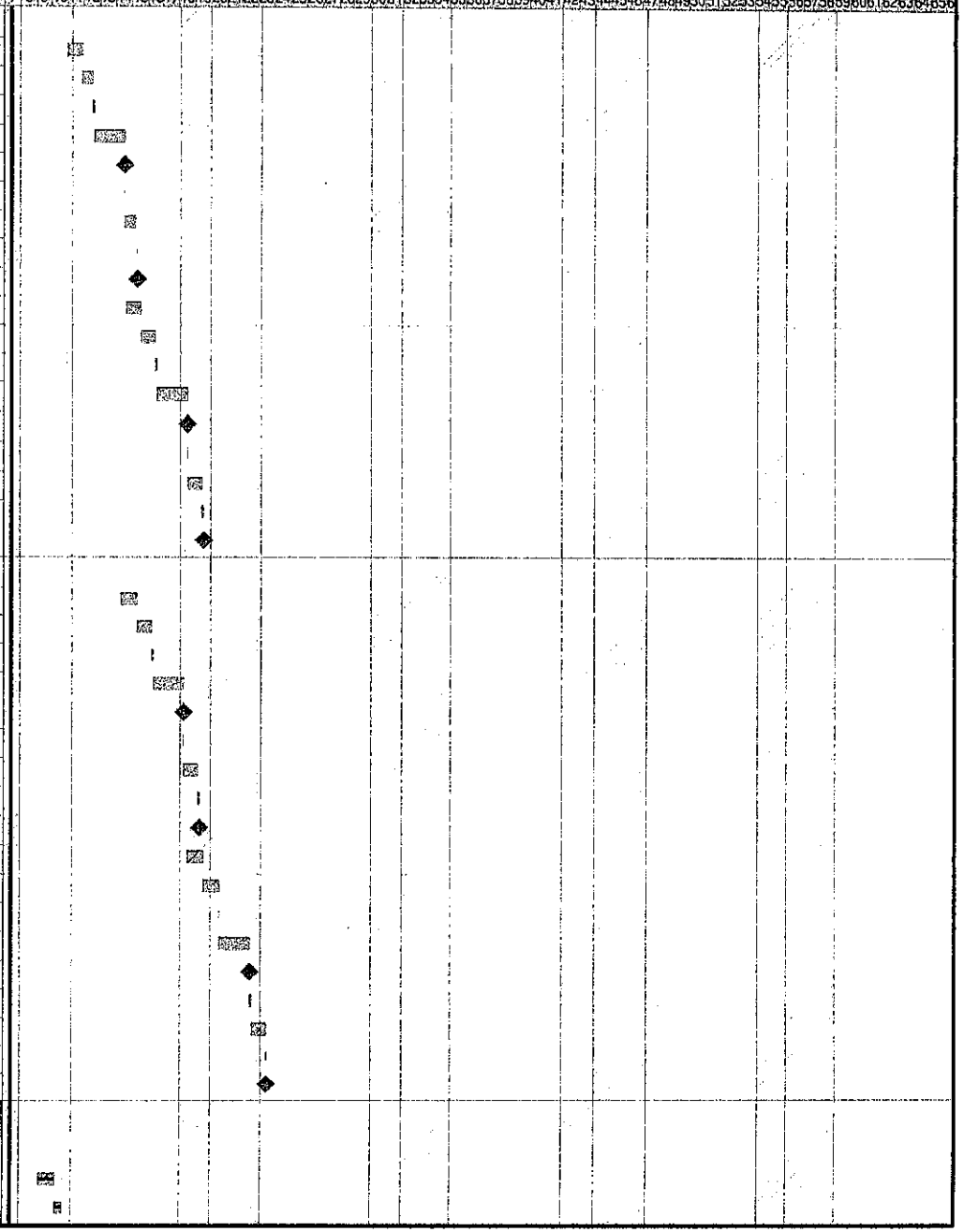
ID	Activity Description	Orig Dur	Early Start	Early Finish	Cal ID	Total Float
02L1DD0430	DDA submission for rel. authorities' approval	1	10APR08	10APR08	1	1
02L1DD0432	Design (DDA) review by the rel. authorities	12	11APR08	22APR08	2	1
02L1DD0434	Obtain rel. authorities's approval for DDA	1	23APR08	23APR08	1	1
02L1DD0436	Obtain SO's consent for design (DDA)	0		24APR08	2	1
Site Formation Design; +40mPD to +24mPD						
02L1DD0502	Design preparation for the AIP submission	14	15FEB08	28FEB08	2	3
02L1DD0504	Design (AIP) certification by the Design Checker	14	29FEB08	13MAR08	2	3
02L1DD0506	Design (AIP) submission for the SO's approval	1	14MAR08	14MAR08	1	2
02L1DD0508	Design (AIP) review by the SO	14	15MAR08	28MAR08	2	3
02L1DD0510	Obtain design (AIP) approval from the SO	0		28MAR08	2	3
02L1DD0512	AIP submission for rel. authorities' approval	1	29MAR08	29MAR08	1	2
02L1DD0514	Design (AIP) review by the rel. authorities	21	30MAR08	19APR08	2	3
02L1DD0516	Obtain rel. authorities's approval for AIP	1	21APR08	21APR08	1	2
02L1DD0518	Obtain SO's consent for design (AIP)	0		22APR08	2	2
02L1DD0520	Design preparation for the DDA submission	14	16APR08	29APR08	2	2
02L1DD0522	Design (DDA) certification by the Design Checker	14	30APR08	13MAY08	2	2
02L1DD0524	Design (DDA) submission for the SO's approval	1	14MAY08	14MAY08	1	2
02L1DD0526	Design (DDA) review by the SO	14	15MAY08	28MAY08	2	2
02L1DD0528	Obtain design (DDA) approval from the SO	0		28MAY08	2	2
02L1DD0530	DDA submission for rel. authorities' approval	1	29MAY08	29MAY08	1	2
02L1DD0532	Design (DDA) review by the rel. authorities	21	30MAY08	19JUN08	2	3
02L1DD0534	Obtain rel. authorities's approval for DDA	1	20JUN08	20JUN08	1	2
02L1DD0536	Obtain SO's consent for design (DDA)	0		21JUN08	2	3
Site Formation Design; +24mPD to 14mPD						
02L1DD0602	Design preparation for the AIP submission	14	29FEB08	13MAR08	2	25
02L1DD0604	Design (AIP) certification by the Design Checker	14	14MAR08	27MAR08	2	25
02L1DD0606	Design (AIP) submission for the SO's approval	1	28MAR08	28MAR08	1	20
02L1DD0608	Design (AIP) review by the SO	14	29MAR08	11APR08	2	25
02L1DD0610	Obtain design (AIP) approval from the SO	0		11APR08	2	25
02L1DD0612	AIP submission for rel. authorities' approval	1	12APR08	12APR08	1	20
02L1DD0614	Design (AIP) review by the rel. authorities	28	13APR08	10MAY08	2	25
02L1DD0616	Obtain rel. authorities's approval for AIP	1	13MAY08	13MAY08	1	20
02L1DD0618	Obtain SO's consent for design (AIP)	0		14MAY08	2	23
02L1DD0620	Design preparation for the DDA submission	14	08MAY08	21MAY08	2	23
02L1DD0622	Design (DDA) certification by the Design Checker	14	22MAY08	04JUN08	2	23
02L1DD0624	Design (DDA) submission for the SO's approval	1	05JUN08	05JUN08	1	19
02L1DD0626	Design (DDA) review by the SO	14	06JUN08	19JUN08	2	24
02L1DD0628	Obtain design (DDA) approval from the SO	0		19JUN08	2	24
02L1DD0630	DDA submission for rel. authorities' approval	1	20JUN08	20JUN08	1	19
02L1DD0632	Design (DDA) review by the rel. authorities	28	21JUN08	18JUL08	2	24
02L1DD0634	Obtain rel. authorities's approval for DDA	1	19JUL08	19JUL08	1	20
02L1DD0636	Obtain SO's consent for design (DDA)	0		21JUL08	2	23



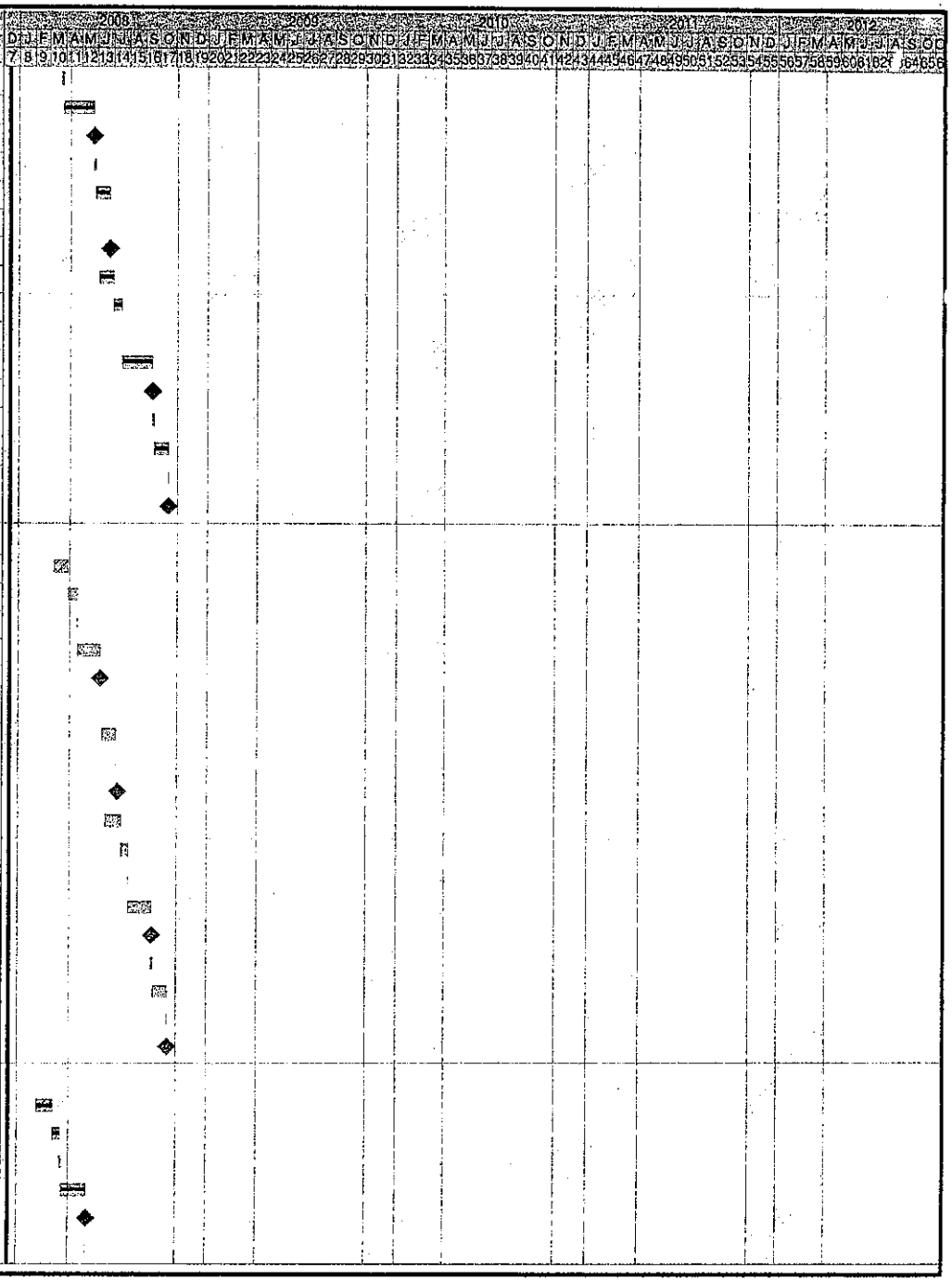
ID	Activity Description	Orig Dur	Early Start	Early Finish	Cal ID	Total Float
TBM Launching Chamber Design						
02L1DD0702	Design preparation for the AIP submission	15	14MAR08	28MAR08	2	36
02L1DD0704	Design (AIP) certification by the Design Checker	15	29MAR08	12APR08	2	36
02L1DD0706	Design (AIP) submission for the SO's approval	1	14APR08	14APR08	1	28
02L1DD0708	Design (AIP) review by the SO	30	15APR08	14MAY08	2	35
02L1DD0710	Obtain design (AIP) approval from the SO	0		14MAY08	2	35
02L1DD0712	AIP submission for rel. authorities' approval	1	15MAY08	15MAY08	1	29
02L1DD0714	Design (AIP) review by the rel. authorities	28	16MAY08	12JUN08	2	35
02L1DD0716	Obtain rel. authorities's approval for AIP	1	13JUN08	13JUN08	1	29
02L1DD0718	Obtain SO's consent for design (AIP)	0		14JUN08	2	35
02L1DD0720	Design preparation for the DDA submission	30	23MAY08	21JUN08	2	35
02L1DD0722	Design (DDA) certification by the Design Checker	15	22JUN08	06JUL08	2	35
02L1DD0724	Design (DDA) submission for the SO's approval	1	07JUL08	07JUL08	1	30
02L1DD0726	Design (DDA) review by the SO	30	08JUL08	06AUG08	2	35
02L1DD0728	Obtain design (DDA) approval from the SO	0		06AUG08	2	35
02L1DD0730	DDA submission for rel. authorities' approval	1	07AUG08	07AUG08	1	30
02L1DD0732	Design (DDA) review by the rel. authorities	28	08AUG08	04SEP08	2	35
02L1DD0734	Obtain rel. authorities's approval for DDA	1	05SEP08	05SEP08	1	27
02L1DD0736	Obtain SO's consent for design (DDA)	0		06SEP08	2	36
Hopper Foundation Design						
02L1DD0802	Design preparation by the Designer	15	28MAY08	11JUN08	2	47
02L1DD0804	Design certification by the Design Checker	15	12JUN08	26JUN08	2	77
02L1DD0806	Design submission for the SO's approval	1	27JUN08	27JUN08	1	65
02L1DD0808	Design review by the SO	30	28JUN08	27JUL08	2	77
02L1DD0810	Obtain design approval from the SO	0		27JUL08	2	77
Steel Platform & Hopper Design						
02L1DD0902	Design preparation by the Designer	30	12JUN08	11JUL08	2	47
02L1DD0904	Design certification by the Design Checker	15	12JUL08	26JUL08	2	47
02L1DD0906	Design submission for the SO's approval	1	28JUL08	28JUL08	1	40
02L1DD0908	Design review by the SO	30	29JUL08	27AUG08	2	46
02L1DD0910	Obtain design approval from the SO	0		27AUG08	2	46
Overhead Gantry Support & Noise Enclosure Design						
02L1DD1002	Design preparation by the Designer	30	28APR08	27MAY08	2	47
02L1DD1004	Design certification by the Design Checker	15	28MAY08	11JUN08	2	60
02L1DD1006	Design submission for the SO's approval	1	12JUN08	12JUN08	1	50
02L1DD1008	Design review by the SO	30	13JUN08	12JUL08	2	60
02L1DD1010	Obtain design approval from the SO	0		12JUL08	2	60
02L1DD1012	Design submission for rel. authorities' approval	1	14JUL08	14JUL08	1	51
02L1DD1014	Design review by the rel. authorities	28	15JUL08	11AUG08	2	59
02L1DD1016	Obtain design approval from rel. authorities'	1	12AUG08	12AUG08	1	48
02L1DD1018	Obtain SO's consent for design	0		13AUG08	2	60



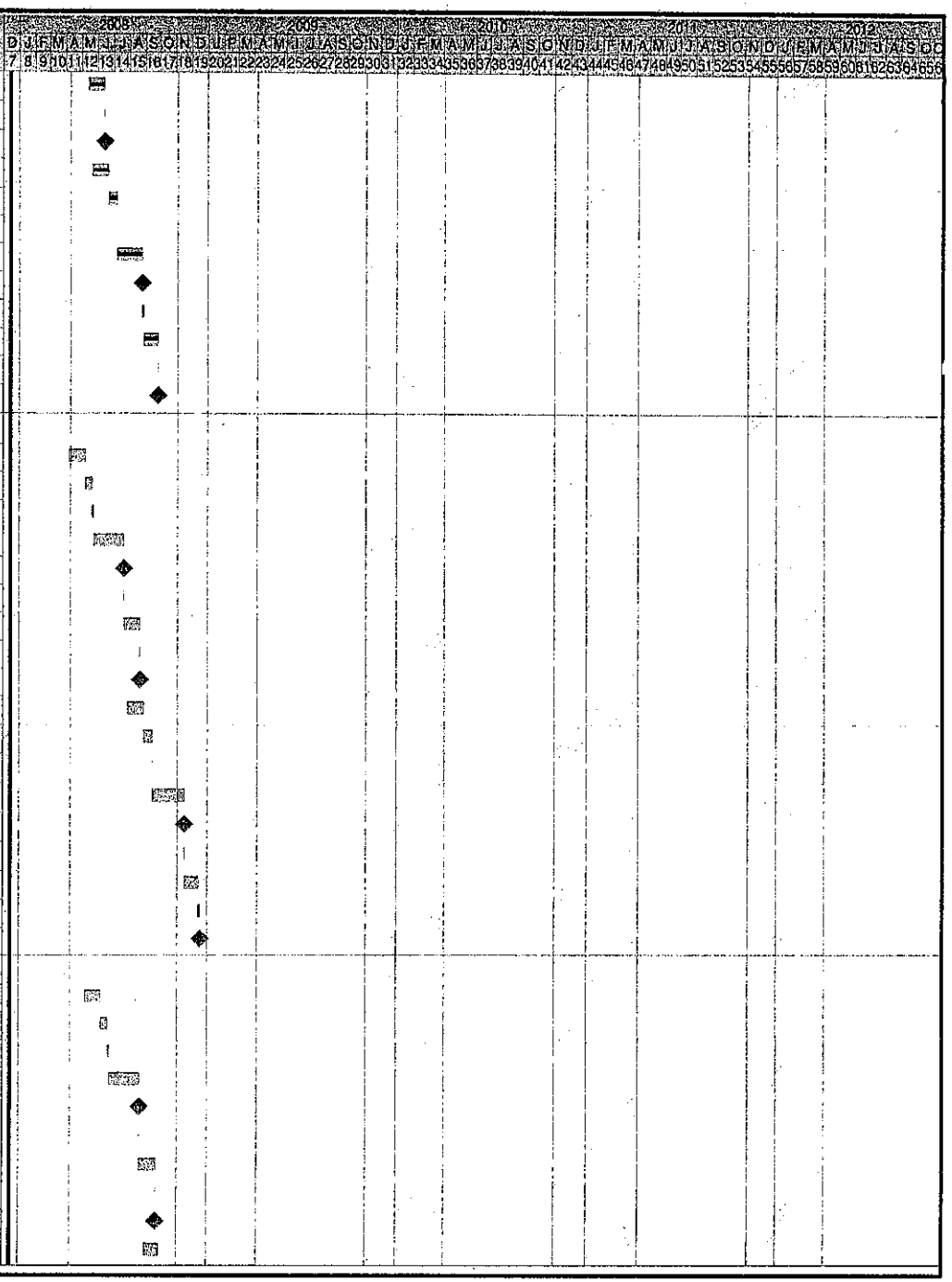
ID	Activity Description	Orig Dur	Early Start	Early Finish	Cal ID	Total Float
ELS Design for Spiral Ramp & Vehicular Access						
02L1DD1102	Design preparation for the AIP submission	30	29MAR08	27APR08	2	47
02L1DD1104	Design (AIP) certification by the Design Checker	21	28APR08	18MAY08	2	130
02L1DD1106	Design (AIP) submission for the SO's approval	1	19MAY08	19MAY08	1	109
02L1DD1108	Design (AIP) review by the SO	60	20MAY08	18JUL08	2	130
02L1DD1110	Obtain design (AIP) approval from the SO	0		18JUL08	2	130
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
02L1DD1128	Obtain design (DDA) approval from the SO	0		16NOV08	2	130
02L1DD1130	DDA submission for rel. authorities' approval	1	17NOV08	17NOV08	1	106
02L1DD1132	Design (DDA) review by the rel. authorities	28	18NOV08	15DEC08	2	130
02L1DD1134	Obtain rel. authorities's approval for DDA	1	16DEC08	16DEC08	1	102
02L1DD1136	Obtain SO's consent for design (DDA)	0		17DEC08	2	131
ELS Design for Box Culvert & Open Channel						
02L1DD1202	Design preparation for the AIP submission	30	12JUL08	10AUG08	2	262
02L1DD1204	Design (AIP) certification by the Design Checker	30	11AUG08	09SEP08	2	262
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
02L1DD1216	Obtain rel. authorities's approval for AIP	1	09DEC08	09DEC08	1	212
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
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
Design Packages for Work's in Portion F						
Main Tunnel Design						
02L1FF0102	Design preparation for the AIP submission	30	08FEB08	08MAR08	2	2
02L1FF0104	Design (AIP) certification by the Design Checker	15	09MAR08	23MAR08	2	2



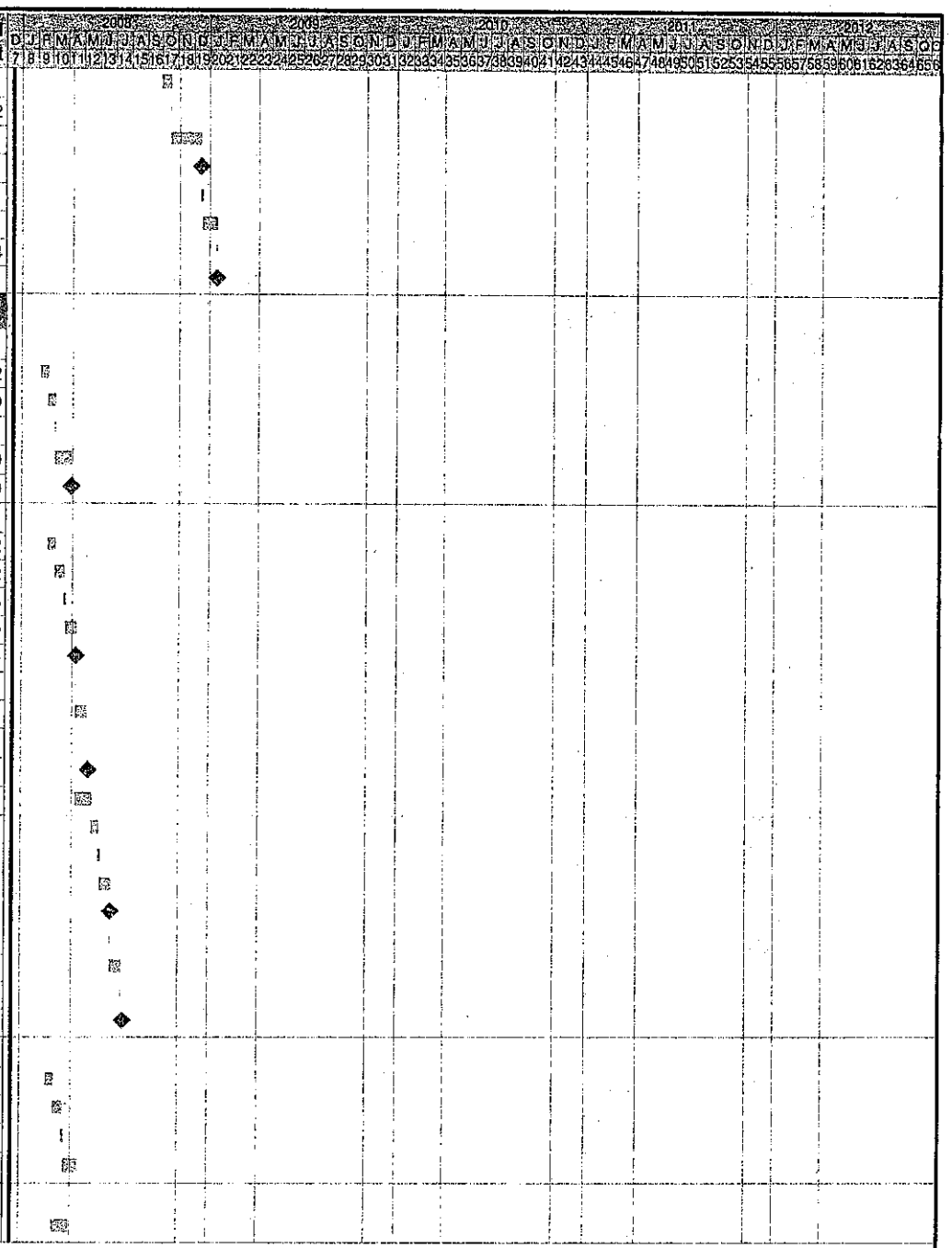
ID	Activity Description	Orig Dur	Early Start	Early Finish	Cal ID	Total Float
02L1FF0106	Design (AIP) submission for the SO's approval	1	25MAR08	25MAR08	1	1
02L1FF0108	Design (AIP) review by the SO	60	26MAR08	24MAY08	2	1
02L1FF0110	Obtain design (AIP) approval from the SO	0		24MAY08	2	1
02L1FF0112	AIP submission for rel. authorities' approval	1	26MAY08	26MAY08	1	0
02L1FF0114	Design (AIP) review by the rel. authorities	28	27MAY08	23JUN08	2	0
02L1FF0116	Obtain rel. authorities's approval for AIP	1	24JUN08	24JUN08	1	0
02L1FF0118	Obtain SO's consent for design (AIP)	0		25JUN08	2	0
02L1FF0120	Design preparation for the DDA submission	30	03JUN08	02JUL08	2	0
02L1FF0122	Design (DDA) certification by the Design Checker	15	03JUL08	17JUL08	2	0
02L1FF0124	Design (DDA) submission for the SO's approval	1	18JUL08	18JUL08	1	0
02L1FF0126	Design (DDA) review by the SO	60	19JUL08	16SEP08	2	0
02L1FF0128	Obtain design (DDA) approval from the SO	0		16SEP08	2	0
02L1FF0130	DDA submission for rel. authorities' approval	1	17SEP08	17SEP08	1	0
02L1FF0132	Design (DDA) review by the rel. authorities	28	18SEP08	15OCT08	2	0
02L1FF0134	Obtain rel. authorities's approval for DDA	1	16OCT08	16OCT08	1	0
02L1FF0136	Obtain SO's consent for design (DDA)	0		17OCT08	2	0
Impact Assessment on WSD Yau Kam Tau WTW						
02L1FF0202	Design preparation for the AIP submission	30	09MAR08	07APR08	2	107
02L1FF0204	Design (AIP) certification by the Design Checker	15	08APR08	22APR08	2	107
02L1FF0206	Design (AIP) submission for the SO's approval	1	23APR08	23APR08	1	88
02L1FF0208	Design (AIP) review by the SO	45	24APR08	07JUN08	2	107
02L1FF0210	Obtain design (AIP) approval from the SO	0		07JUN08	2	107
02L1FF0212	AIP submission for rel. authorities' approval	1	10JUN08	10JUN08	1	88
02L1FF0214	Design (AIP) review by the rel. authorities	28	11JUN08	08JUL08	2	105
02L1FF0216	Obtain rel. authorities's approval for AIP	1	09JUL08	09JUL08	1	87
02L1FF0218	Obtain SO's consent for design (AIP)	0		10JUL08	2	105
02L1FF0220	Design preparation for the DDA submission	30	18JUN08	17JUL08	2	105
02L1FF0222	Design (DDA) certification by the Design Checker	15	18JUL08	01AUG08	2	105
02L1FF0224	Design (DDA) submission for the SO's approval	1	02AUG08	02AUG08	1	87
02L1FF0226	Design (DDA) review by the SO	45	03AUG08	16SEP08	2	105
02L1FF0228	Obtain design (DDA) approval from the SO	0		16SEP08	2	105
02L1FF0230	DDA submission for rel. authorities' approval	1	17SEP08	17SEP08	1	86
02L1FF0232	Design (DDA) review by the rel. authorities	28	18SEP08	15OCT08	2	106
02L1FF0234	Obtain rel. authorities's approval for DDA	1	16OCT08	16OCT08	1	85
02L1FF0236	Obtain SO's consent for design (DDA)	0		17OCT08	2	107
Impact Assessment on WSD Tai Lam Chung WT No. 3						
02L1FF0302	Design preparation for the AIP submission	30	08FEB08	08MAR08	2	3
02L1FF0304	Design (AIP) certification by the Design Checker	15	09MAR08	23MAR08	2	3
02L1FF0306	Design (AIP) submission for the SO's approval	1	25MAR08	25MAR08	1	2
02L1FF0308	Design (AIP) review by the SO	50	26MAR08	14MAY08	2	2
02L1FF0310	Obtain design (AIP) approval from the SO	0		14MAY08	2	2
02L1FF0312	AIP submission for rel. authorities' approval	1	15MAY08	15MAY08	1	2



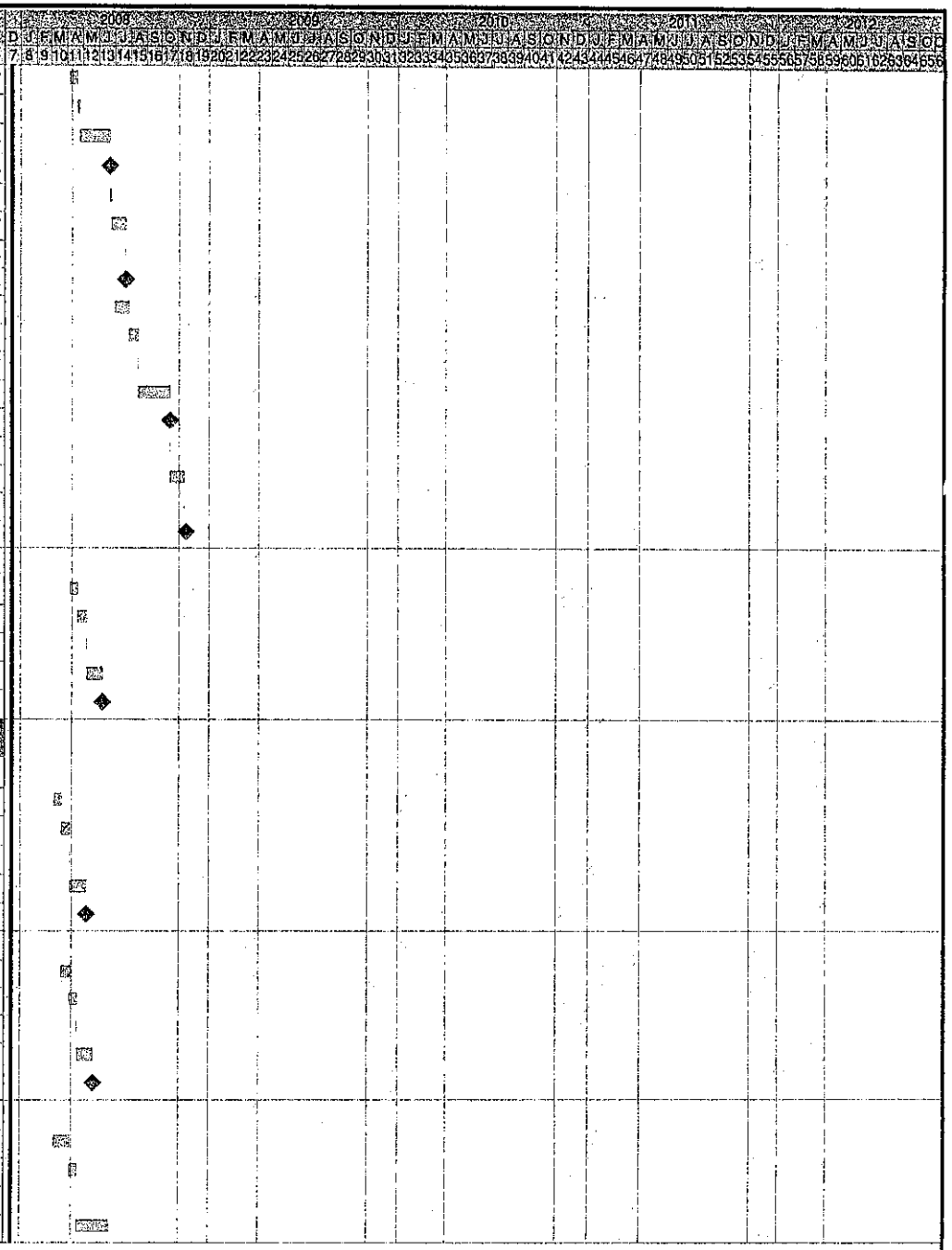
ID	Activity Description	Orig Dur	Early Start	Early Finish	Cal ID	Total Float
02L1FF0314	Design (AIP) review by the rel. authorities	28	16MAY08	12JUN08	2	3
02L1FF0316	Obtain rel. authorities's approval for AIP	1	13JUN08	13JUN08	1	2
02L1FF0318	Obtain SO's consent for design (AIP)	0		14JUN08	2	3
02L1FF0320	Design preparation for the DDA submission	30	23MAY08	21JUN08	2	3
02L1FF0322	Design (DDA) certification by the Design Checker	15	22JUN08	06JUL08	2	3
02L1FF0324	Design (DDA) submission for the SO's approval	1	07JUL08	07JUL08	1	3
02L1FF0326	Design (DDA) review by the SO	50	08JUL08	26AUG08	2	3
02L1FF0328	Obtain design (DDA) approval from the SO	0		26AUG08	2	3
02L1FF0330	DDA submission for rel. authorities' approval	1	27AUG08	27AUG08	1	3
02L1FF0332	Design (DDA) review by the rel. authorities	28	28AUG08	24SEP08	2	4
02L1FF0334	Obtain rel. authorities's approval for DDA	1	25SEP08	25SEP08	1	3
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	15	08MAY08	22MAY08	2	190
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	1	23JUL08	23JUL08	1	155
02L1FF0414	Design (AIP) review by the rel. authorities	28	24JUL08	20AUG08	2	191
02L1FF0416	Obtain rel. authorities's approval for AIP	1	21AUG08	21AUG08	1	155
02L1FF0418	Obtain SO's consent for design (AIP)	0		22AUG08	2	192
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
02L1FF0424	Design (DDA) submission for the SO's approval	1	16SEP08	16SEP08	1	155
02L1FF0426	Design (DDA) review by the SO	60	17SEP08	15NOV08	2	190
02L1FF0428	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
Impact Assessment on WSD Tsuen Wan Reservoir G.						
02L1FF0502	Design preparation for the AIP submission	30	08MAY08	06JUN08	2	251
02L1FF0504	Design (AIP) certification by the Design Checker	15	07JUN08	21JUN08	2	251
02L1FF0506	Design (AIP) submission for the SO's approval	1	23JUN08	23JUN08	1	205
02L1FF0508	Design (AIP) review by the SO	60	24JUN08	22AUG08	2	250
02L1FF0510	Obtain design (AIP) approval from the SO	0		22AUG08	2	250
02L1FF0512	AIP submission for rel. authorities' approval	1	23AUG08	23AUG08	1	201
02L1FF0514	Design (AIP) review by the rel. authorities	28	24AUG08	20SEP08	2	251
02L1FF0516	Obtain rel. authorities's approval for AIP	1	22SEP08	22SEP08	1	200
02L1FF0518	Obtain SO's consent for design (AIP)	0		23SEP08	2	251
02L1FF0520	Design preparation for the DDA submission	30	01SEP08	30SEP08	2	251



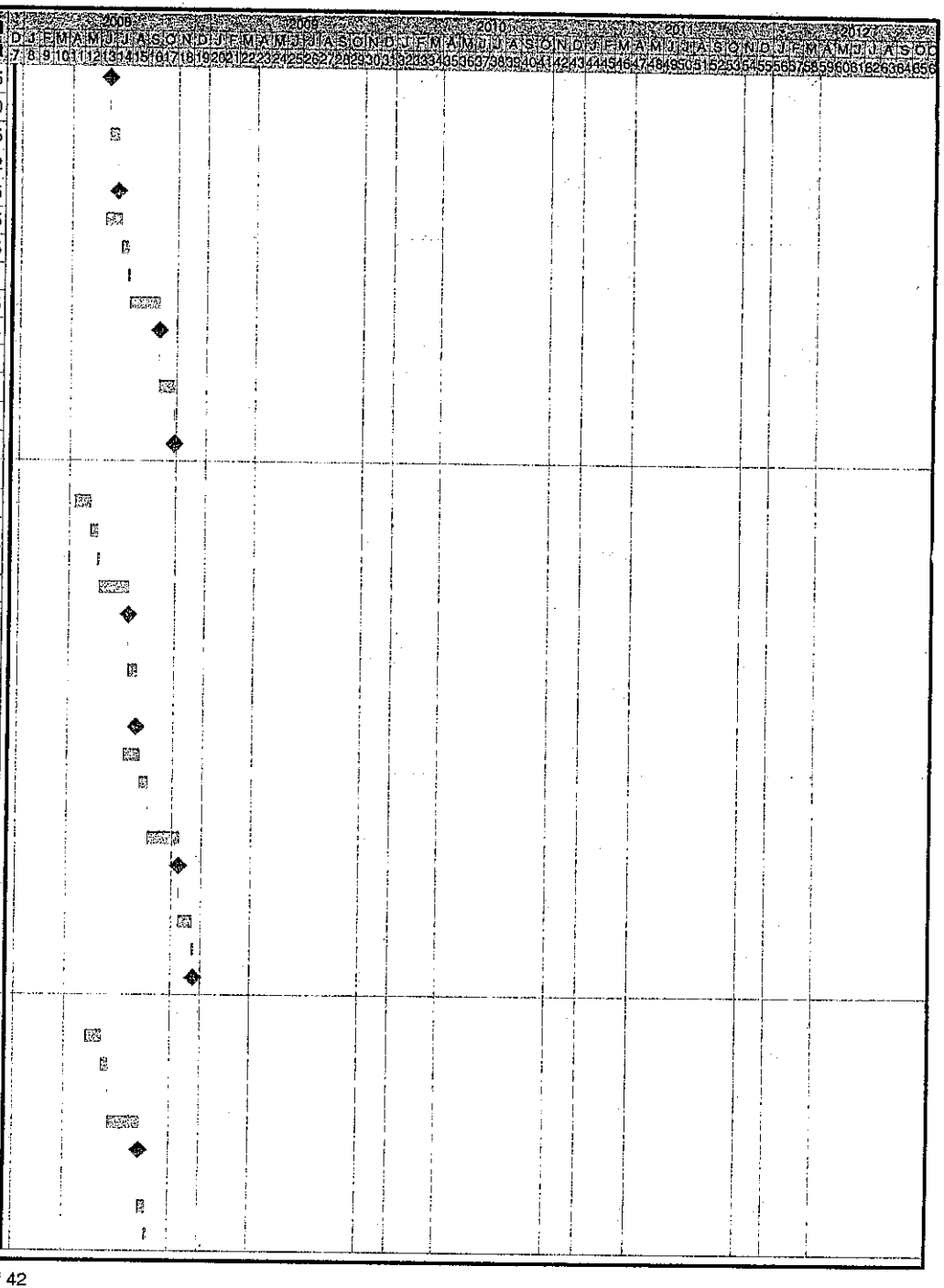
ID	Activity Description	Orig Dur	Early Start	Early Finish	Cal ID	Total Float
02L1FF0522	Design (DDA) certification by the Design Checker	15	01OCT08	15OCT08	2	251
02L1FF0524	Design (DDA) submission for the SO's approval	1	16OCT08	16OCT08	1	202
02L1FF0526	Design (DDA) review by the SO	60	17OCT08	15DEC08	2	251
02L1FF0528	Obtain design (DDA) approval from the SO	0		15DEC08	2	251
02L1FF0530	DDA submission for rel. authorities' approval	1	16DEC08	16DEC08	1	201
02L1FF0532	Design (DDA) review by the rel. authorities	28	17DEC08	13JAN09	2	251
02L1FF0534	Obtain rel. authorities's approval for DDA	1	14JAN09	14JAN09	1	204
02L1FF0536	Obtain SO's consent for design (DDA)	0		15JAN09	2	251
Design Packages for Works in Portion A						
Temp. Steel Decking Design Over Shing Mun Nullah						
02L1AA0102	Design preparation by the Designer	14	08FEB08	21FEB08	2	22
02L1AA0104	Design certification by the Design Checker	14	22FEB08	06MAR08	2	29
02L1AA0106	Design submission for the SO's approval	1	07MAR08	07MAR08	1	21
02L1AA0108	Design review by the SO	28	08MAR08	04APR08	2	29
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
02L1AA0204	Design (AIP) certification by the Design Checker	15	08MAR08	22MAR08	2	22
02L1AA0206	Design (AIP) submission for the SO's approval	1	25MAR08	25MAR08	1	16
02L1AA0208	Design (AIP) review by the SO	21	26MAR08	15APR08	2	20
02L1AA0210	Obtain design (AIP) approval from the SO	0		15APR08	2	20
02L1AA0212	AIP submission for rel. authorities' approval	1	16APR08	16APR08	1	16
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
02L1AA0222	Design (DDA) certification by the Design Checker	15	17MAY08	31MAY08	2	20
02L1AA0226	Design (DDA) submission for the SO's approval	1	02JUN08	02JUN08	1	16
02L1AA0228	Design (DDA) review by the SO	21	03JUN08	23JUN08	2	20
02L1AA0230	Obtain design (DDA) approval from the SO	0		23JUN08	2	20
02L1AA0232	DDA submission for rel. authorities' approval	1	24JUN08	24JUN08	1	16
02L1AA0234	Design (DDA) review by the rel. authorities	21	25JUN08	15JUL08	2	20
02L1AA0236	Obtain rel. authorities's approval for DDA	1	16JUL08	16JUL08	1	17
02L1AA0238	Obtain SO's consent for design (DDA)	0		17JUL08	2	20
Temp. Platform Design for H-Piling						
02L1AA0302	Design preparation by the Designer	15	22FEB08	07MAR08	2	627
02L1AA0304	Design certification by the Design Checker	15	08MAR08	22MAR08	2	1,618
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
Cascade & Box Culver Design for Portion A						
02L1AA0402	Design preparation for the AIP submission	30	08MAR08	06APR08	2	627



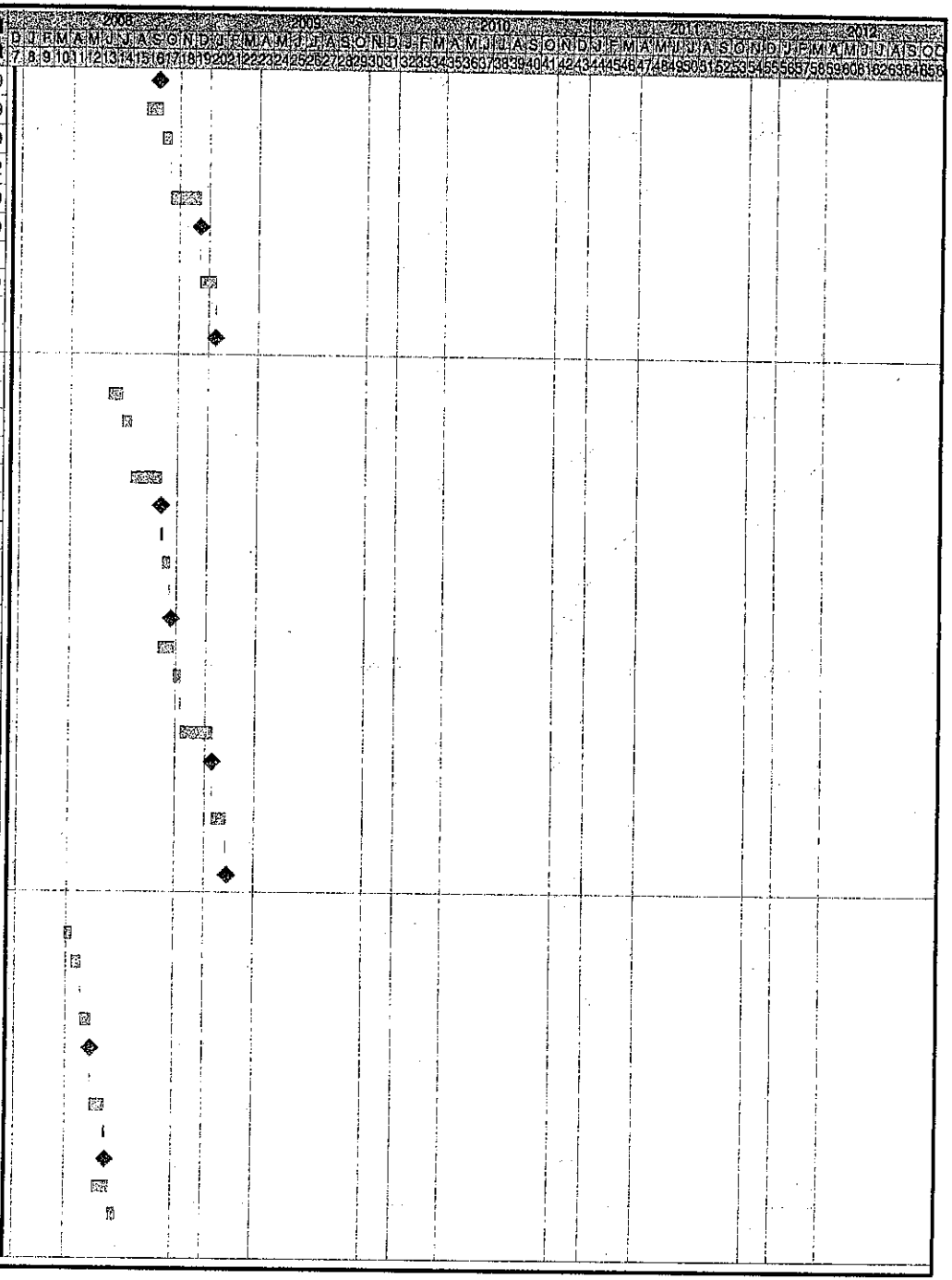
ID	Activity Description	Orig Dur	Early Start	Early Finish	Cal ID	Total Float
02L1AA0404	Design (AIP) certification by the Design Checker	15	07APR08	21APR08	2	627
02L1AA0406	Design (AIP) submission for the SO's approval	1	22APR08	22APR08	1	511
02L1AA0408	Design (AIP) review by the SO	60	23APR08	21JUN08	2	628
02L1AA0410	Obtain design (AIP) approval from the SO	0		21JUN08	2	628
02L1AA0412	AIP submission for rel. authorities' approval	1	23JUN08	23JUN08	1	511
02L1AA0414	Design (AIP) review by the rel. authorities	28	24JUN08	21JUL08	2	627
02L1AA0416	Obtain rel. authorities's approval for AIP	1	22JUL08	22JUL08	1	508
02L1AA0418	Obtain SO's consent for design (AIP)	0		23JUL08	2	628
02L1AA0420	Design preparation for the DDA submission	30	01JUL08	30JUL08	2	628
02L1AA0422	Design (DDA) certification by the Design Checker	15	31JUL08	14AUG08	2	628
02L1AA0424	Design (DDA) submission for the SO's approval	1	15AUG08	15AUG08	1	507
02L1AA0426	Design (DDA) review by the SO	60	16AUG08	14OCT08	2	628
02L1AA0428	Obtain design (DDA) approval from the SO	0		14OCT08	2	628
02L1AA0430	DDA submission for rel. authorities' approval	1	15OCT08	15OCT08	1	507
02L1AA0432	Design (DDA) review by the rel. authorities	28	16OCT08	12NOV08	2	628
02L1AA0434	Obtain rel. authorities's approval for DDA	1	13NOV08	13NOV08	1	507
02L1AA0436	Obtain SO's consent for design (DDA)	0		14NOV08	2	628
Overhead Gantry Design for Retrieval of TBM						
02L1AA0502	Design preparation by the Designer	15	07APR08	21APR08	2	694
02L1AA0504	Design certification by the Design Checker	15	22APR08	06MAY08	2	694
02L1AA0506	Design submission for the SO's approval	1	07MAY08	07MAY08	1	566
02L1AA0508	Design review by the SO	30	08MAY08	06JUN08	2	699
02L1AA0510	Obtain design approval from the SO	0		06JUN08	2	699
Design Packages for Works in Portion B						
Temp. Platform Design for RCD for Air Vent Shaft						
02L1BB0302	Design preparation by the Designer	15	07MAR08	21MAR08	2	17
02L1BB0304	Design certification by the Design Checker	15	22MAR08	05APR08	2	17
02L1BB0306	Design submission for the SO's approval	1	07APR08	07APR08	1	14
02L1BB0308	Design review by the SO	28	08APR08	05MAY08	2	16
02L1BB0310	Obtain design approval from the SO	0		05MAY08	2	16
ELS Design for Intake Structure Construction						
02L1BB0402	Design preparation by the Designer	15	22MAR08	05APR08	2	162
02L1BB0404	Design certification by the Design Checker	15	06APR08	20APR08	2	162
02L1BB0406	Design submission for the SO's approval	1	21APR08	21APR08	1	134
02L1BB0408	Design review by the SO	28	22APR08	19MAY08	2	162
02L1BB0410	Obtain design approval from the SO	0		19MAY08	2	162
Temp. Support Design for MAA/MAS/VDS/DC/AVS						
02L1BB0502	Design preparation for the AIP submission	30	07MAR08	05APR08	2	25
02L1BB0504	Design (AIP) certification by the Design Checker	15	06APR08	20APR08	2	25
02L1BB0506	Design (AIP) submission for the SO's approval	1	21APR08	21APR08	1	20
02L1BB0508	Design (AIP) review by the SO	60	22APR08	20JUN08	2	25



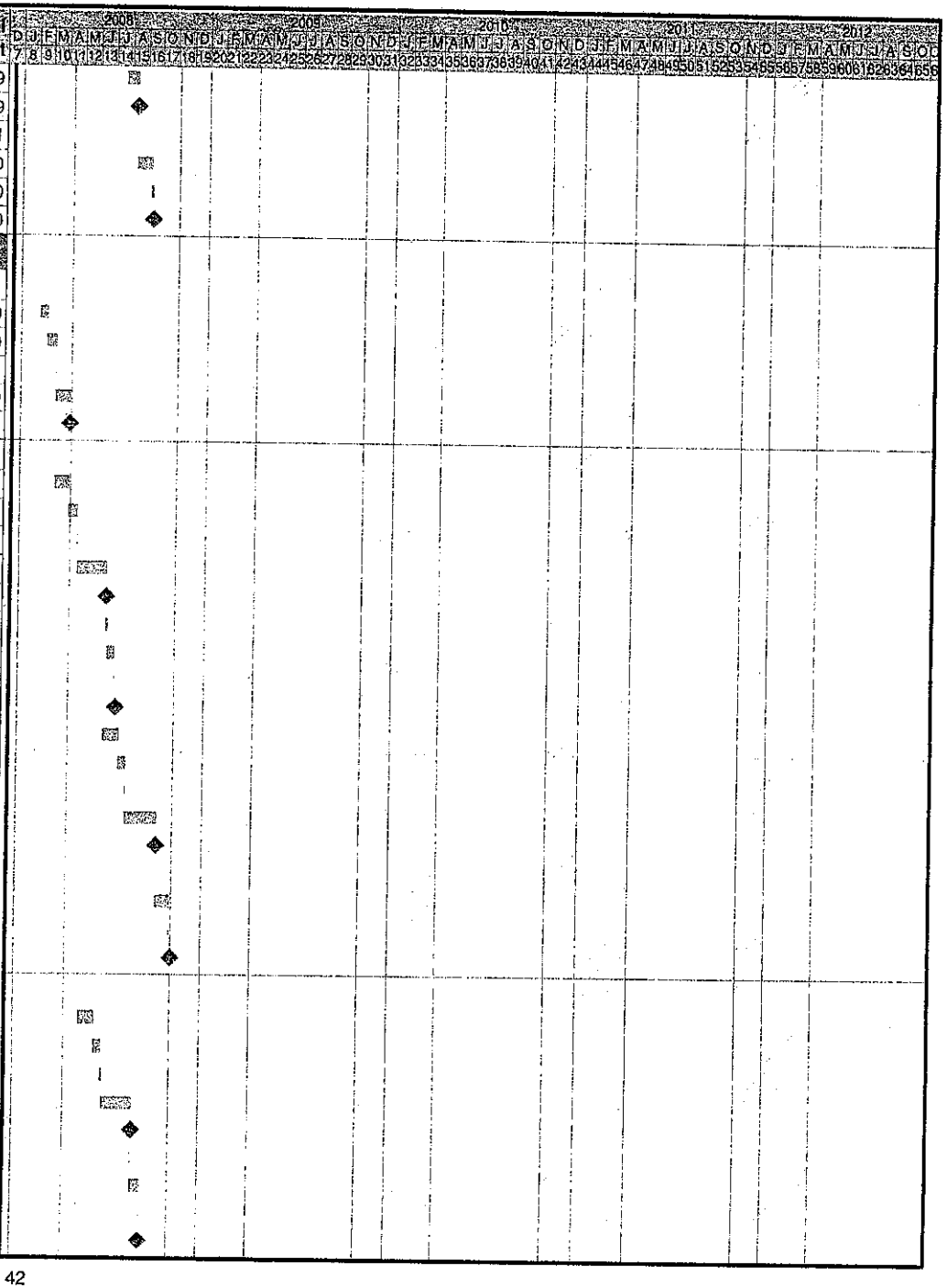
ID	Activity Description	Orig Dur	Early Start	Early Finish	Cal ID	Total Float
02L1BB0510	Obtain design (AIP) approval from the SO	0		20JUN08	2	25
02L1BB0512	AIP submission for rel. authorities' approval	1	21JUN08	21JUN08	1	20
02L1BB0514	Design (AIP) review by the rel. authorities	15	22JUN08	06JUL08	2	25
02L1BB0516	Obtain rel. authorities's approval for AIP	1	07JUL08	07JUL08	1	22
02L1BB0518	Obtain SO's consent for design (AIP)	0		08JUL08	2	25
02L1BB0520	Design preparation for the DDA submission	30	16JUN08	15JUL08	2	25
02L1BB0522	Design (DDA) certification by the Design Checker	15	16JUL08	30JUL08	2	25
02L1BB0524	Design (DDA) submission for the SO's approval	1	31JUL08	31JUL08	1	21
02L1BB0526	Design (DDA) review by the SO	60	01AUG08	29SEP08	2	25
02L1BB0528	Obtain design (DDA) approval from the SO	0		29SEP08	2	25
02L1BB0530	DDA submission for rel. authorities' approval	1	30SEP08	30SEP08	1	20
02L1BB0532	Design (DDA) review by the rel. authorities	28	01OCT08	28OCT08	2	26
02L1BB0534	Obtain rel. authorities's approval for DDA	1	29OCT08	29OCT08	1	22
02L1BB0536	Obtain SO's consent for design (DDA)	0		30OCT08	2	26
Temp. Support Design for MA and MA/MT Connection						
02L1BB0602	Design preparation for the AIP submission	30	21APR08	20MAY08	2	527
02L1BB0604	Design (AIP) certification by the Design Checker	15	21MAY08	04JUN08	2	804
02L1BB0606	Design (AIP) submission for the SO's approval	1	05JUN08	05JUN08	1	653
02L1BB0608	Design (AIP) review by the SO	60	06JUN08	04AUG08	2	804
02L1BB0610	Obtain design (AIP) approval from the SO	0		04AUG08	2	804
02L1BB0612	AIP submission for rel. authorities' approval	1	05AUG08	05AUG08	1	652
02L1BB0614	Design (AIP) review by the rel. authorities	15	06AUG08	20AUG08	2	804
02L1BB0616	Obtain rel. authorities's approval for AIP	1	21AUG08	21AUG08	1	652
02L1BB0618	Obtain SO's consent for design (AIP)	0		22AUG08	2	804
02L1BB0620	Design preparation for the DDA submission	30	31JUL08	29AUG08	2	804
02L1BB0622	Design (DDA) certification by the Design Checker	15	30AUG08	13SEP08	2	804
02L1BB0624	Design (DDA) submission for the SO's approval	1	16SEP08	16SEP08	1	652
02L1BB0626	Design (DDA) review by the SO	60	17SEP08	15NOV08	2	803
02L1BB0628	Obtain design (DDA) approval from the SO	0		15NOV08	2	803
02L1BB0630	DDA submission for rel. authorities' approval	1	17NOV08	17NOV08	1	651
02L1BB0632	Design (DDA) review by the rel. authorities	28	18NOV08	15DEC08	2	802
02L1BB0634	Obtain rel. authorities's approval for DDA	1	16DEC08	16DEC08	1	648
02L1BB0636	Obtain SO's consent for design (DDA)	0		17DEC08	2	803
Permanent Design for MAA/MAS/VDS/DC/AVS						
02L1BB0702	Design preparation for the AIP submission	30	21MAY08	19JUN08	2	527
02L1BB0704	Design (AIP) certification by the Design Checker	15	20JUN08	04JUL08	2	730
02L1BB0706	Design (AIP) submission for the SO's approval	1	05JUL08	05JUL08	1	591
02L1BB0708	Design (AIP) review by the SO	60	06JUL08	03SEP08	2	730
02L1BB0710	Obtain design (AIP) approval from the SO	0		03SEP08	2	730
02L1BB0712	AIP submission for rel. authorities' approval	1	04SEP08	04SEP08	1	592
02L1BB0714	Design (AIP) review by the rel. authorities	15	05SEP08	19SEP08	2	730
02L1BB0716	Obtain rel. authorities's approval for AIP	1	20SEP08	20SEP08	1	592



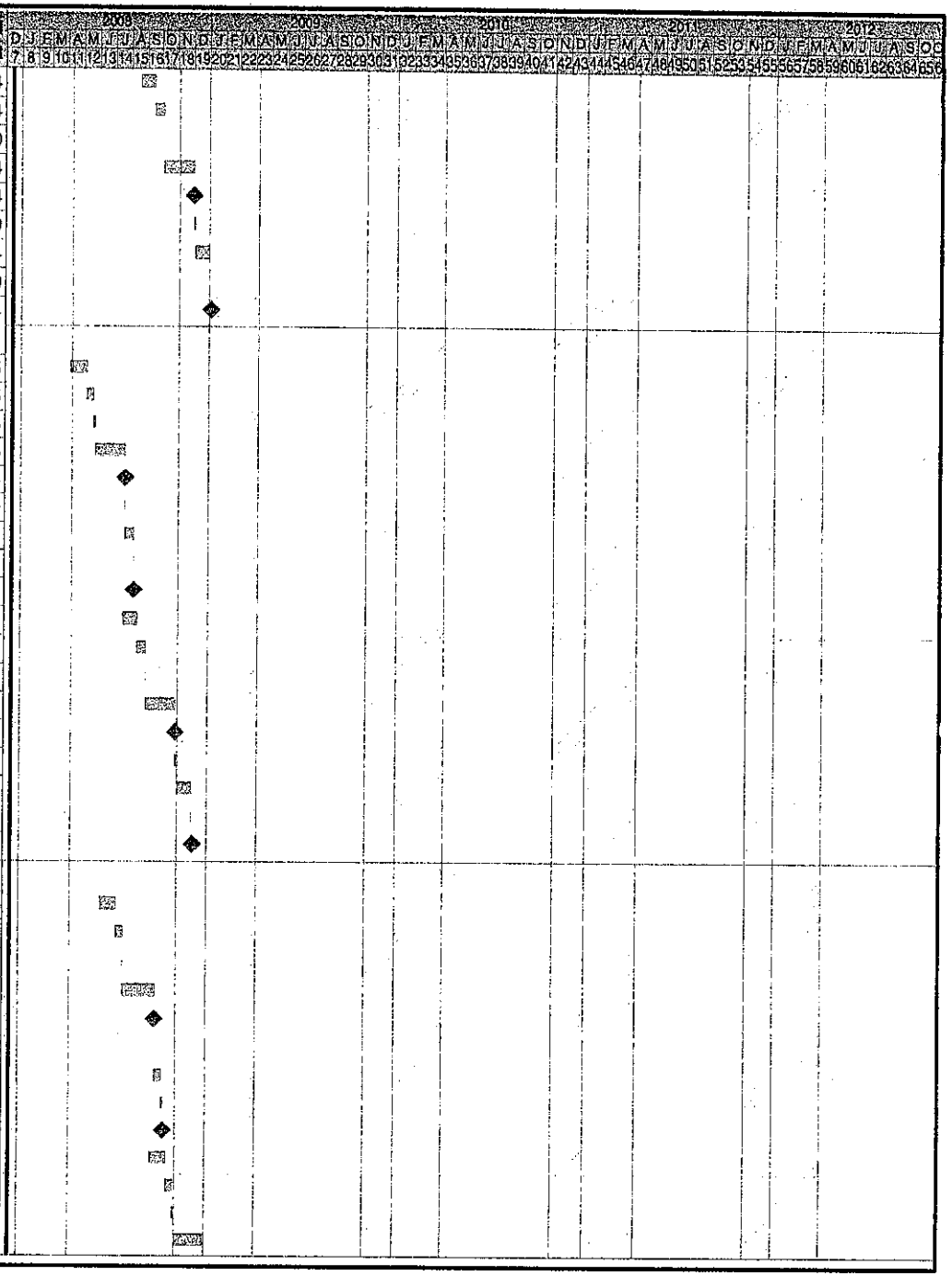
ID	Activity Description	Orig Dur	Early Start	Early Finish	Cal ID	Total Float
02L1BB0718	Obtain SO's consent for design (AIP)	0		22SEP08	2	729
02L1BB0720	Design preparation for the DDA submission	30	31AUG08	29SEP08	2	729
02L1BB0722	Design (DDA) certification by the Design Checker	15	30SEP08	14OCT08	2	729
02L1BB0724	Design (DDA) submission for the SO's approval	1	15OCT08	15OCT08	1	592
02L1BB0726	Design (DDA) review by the SO	60	16OCT08	14DEC08	2	729
02L1BB0728	Obtain design (DDA) approval from the SO	0		14DEC08	2	729
02L1BB0730	DDA submission for rel. authorities' approval	1	15DEC08	15DEC08	1	591
02L1BB0732	Design (DDA) review by the rel. authorities	28	16DEC08	12JAN09	2	729
02L1BB0734	Obtain rel. authorities's approval for DDA	1	13JAN09	13JAN09	1	591
02L1BB0736	Obtain SO's consent for design (DDA)	0		14JAN09	2	729
Permanent Design for MA and MA/MT Connection						
02L1BB0802	Design preparation for AIP submission	30	20JUN08	19JUL08	2	527
02L1BB0804	Design (AIP) certification by the Design Checker	15	20JUL08	03AUG08	2	527
02L1BB0806	Design (AIP) submission for the SO's approval	1	04AUG08	04AUG08	1	429
02L1BB0808	Design (AIP) review by the SO	60	05AUG08	03OCT08	2	527
02L1BB0810	Obtain design (AIP) approval from the SO	0		03OCT08	2	527
02L1BB0812	AIP submission for rel. authorities' approval	1	04OCT08	04OCT08	1	427
02L1BB0814	Design (AIP) review by the rel. authorities	15	05OCT08	19OCT08	2	527
02L1BB0816	Obtain rel. authorities's approval for AIP	1	20OCT08	20OCT08	1	429
02L1BB0818	Obtain SO's consent for design (AIP)	0		21OCT08	2	531
02L1BB0820	Design preparation for the DDA submission	30	29SEP08	28OCT08	2	531
02L1BB0822	Design (DDA) certification by the Design Checker	15	29OCT08	12NOV08	2	531
02L1BB0824	Design (DDA) submission for the SO's approval	1	13NOV08	13NOV08	1	428
02L1BB0826	Design (DDA) review by the SO	60	14NOV08	12JAN09	2	531
02L1BB0828	Obtain design (DDA) approval from the SO	0		12JAN09	2	531
02L1BB0830	DDA submission for rel. authorities' approval	1	13JAN09	13JAN09	1	428
02L1BB0832	Design (DDA) review by the rel. authorities	28	14JAN09	10FEB09	2	531
02L1BB0834	Obtain rel. authorities's approval for DDA	1	11FEB09	11FEB09	1	430
02L1BB0836	Obtain SO's consent for design (DDA)	0		12FEB09	2	531
Boulder Assessment & Design of Stabili. Measure						
02L1BB0902	Design preparation for the AIP submission	15	06APR08	20APR08	2	50
02L1BB0904	Design (AIP) certification by the Design Checker	15	21APR08	05MAY08	2	50
02L1BB0906	Design (AIP) submission for the SO's approval	1	06MAY08	06MAY08	1	41
02L1BB0908	Design (AIP) review by the SO	21	07MAY08	27MAY08	2	50
02L1BB0910	Obtain design (AIP) approval from the SO	0		27MAY08	2	50
02L1BB0912	AIP submission for rel. authorities' approval	1	28MAY08	28MAY08	1	41
02L1BB0914	Design (AIP) review by the rel. authorities	28	29MAY08	25JUN08	2	50
02L1BB0916	Obtain rel. authorities's approval for AIP	1	26JUN08	26JUN08	1	42
02L1BB0918	Obtain SO's consent for design (AIP)	0		27JUN08	2	50
02L1BB0920	Design preparation for the DDA submission	30	05JUN08	04JUL08	2	50
02L1BB0922	Design (DDA) certification by the Design Checker	15	05JUL08	19JUL08	2	50
02L1BB0924	Design (DDA) submission for the SO's approval	1	21JUL08	21JUL08	1	42



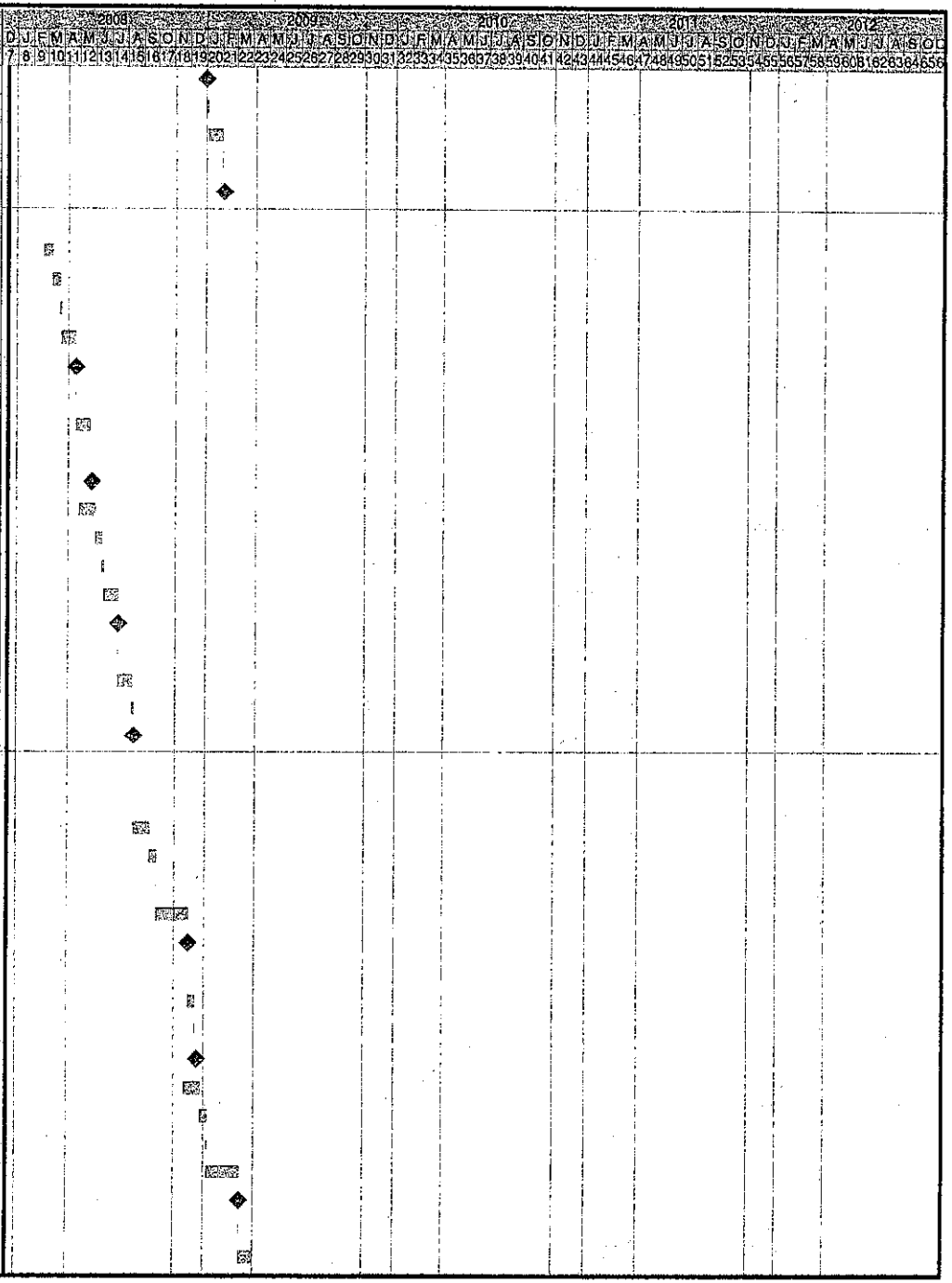
ID	Activity Description	Orig Dur	Early Start	Early Finish	Cal ID	Total Float
02L1BB0926	Design (DDA) review by the SO	21	22JUL08	11AUG08	2	49
02L1BB0928	Obtain design (DDA) approval from the SO	0		11AUG08	2	49
02L1BB0930	DDA submission for rel. authorities' approval	1	12AUG08	12AUG08	1	41
02L1BB0932	Design (DDA) review by the rel. authorities	28	13AUG08	09SEP08	2	50
02L1BB0934	Obtain rel. authorities's approval for DDA	1	10SEP08	10SEP08	1	40
02L1BB0936	Obtain SO's consent for design (DDA)	0		11SEP08	2	50
Design Packages for Works in Portion C						
ELS Design for Intake Structure Construction						
02L1CC0102	Design preparation by the Designer	15	08FEB08	22FEB08	2	30
02L1CC0104	Design certification by the Design Checker	15	23FEB08	08MAR08	2	30
02L1CC0106	Design submission for the SO's approval	1	10MAR08	10MAR08	1	21
02L1CC0108	Design review by the SO	28	11MAR08	07APR08	2	29
02L1CC0110	Obtain design approval from the SO	0		07APR08	2	29
Temp. Support Design for MAA/MAS/VDS/DC/AVS						
02L1CC0302	Design preparation for the AIP submission	30	09MAR08	07APR08	2	262
02L1CC0304	Design (AIP) certification by the Design Checker	15	08APR08	22APR08	2	262
02L1CC0306	Design (AIP) submission for the SO's approval	1	23APR08	23APR08	1	215
02L1CC0308	Design (AIP) review by the SO	60	24APR08	22JUN08	2	262
02L1CC0310	Obtain design (AIP) approval from the SO	0		22JUN08	2	262
02L1CC0312	AIP submission for rel. authorities' approval	1	23JUN08	23JUN08	1	215
02L1CC0314	Design (AIP) review by the rel. authorities	15	24JUN08	08JUL08	2	262
02L1CC0316	Obtain rel. authorities's approval for AIP	1	09JUL08	09JUL08	1	216
02L1CC0318	Obtain SO's consent for design (AIP)	0		10JUL08	2	263
02L1CC0320	Design preparation for the DDA submission	30	18JUN08	17JUL08	2	263
02L1CC0322	Design (DDA) certification by the Design Checker	15	18JUL08	01AUG08	2	263
02L1CC0324	Design (DDA) submission for the SO's approval	1	02AUG08	02AUG08	1	212
02L1CC0326	Design (DDA) review by the SO	60	03AUG08	01OCT08	2	263
02L1CC0328	Obtain design (DDA) approval from the SO	0		01OCT08	2	263
02L1CC0330	DDA submission for rel. authorities' approval	1	02OCT08	02OCT08	1	211
02L1CC0332	Design (DDA) review by the rel. authorities	28	03OCT08	30OCT08	2	263
02L1CC0334	Obtain rel. authorities's approval for DDA	1	31OCT08	31OCT08	1	211
02L1CC0336	Obtain SO's consent for design (DDA)	0		01NOV08	2	263
Temp. Support Design for MA and MA/MT Connection						
02L1CC0402	Design preparation for the AIP submission	30	08MAY08	06JUN08	2	395
02L1CC0404	Design (AIP) certification by the Design Checker	15	07JUN08	21JUN08	2	395
02L1CC0406	Design (AIP) submission for the SO's approval	1	23JUN08	23JUN08	1	320
02L1CC0408	Design (AIP) review by the SO	60	24JUN08	22AUG08	2	394
02L1CC0410	Obtain design (AIP) approval from the SO	0		22AUG08	2	394
02L1CC0412	AIP submission for rel. authorities' approval	1	23AUG08	23AUG08	1	320
02L1CC0414	Design (AIP) review by the rel. authorities	15	24AUG08	07SEP08	2	394
02L1CC0416	Obtain rel. authorities's approval for AIP	1	08SEP08	08SEP08	1	319
02L1CC0418	Obtain SO's consent for design (AIP)	0		09SEP08	2	394



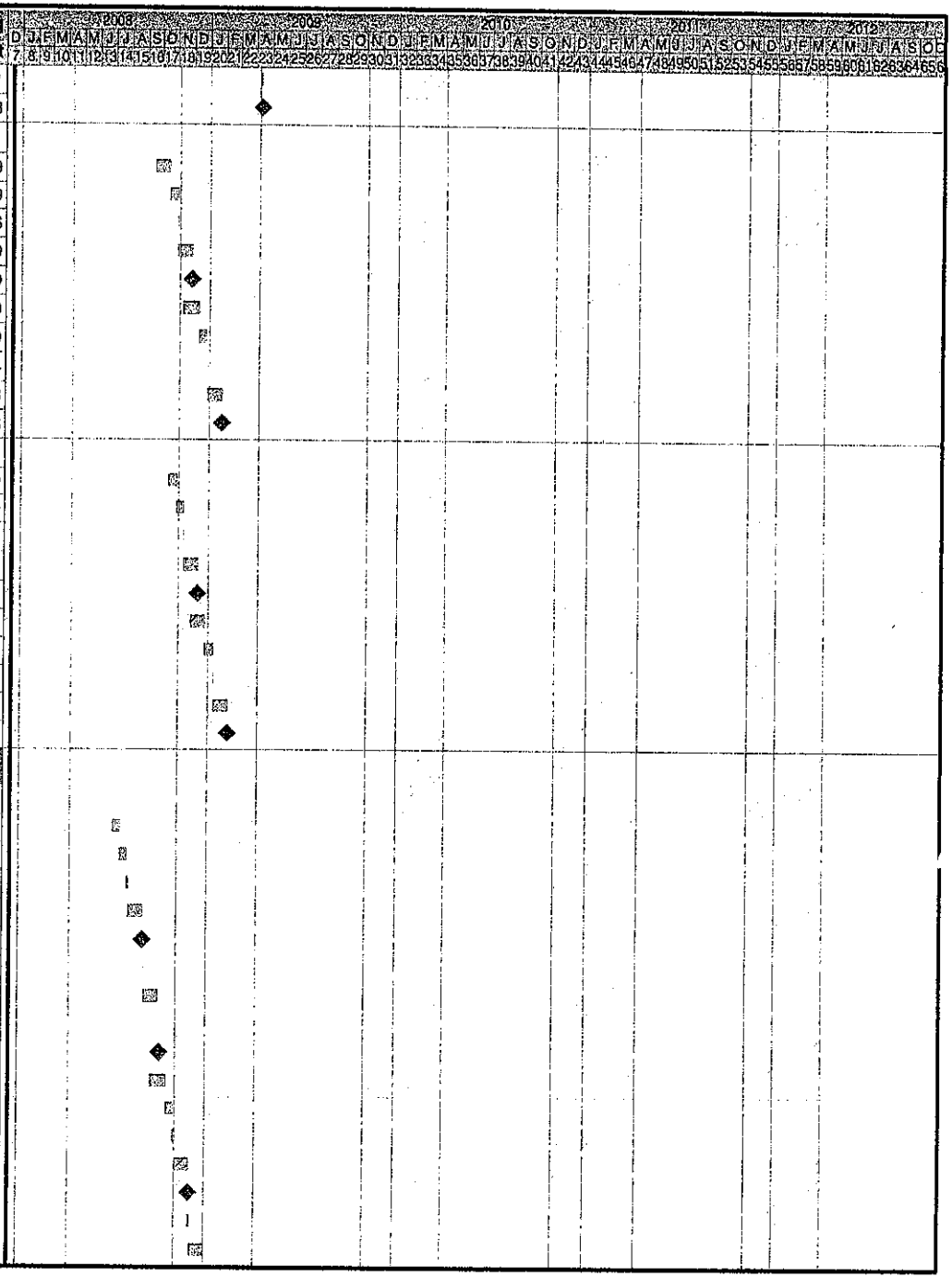
ID	Activity Description	Orig Dur	Early Start	Early Finish	Cal ID	Total Float
02L1CC0420	Design preparation for the DDA submission	30	18AUG08	16SEP08	2	394
02L1CC0422	Design (DDA) certification by the Design Checker	15	17SEP08	01OCT08	2	394
02L1CC0424	Design (DDA) submission for the SO's approval	1	02OCT08	02OCT08	1	320
02L1CC0426	Design (DDA) review by the SO	60	03OCT08	01DEC08	2	394
02L1CC0428	Obtain design (DDA) approval from the SO	0		01DEC08	2	394
02L1CC0430	DDA submission for rel. authorities' approval	1	02DEC08	02DEC08	1	319
02L1CC0432	Design (DDA) review by the rel. authorities	28	03DEC08	30DEC08	2	394
02L1CC0434	Obtain rel. authorities's approval for DDA	1	31DEC08	31DEC08	1	320
02L1CC0436	Obtain SO's consent for design (DDA)	0		02JAN09	2	394
Permanent Design for MAA/MAS/VDS/DC/AVS						
02L1CC0502	Design preparation for the AIP submission	30	08APR08	07MAY08	2	285
02L1CC0504	Design (AIP) certification by the Design Checker	15	08MAY08	22MAY08	2	285
02L1CC0506	Design (AIP) submission for the SO's approval	1	23MAY08	23MAY08	1	233
02L1CC0508	Design (AIP) review by the SO	60	24MAY08	22JUL08	2	285
02L1CC0510	Obtain design (AIP) approval from the SO	0		22JUL08	2	285
02L1CC0512	AIP submission for rel. authorities' approval	1	23JUL08	23JUL08	1	229
02L1CC0514	Design (AIP) review by the rel. authorities	15	24JUL08	07AUG08	2	285
02L1CC0516	Obtain rel. authorities's approval for AIP	1	08AUG08	08AUG08	1	229
02L1CC0518	Obtain SO's consent for design (AIP)	0		09AUG08	2	285
02L1CC0520	Design preparation for the DDA submission	30	18JUL08	16AUG08	2	285
02L1CC0522	Design (DDA) certification by the Design Checker	15	17AUG08	31AUG08	2	285
02L1CC0524	Design (DDA) submission for the SO's approval	1	01SEP08	01SEP08	1	229
02L1CC0526	Design (DDA) review by the SO	60	02SEP08	31OCT08	2	286
02L1CC0528	Obtain design (DDA) approval from the SO	0		31OCT08	2	286
02L1CC0530	DDA submission for rel. authorities' approval	1	01NOV08	01NOV08	1	231
02L1CC0532	Design (DDA) review by the rel. authorities	28	02NOV08	29NOV08	2	286
02L1CC0534	Obtain rel. authorities's approval for DDA	1	01DEC08	01DEC08	1	231
02L1CC0536	Obtain SO's consent for design (DDA)	0		02DEC08	2	286
Permanent Design for MA and MA/MT Connection						
02L1CC0602	Design preparation for the AIP submission	30	07JUN08	06JUL08	2	414
02L1CC0604	Design (AIP) certification by the Design Checker	15	07JUL08	21JUL08	2	414
02L1CC0606	Design (AIP) submission for the SO's approval	1	22JUL08	22JUL08	1	338
02L1CC0608	Design (AIP) review by the SO	60	23JUL08	20SEP08	2	414
02L1CC0610	Obtain design (AIP) approval from the SO	0		20SEP08	2	414
02L1CC0612	AIP submission for rel. authorities' approval	1	22SEP08	22SEP08	1	335
02L1CC0614	Design (AIP) review by the rel. authorities	15	23SEP08	07OCT08	2	413
02L1CC0616	Obtain rel. authorities's approval for AIP	1	08OCT08	08OCT08	1	337
02L1CC0618	Obtain SO's consent for design (AIP)	0		09OCT08	2	413
02L1CC0620	Design preparation for the DDA submission	30	17SEP08	16OCT08	2	413
02L1CC0622	Design (DDA) certification by the Design Checker	15	17OCT08	31OCT08	2	413
02L1CC0624	Design (DDA) submission for the SO's approval	1	01NOV08	01NOV08	1	337
02L1CC0626	Design (DDA) review by the SO	60	02NOV08	31DEC08	2	414



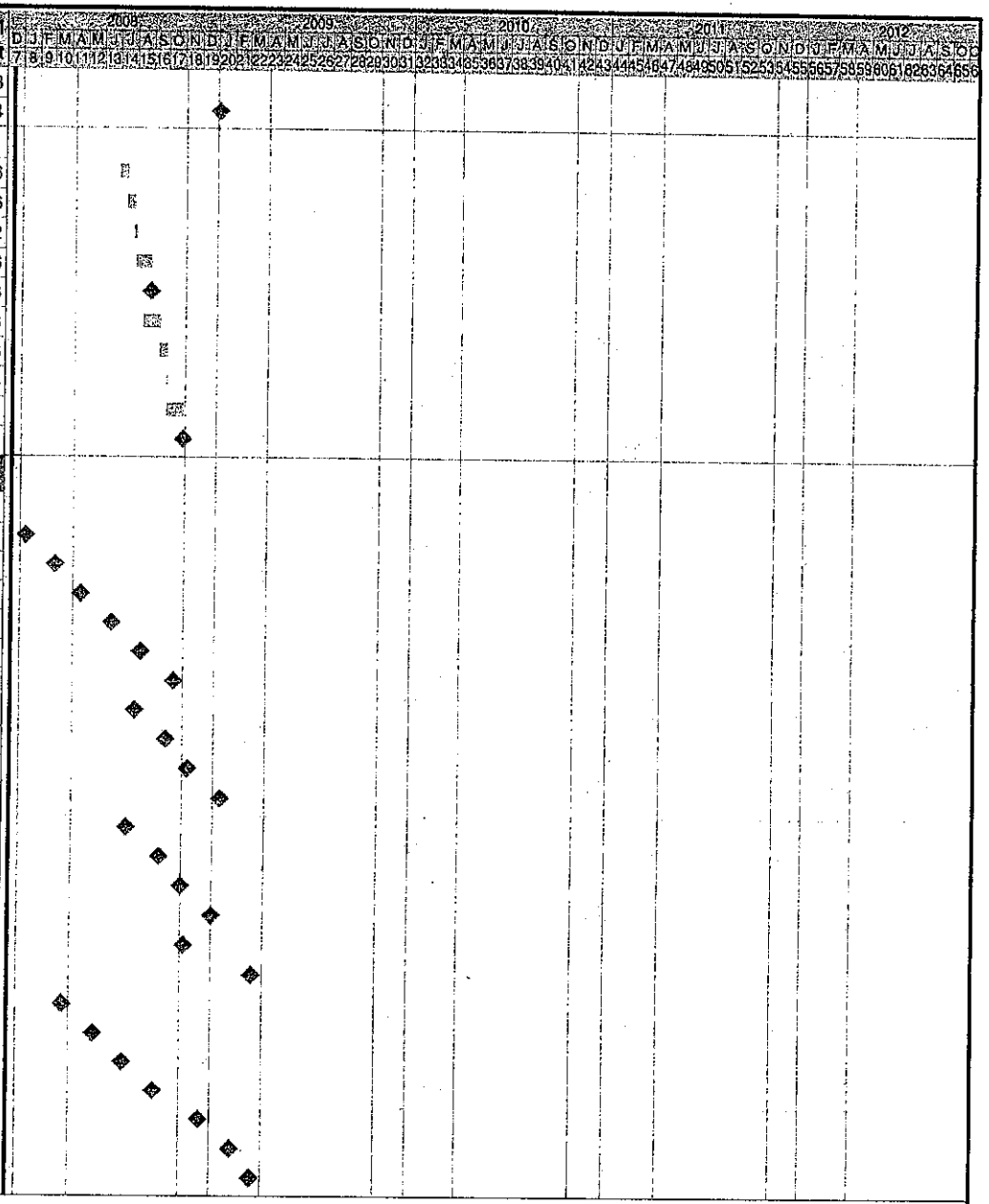
ID	Activity Description	Orig Dur	Early Start	Early Finish	Cal ID	Total Float
02L1CC0628	Obtain design (DDA) approval from the SO	0		31DEC08	2	414
02L1CC0630	DDA submission for rel. authorities' approval	1	02JAN09	02JAN09	1	334
02L1CC0632	Design (DDA) review by the rel. authorities	28	03JAN09	30JAN09	2	413
02L1CC0634	Obtain rel. authorities's approval for DDA	1	31JAN09	31JAN09	1	337
02L1CC0636	Obtain SO's consent for design (DDA)	0		02FEB09	2	413
Boulder Assessment & Design for Stabili. Measure						
02L1CC0702	Design preparation for the AIP submission	15	23FEB08	08MAR08	2	262
02L1CC0704	Design (AIP) certification by the Design Checker	15	09MAR08	23MAR08	2	319
02L1CC0706	Design (AIP) submission for the SO's approval	1	25MAR08	25MAR08	1	259
02L1CC0708	Design (AIP) review by the SO	28	26MAR08	22APR08	2	318
02L1CC0710	Obtain design (AIP) approval from the SO	0		22APR08	2	318
02L1CC0712	AIP submission for rel. authorities' approval	1	23APR08	23APR08	1	260
02L1CC0714	Design (AIP) review by the rel. authorities	28	24APR08	21MAY08	2	319
02L1CC0716	Obtain rel. authorities's approval for AIP	1	22MAY08	22MAY08	1	261
02L1CC0718	Obtain SO's consent for design (AIP)	0		23MAY08	2	319
02L1CC0720	Design preparation for the DDA submission	30	01MAY08	30MAY08	2	319
02L1CC0722	Design (DDA) certification by the Design Checker	15	31MAY08	14JUN08	2	319
02L1CC0724	Design (DDA) submission for the SO's approval	1	16JUN08	16JUN08	1	259
02L1CC0726	Design (DDA) review by the SO	28	17JUN08	14JUL08	2	321
02L1CC0728	Obtain design (DDA) approval from the SO	0		14JUL08	2	321
02L1CC0730	DDA submission for rel. authorities' approval	1	15JUL08	15JUL08	1	259
02L1CC0732	Design (DDA) review by the rel. authorities	28	16JUL08	12AUG08	2	321
02L1CC0734	Obtain rel. authorities's approval for DDA	1	13AUG08	13AUG08	1	259
02L1CC0736	Obtain SO's consent for design (DDA)	0		14AUG08	2	322
Design Packages for Work's in Portion G						
Drainage Impact Assessment						
02L1GG0102	Design preparation for the AIP submission	30	15AUG08	13SEP08	2	322
02L1GG0104	Design (AIP) certification by the Design Checker	15	14SEP08	28SEP08	2	322
02L1GG0106	Design (AIP) submission for the SO's approval	1	29SEP08	29SEP08	1	260
02L1GG0108	Design (AIP) review by the SO	60	30SEP08	28NOV08	2	322
02L1GG0110	Obtain design (AIP) approval from the SO	0		28NOV08	2	322
02L1GG0112	AIP submission for rel. authorities' approval	1	29NOV08	29NOV08	1	260
02L1GG0114	Design (AIP) review by the rel. authorities	15	30NOV08	14DEC08	2	323
02L1GG0116	Obtain rel. authorities's approval for AIP	1	15DEC08	15DEC08	1	260
02L1GG0118	Obtain SO's consent for design (AIP)	0		16DEC08	2	323
02L1GG0120	Design preparation for the DDA submission	30	24NOV08	23DEC08	2	323
02L1GG0122	Design (DDA) certification by the Design Checker	15	24DEC08	07JAN09	2	323
02L1GG0124	Design (DDA) submission for the SO's approval	1	08JAN09	08JAN09	1	263
02L1GG0126	Design (DDA) review by the SO	60	09JAN09	09MAR09	2	323
02L1GG0128	Obtain design (DDA) approval from the SO	0		09MAR09	2	323
02L1GG0130	DDA submission for rel. authorities' approval	1	10MAR09	10MAR09	1	263
02L1GG0132	Design (DDA) review by the rel. authorities	28	11MAR09	07APR09	2	323



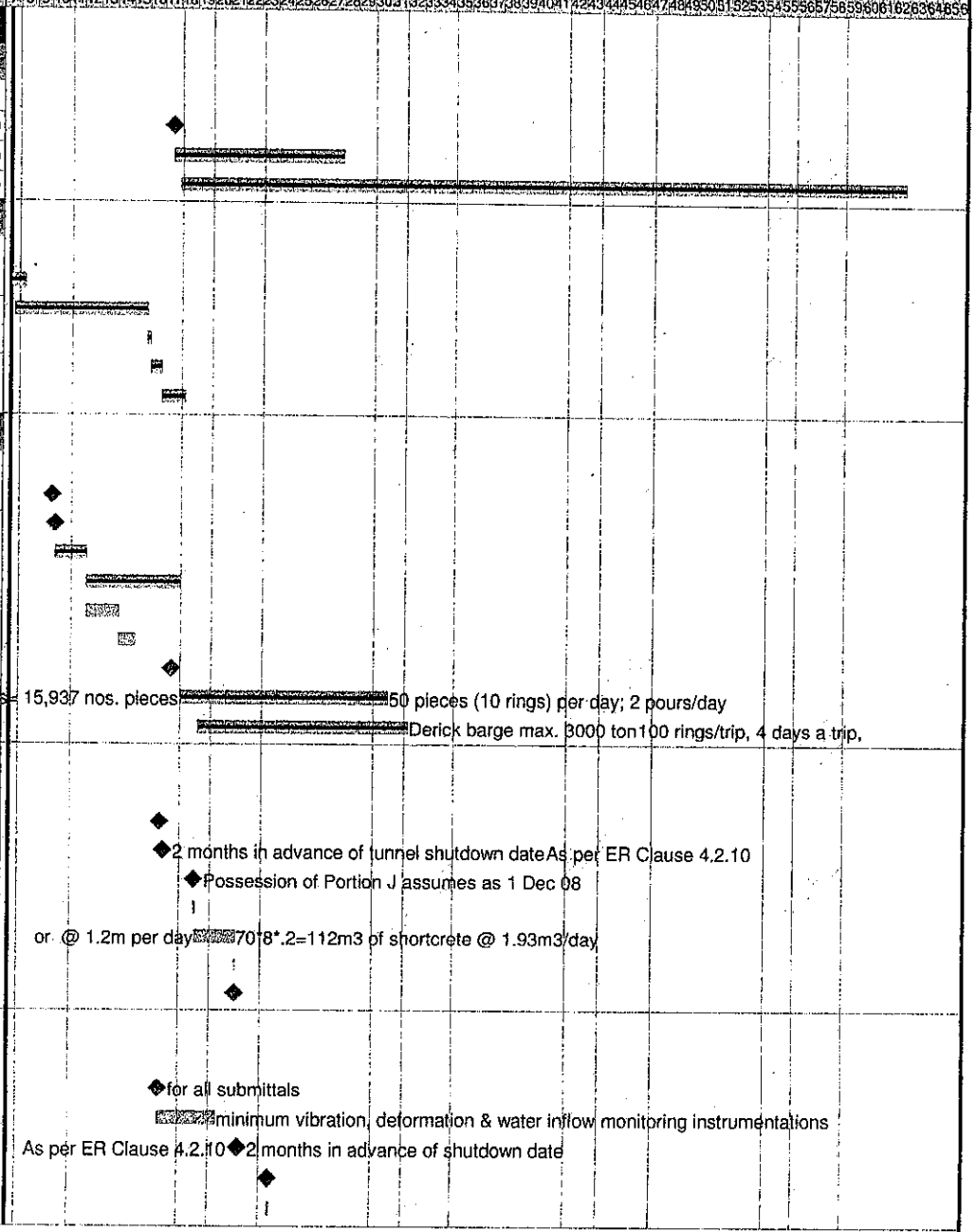
ID	Activity Description	Orig Dur	Early Start	Early Finish	Cal ID	Total Float
02L1GG0134	Obtain rel. authorities's approval for DDA	1	08APR09	08APR09	1	261
02L1GG0136	Obtain SO's consent for design (DDA)	0		09APR09	2	323
Temp. Platform Design for H-Piling at Portion G						
02L1GG0202	Design preparation for the AIP submission	30	14SEP08	13OCT08	2	439
02L1GG0204	Design (AIP) certification by the Design Checker	15	14OCT08	28OCT08	2	439
02L1GG0206	Design (AIP) submission for the SO's approval	1	29OCT08	29OCT08	1	356
02L1GG0208	Design (AIP) review by the SO	28	30OCT08	26NOV08	2	439
02L1GG0210	Obtain design (AIP) approval from the SO	0		26NOV08	2	439
02L1GG0220	Design preparation for the DDA submission	30	11NOV08	10DEC08	2	439
02L1GG0222	Design (DDA) certification by the Design Checker	15	11DEC08	25DEC08	2	439
02L1GG0224	Design (DDA) submission for the SO's approval	1	27DEC08	27DEC08	1	354
02L1GG0226	Design (DDA) review by the SO	28	28DEC08	24JAN09	2	438
02L1GG0228	Obtain design (DDA) approval from the SO	0		24JAN09	2	438
ELS Design for Pipe Jacking at Portion G						
02L1GG0302	Design preparation for the AIP submission	15	14OCT08	28OCT08	2	630
02L1GG0304	Design (AIP) certification by the Design Checker	15	29OCT08	12NOV08	2	630
02L1GG0306	Design (AIP) submission for the SO's approval	1	13NOV08	13NOV08	1	509
02L1GG0308	Design (AIP) review by the SO	28	14NOV08	11DEC08	2	630
02L1GG0310	Obtain design (AIP) approval from the SO	0		11DEC08	2	630
02L1GG0320	Design preparation for the DDA submission	30	26NOV08	25DEC08	2	630
02L1GG0322	Design (DDA) certification by the Design Checker	15	26DEC08	09JAN09	2	630
02L1GG0324	Design (DDA) submission for the SO's approval	1	10JAN09	10JAN09	1	510
02L1GG0326	Design (DDA) review by the SO	28	11JAN09	07FEB09	2	631
02L1GG0328	Obtain design (DDA) approval from the SO	0		07FEB09	2	631
Design Packages for E&M Works						
Design for Communication System						
02L1FE0102	Design preparation for the AIP submission	15	01JUL08	15JUL08	2	466
02L1FE0104	Design (AIP) certification by the Design Checker	15	16JUL08	30JUL08	2	466
02L1FE0106	Design (AIP) submission for the SO's approval	1	31JUL08	31JUL08	1	379
02L1FE0108	Design (AIP) review by the SO	30	01AUG08	30AUG08	2	466
02L1FE0110	Obtain design (AIP) approval from the SO	0		30AUG08	2	466
02L1FE0112	AIP submission for rel. authorities' approval	1	01SEP08	01SEP08	1	379
02L1FE0114	Design (AIP) review by the rel. authorities	28	02SEP08	29SEP08	2	465
02L1FE0116	Obtain rel. authorities's approval for AIP	1	30SEP08	30SEP08	1	377
02L1FE0118	Obtain SO's consent for design (AIP)	0		02OCT08	2	464
02L1FE0120	Design preparation for the DDA submission	30	17SEP08	16OCT08	2	464
02L1FE0122	Design (DDA) certification by the Design Checker	15	17OCT08	31OCT08	2	464
02L1FE0124	Design (DDA) submission for the SO's approval	1	01NOV08	01NOV08	1	377
02L1FE0126	Design (DDA) review by the SO	30	02NOV08	01DEC08	2	464
02L1FE0128	Obtain design (DDA) approval from the SO	0		01DEC08	2	464
02L1FE0130	DDA submission for rel. authorities' approval	1	02DEC08	02DEC08	1	375
02L1FE0132	Design (DDA) review by the rel. authorities	28	03DEC08	30DEC08	2	464



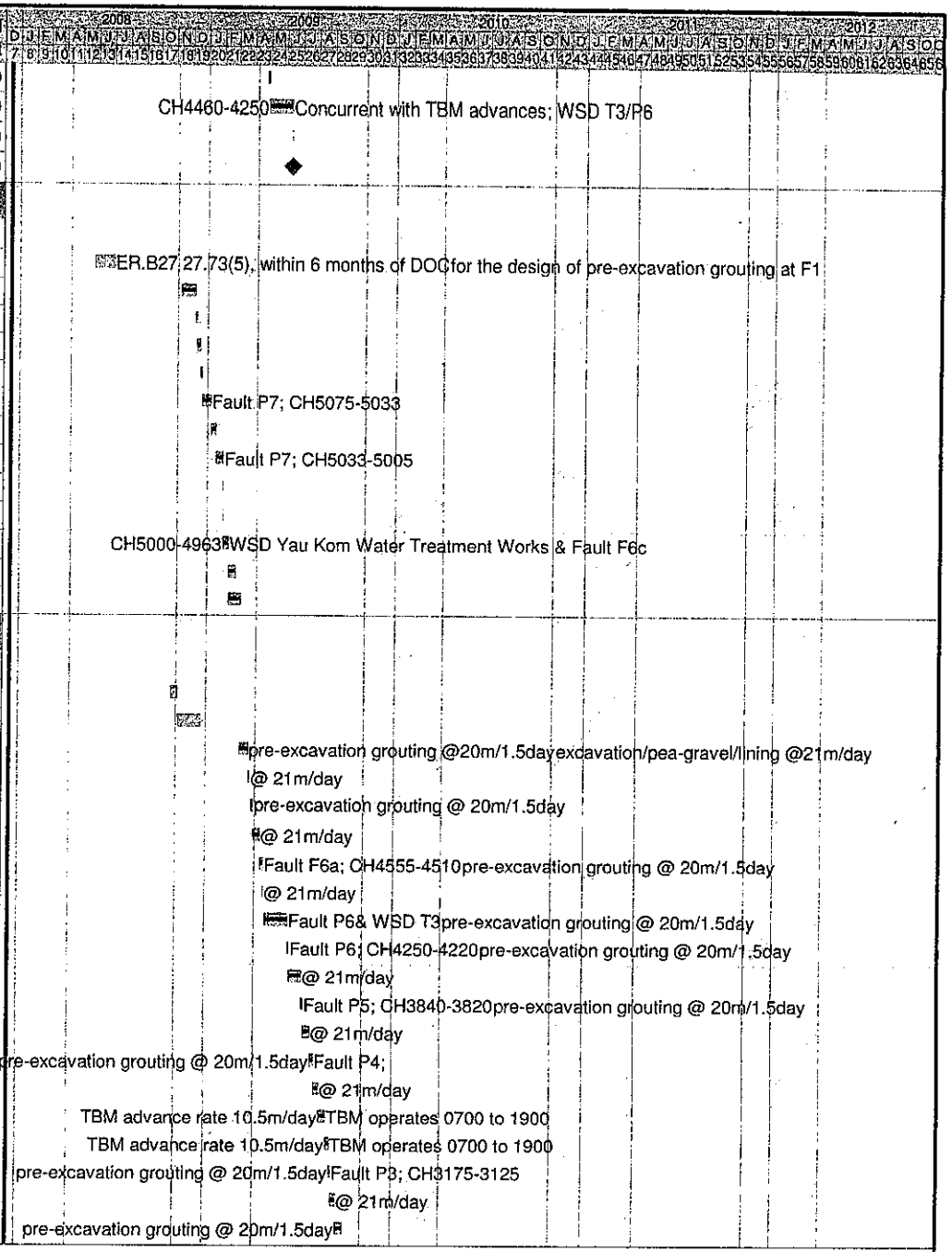
ID	Activity Description	Orig Dur	Early Start	Early Finish	Cal ID	Total Float
02L1FE0134	Obtain rel. authorities's approval for DDA	1	31DEC08	31DEC08	1	373
02L1FE0136	Obtain SO's consent for design (DDA)	0		02JAN09	2	464
Design for Flow Measurement System						
02L1FE0202	Design preparation for the AIP submission	15	01JUL08	15JUL08	2	816
02L1FE0204	Design (AIP) certification by the Design Checker	15	16JUL08	30JUL08	2	816
02L1FE0206	Design (AIP) submission for the SO's approval	1	31JUL08	31JUL08	1	662
02L1FE0208	Design (AIP) review by the SO	30	01AUG08	30AUG08	2	816
02L1FE0210	Obtain design (AIP) approval from the SO	0		30AUG08	2	816
02L1FE0220	Design preparation for the DDA submission	30	15AUG08	13SEP08	2	816
02L1FE0222	Design (DDA) certification by the Design Checker	15	14SEP08	28SEP08	2	816
02L1FE0224	Design (DDA) submission for the SO's approval	1	29SEP08	29SEP08	1	664
02L1FE0226	Design (DDA) review by the SO	30	30SEP08	29OCT08	2	818
02L1FE0228	Obtain design (DDA) approval from the SO	0		29OCT08	2	818
Schedule of Milestones for Cost Centre No. 2L						
02L10D1002	2L 1; On submission of PDP to the SO	0		10JAN08	2	1,719
02L10D1004	2L 2; On acception of PDP by the SO	0		06MAR08	2	1,663
02L10D1006	2L 3; On submission of AIP to the SO; Portion A	0		22APR08	2	1,616
02L10D1008	2L 4; On acceptance of AIP by the SO; Portion A	0		21JUN08	2	1,556
02L10D1010	2L 5; On subumission of DDA to the SO; Portion A	0		15AUG08	2	1,501
02L10D1012	2L 6; On acceptance of DDA by the SO; Portion A	0		14OCT08	2	1,441
02L10D1014	2L 7; On submission of AIP to the SO; Portion B	0		04AUG08	2	1,512
02L10D1016	2L 8; On acceptance of AIP by the SO; Portion B	0		03OCT08	2	1,452
02L10D1018	2L 9; On submission of DDA to the SO; Portion B	0		13NOV08	2	1,411
02L10D1020	2L 10; On acceptance of DDA by the SO; Portion B	0		12JAN09	2	1,351
02L10D1022	2L 11; On submission of AIP to the SO; Portion C	0		22JUL08	2	1,525
02L10D1024	2L 12; On acceptance of AIP by the SO; Portion C	0		20SEP08	2	1,465
02L10D1026	2L 13; On submission of DDA to the SO; Portion C	0		01NOV08	2	1,423
02L10D1028	2L 14; On acceptance of DDA by the SO; Portion C	0		31DEC08	2	1,363
02L10D1030	2L 15; On acceptance of AIP by the SO; Portion D	0		09NOV08	2	1,415
02L10D1032	2L 16; On acceptance of DDA by the SO; Portion D	0		18MAR09	2	1,286
02L10D1034	2L 17; On submission of AIP to the SO; Portion F	0		25MAR08	2	1,644
02L10D1036	2L 18; On acceptance of AIP by the SO; Portion F	0		24MAY08	2	1,584
02L10D1038	2L 19; On submission of DDA to the SO; Portion F	0		18JUL08	2	1,529
02L10D1040	2L 20; On acceptance of DDA by the SO; Portion F	0		16SEP08	2	1,469
02L10D1042	2L 21; On acceptance of AIP by the SO; Portion G	0		11DEC08	2	1,383
02L10D1044	2L 22; On acceptance of DDA by the SO; Portion G	0		07FEB09	2	1,325
02L10D1046	2L 23; On completion of all works under this CC	0		18MAR09	2	1,286



ID	Activity Description	Orig Dur	Early Start	Early Finish	Cal ID	Total Float
Construction of Main Tunnel						
Geotechnical Instrumentation						
3DL1FT0202	Obtain Tunnel Design (DDA) approval from the SO	0		17OCT08	1	0
3DL1FT0206	Installation of Geotechnical Instrumentation	260	18OCT08	02SEP09	1	0
3DL1FT0208	Maintain/monitor geotechnical instrumentation	1,104	01NOV08	26JUL12	1	0
TBM Manufacture/Testing/Delivery						
3AL1FT0302	TBM & Excavation Sys Procurement	30	14DEC07	12JAN08	2	0
3AL1FT0304	TBM design & manufacturing	252	21DEC07	28AUG08	2	0
3AL1FT0306	TBM workshop tests	7	29AUG08	04SEP08	2	0
3AL1FT0308	TBM dismounting & packing	21	05SEP08	25SEP08	2	0
3AL1FT0310	TBM shipment to Hong Kong	45	26SEP08	09NOV08	2	0
Manufacture Pre-cast Lining/Delivery						
3AL1FT0402	Procure sub-contract for segment lining	0		03MAR08	1	7
3AL1FT0403	Design preparation of MT for AIP submission	0		08MAR08	1	2
3AL1FT0404	Design of segment mould	60	09MAR08	07MAY08	2	3
3AL1FT0406	Manufacture of segment moulds	180	08MAY08	03NOV08	2	3
3AL1FT0408	Prepare/submit QA Sys & Fabrication MS	60	08MAY08	06JUL08	2	89
3AL1FT0410	SO approve QA system & Fabrication MS	28	07JUL08	07AUG08	1	75
3AL1FT0412	Approval of Tunnel Linig Design	0		17OCT08	2	20
3AL1FT0416	Manufactur of segments	320	04NOV08	01DEC09	1	3
3AL1FT0418	Delivery of Segments	320	09DEC08	08JAN10	1	3
Strenghtening Works at Exist. WSD Tai Lam Tunnel						
10AR1JT052	Approval of Imapact Assessment Report by SO/WSD	0		26SEP08	2	5
10AR1JT053	Obtain WSD's agreement for Tunnel Shutdown Date	0		01OCT08	2	0
10AR1JT054	Tunnel Shutdown Commences	0	01DEC08*		2	0
10AR1JT055	Preparatory works; temp. ventilation & lighting	3	01DEC08	03DEC08	1	51
10AR1JT056	Carry out strengthening works	58	04DEC08	16FEB09	1	51
10AR1JT057	Subsequent inspection by SO/WSD	2	17FEB09	18FEB09	1	51
10AR1JT058	WSD Tunnel strats operation	0	19FEB09		1	51
Geotechnical Instrumetation at WSD Tunnel						
3AL1FT0602	Approval of Impact Assessment Report by SO/WSD	0		26SEP08	1	29
3AL1FT0604	Procure/delivery of instrumentations	90	27SEP08	15JAN09	1	29
3AL1FT0612	Obtain WSD's agreement for Tunnel Shutdown date	0		22FEB09	2	0
3AL1FT0614	WSD Tunnel shutdown for instrumentation works	0	24APR09		2	0
3AL1FT0616	Joint survey & geo. instrumentations; daytime	3	24APR09	26APR09	2	0



ID	Activity Description	Orig Dur	Early Start	Early Finish	Cal ID	Total Float
3AL1FT0618	Verify method statement	3	24APR09	26APR09	2	0
3AL1FT0620	Monitoring of geotechnical insturmentation	45*	27APR09	10JUN09	2	0
3AL1FT0622	Subsequent Inspection/ repair damages (if any)	2	11JUN09	12JUN09	2	0
3AL1FT0624	WSD Tunnel starts operation	0	13JUN09		2	0
TBM Assembly & Initial Driving: Day Time Work						
3AL1FT0700	Carry out grouting trials from the surface at F1	30	26MAY08	30JUN08	1	109
3AL1FT0702	TBM initial assembly & start-up test	25	10NOV08	08DEC08	1	0
3AL1FT0704	TBM mobilization to tunnel face (CH5085)	2	09DEC08	10DEC08	1	0
3AL1FT0706	Install back-up system (3 decks + 3 platforms)	7	11DEC08	18DEC08	1	0
3AL1FT0708	TBM advances; CH5085-5075	2	19DEC08	20DEC08	1	0
3AL1FT0710	TBM advances; P7 CH5075-5033	11	22DEC08	06JAN09	1	0
3AL1FT0712	Install back-up system (6 decks)	10	07JAN09	17JAN09	1	0
3AL1FT0714	TBM advances; P7 CH5033-5005	7	19JAN09	29JAN09	1	0
3AL1FT0716	Install back-up system (1 decks)	1	30JAN09	30JAN09	1	0
3AL1FT0718	TBM advances; CH 5005-5000	1	31JAN09	31JAN09	1	0
3AL1FT0719	TBM advances; WSDYKWTW/F6c CH5000-4963	9	02FEB09	11FEB09	1	0
3AL1FT0720	Conveyor belt sys	10	12FEB09	23FEB09	1	0
3AL1FT0722	Install noise enclosure	20	12FEB09	06MAR09	1	0
Main Tunnel Works: Day & Night Work						
3AL1FT0802	Apply to EPD for CNP for 24 hrs. tunnel work	14	23OCT08	05NOV08	2	76
3AL1FT0804	EPD process/approve CNP application	45	06NOV08	20DEC08	2	76
3AL1FT0806	TBM advances; WSD YKTWTW/F6c CH4963-4830	16	07MAR09	25MAR09	1	0
3AL1FT0808	TBM advances; CH4830-4760	3	26MAR09	28MAR09	1	0
3AL1FT0810	TBM advances; F6b CH4760-4740	3	30MAR09	01APR09	1	0
3AL1FT0812	TBM advances; CH4740-4555	9	02APR09	16APR09	1	0
3AL1FT0814	TBM advances; F6a CH4555-4510	6	17APR09	23APR09	1	0
3AL1FT0816	TBM advances; CH4510-4460	2	24APR09	25APR09	1	0
3AL1FT0818	TBM advances; WSD T3/P6 CH4460-4250	36	27APR09	10JUN09	1	0
3AL1FT0820	TBM advances; P6 CH4250-4220	4	11JUN09	15JUN09	1	8
3AL1FT0822	TBM advances; CH4220-3840	18	16JUN09	07JUL09	1	8
3AL1FT0824	TBM advances; P5 CH3840-3820	3	08JUL09	10JUL09	1	8
3AL1FT0826	TBM advances CH3820-3575	12	11JUL09	24JUL09	1	8
3AL1FT0828	TBM advances; P4 CH3575-3525	6	25JUL09	31JUL09	1	8
3AL1FT0830	TBM advances; CH3525-3308	10	01AUG09	12AUG09	1	8
3AL1FT0832	TBM advances; Noise sesitive area CH3308-3175	13	13AUG09	27AUG09	1	8
3AL1FT0834	TBM advances; P3/Noise sesitive area CH3175-3143	6	28AUG09	03SEP09	1	8
3AL1FT0836	TBM advances; P3 CH3143-3125	2	04SEP09	05SEP09	1	8
3AL1FT0838	TBM advances; CH3125-2970	7	07SEP09	14SEP09	1	8
3AL1FT0840	TBM advances; WSD WS Reservior CH2970-2865	13	15SEP09	29SEP09	1	8



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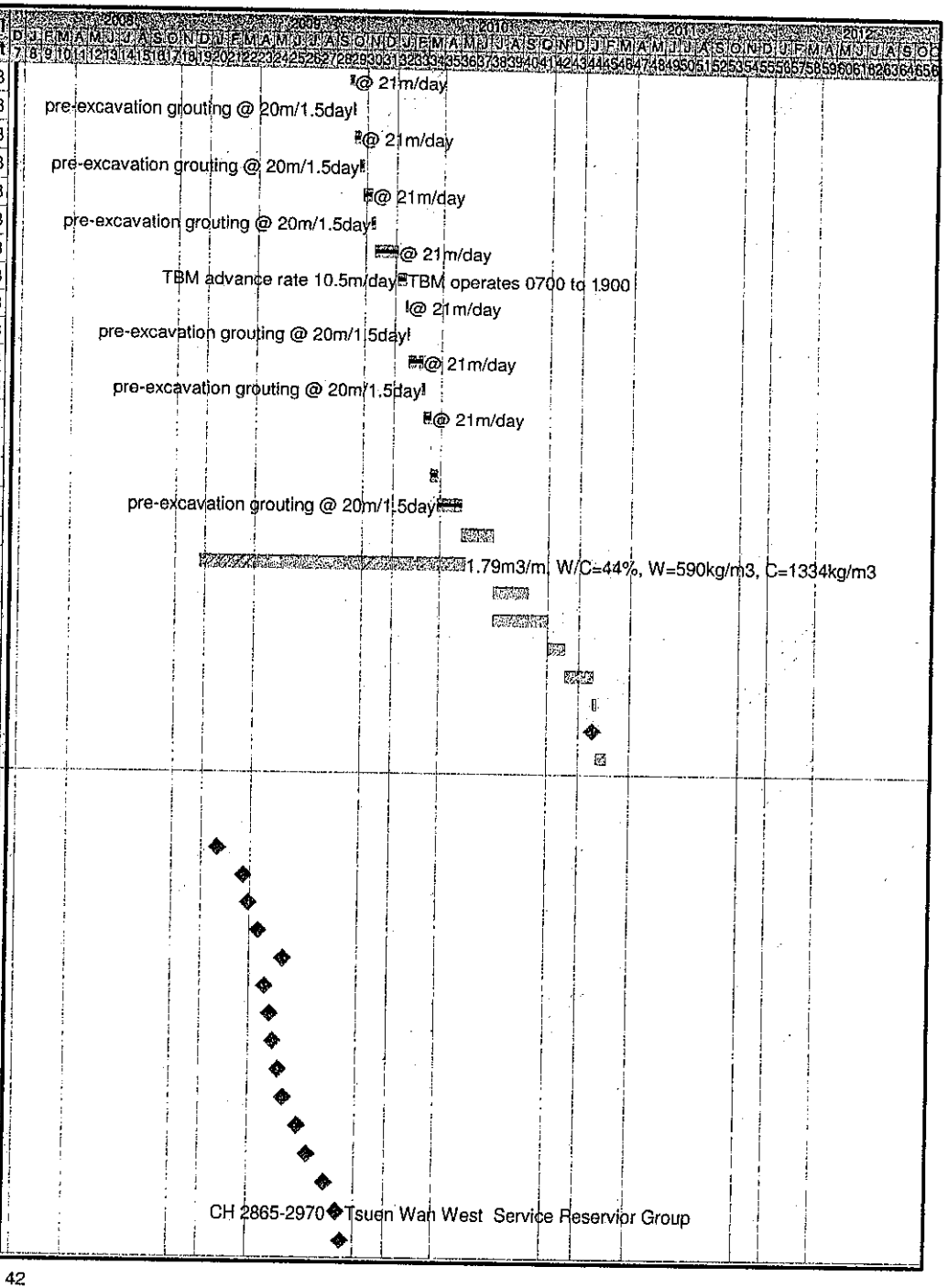
3AL1FT0842	TBM advances; CH2865-2765	5	30SEP09	07OCT09	1	8
3AL1FT0844	TBM advances; F5 CH2765-2745	3	08OCT09	10OCT09	1	8
3AL1FT0846	TBM advances; CH2745-2585	8	12OCT09	20OCT09	1	8
3AL1FT0848	TBM advances; F4 CH2585-2535	6	21OCT09	28OCT09	1	8
3AL1FT0850	TBM advances; CH2535-2255	13	29OCT09	12NOV09	1	8
3AL1FT0852	TBM advances; F3 CH2255-2205	6	13NOV09	19NOV09	1	8
3AL1FT0854	TBM advances; CH2205-1449	36	20NOV09	04JAN10	1	8
3AL1FT0856	TBM advances; Noise sesitive area CH1449-1295	15	05JAN10	21JAN10	1	8
3AL1FT0858	TBM advances; CH1295-1250	2	22JAN10	23JAN10	1	8
3AL1FT0860	TBM advances; F2 CH1250-1230	3	25JAN10	27JAN10	1	8
3AL1FT0862	TBM advances; CH1230-795	21	28JAN10	24FEB10	1	8
3AL1FT0864	TBM advances; P2 CH795-770	3	25FEB10	27FEB10	1	8
3AL1FT0866	TBM advances; CH770-540	11	01MAR10	12MAR10	1	8
3AL1FT0868	TBM advances; P1 CH540-530	1	13MAR10	13MAR10	1	8
3AL1FT0870	TBM advances; CH530-300	11	15MAR10	26MAR10	1	8
3AL1FT0872	TBM advances; F1 CH300-0	37	27MAR10	14MAY10	1	8
3AL1FT0873	Desembly & demobilization of TBM	50*	15MAY10	15JUL10	1	17
3AL1FT0874	Back grouting (daytime); CH5100-00	414	22DEC08	20MAY10	1	116
3AL1FT0876	Complete maintennce access & dry weather channel	60	16JUL10	24SEP10	1	129
3AL1FT0878	Installation of communication system (Daytime)	90	16JUL10	01NOV10	1	71
3AL1FT0880	Testing & Commissioning; daytime	28	02NOV10	03DEC10	1	71
3AL1FT0882	Authorities' inspection/remedial works; daytime	45	04DEC10	28JAN11	1	71
3AL1FT0884	Contractor serve notice for Works completion	7	29JAN11	04FEB11	2	577
3AL1FT0886	Handover of Portion F	0		28JAN11	1	144
3AL1FT0888	SO issues completion certificate	21	05FEB11	25FEB11	2	577

Schedule of Milestones for Cost Centre No. 6aR

6AR1FT0902	6aR 1; On completion of grouting at P7	0		29JAN09	2	1,334
6AR1FT0904	6aR 2; On completion of grouting at F6c	0		25MAR09	2	1,279
6AR1FT0906	6aR 3; On completion of grouting at F6b	0		01APR09	2	1,272
6AR1FT0908	6aR 4; On completion of grouting at F6a	0		23APR09	2	1,250
6AR1FT0910	6aR 5; On completion of grouting at WSD T. 3	0		10JUN09	2	1,202
6AR1FT0912	6aR 6; On completion of 20% grout by Ith at P6	0		07MAY09	2	1,236
6AR1FT0914	6aR 7; On completion of 40% grout by Ith at P6	0		16MAY09	2	1,227
6AR1FT0916	6aR 8; On completion of 60% grout by Ith at P6	0		26MAY09	2	1,217
6AR1FT0918	6aR 9; On completion of 80% grout by Ith at P6	0		05JUN09	2	1,207
6AR1FT0920	6aR 10; On completion of grouting works at P6	0		15JUN09	2	1,197
6AR1FT0922	6aR 11; On completion of grouting wks at P5	0		10JUL09	2	1,172
6AR1FT0924	6aR 12; On completion of grouting wks at P4	0		31JUL09	2	1,151
6AR1FT0926	6aR 13; On completion of grouting wks at P3	0		05SEP09	2	1,115
6AR1FT0928	6aR 14; On completion of grouting wks at WSD's	0		29SEP09	2	1,091
6AR1FT0930	6aR 15; On completion of grouting wks at F5	0		10OCT09	2	1,080



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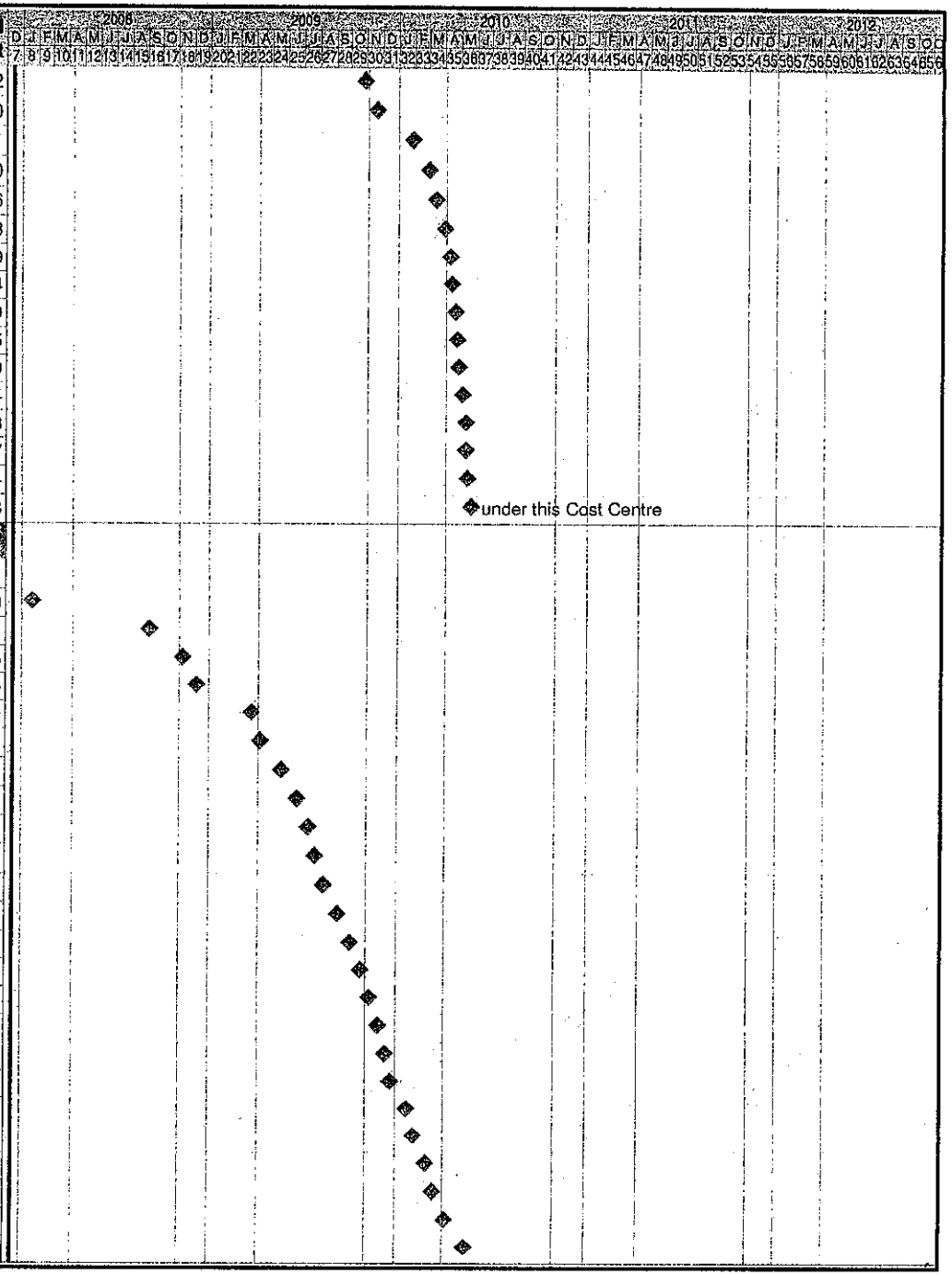
6AR1FT0932	6aR 16; On completion of grouting wks at F4	0		28OCT09	2	1,062
6AR1FT0934	6aR 17; On completion of grouting wks at F3	0		19NOV09	2	1,040
6AR1FT0936	6aR 18; On completion of grouting wks at F2	0		27JAN10	2	971
6AR1FT0938	6aR 19; On completion of grouting wks at P2	0		27FEB10	2	940
6AR1FT0940	6aR 20; On completion of grouting wks at P1	0		13MAR10	2	926
6AR1FT0942	6aR 21; On completion of 10% grout by Ith at F1	0		31MAR10	2	908
6AR1FT0944	6aR 22; On completion of 20% grout by Ith at F1	0		09APR10	2	899
6AR1FT0946	6aR 23; On completion of 30% grout by Ith at F1	0		14APR10	2	894
6AR1FT0948	6aR 24; On completion of 40% grout by Ith at F1	0		19APR10	2	889
6AR1FT0950	6aR 25; On completion of 50% grout by Ith at F1	0		23APR10	2	885
6AR1FT0952	6aR 26; On completion of 60% grout by Ith at F1	0		28APR10	2	880
6AR1FT0954	6aR 27; On completion of 70% grout by Ith at F1	0		04MAY10	2	874
6AR1FT0956	6aR 28; On completion of 80% grout by Ith at F1	0		10MAY10	2	868
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	0		14MAY10	2	864
6AR1FT0970	6aR 31; On completion of all works under this CC	0		20MAY10	2	858
Schedule of Milestones for Cost Centre No. 3aL						
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		04SEP08	2	1,481
3AL1FT1006	3aL 3; On delivery of all parts of TBM to the Si	0		09NOV08	2	1,415
3AL1FT1008	3aL 4; On completion of site comm. & test. of TB	0		08DEC08	2	1,386
3AL1FT1010	3aL 5; On completion of 5% perm. tunnel lining	0		25MAR09	2	1,279
3AL1FT1012	3aL 6; On completion of 10% perm. tunnel lining	0		09APR09	2	1,264
3AL1FT1014	3aL 7; On completion of 15% perm. tunnel lining	0		22MAY09	2	1,221
3AL1FT1016	3aL 8; On completion of 20% perm. tunnel lining	0		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	0		24JUL09	2	1,158
3AL1FT1022	3aL 11; On completion of 35% perm. tunnel lining	0		10AUG09	2	1,141
3AL1FT1024	3aL 12; On completion of 40% perm. tunnel lining	0		09SEP09	2	1,111
3AL1FT1026	3aL 13; On completion of 45% perm. tunnel lining	0		03OCT09	2	1,087
3AL1FT1028	3aL 14; On completion of 50% perm. tunnel lining	0		24OCT09	2	1,066
3AL1FT1030	3aL 15; On completion of 55% perm. tunnel lining	0		09NOV09	2	1,050
3AL1FT1032	3aL 16; On completion of 60% perm. tunnel lining	0		27NOV09	2	1,032
3AL1FT1034	3aL 17; On completion of 65% perm. tunnel lining	0		09DEC09	2	1,020
3AL1FT1036	3aL 18; On completion of 70% perm. tunnel lining	0		21DEC09	2	1,008
3AL1FT1038	3aL 19; On completion of 75% perm. tunnel lining	0		22JAN10	2	976
3AL1FT1040	3aL 20; On completion of 80% perm. tunnel lining	0		05FEB10	2	962
3AL1FT1042	3aL 21; On completion of 85% perm. tunnel lining	0		01MAR10	2	938
3AL1FT1044	3aL 22; On completion of 90% perm. tunnel lining	0		15MAR10	2	924
3AL1FT1046	3aL 23; On completion of 95% perm. tunnel lining	0		07APR10	2	901
3AL1FT1048	3aL 24; On completion of perm. tunnel lining	0		14MAY10	2	864



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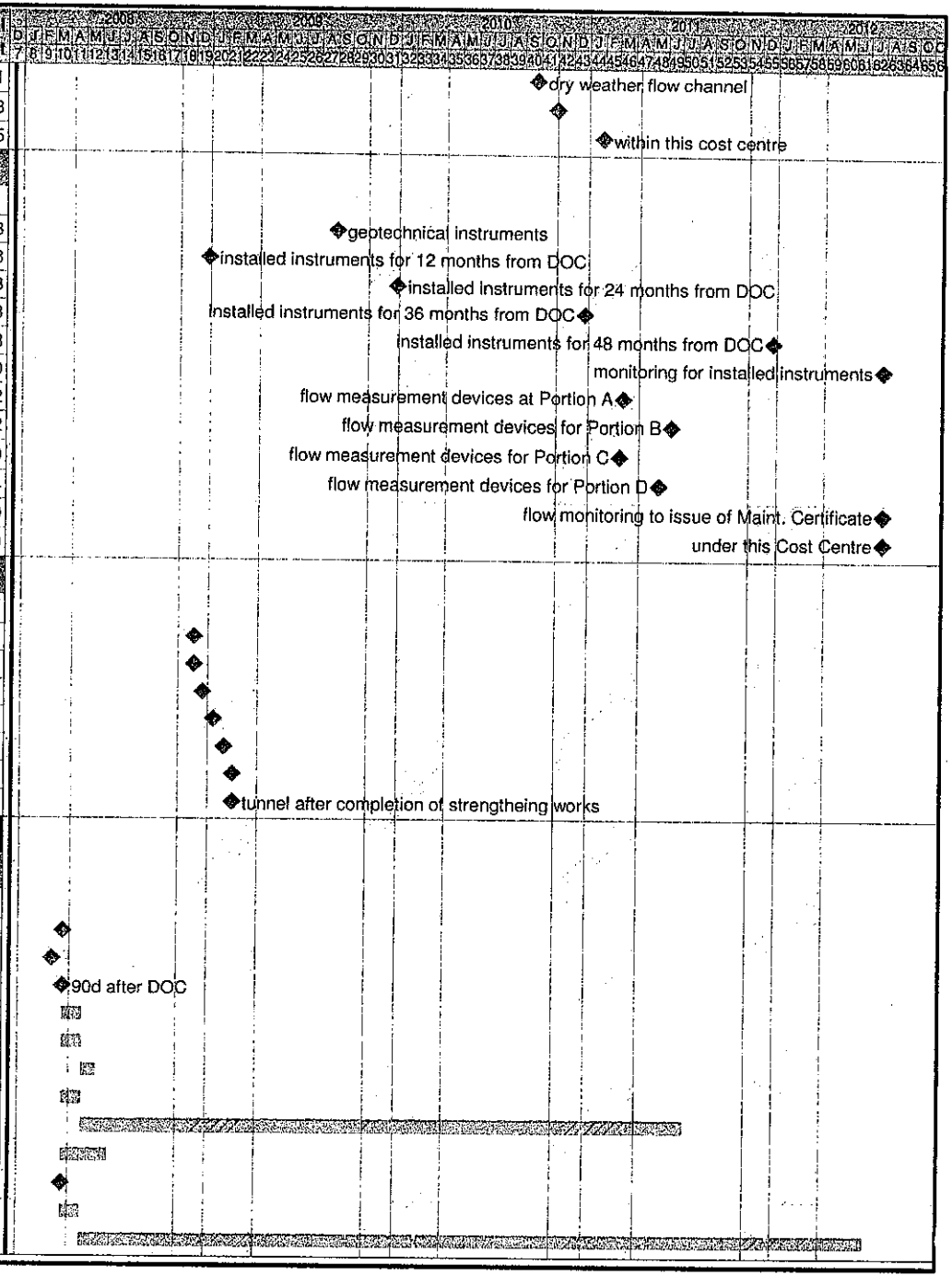
3AL1FT1050	3aL 25; On completion of maint. access/flow chan	0		24SEP10	2	731
3AL1FT1052	3aL 26; On completion of provision of communic.	0		01NOV10	2	693
3AL1FT1054	3aL 27; On completion of all works under this CC	0		28JAN11	2	605
Schedule of Milestones for Cost Centre No. 3dL						
3DL10T1202	3dL 1; On complet. of install geo instrrument.	0		02SEP09	2	1,118
3DL10T1204	3dL 2; Maint./monit. geo. inst. for 12 mth	0		26DEC08	2	1,368
3DL10T1206	3dL 3; Maint./monitor geo. inst. for 24	0		26DEC09	2	1,003
3DL10T1208	3dL 4; Maint./monitor geo. inst. for 36	0		26DEC10	2	638
3DL10T1210	3dL 5; Maint./monitor geo. inst. for 48	0		26DEC11	2	273
3DL10T1212	3dL 6; On completion of maint. & monit. of geo.	0		26JUL12	2	60
3DL10T1214	3dL 7; On installation of FMD at Portion A	0		12MAR11	2	562
3DL10T1216	3dL 8; On installation of FMD at Portion B	0		10JUN11	2	472
3DL10T1218	3dL 9; On installation of FMD at Portion C	0		05MAR11	2	569
3DL10T1220	3dL 10; On installation of FMD at Portion D	0		19MAY11	2	494
3DL10T1222	3dL 11; On completion of maint. & monit. of FMD	0		26JUL12	2	60
3DL10T1224	3dL 12; On completion of all works under this CC	0		26JUL12	2	60
Schedule of Milestones for Cost Centre No. 10aR						
10AR1JT131	10aR 1; On installation of temp. ventilation	0		03DEC08	2	1,391
10AR1JT132	10aR 2; On installation temp. lighting	0		03DEC08	2	1,391
10AR1JT133	10aR 3; On completion of 25% strengthening wks	0		20DEC08	2	1,374
10AR1JT134	10aR 4; On completion of 50% strengthening wks	0		10JAN09	2	1,353
10AR1JT135	10aR 5; On completion of 75% strengthening wks	0		31JAN09	2	1,332
10AR1JT136	10aR 6; On completion of strengthening works	0		16FEB09	2	1,316
10AR1JT137	10aR 7; On recharge of the water after wrk comp	0		18FEB09	2	1,314
Construction of Intake I-1						
Preliminary Works						
01R1AI1108	Obtain tree felling permit	0		26MAR08	2	90
01R1AI1110	Obtain TTA (Ingress & egress) approval	0	07MAR08		2	59
01R1AI1112	Possession of site	0	26MAR08		1	12
01R1AI1114	Site establishment	30	27MAR08	02MAY08	1	31
01R1AI1116	Site clearance	30	27MAR08	02MAY08	1	31
01R1AI1117	Erect temp. steel decking spanning Shing M. Nul.	24	03MAY08	31MAY08	1	31
01R1AI1122	Install remote control CCTV as per ER 4.4.10	30	27MAR08	02MAY08	1	12
01R1AI1124	Maintain & operate CCTV	1,165	03MAY08	11JUL11	2	16
16R7AI1102	Tree transplanting; 4 nos.	72	27MAR08	23JUN08	1	73
3DL1AI1104	Obtain approval for Geotechnical Instrumentation	0		26MAR08	2	29
3DL1AI1106	Installation of Geotechnical Instrumentation	30	27MAR08	02MAY08	1	24
3DL1AI1108	Monitor/report Geotechnical Instrumentation	1,230	03MAY08	27JUN12	1	24



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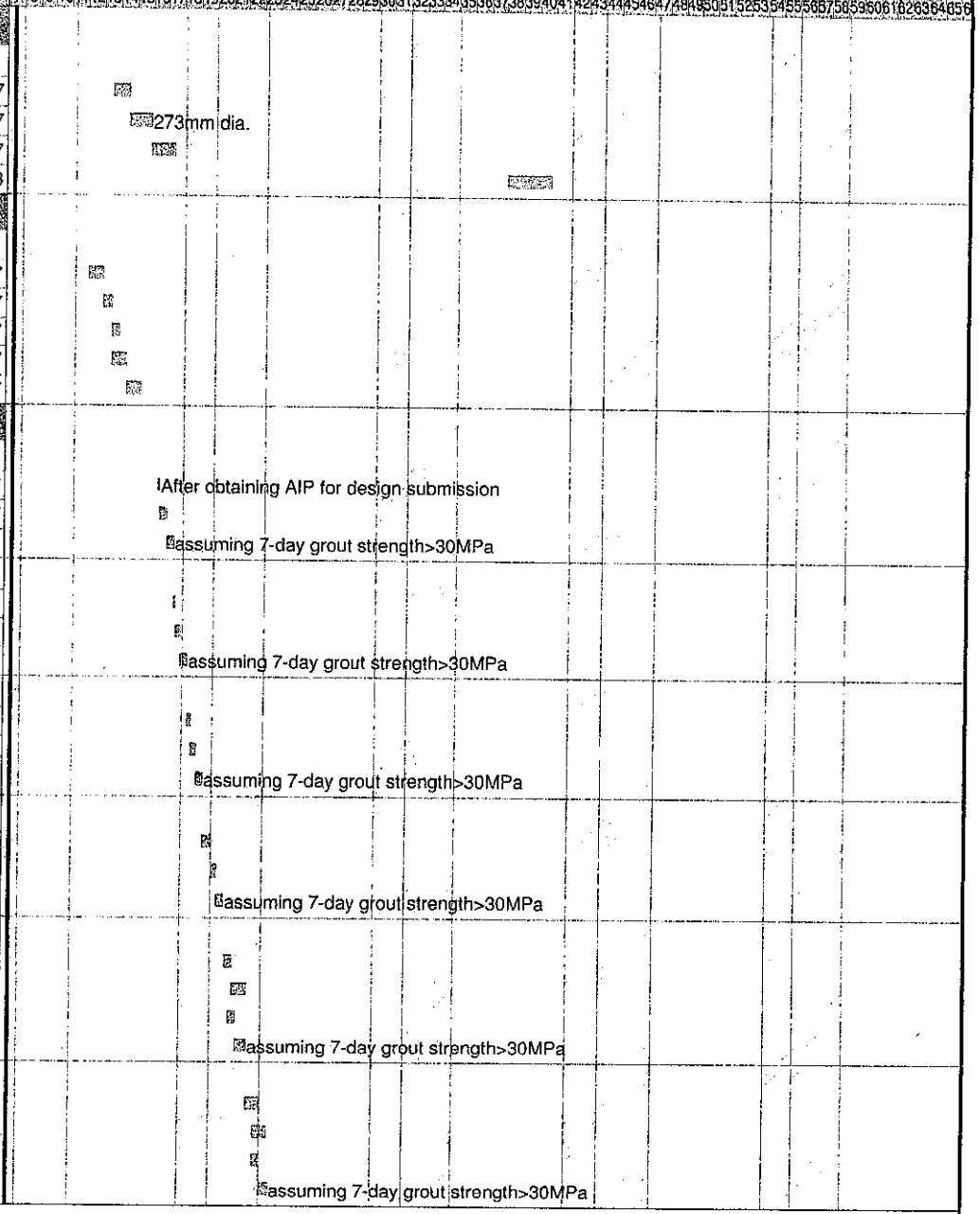
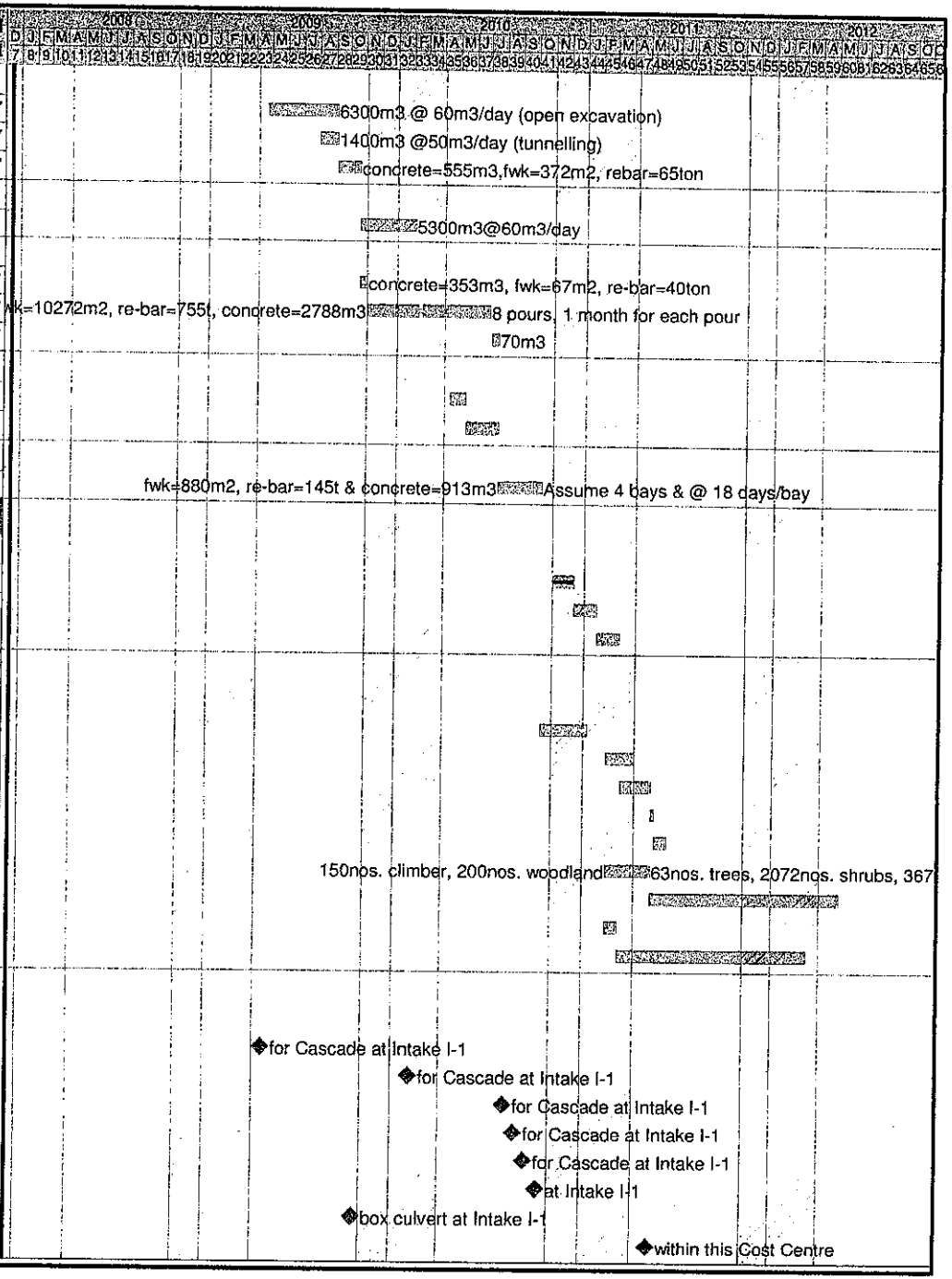
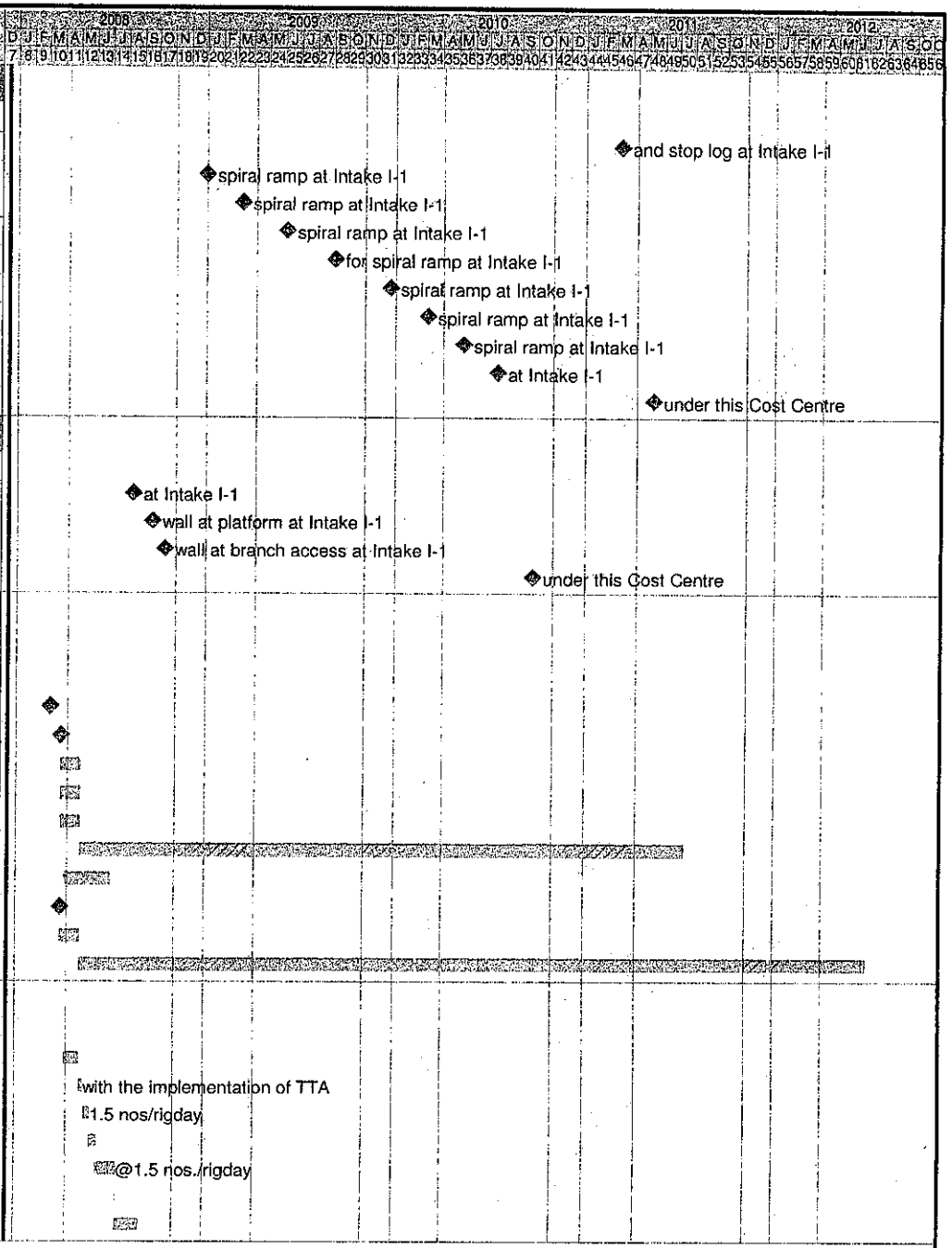
Piling Works						
07R1AI1202	Erect piling platform	24	19JUN08	17JUL08	1	17
07R1AI1204	Install 273 mm dia. temp. pipe piles; 175 nos.	36	18JUL08	28AUG08	1	17
11R2AI1206	350mm dia. pre-bored H-piles; 66 nos.	36	29AUG08	13OCT08	1	17
11R2AI1208	Construct skin wall/access platforms; Portion A	72	02JUL10	24SEP10	1	198
Permanent Soil Nailing Works						
11R2AI1302	Erect scaffolding & working platform	24	03MAY08	31MAY08	1	57
11R2AI1304	Install test nails & proof loading test; 2 nos.	12	02JUN08	16JUN08	1	57
11R2AI1306	Soil nailing at western side; 28 nos.	12	17JUN08	30JUN08	1	57
11R2AI1308	Soil nailing at eastern side; 122 nos.	24	17JUN08	15JUL08	1	57
11R2AI1310	Constrcut soil nail heads; 150 nos.	24	16JUL08	12AUG08	1	57
Construction of Spiral Ramp & Cascade						
Excavation from Existing GL to +103.5mPD						
04L1AI1402	Bulk excavation; soil (80m3)	4	16SEP08	19SEP08	1	17
04L1AI1404	Install test tie-back & proof load test; 1 no.	10	20SEP08	02OCT08	1	17
04L1AI1406	Install working tie-backs; 10 nos.	10	03OCT08	15OCT08	1	17
Excavation from +103.5mPD to +100.5mPD						
04L1AI1408	Bulk excavation; soil (240m3)	4	16OCT08	20OCT08	1	17
04L1AI1410	Install test tie-back & proof load test; 1 no.	10	21OCT08	31OCT08	1	17
04L1AI1412	Install working tie-backs; 10 nos.	10	01NOV08	12NOV08	1	17
Excavation from +100.5mPD to +97.5mPD						
04L1AI1414	Bulk excavation; soil (510m3)	6	13NOV08	19NOV08	1	17
04L1AI1416	Install test tie-back & proof load test; 1 no.	10	20NOV08	01DEC08	1	17
04L1AI1418	Install working tie-backs; 22 nos.	10	02DEC08	12DEC08	1	17
Excavation from +97.5mPD to +94.5mPD						
04L1AI1420	Bulk excavation; soil (950m3)	12	13DEC08	29DEC08	1	17
04L1AI1422	Install test tie-back & proof load test; 1 no.	10	30DEC08	10JAN09	1	17
04L1AI1424	Install working tie-backs; 37 nos.	12	12JAN09	24JAN09	1	17
Excavation from +94.5mPD to +91.5mPD						
04L1AI1426	Bulk excavation; soil (1130m3)	12	29JAN09	11FEB09	1	17
04L1AI1428	Bulk excavation; rock (650m3)	24	12FEB09	11MAR09	1	17
04L1AI1430	Install test tie-back & proof load test; 1 no.	10	05FEB09	16FEB09	1	19
04L1AI1432	Install working tie-backs; 43 nos.	18	17FEB09	09MAR09	1	19
Excavation from +91.5mPD to + 88.5mPD						
04L1AI1434	Bulk excavation; soil (1860m3)	18	12MAR09	01APR09	1	17
04L1AI1436	Bulk excavation; rock (420m3)	18	26MAR09	20APR09	1	17
04L1AI1438	Install test tie-back & proof load test; 1 no.	10	26MAR09	07APR09	1	17
04L1AI1440	Install working tie-backs; 27 nos.	12	08APR09	24APR09	1	17



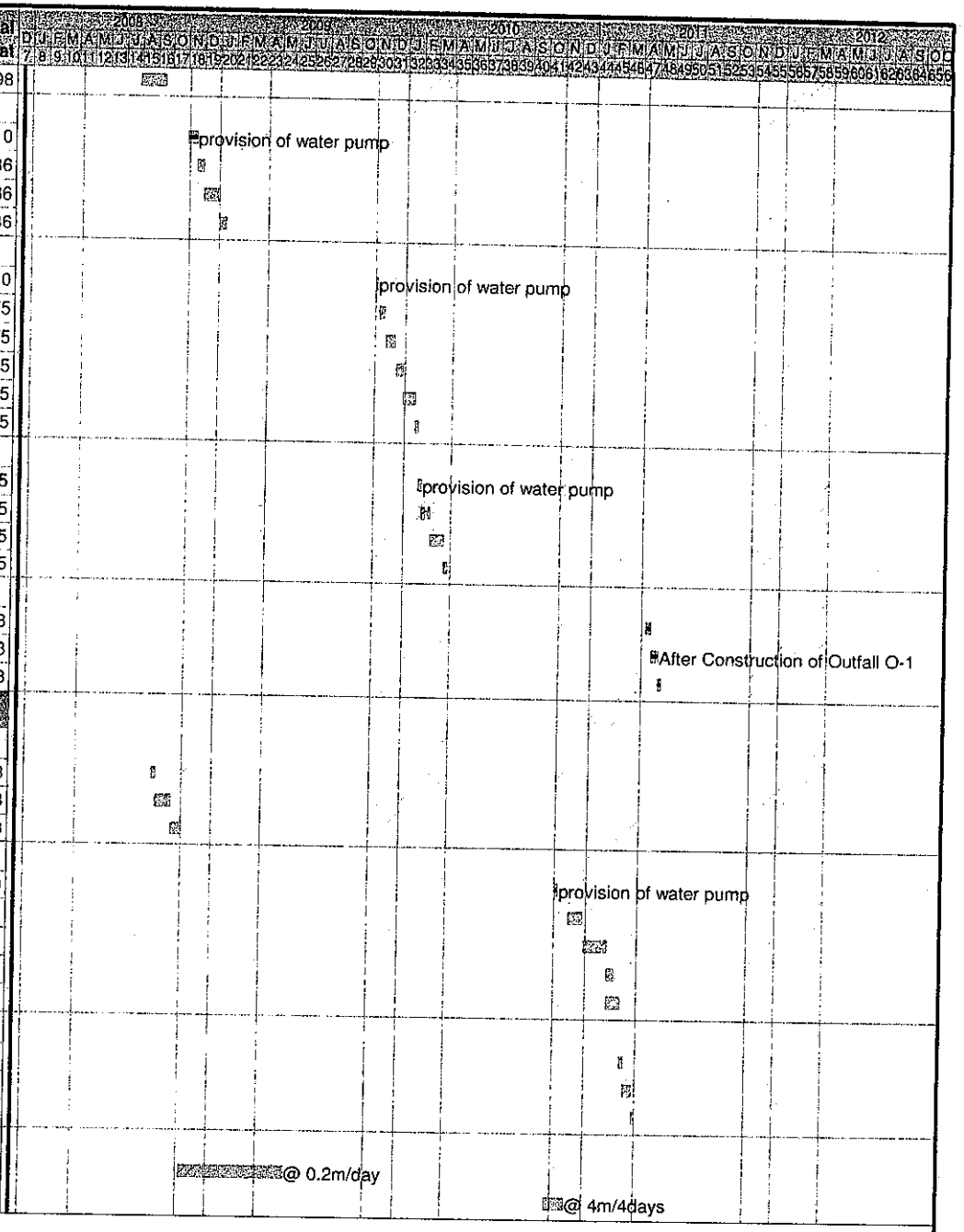
ID	Activity Description	Orig Dur	Early Start	Early Finish	Cal ID	Total Float
Excavation from +88.5mPD to +72.5mPD; North						
04L1AI1442	Bulk excavation; rock (6300m3)	110	25APR09	04SEP09	1	17
07R1AI1444	Bulk excavation for vehicular access; 1400m3	30	01AUG09	04SEP09	1	17
07R1AI1446	Construct vehicular access	36	05SEP09	19OCT09	1	17
Excavation to Bottom Level to south west of SR						
04L1AI1448	Bulk excavation; rock (5300m3)	88	20OCT09	03FEB10	1	71
Construction of Spiral Ramp Structure						
07R1AI1402	Raft foundation	12	20OCT09	03NOV09	1	17
07R1AI1404	Construct RC spiral ramp	192	04NOV09	30JUN10	1	17
07R1AI1406	Construct RC spiral ramp top	12	02JUL10	15JUL10	1	17
Dismantle & removal of TBM						
04L1AI1450	Install temporary steel works for removal of TBM	24	16APR10	14MAY10	1	17
04L1AI1452	Dissembly & demobilization of TBM	50	15MAY10	15JUL10	1	17
Construction of Cascade Structure						
04L1AI1454	Construct box culvert & cascade	72	16JUL10	09OCT10	1	17
Modification of Existing Channel in Dry Season						
07R1AI1502	Modify channel bed & construct weir; Phase 1	36	01NOV10*	11DEC10	1	0
07R1AI1504	Modify channel bed and orfice; Phase 2	36	13DEC10	26JAN11	1	61
07R1AI1506	Modify channel bed and orfice; Phase 3	36	27JAN11	12MAR11	1	61
Remaining Works Prior to Handover						
07R1AI1602	Backfill & compaction above box culvert; Port. A	72	11OCT10	06JAN11	1	90
07R1AI1606	Finishing & reinstatement works; Portion A	48	14FEB11	11APR11	1	61
07R1AI1608	Pre-handover inspections and remedial works	48	14MAR11	13MAY11	1	61
07R1AI1610	Contractor serve notice for Works completion	7	14MAY11	20MAY11	2	412
07R1AI1612	SO issues completion certificate	21	21MAY11	10JUN11	2	412
16R7AI1602	Landscaping works at Portion A	72	14FEB11	13MAY11	1	62
16R7AI1604	Establishment Works at Portion A	365	14MAY11	12MAY12	2	75
3DL1AI1602	Install flow measurement devices at Intake I-1	24	14FEB11	12MAR11	1	82
3DL1AI1604	Maintain & monitor flow monitoring	365	13MAR11	11MAR12	2	137
Schedule of Milestones to Cost Center No. 4L						
04L1AI1802	4L 1; On completion of 50% excavation	0		24APR09	2	1,249
04L1AI1804	4L 2; On completion of excavation	0		03FEB10	2	964
04L1AI1806	4L 3; On completion of 25% concreting	0		05AUG10	2	781
04L1AI1808	4L 4; On completion of 50% concreting	0		26AUG10	2	760
04L1AI1810	4L 5; On completion of 75% concreting	0		16SEP10	2	739
04L1AI1812	4L 6; On completion of Cascade	0		09OCT10	2	716
04L1AI1814	4L 7; On completion of connecting BC	0		19OCT09	2	1,071
04L1AI1816	4L 8; On completion of all works under this CC	0		13MAY11	2	500



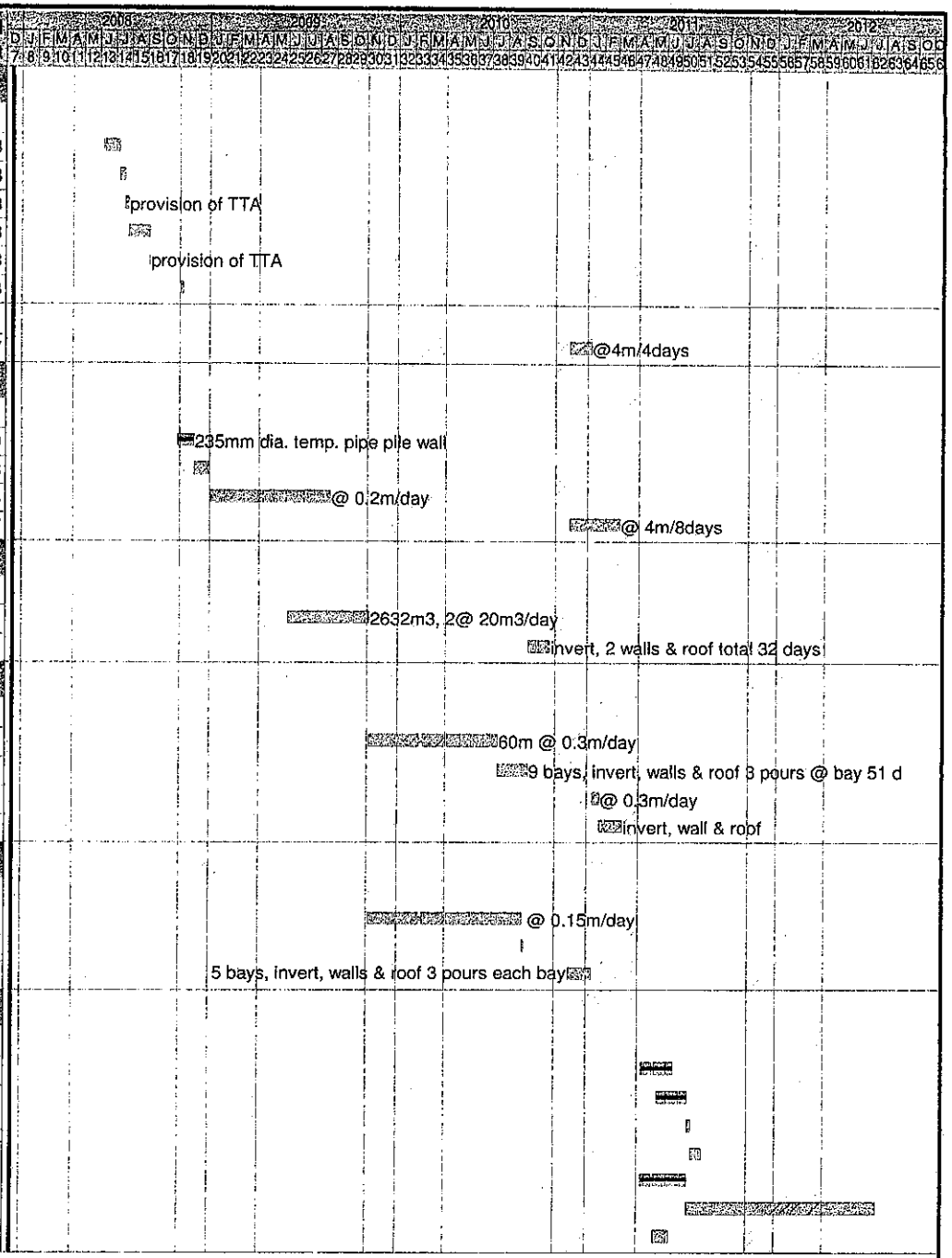
ID	Activity Description	Orig Dur	Early Start	Early Finish	Cal ID	Total Float
Schedule of Milestones for Cost Centre No. 7R						
07R1AI1902	7R 1; On completion of trash grills	0		12MAR11	2	562
07R1AI1904	7R 2; On completion of 25% excavation	0		29DEC08	2	1,365
07R1AI1906	7R 3; On completion of 50% excavation	0		11MAR09	2	1,293
07R1AI1908	7R 4; On completion of 75% excavation	0		02JUN09	2	1,210
07R1AI1910	7R 5; On completion of all excavation	0		04SEP09	2	1,116
07R1AI1912	7R 6; On completion of spiral ramp to +80mPD	0		22DEC09	2	1,007
07R1AI1914	7R 7; On completion of spiral ramp to +90mPD	0		02MAR10	2	937
07R1AI1916	7R 8; On completion of spiral ramp to +100mPD	0		10MAY10	2	868
07R1AI1918	7R 9; On completion of spiral access ramp	0		15JUL10	2	802
07R1AI1920	7R 10; On completion of all works under this CC	0		13MAY11	2	500
Schedule of Milestones for Cost Centre No. 11R						
11R2AI1R02	11R 1; On completion of soil nailing works	0		12AUG08	2	1,504
11R2AI1R04	11R 2; On completion of piling at platform	0		19SEP08	2	1,466
11R2AI1R06	11R 3; On completion of piling at baranch access	0		13OCT08	2	1,442
11R2AI1R08	11R 4; On completion of all works under this CC	0		24SEP10	2	731
Construction of Intake I-2						
Preliminary Works						
01R1BI2108	Obtain TTA (ingress & egress) approval	0		06MAR08	2	36
01R1BI2110	Possession of Portion B -90d of DOC	0	26MAR08		2	15
01R1BI2112	Site establishment	30	27MAR08	02MAY08	1	13
01R1BI2114	Site clearance	30	27MAR08	02MAY08	1	13
01R1BI2116	Install remote contorl CCTV as per ER 4.4.10	30	27MAR08	02MAY08	1	12
01R1BI2118	Maintain & operate CCTV	1,165	03MAY08	11JUL11	2	16
16R7BI2002	Tree transplanting; 1 no.	72	03APR08	30JUN08	1	398
3DL1BI2104	Obtain approval for Geotechnical Instrumentation	0		26MAR08	2	16
3DL1BI2106	Installation of Geotechnical Instrumentation	30	27MAR08	02MAY08	1	13
3DL1BI2108	Monitor/report Geotechnical Instrumentation	1,230	03MAY08	27JUN12	1	24
Stream Diversion Approach Channel/H-Pile Wall						
Phase 1, Stg 1-Construct 550 dia. H-Pile Wall						
12R3BI2202	Form temp. access ramp along west side of stream	24	05APR08	03MAY08	1	13
12R3BI2204	Mobilize piling rig & set up	6	05MAY08	10MAY08	1	13
12R3BI2206	15 nos. pre-bored H-piles at southern end	10	13MAY08	23MAY08	1	13
12R3BI2208	Remove southern access ramp (tail)	12	24MAY08	06JUN08	1	13
12R3BI2210	Remaining 44 nos. pre-bored H-piles	30	07JUN08	14JUL08	1	298
12R3BI2212	Demolize piling rig	1	15JUL08	15JUL08	1	298
12R3BI2214	Excavate for skin wall & remove temp. access	40	16JUL08	30AUG08	1	298



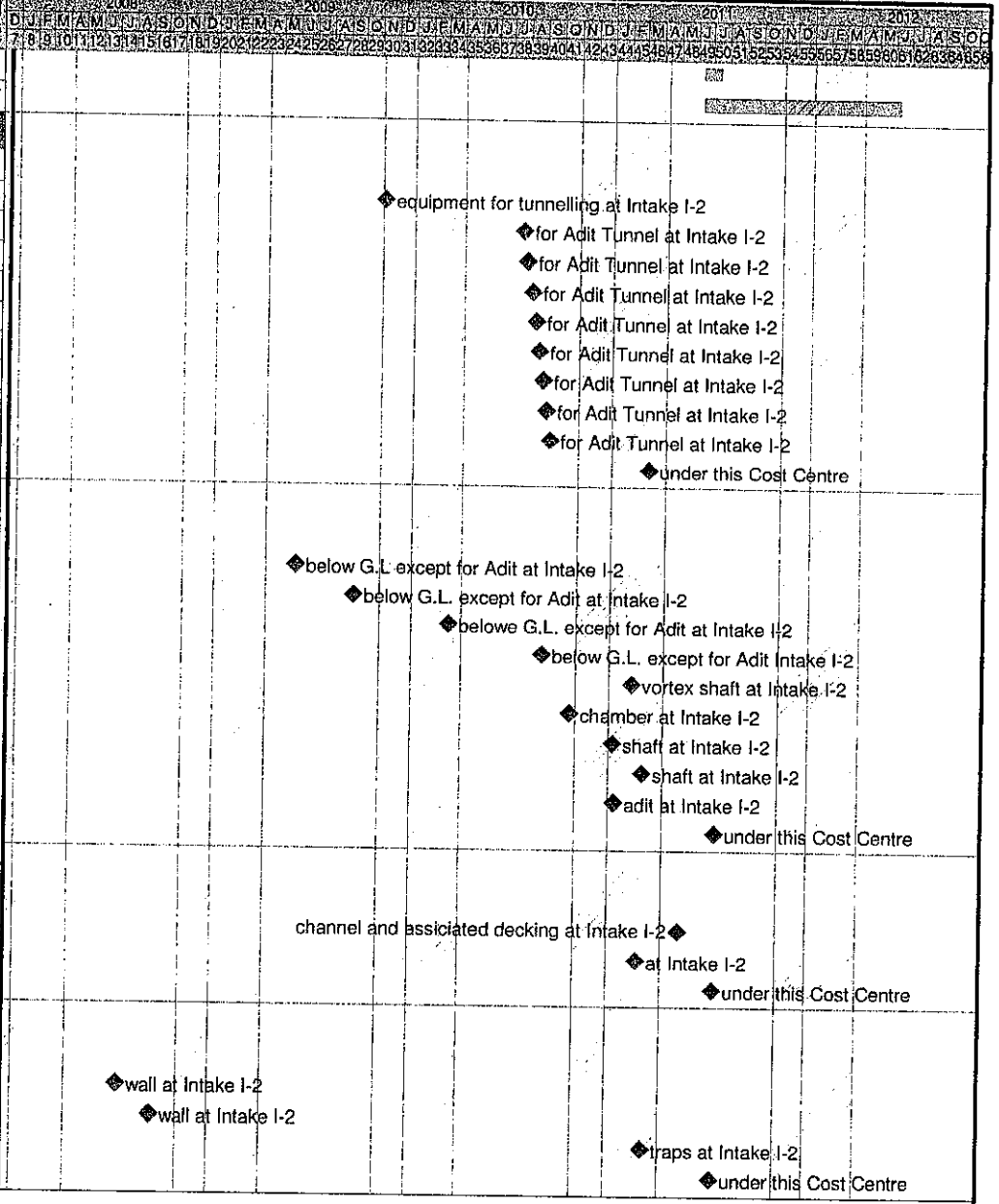
ID	Activity Description	Orig Dur	Early Start	Early Finish	Cal ID	Total Float
12R3BI2216	Construct skin wall; 45m; Portion B	40	30JUL08	13SEP08	1	298
Phase 1, Stg 3-Flatten exist. Stream Bed at West						
08R1BI2202	Construct temp. concrete block bund	12	01NOV08*	14NOV08	1	0
08R1BI2204	Excavate for new low flow channel	12	15NOV08	28NOV08	1	236
08R1BI2206	Construct new low flow channel	24	29NOV08	29DEC08	1	236
08R1BI2208	Remove temp. concrete block bund	12	30DEC08	13JAN09	1	236
Phase 2, Stg 1- Const. Approach Channel at East						
08R1BI2210	Construct temp. concrete block bund	6	02NOV09*	07NOV09	1	0
08R1BI2212	Excavate for L-shaped retaining wall	12	09NOV09	21NOV09	1	175
08R1BI2214	Construct L-shaped retaining wall	18	23NOV09	12DEC09	1	175
08R1BI2216	Excavate eastern portion of guide wall & slab	12	14DEC09	29DEC09	1	175
08R1BI2218	Construct eastern portion of guide wall & slab	18	30DEC09	20JAN10	1	175
08R1BI2220	Remove temp. concrete blcok bund	6	21JAN10	27JAN10	1	175
Phase 2, Stg 2- Const Approach Channel at West						
08R1BI2222	Construct temp. concrete block bund	6	28JAN10	03FEB10	1	175
08R1BI2224	Excavate for western portion guide wall & slab	12	04FEB10	20FEB10	1	175
08R1BI2226	Construct western portion of guide wall & slab	24	22FEB10	20MAR10	1	175
08R1BI2228	Remove concrete block bund	6	22MAR10	27MAR10	1	175
Phase 4- Construct Remaining Approach Channel						
08R1BI2234	Construct temp. concrete block bund	6	18APR11	27APR11	1	8
08R1BI2236	Complete guide wall between A.C. & V.S.	12	28APR11	12MAY11	1	8
08R1BI2238	Remove temp. conctete block bund	6	13MAY11	19MAY11	1	8
Excavate & Construct Vortex/Drop Shaft						
Phase 1, Stg 2- Form temp. access ramp to VS						
05L1BI2304	Setting up	6	05SEP08	11SEP08	1	13
05L1BI2306	Probing & curtain grouting around shaft	24	12SEP08	13OCT08	1	13
05L1BI2310	Construct ELS around shaft	18	14OCT08	03NOV08	1	13
Phase 3, Stg 1- Const. Vortex Shaft/Trash Grill						
05L1BI2316	Construct temp. concrete block bund	6	01NOV10*	06NOV10	1	0
05L1BI2318	Excavate for vortex shaft & guide wall	24	27NOV10	24DEC10	1	13
05L1BI2320	Construct vortex shaft & guide wall	36	28DEC10	11FEB11	1	13
08R1BI2122	Construct trash grill	12	12FEB11	25FEB11	1	13
12R3BI2124	Construction of boulder traps; 7nos.	24	12FEB11	11MAR11	1	13
Phase 3, Stg 2- Construct Rem. West. Guide Wall						
08R1BI2126	Relocate temp. concrete block bund	4	12MAR11	16MAR11	1	13
08R1BI2128	Excavate/const. rem. western guide wall	15	17MAR11	02APR11	1	13
08R1BI2134	Remove temp. concrete block bund	6	04APR11	11APR11	1	13
05L1BI2312	Mechanical excavation for drop shaft; 32m	160	11NOV08	30MAY09	1	13
05L1BI2314	Construct drop shaft; 34m	32	21OCT10	26NOV10	1	13



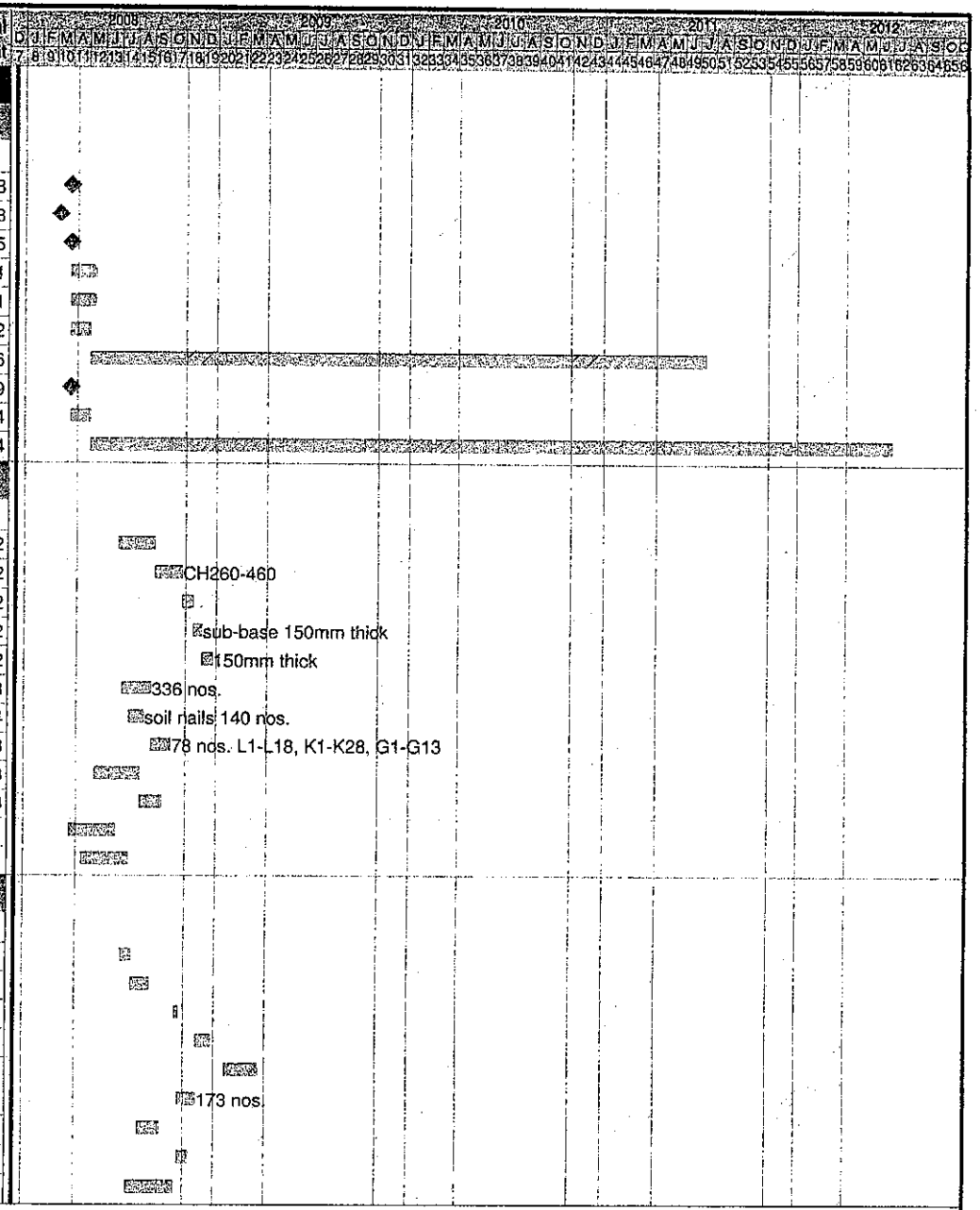
ID	Activity Description	Orig Dur	Early Start	Early Finish	Cal ID	Total Float
Excavate & Construct Air Vent Shaft						
Phase 1, Stg 2- Form temp. access ramp to VS						
05L1BI2302	Form temp. access ramp; Lo Wai Rd to Drop Shaft	24	07JUN08	07JUL08	1	13
05L1BI2402	Construct temp. platform for RCD	10	08JUL08	18JUL08	1	13
05L1BI2404	Mobilize & set up plants for RCD excavation	6	19JUL08	25JUL08	1	13
05L1BI2406	Excavate by RCD; 34m @ 1m/day	34	26JUL08	03SEP08	1	13
05L1BI2408	Demobilize RCD	1	04SEP08	04SEP08	1	13
05L1BI2410	Dismante & remove temp platform	6	04NOV08	10NOV08	1	13
3BL1BI2412	Construct air vent shaft; 34m	34	27NOV10	08JAN11	1	67
Excavate & Construct Main Access Shaft						
05L1BI2502	Construct ELS around shaft	24	01NOV08*	28NOV08	1	0
05L1BI2504	Probing & curtain grouting around shaft	24	29NOV08	29DEC08	1	443
05L1BI2512	Mechanical excavation for man access shaft; 38m	190	30DEC08	21AUG09	1	443
05L1BI2514	Construct man access shaft including stairs; 38m	76	27NOV10	02MAR11	1	67
Excavate & Construct De-aeration Chamber						
05L1BI2602	Mechanical excavation for chamber; 22.5m	132	01JUN09	05NOV09	1	13
05L1BI2604	Construct de-aeration chamber	32	10SEP10	20OCT10	1	13
Excavate & Construct Adit Tunnel						
3BL1BI2102	Mechanical excavation for Adit Tunnel	200	06NOV09	13JUL10	1	13
3BL1BI2104	Construct adit tunnel; 60m	50	14JUL10	09SEP10	1	13
3BL1BI2106	Mechanical excavation breakthrough	12	12JAN11	25JAN11	1	38
3BL1BI2108	Construct collar between MT & AT	36	26JAN11	11MAR11	1	38
Excavate & Construct Main Access Tunnel						
05L1BI2802	Mechanical excavation for Man Access Tunnel	240	06NOV09	28AUG10	1	109
05L1BI2804	Mechanical excavation breakthrough	3	30AUG10	01SEP10	1	109
05L1BI2806	Construct man access tunnel; 35m	36	27NOV10	11JAN11	1	38
Remaining Works Prior to Handover						
08R1BI2102	Finishing & reinstatement works; Portion B	48	18APR11	17JUN11	1	8
08R1BI2103	Pre-handover inspections and remedial works	48	20MAY11	16JUL11	1	8
08R1BI2104	Contractor serve notice for Works completion	7	17JUL11	23JUL11	2	348
08R1BI2105	SO issues completion certificate	21	24JUL11	13AUG11	2	348
16R7BI2102	Landscaping works at Portion B	72	18APR11	16JUL11	1	8
16R7BI2104	Establishment Works at Portion B	365	17JUL11	15JUL12	2	11
3DL1BI2101	Install flow measurement devices at Intake I-2	24	13MAY11	10JUN11	1	11



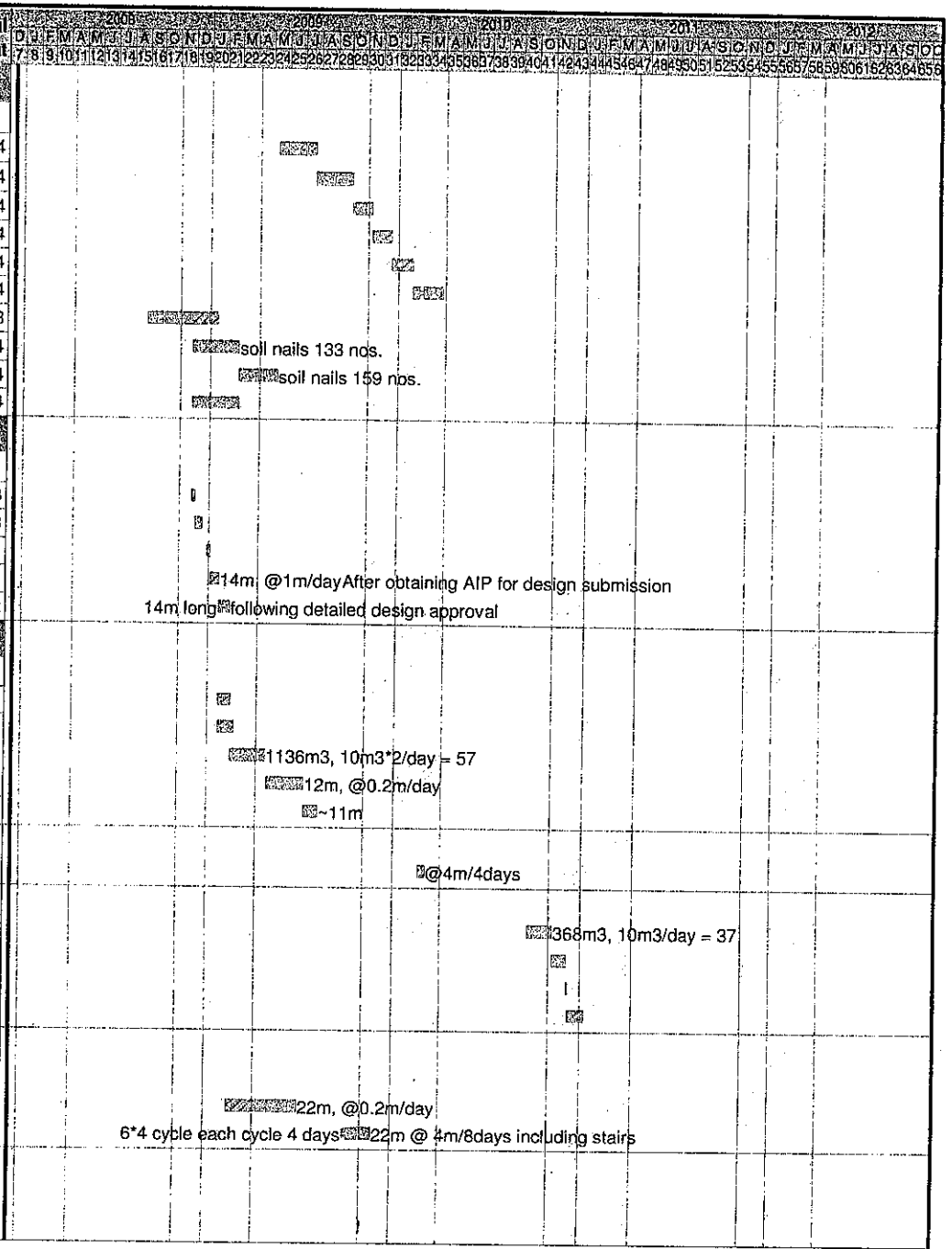
ID	Activity Description	Orig Dur	Early Start	Early Finish	Cal ID	Total Float
3DL1BI2103	T & C for flow measurement system	28	11JUN11	14JUL11	1	11
3DL1BI2105	Maintain & monitor flow monitoring	365	11JUN11	09JUN12	2	47
Schedule of Milestones for Cost Centre No. 3bL						
3BL1BI2A02	3bL 1; On establishing tunnelling equipments	0		05NOV09	2	1,054
3BL1BI2A04	3bL 2; On completion of 12.5% perm. tunnel linin	0		20JUL10	2	797
3BL1BI2A06	3bL 3; On completion of 25% perm. tunnel lining	0		27JUL10	2	790
3BL1BI2A08	3bL 4; On completion of 37.5% perm. tunnel linin	0		04AUG10	2	782
3BL1BI2A10	3bL 5; On completion of 50% perm. tunnel lining	0		11AUG10	2	775
3BL1BI2A12	3bL 6; On completion of 62.5% perm. tunnel linin	0		19AUG10	2	767
3BL1BI2A14	3bL 7; On completion of 75% perm. tunnel lining	0		26AUG10	2	760
3BL1BI2A16	3bL 8; On completion of 87.5% perm. tunnel linin	0		02SEP10	2	753
3BL1BI2A18	3bL 9; On completion of perm. tunnel lining	0		09SEP10	2	746
3BL1BI2A20	3bL 10; On completion of all works under this CC	0		11MAR11	2	563
Schedule of Milestones for Cost Centre No. 5L						
05L1BI2M02	5L 1; On completion of 25% of excavation	0		30MAY09	2	1,213
05L1BI2M04	5L 2; On completion of 50% of excavation	0		14SEP09	2	1,106
05L1BI2M06	5L 3; On completion of 75% of excavation	0		09MAR10	2	930
05L1BI2M08	5L 4; On completion of all excavation	0		28AUG10	2	758
05L1BI2M10	5L 5; On completion of drop shaft & vortex shaft	0		11FEB11	2	591
05L1BI2M12	5L 6; On completion of de-aeration chamber	0		20OCT10	2	705
05L1BI2M14	5L 7; On completion of air vent shaft	0		08JAN11	2	625
05L1BI2M16	5L 8; On completion of man access shaft	0		02MAR11	2	572
05L1BI2M18	5L 9; On completion of man access adit	0		11JAN11	2	622
05L1BI2M20	5L 10; On completion of all works under this CC	0		16JUL11	2	436
Schedule of Milestones for Cost Centre No. 8R						
08R1BI2R02	8R 1; On completion of approach channel	0		12MAY11	2	501
08R1BI2R04	8R 2; On completion of trash grill	0		25FEB11	2	577
08R1BI2R06	8R 3; On completion of all works under this CC	0		16JUL11	2	436
Schedule of Milestones for Cost Centre No. 12R						
12R3BI2S02	12R 1; On completion of 50% pile retain. wall	0		14JUL08	2	1,533
12R3BI2S04	12R 2; On completion of pile retain. wall	0		13SEP08	2	1,472
12R3BI2S06	12R 3; On completion of boulder traps	0		11MAR11	2	563
12R3BI2S08	12R 4; On completion of all works under this CC	0		16JUL11	2	436



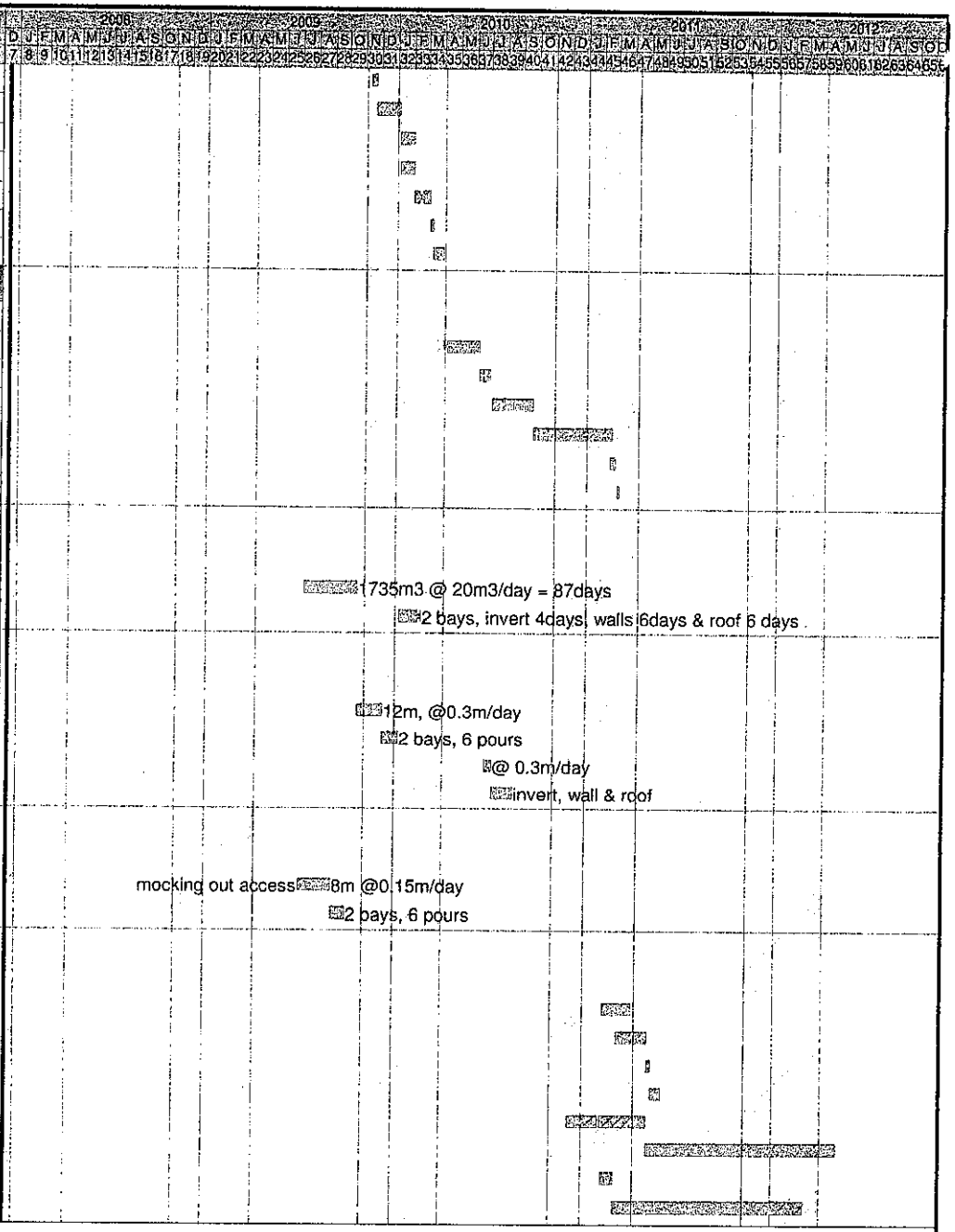
ID	Activity Description	Orig Dur	Early Start	Early Finish	Cat ID	Total Float
Construction of Intake I-3						
Preliminary Works						
01R1CI3108	Obtain tree felling permit	0		26MAR08	2	88
01R1CI3110	Obtain TTA (ingress & egress) approval	0		06MAR08	2	108
01R1CI3112	Possession of Portion C'-90d of DOC	0	26MAR08		2	15
01R1CI3114	Site establishment	40	27MAR08	15MAY08	1	71
01R1CI3116	Site clearance	40	27MAR08	15MAY08	1	71
01R1CI3118	Install remote contorl CCTV as per ER 4.4.10	30	27MAR08	02MAY08	1	12
01R1CI3120	Maintain & operate CCTV	1,165	03MAY08	11JUL11	2	16
3DL1CI3104	Obtain approval for Geotechnical Instrumentation	0		26MAR08	2	29
3DL1CI3106	Installation of Geotechnical Instrumentation	30	27MAR08	02MAY08	1	24
3DL1CI3108	Monitor/report Geotechnical Instrumentation	1,230	03MAY08	27JUN12	1	24
Construction of Upper Part of Access Road						
09R1CI3204	Excavation of fill slope; 13000m3	60	27JUN08	05SEP08	1	382
09R1CI3206	Construction of Drainage System; 200m	40	06SEP08	25OCT08	1	382
09R1CI3208	Backfill & prepare road formation; CH260-460	18	27OCT08	15NOV08	1	382
09R1CI3210	Laying of Sub-base/Road Kerbs; CH260-460	16	17NOV08	04DEC08	1	382
09R1CI3212	Concrete paving; CH260-460	16	05DEC08	23DEC08	1	382
13R1CI3206	Install soil nails at NW portion; 336 nos.	48	04JUL08	28AUG08	1	83
13R1CI3208	Excavation & install soil nails at NW portion	24	19JUL08	15AUG08	1	94
13R1CI3210	Install soil nails at central protion; 78 nos.	31	29AUG08	06OCT08	1	83
13R4CI3202	350mm dia. pre-bored H-piles, Wall A; 388 nos.	70	16MAY08	07AUG08	1	83
13R4CI3204	Construct skin wall A at Portion C; 175 m3;	36	08AUG08	19SEP08	1	393
16R7CI3202	Tree transplant (group 1); 15 nos.	72	27MAR08	23JUN08	1	71
16R7CI3204	Tree transplant (group 2); 21 nos.	72	22APR08	18JUL08	1	71
Construction of Temporary Access Road						
09R1CI3302	Excavation to form access road A	18	05JUL08	25JUL08	1	90
09R1CI3304	Backfill to form access road A & B; 1200m3	28	26JUL08	27AUG08	1	90
09R1CI3306	Excavation to form access road B	6	15OCT08	21OCT08	1	71
09R1CI3308	Cut rock slope to 80 degree to +65mPD; 940m3	25	26NOV08	24DEC08	1	71
09R1CI3310	Cut rock slope to 80 deg. to +63mPD; 1500m3	50	21JAN09	23MAR09	1	311
13R1CI3304	Excavate/install soil nails at SE end; 173 nos.	30	22OCT08	25NOV08	1	71
13R4CI3302	350mm dia. pre-bored H-piles, Wall B; 106 nos.	36	08AUG08	19SEP08	1	90
13R4CI3306	Construct skin wall B at Portion C; 48m3	18	22OCT08	11NOV08	1	368
16R7CI3316	Tree transplanting (group 3B); 15 nos.	72	19JUL08	14OCT08	1	71



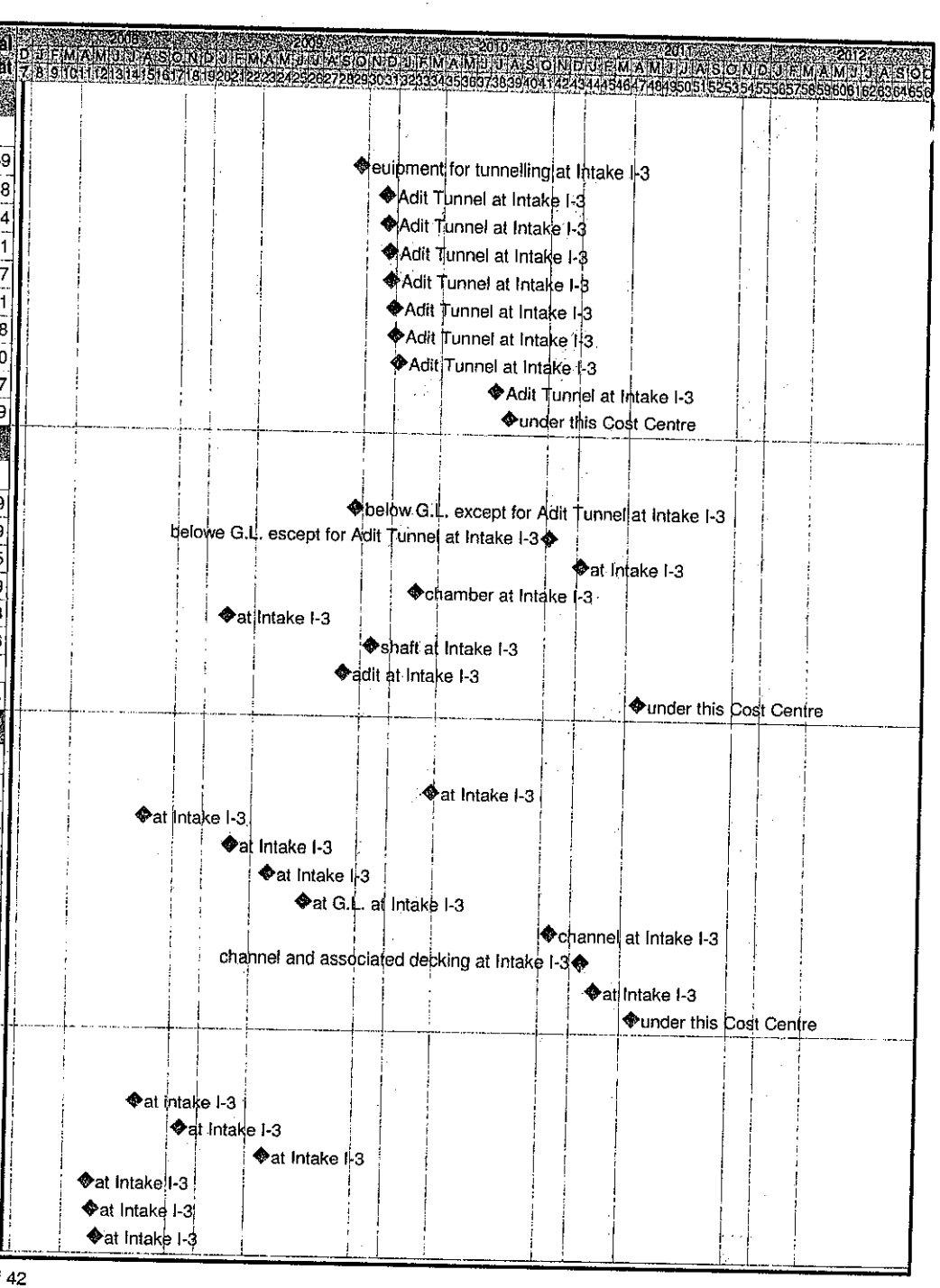
ID	Activity Description	Orig Dur	Early Start	Early Finish	Cal ID	Total Float
Construction of Lower part of Access Road						
09R1CI3402	Cut rock slope to 80 deg.; 2800m3	60	13MAY09	23JUL09	1	274
09R1CI3406	Construction of Drainage System; CH0-260	60	24JUL09	02OCT09	1	274
09R1CI3408	Backfill & prepare road formation; CH0-260	30	03OCT09	09NOV09	1	274
09R1CI3410	Laying of Sub-base/Road Kerbs; CH0-260	32	10NOV09	16DEC09	1	274
09R1CI3412	Concrete paving; CH0-260	32	17DEC09	26JAN10	1	274
09R1CI3414	Reinstate temporary Access Road	48	27JAN10	26MAR10	1	274
13R1CI3402	Boulder Treatment; 5050m3	112	28AUG08	12JAN09	1	288
13R1CI3404	Excavate & install soil nail (NW Turning Area)	72	26NOV08	24FEB09	1	274
13R1CI3406	Excavate & install soil nails (SE Portion)	60	25FEB09	12MAY09	1	274
16R7CI3402	Tree transplanting (group 3A); 16 nos.	72	26NOV08	24FEB09	1	274
Excavate & Construct Air Vent Shaft						
Phase 1						
06L1CI3502	Modify & flatten the stream bed	6	26NOV08	02DEC08	1	78
06L1CI3504	Construct temporary concrete block wall bund	12	03DEC08	16DEC08	1	78
06L1CI3506	Mobilization & setting up of RCD rig	6	27DEC08	03JAN09	1	71
06L1CI3508	Drilling for air vent shaft	14	05JAN09	20JAN09	1	71
06L1CI3510	Construction of air vent shaft	14	21JAN09	09FEB09	1	192
Excavate & Construct Drop Shaft						
Phase 1						
06L1CI3602	Probing & curtain grouting	18	21JAN09	13FEB09	1	71
06L1CI3604	Construct temp. rain shelter & bund	24	21JAN09	20FEB09	1	71
06L1CI3606	Bulk excavation for Vortex (southern portion)	57	14FEB09	25APR09	1	71
06L1CI3608	Bulk excavation for drop shaft	60	27APR09	09JUL09	1	71
06L1CI3610	Construction of vortex (southern portion)	24	10JUL09	06AUG09	1	71
Phase 2						
06L1CI3612	Construction of drop shaft	12	19FEB10	04MAR10	1	83
Phase 3						
06L1CI3614	Bulk excavation for Vortex (northern portion)	37	21SEP10	05NOV10	1	106
06L1CI3616	Construction of vortex (northern portion)	24	06NOV10	03DEC10	1	106
06L1CI3618	Relocate flood wall within vortex	4	04DEC10	08DEC10	1	106
06L1CI3620	Construct remaining of the vortex	24	09DEC10	08JAN11	1	106
Excavate & Construct Man Access Shaft						
Phase 1						
06L1CI3706	Bulk excavation for man access shaft	110	14FEB09	30JUN09	1	170
06L1CI3708	Construction of man access shaft	44	30SEP09	23NOV09	1	170
Modification of Stream Bed (Dry Season Works)						
Phase 2						
09R1CI3802	Construct temporary sand bag bund	6	02NOV09*	07NOV09	1	0



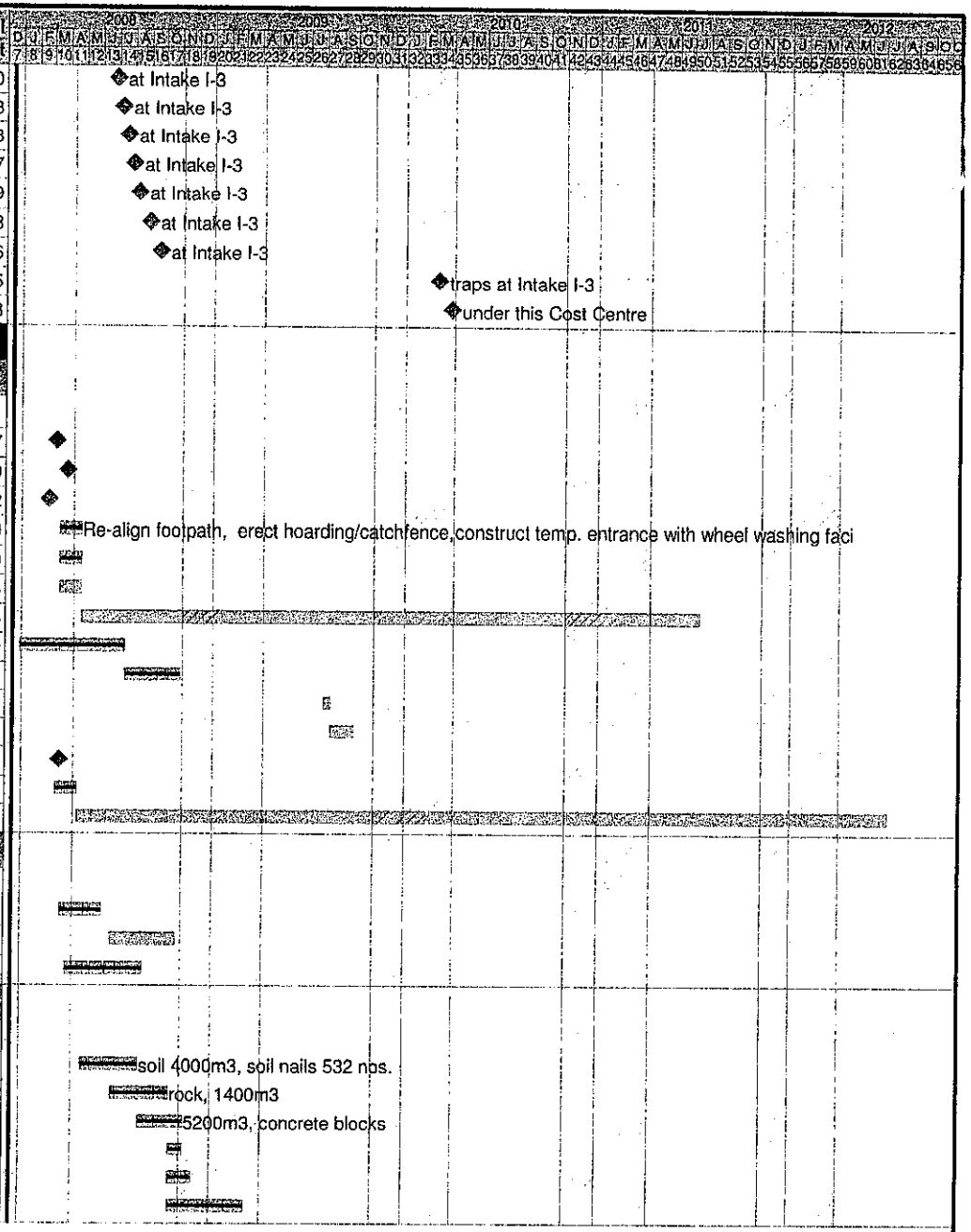
ID	Activity Description	Orig Dur	Early Start	Early Finish	Cal ID	Total Float
09R1CI3804	Removal of large boulders	10	09NOV09	19NOV09	1	67
09R1CI3806	Excavation of the stream bed	36	20NOV09	04JAN10	1	67
09R1CI3808	Laying of granular filter	24	05JAN10	01FEB10	1	91
09R1CI3810	Laying of rock armour	24	05JAN10	01FEB10	1	67
09R1CI3812	Construction of boulder trap; 7 nos.	24	02FEB10	04MAR10	1	67
09R1CI3814	Removal of sand bag bund	4	05MAR10	09MAR10	1	67
09R1CI3816	Construct temporary concrete block bund	18	10MAR10	30MAR10	1	67
Excavate & Construct Approach Channel						
Phase 3						
09R1CI3902	Excavation of the Stream Bed	54	31MAR10	08JUN10	1	67
09R1CI3904	Laying Granular Filter within Stream Bed	18	09JUN10	30JUN10	1	67
09R1CI3908	Open excavation for Approach Channel	69	02JUL10	20SEP10	1	67
09R1CI3910	Construction of Approach Channel	122	21SEP10	19FEB11	1	67
09R1CI3912	Construction of trash grill	12	14FEB11	26FEB11	1	67
09R1CI3914	Removal of concrete bolck bund	6	28FEB11	05MAR11	1	67
Excavate & Construct De-aeration Chamber						
Phase 2						
06L1CI3102	Excavation for de-aeration chamber	87	10JUL09	21OCT09	1	83
06L1CI3104	Construction of de-aeration chamber	32	09JAN10	18FEB10	1	83
Excavate & Construct Adit Tunnel						
Phase 2						
3CL1CI3102	Mechanical excavation for Adit Tunnel	40	22OCT09	08DEC09	1	83
3CL1CI3104	Construction of Adit Tunnel	24	09DEC09	08JAN10	1	83
3CL1CI3106	Mechanical excavation breakthrough	12	22JUN10	06JUL10	1	206
3CL1CI3108	Construct collar between MT & AT	36	07JUL10	17AUG10	1	206
Excavate & Construct Man Access Tunnel						
Phase 2						
06L1CI3122	Mechanical excavation for man access tunnel	53	02JUL09	01SEP09	1	170
06L1CI3124	Construction of man access tunnel	24	02SEP09	29SEP09	1	170
Remaining Works Prior to Handover to Client						
09R1CI3142	Finishing & reinstatement works; Portion C	48	07FEB11	02APR11	1	67
09R1CI3143	Pre-handover inspections and remedial works	48	07MAR11	05MAY11	1	67
09R1CI3144	Contractor serve notice for Works completion	7	06MAY11	12MAY11	2	480
09R1CI3146	SO issues completion certificate	21	13MAY11	02JUN11	2	480
16R7CI3142	Landscaping works at Portion C	120	06DEC10	05MAY11	1	68
16R7CI3144	Establishment Works at Portion C	365	06MAY11	04MAY12	2	83
3DL1CI3141	Install flow measurement devices at Intake I-3	24	07FEB11	05MAR11	1	88
3DL1CI3143	Maintain & monitor flow monitoring	365	06MAR11	04MAR12	2	144



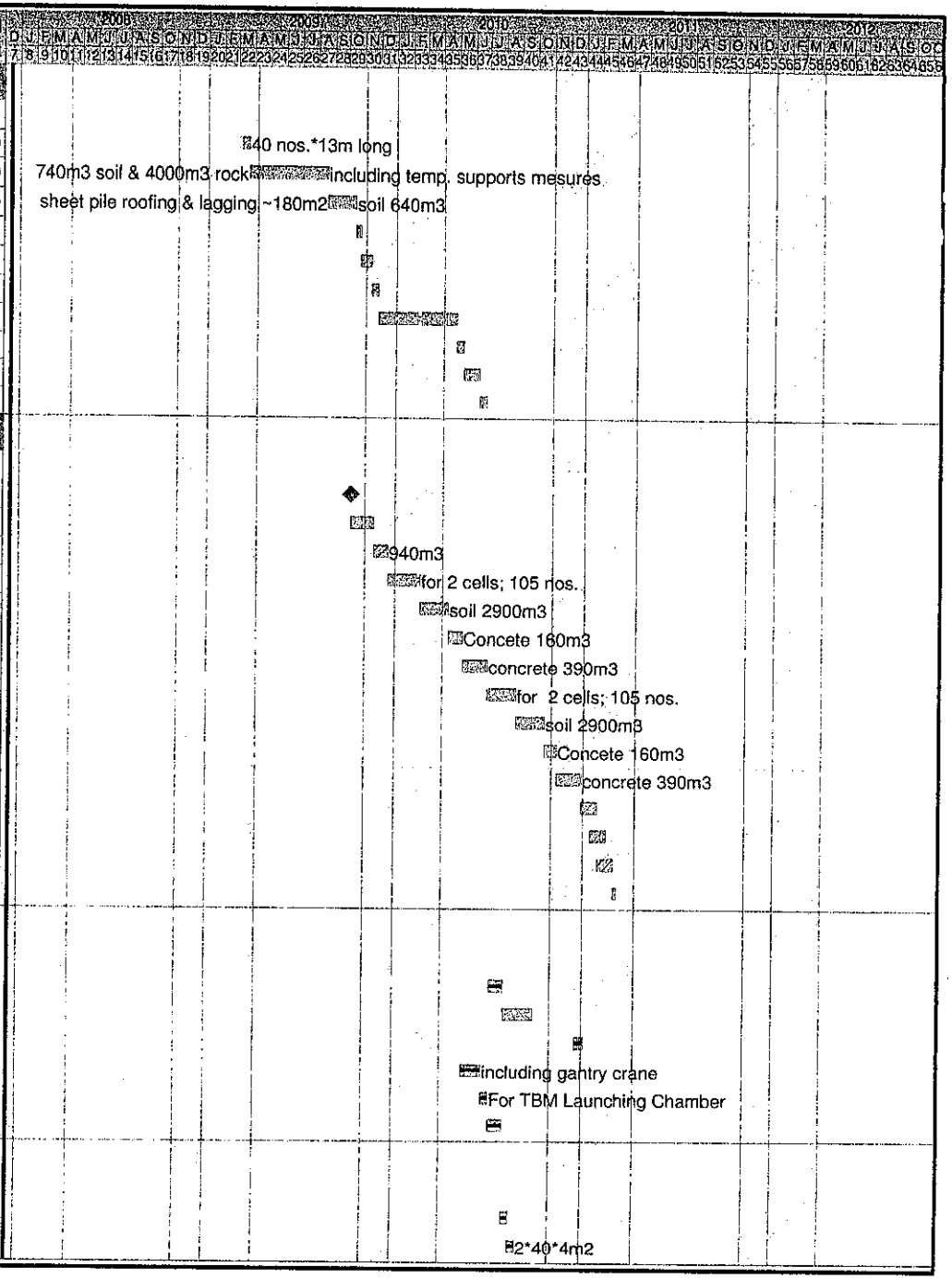
ID	Activity Description	Orig Dur	Early Start	Early Finish	Cal ID	Total Float
Schedule of Milestones for Cost Centre No. 3cL						
3CL1CI3A02	3cL 1; On establishing tunnelling equipments	0		21OCT09	2	1,069
3CL1CI3A04	3cL 2; On completion of 12.5% perm. tunnel linin	0		11DEC09	2	1,018
3CL1CI3A06	3cL 3; On completion of 25% perm. tunnel lining	0		15DEC09	2	1,014
3CL1CI3A08	3cL 4; On completion of 37.5 perm. tunnel lining	0		18DEC09	2	1,011
3CL1CI3A10	3cL 5; On completion of 50% perm. tunnel lining	0		22DEC09	2	1,007
3CL1CI3A12	3cL 6; On completion of 62.5% perm. tunnel linin	0		28DEC09	2	1,001
3CL1CI3A14	3cL 7; On completion of 75% perm. tunnel lining	0		31DEC09	2	998
3CL1CI3A16	3cL 8; On completion of 87.5% perm. tunnel linin	0		08JAN10	2	990
3CL1CI3A18	3cL 9; On completion of perm. tunnel lining	0		20JUL10	2	797
3CL1CI3A20	3cL 10; On completion of all works under this CC	0		17AUG10	2	769
Schedule of Milestones for Cost Centre No. 6l						
06L1CI3M02	6L 1; On completion of 50% of excavation	0		21OCT09	2	1,069
06L1CI3M04	6L 2; On completion of excavation works	0		05NOV10	2	689
06L1CI3M08	6L 3; On completion of vortex shaft	0		08JAN11	2	625
06L1CI3M10	6L 4; On completion of de-aeration chamber	0		18FEB10	2	949
06L1CI3M12	6L 5; On completion of vent shaft	0		09FEB09	2	1,323
06L1CI3M14	6L 6; On completion of man access shaft	0		23NOV09	2	1,036
06L1CI3M16	6L 7; On completion of man access adit	0		29SEP09	2	1,091
06L1CI3M18	6L 8; On completion of all works under this CC	0		05MAY11	2	508
Schedule of Milestone for Cost Centre No. 9R						
09R1CI3R02	9R 1; On completion of access road	0		26MAR10	2	913
09R1CI3R04	9R 2; On completion of 25% of excavation at G.L	0		05SEP08	2	1,480
09R1CI3R06	9R 3; On completion of 50% of excavation at G.L	0		24FEB09	2	1,308
09R1CI3R08	9R 4; On completion of 75% of excavation at G.L	0		12MAY09	2	1,231
09R1CI3R10	9R 5; On completion of excavation at G.L.	0		23JUL09	2	1,159
09R1CI3R12	9R 6; On completion of 50% of approach channel	0		20NOV10	2	674
09R1CI3R14	9R 7; On completion of approach channel	0		21JAN11	2	612
09R1CI3R16	9R 8; On completion of trash grill	0		19FEB11	2	583
09R1CI3R18	9R 9; On completion of all works under this CC	0		05MAY11	2	508
Schedule of Milestones for Cost Centre No. 13R						
13R4CI3S01	13R 1; On completion of 30% soil nailing	0		28AUG08	2	1,488
13R4CI3S02	13R 2; On completion of 60% soil nailing	0		25NOV08	2	1,399
13R4CI3S03	13R 3; On completion of all soil naing works	0		12MAY09	2	1,231
13R4CI3S04	13R 4; On completion of 10% piles by number	0		26MAY08	2	1,582
13R4CI3S05	13R 5; On completion of 20% piles by number	0		05JUN08	2	1,572
13R4CI3S06	13R 6; On completion of 30% piles by number	0		17JUN08	2	1,560



ID	Activity Description	Orig Dur	Early Start	Early Finish	Cal ID	Total Float
13R4CI3S07	13R 7; On completion of 40% piles by number	0		27JUN08	2	1,550
13R4CI3S08	13R 8; On completion of 50% piles by number	0		09JUL08	2	1,538
13R4CI3S09	13R 9; On completion of 60% piles by number	0		19JUL08	2	1,528
13R4CI3S10	13R 10; On completion of 70% piles by number	0		30JUL08	2	1,517
13R4CI3S11	13R 11; On completion of 80% piles by number	0		07AUG08	2	1,509
13R4CI3S12	13R 12; On completion of 90% piles by number	0		28AUG08	2	1,488
13R4CI3S13	13R 13; On completion of all piling works	0		19SEP08	2	1,466
13R4CI3S14	13R 14; On completion of boulder traps	0		04MAR10	2	935
13R4CI3S15	13R 15; On completion of all work under this CC	0		26MAR10	2	913
Construction of Outfall O-1						
Preliminary Works						
01R1DO0108	Obtain TTA (ingress & egress) approval	0		06MAR08	2	7
01R1DO0110	Obtain tree felling permit	0		26MAR08	2	0
01R1DO0112	Obtain excavation permit	0		20FEB08	2	22
01R1DO0114	Site establishment	30	14MAR08	22APR08	1	0
01R1DO0116	Site clearance	30	14MAR08	22APR08	1	0
01R1DO0118	Install remote contorl CCTV as per ER 4.4.10	30	14MAR08	22APR08	1	13
01R1DO0120	Maintain & operate CCTV	1,175	23APR08	11JUL11	2	16
01R1DO0126	Application/approval for temp. CLP Power Supply	200	28DEC07	14JUL08	2	9
01R1DO0128	Establish temp. CLP power sub-station	90	15JUL08	30OCT08	1	8
01R1DO0130	Apply for Marine Permit for Works at Portion E	14	30JUL09	12AUG09	2	58
01R1DO0132	Obtain marine permit from Marine Department	45	13AUG09	26SEP09	2	58
3DL1DO0104	Obtain approval for Geotechnical Instrumentation	0		14MAR08	2	2
3DL1DO0106	Installation of Geotechnical Instrumentation	30	08MAR08	16APR08	1	1
3DL1DO0108	Monitor/report Geotechnical Insturmentatation	1,250	17APR08	06JUL12	1	17
Form Temporary Access/Tree Felling						
10R1DO0202	Form 80m long (+14 to +69mPD) temp. access road	60	18MAR08	02JUN08	1	0
14R1DO0202	Existing boulder stabilization works	100	23JUN08	21OCT08	1	16
16R7DO0202	Tree transplanting; 164 nos.	120	28MAR08	20AUG08	1	0
Form Temporary Launching Platform						
10R1DO0302	Cut slope (69 to 41mPD)/install perm. soil nails	90	26APR08	13AUG08	1	0
10R1DO0304	Cut slope & form launching platform; 41 to 24mPD	90	25JUN08	11OCT08	1	0
10R1DO0306	Cut rock benching & form platform; 14 to 24mPD	72	14AUG08	08NOV08	1	0
3AL1DO0302	Excavate TBM launching chamber; 15m long	24	13OCT08	08NOV08	1	0
3AL1DO0304	Install cranage/gantry facilities	40	13OCT08	27NOV08	1	0
3AL1DO0306	Install steel platform,hopper & other facilities	120	13OCT08	07MAR09	1	0



ID	Activity Description	Orig. Dur	Early Start	Early Finish	Cal ID	Total Float
Construct Spiral Ramp & Assock Vehicular Access						
10R1DO0402	Install 273mm dia. temp. pipe piles; 40 nos.	12	07MAR09	20MAR09	1	40
10R1DO0404	Mechanical excavation for spiral ramp	120	21MAR09	17AUG09	1	40
10R1DO0408	Excavation for vehicular access underneath CPR	48	18AUG09	14OCT09	1	40
10R1DO0410	Construct base for vehicular access	8	15OCT09	23OCT09	1	40
10R1DO0412	Construct wall & roof for vehicular access	16	24OCT09	12NOV09	1	40
10R1DO0414	Construct base of spiral ramp; Outfall O-1	12	13NOV09	26NOV09	1	40
10R1DO0416	Construct spiral ramp; +4.5 to +24mPD at O-1	120	27NOV09	27APR10	1	40
10R1DO0420	Construct spiral ramp top; Outfall O-1	12	28APR10	12MAY10	1	40
10R1DO0422	Construct vehicular access bet. tunnel & s. ramp	24	13MAY10	10JUN10	1	40
10R1DO0424	Commission of Spiral Ramp	12	11JUN10	25JUN10	1	40
Construct Lower Part Box Culvert & Open Channel						
10R1DO0502	Site possession of Portion E-650d of DOC	0	08OCT09		2	47
10R1DO0504	Divert exist. outfall "W" under CPR arch bridge	36	08OCT09	19NOV09	1	39
10R1DO0506	Excavate & form pipe roofing platform @+2.3mPD	24	20NOV09	17DEC09	1	39
10R1DO0508	Install 273mm dia. temp. pile for pipe roofing	48	18DEC09	18FEB10	1	39
10R1DO0510	Excavate for box-culvert; 2 cells	44	19FEB10	15APR10	1	39
10R1DO0512	Construct base slabs of box culvert; 2 cells	20	16APR10	10MAY10	1	39
10R1DO0514	Construt wall & roof of box culvert; 2 cells	40	11MAY10	28JUN10	1	39
10R1DO0515	Install 273mm dia. temp. pile for pipe roofing	48	29JUN10	24AUG10	1	39
10R1DO0516	Excavate for box-culvert; 2 cells	44	25AUG10	18OCT10	1	39
10R1DO0518	Construct base slabs of box culvert; 2 cells	20	19OCT10	10NOV10	1	39
10R1DO0520	Construt wall & roof of box culvert; 2 cells	40	11NOV10	29DEC10	1	39
10R1DO0522	Excavate for open channel	24	30DEC10	27JAN11	1	39
10R1DO0524	Construct channel toe below 2.3mPD	24	14JAN11	14FEB11	1	39
10R1DO0526	Construct open channel at 2.3 mPD	24	28JAN11	28FEB11	1	39
10R1DO0528	Reinstate existing outfall "W"	6	01MAR11	07MAR11	1	39
Construct Portal Head & Associated Strutures						
10R1DO0602	Excavation/formation for tapered open channel	24	07JUL10	03AUG10	1	8
10R1DO0604	Construct tapered open channel	48	04AUG10	29SEP10	1	74
10R1DO0606	Dismantle & removal of tower crane	12	18DEC10	04JAN11	1	8
3AL1DO0602	Dismantle/remove TBM backup system	30	15MAY10	21JUN10	1	8
3AL1DO0604	Construct permanent lining for CH5100-5085	12	22JUN10	06JUL10	1	8
3AL1DO0606	Construct portal head wall	24	07JUL10	03AUG10	1	8
Construct Cascade & Upper Part Box Culvert						
10R1DO0702	Form temp. working platorm	12	04AUG10	17AUG10	1	8
10R1DO0704	Drive temp. sheet piles along footpath	12	18AUG10	31AUG10	1	8



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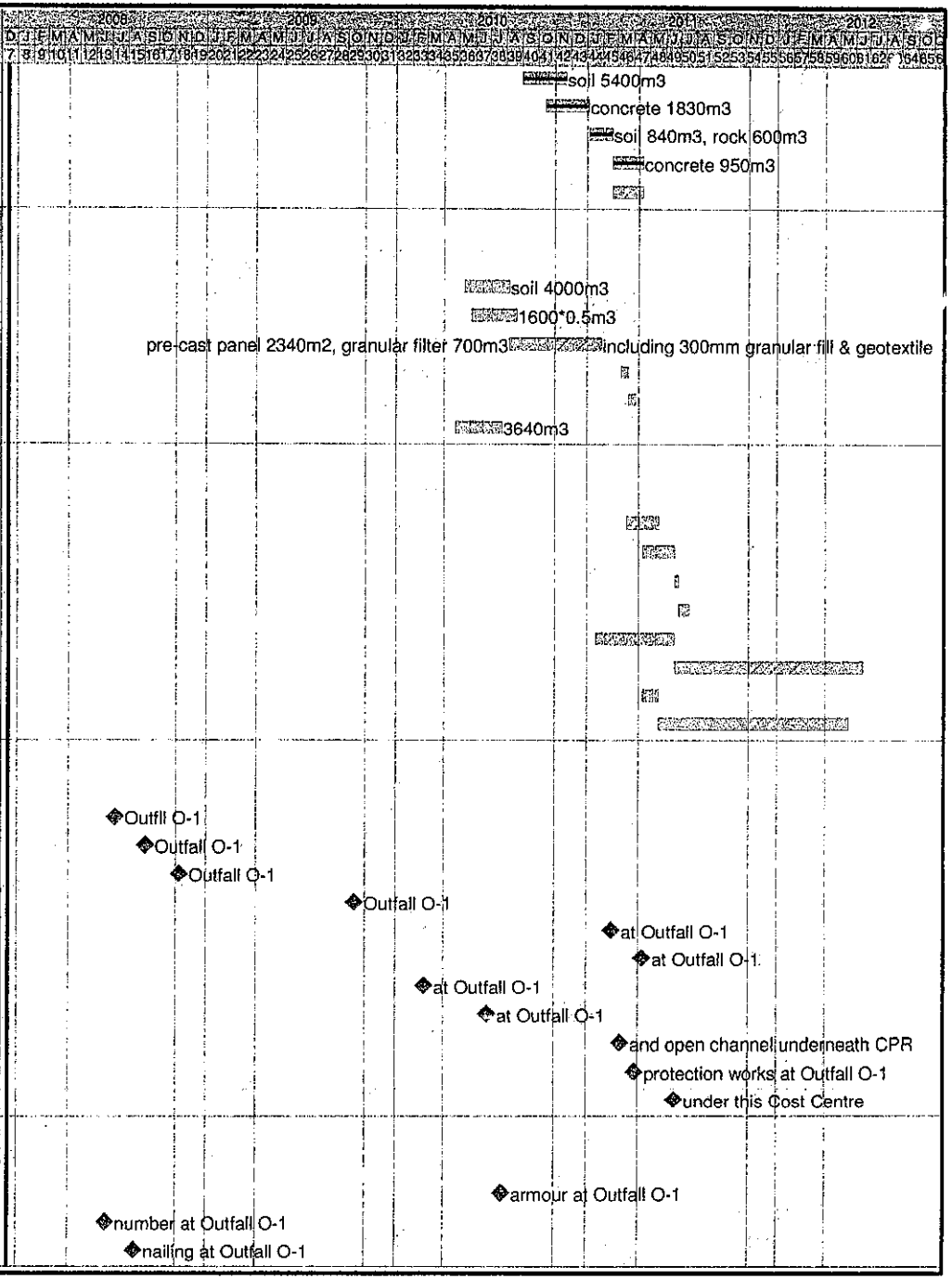
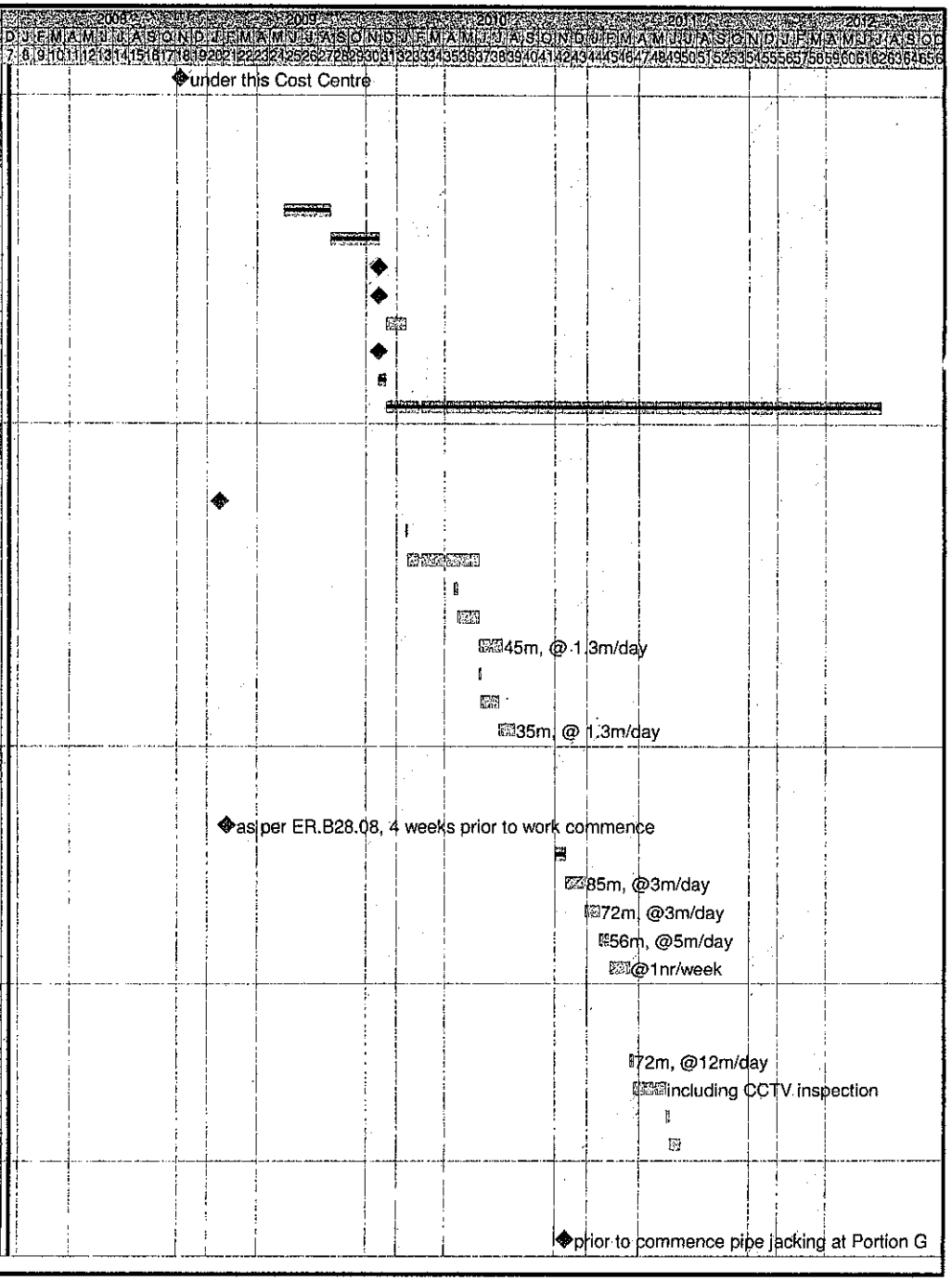
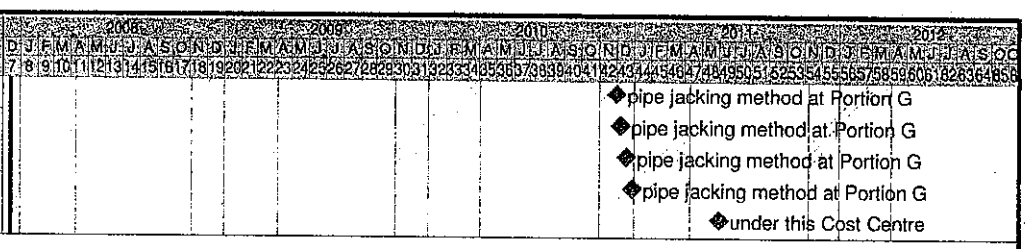
10R1DO0706	Excavate for box culvert (upper part)	66	01SEP10	19NOV10	1	8
10R1DO0708	Construct box-culvert (upper part)	66	15OCT10	04JAN11	1	8
10R1DO0710	Excavate for cascade construction	36	05JAN11	18FEB11	1	8
10R1DO0712	Construct cascade	48	19FEB11	16APR11	1	8
10R1DO0714	Construct retaining wall, baffle, railing etc.	48	19FEB11	16APR11	1	33
Seabed Protection Works						
10R1DO0804	Excavate & formation for 100m*16m slab	72	11MAY10	05AUG10	1	93
10R1DO0806	Construct concrete apron with pre-cast RC slabs	72	26MAY10	19AUG10	1	93
10R1DO0808	Installition of precast stepped blocks	144	06AUG10	27JAN11	1	93
10R1DO0810	Removal of platform & formation	12	08MAR11	21MAR11	1	39
10R1DO0812	Install remain. Concrete apron for rem. Area	12	22MAR11	04APR11	1	39
14R5DO0802	Removal of sea wall armour	72	26APR10	22JUL10	1	93
Remaining Works Prior to Handover						
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
16R7DO0902	Landscaping works at Portion D	120	19JAN11	17JUN11	1	33
16R7DO0904	Establishment Works at Portion D	365	18JUN11	16JUN12	2	40
3DL1DO0902	Install flow measurement devices at Outfall O-1	24	18APR11	19MAY11	1	29
3DL1DO0904	Maintain & monitor flow monitoring	365	20MAY11	18MAY12	2	69
Schedule of Milestones for Cost Centre No. 10R						
10R1DO1002	10R 1; On completion of 20% excavation works	0		09JUL08	2	1,538
10R1DO1004	10R 2; On completion of 40% excavation works	0		03SEP08	2	1,482
10R1DO1006	10R 3; On completion of 60% excavation works	0		08NOV08	2	1,416
10R1DO1008	10R 4; On completion of 80% excavation works	0		14OCT09	2	1,076
10R1DO1010	10R 5; On completion all excavation works	0		18FEB11	2	584
10R1DO1012	10R 6; On completion of cascade structure	0		16APR11	2	527
10R1DO1014	10R 7; On completion of spiral ramp to +16mPD	0		23FEB10	2	944
10R1DO1016	10R 8; On completion of spiral access ramp	0		25JUN10	2	822
10R1DO1018	10R 9; On completion box-culvert & open channel	0		07MAR11	2	567
10R1DO1020	10R 10; On completion of seabed protection wks	0		04APR11	2	539
10R1DO1022	10R 11; On completion of all works under this CC	0		17JUN11	2	465
Schedule of Milestones for Cost Centre No. 14R						
14R5DO1102	14R 1; On complet. of remove exist. rock armour	0		22JUL10	2	795
14R5DO1104	14R 2; On complet. of 50% soil nailing by number	0		20JUN08	2	1,557
14R5DO1106	14R 3; On completion all soiling works	0		13AUG08	2	1,503



ID	Activity Description	Orig Dur	Early Start	Early Finish	Cal ID	Total Float
14R5DO1108	14R 4; On completion of all works under this CC	0		08NOV08	2	1,416
Drainage Improvement Works at Portion G						
Preliminary Works						
01R6GG0102	Prepare/submit Drainage Assessment Report	90	30MAY09	27AUG09	2	6
01R6GG0104	DAR reviewed/approvded by SO and DSD	90	28AUG09	25NOV09	2	6
01R6GG0112	Obtain TTA (ingress & egress) approval	0		25NOV09	2	6
01R6GG0114	Possession of Portion G -700d of DOC	0	26NOV09		2	6
01R6GG0116	Site clearance/Site Establishment	30	10DEC09	16JAN10	1	62
3DL6GG0104	Obtain approval for Geotechnical Instrumentation	0		25NOV09	2	6
3DL6GG0106	Installation of Geotechnical Instrumentation	12	26NOV09	09DEC09	1	5
3DL6GG0108	Monitor/report Geotechnical Instrumentation	770	10DEC09	20JUL12	1	5
Piling Works						
15R6GG0200	Obtain SO's consent for temp. works design	0		24JAN09	1	351
15R6GG0202	Mibilization & set up for temp. platform	3	18JAN10	20JAN10	1	62
15R6GG0204	Construct steel working platform for H-piling	110	21JAN10	08JUN10	1	62
15R6GG0206	Mibilization & set up for H-piling; Wall 1	3	23APR10	26APR10	1	62
15R6GG0208	52 nos. 600mm dia. H-piles; Wall 1 @1.5 nr/day	35	27APR10	08JUN10	1	62
15R6GG0210	Excavate & construct skin wall 1 at Portion G	35	09JUN10	21JUL10	1	62
15R6GG0212	Mibilization & set up for H-piling; Wall 2	3	09JUN10	11JUN10	1	62
15R6GG0214	40 nos. 600mm dia. H-piles; Wall 2 @1.5 nr/day	27	12JUN10	15JUL10	1	62
15R6GG0216	Excavate & construct skin wall 2 at Portion G	27	16JUL10	16AUG10	1	62
Drainage Improvement Works						
15R6GG0301	Obtain approval of ELS design package incl MS	0		07FEB09	2	631
15R6GG0302	Install ELS & excavate shaft for pipe jacking	18	01NOV10*	20NOV10	1	0
15R6GG0304	Construct 1.5m dia. drainage by pipe jacking	30	22NOV10	28DEC10	1	44
15R6GG0306	Construct 1.5m dia. drainage by open trenching	24	29DEC10	26JAN11	1	44
15R6GG0308	Construct .75m & 1.5m U and Stepped Channel	12	27JAN11	12FEB11	1	44
15R6GG0310	Construct 3 nos. manhole & 2 nos. catchpit	35	14FEB11	25MAR11	1	44
Remaining Works Prior to Handover to Client						
15R6GG0312	Reinstate carriageway & footway	6	26MAR11	01APR11	1	44
15R6GG0402	Pre-handover inspections and remedial works	48	02APR11	02JUN11	1	44
15R6GG0404	Contractor serve notice for Works completion	7	03JUN11	09JUN11	2	452
15R6GG0408	SO issues completion certificate	21	10JUN11	30JUN11	2	452
Schedule of Milestones for Cost Centre No. 15R						
15R6GG0502	15R 1; On completion of all temp. works	0		20NOV10	2	674



ID	Activity Description	Orig Dur	Early Start	Early Finish	Cal ID	Total Float
15R6GG0504	15R 2; On completion of 25% of pipejacking	0		30NOV10	2	664
15R6GG0506	15R 3; On completion of 50% of pipejacking	0		08DEC10	2	656
15R6GG0508	15R 4; On completion of 75% of pipejacking	0		17DEC10	2	647
15R6GG0510	15R 5; On completion of all pipejacking	0		28DEC10	2	636
15R6GG0512	15R 6; On completion of all wks under this CC	0		02JUN11	2	480



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 Quality					
3.6.1	**Specific** 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 *Air Pollution Control (Construction Dust) 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 *Air Pollution Control (Construction Dust) 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 *Air Pollution Control (Construction Dust) Regulation* 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;				✓
	• 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 Sites	Air Pollution Control (Construction Dust) Regulation	✓
	• mobile plant should be sited as far away from NSRs as possible; and				✓
	• 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** 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	DSD's Contractor	Project Area	NCO & EIAO	
	• 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
Water Quality					
5.9.1	**During Construction** Mitigation measures and a spill control and response plan have been prepared for works at the intakes and work sites.	DSD's Contractor	Construction Work Sites	Practice Note for Professional Persons with regard to site drainage (ProPECC PN 1/94) and WQO	✓
	Precautions to be taken at any time of year when rainstorms are likely: • Temporarily exposed surfaces should be covered e.g. by tarpaulin.				✓
	• Temporary access roads should be protected by crushed stone or gravel.				✓
	• 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.				✓
	<u>Spill Control and Response Plan</u>				
	1 Prevention and Precaution Measures				
	General Precautions • No discharge of silty water into watercourses.				✓
	• All materials to be used during construction and operation shall be identified and their hazard potential evaluated.				✓
	• 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.				✓
	• Any soil contaminated with chemicals/oils shall be removed from site and the void created shall be filled with suitable materials.				✓
	• 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.				✓
	• Suitable containers shall be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport				✓
	• Chemical waste containers shall be suitably labelled to notify and warn the personnel who are handling the wastes to avoid accidents.				✓
	• Storage areas shall be selected at safe locations on site and adequate space shall be allocated to the storage area.				✓
	• Prevent obstructions and tripping hazards.				✓
	Storage Precautions • All chemical storage containers shall be correctly labelled.				✓
	• Solid and impermeable enclosure walls or storage shelves shall be used.				✓
	• Only compatible chemical wastes shall be stored in the same storage area.				✓
	• The storage areas shall be inspected to detect any leakages or defective containers on a regular basis.				✓
	• The storage areas shall be inspected to detect any leakages or defective containers on a regular basis.				✓
	• Suitable notices warning of hazards, emergency response plans, telephone numbers etc shall be posted around the site, including storage areas.				✓
	• Large and heavy containers shall be stored at ground level.				✓

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.				✓
5.9.1	• Adequate space for handling of the containers shall be provided	DSD's Contractor	Construction Work Sites	WQO	✓
	• Spill response kits shall be located adjacent/near to the storage areas.				✓
	• A log of chemical wastes shall be maintained.				✓
	• Incompatible chemicals shall be stored separately.				✓
	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:				✓
	• Only trained personnel who are equipped with protective clothing and equipment shall be allowed to enter the spillage area for clean up.				✓
	• Spills shall be transferred appropriate back into containers using suitable equipment.				✓
	• Absorbent materials shall be used to clean up the spills and shall be disposed of as chemical wastes.				✓
	• Where appropriate suitable solvents may be used to clean the contaminated area after removal of all contaminated materials.				✓
	• All necessary protective devices, safety equipment, containers and clean up materials for emergency use shall be maintained to a high standard.				✓
	3 Spill Clean Up and Disposal				
	Effect the response plan.				✓
	Control the leakage and absorb the spillage using suitably absorbent materials.				✓
	Provide safety equipment and personal protective equipment for handling of chemical wastes would be similar to that for handling of chemicals.				✓
	Safety equipment includes but is not limited to: • Fire extinguishers.				✓
	• Spades, brushes, dustpan, mop and bucket (or similar readily available on site).				✓
	• Absorbent material such as dry sand, tissues and toweling (all materials readily available on-site).				✓
	• Containers including plaster bags, drums, etc.				✓
	• Absorbing materials.				✓
	• Pumps.				✓
	Personal protective equipment includes as appropriate: • First-aid kits.				✓
	• Safety helmet and goggles.				✓
	• Gloves which can resist chemical reaction.				✓

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 Contractor	Construction Work Sites	WQO	✓
5.9.1	• Respirators and gas masks.				
	• Face visor and masks.				✓
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.				
	The emergency plans should include the procedures for: • spill prevention and precaution;				✓
	• response actions; and				✓
	• spill clean up and disposal.				✓
	Spill prevention and precaution embraces good site practice and covers: • good housekeeping practices;				✓
	• chemical storage requirements; and				✓
	• chemical transfer and transport.				✓
5.9.3	**During Operation** 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.	DSD's Contractor	Project Area		N/A
Waste Management					
6.5.1	**During Construction** *Vegetation Removed from Site Clearance* Wastes generated from site clearance shall be sorted and excavated topsoil segregated from roots for re-use in landscaping works, thus eliminating the need for off-site disposal.	DSD's Contractor	Construction Work Sites	Waste Disposal Ordinance (Cap.354); Waste Disposal (Chemical Wastes) (General) Regulation (Cap 354) and ETWBTC No. 15/2003, Waste anagement on Construction Site	✓
	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.				✓

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	As referred to the section 6.4.1, the 317,936m3 of inert surplus material generated by the 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.	DSD's Contractor	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;				✓
	(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.				✓
	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.	DSD's Contractor	Construction Work Sites	WDO (Cap.354) and ETWBTC No. 15/2003	✓
	Municipal Waste Temporary refuse collection facilities should be set-up by the contractor and wastes should be stored in appropriate containers prior to collection and disposal.				✓
	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	✓
	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.				✓
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 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				✓
	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	✓
	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.				✓
	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.				✓

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	✓
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.				N/A
	Provide natural stream bed (approximately 0.5 ha,) for the Approach Channel and Dry 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.				N/A
	Provide at least 2.2 ha of compensatory planting on the permanent and temporary affected 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
Cultural Heritage					
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
Fisheries					
10.6	In accordance with the guidelines in the *EIAO-TM* 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:
- ✓ Compliance of mitigation measure
- × Non-compliance of mitigation measure
- N/A Not applicable

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	7-Aug-2008	31-Aug-2013	Water Pollution Control Ordinance – Outfall 1	001028154	Licence No.: EP760/323/012997 I	Contractor had received the acknowledge receipt on 3 March 2008. Public Notice had been issued on 16 June 2008. Application fees had been paid on 28 July 2008. Licence had been issued on 7 Aug 2008.
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	Permit No.: 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	2-Jul-08	31-Jul-2013	Water Pollution Control Ordinance – Intake 2	001029959	Licence No.: EP760/321/013020I	Contractor had received the acknowledge receipt on 8 May 2008. Application fees had been paid on 26 June 2008. Licence had been issued on 2 July 2008.
18-Apr-2008	5-Aug-2008	31-Aug-2013	Water Pollution Control Ordinance – Intake 3	001029960	Licence No.: EP760/323/013324 I	Contractor had received the acknowledge receipt on 8 May 2008. Public Notice had been issued on 16 June 2008. Application fees had been paid on 28 July 2008. Licence had been issued on 5 Aug 2008.
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. Licence had been issued on 26 June 2008.
18-Jun-2008	27-Jun-2008	----	Variation of Environmental Permit	VEP-266/2008	Permit No.: FEP-01/275/2007/A	Contractor had received the acknowledge receipt on 23 June 2008. Licence had been issued on 27 June 2008.
23-Jul-2008	27-Aug-2008	31-Aug-2013	Water Pollution Control Ordinance – Intake 1 (Intersection of Wo Yi Hop Lane and Ho Fung College)	001031974	Licence No.: EP760/325/013536I	Contractor had applied the permit on 23 July 2008. Application fees had been paid on 19 Aug 2008. Licence had been issued on 27 Aug 2008.

Appendix F

Calibration Certificates

High Volume Air Sampler Calibration Worksheet

Project Title: Design and Construction of Tsuen Wan Drainage Tunnel
Monitoring Location: Ho Fung College
Calibration Date: 15-Aug-08
Calibration Due Date 15-Oct-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

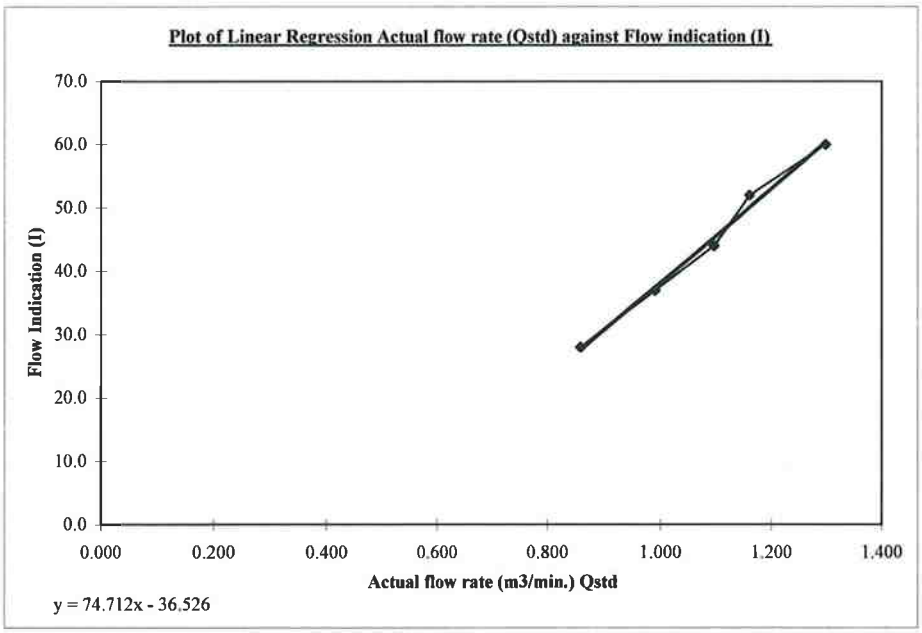
$$Flow(corrected) = \sqrt{H \times \frac{Pa}{Pstd} \times \frac{Tstd}{Ta}}$$

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

Standard pressure (mmHg) Pstd:	756.9
Standard temp. (K) Tstd:	297.18
Calibration pressure (mmHg) Pa:	755.5
Calibration temp. (K) Ta:	300.2

Sample no.	Pressure Drop (H), inch	Flow (corrcted), m^3/min	Actual flow rate (Qstd), m^3/min	Flow indication (I), arbitrary
1	6.9	2.615	1.298	60.0
2	5.5	2.334	1.160	52.0
3	4.9	2.203	1.095	44.0
4	4.0	1.991	0.990	37.0
5	3.0	1.724	0.859	28.0

Correlation Coefficient : 0.9954



Remark
1HPa = 0.750062 mmHg

Calibrated by: **Hui Chun Ming** **Date:** 18. 8. 08
( )

Checked by: **Tang Hiu Yeung** **Date:** 18. 8. 08
( )

High Volume Air Sampler Calibration Worksheet

Project Title: Design and Construction of Tsuen Wan Drainage Tunnel
Monitoring Location: Long Beach Gardan
Calibration Date: 15-Aug-08
Calibration Due Date 15-Oct-08
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

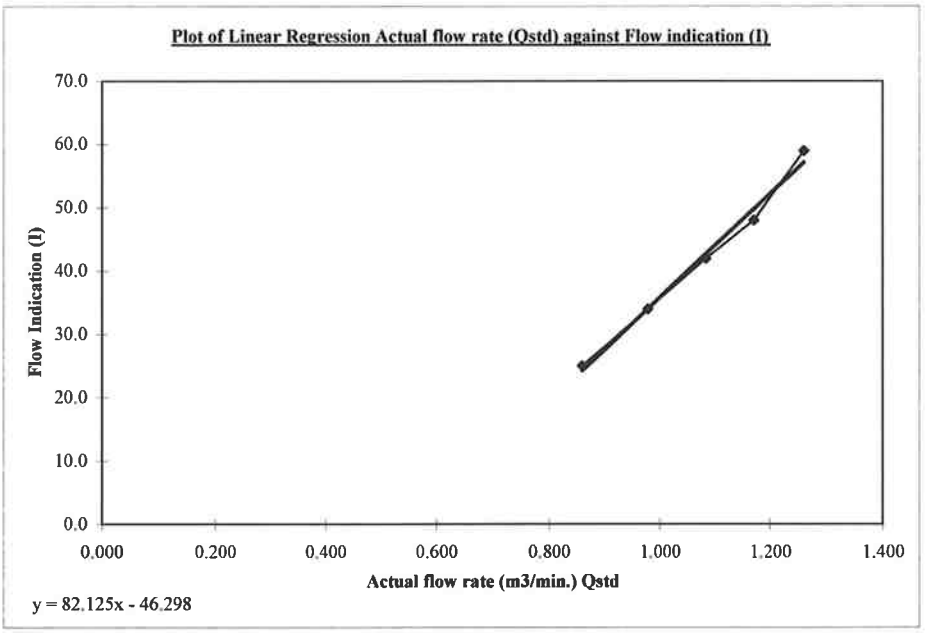
$$Flow(corrected) = \sqrt{H \times \frac{Pa}{Pstd} \times \frac{Tstd}{Ta}}$$

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

Standard pressure (mmHg) Pstd:	756.9
Standard temp. (K) Tstd:	297.18
Calibration pressure (mmHg) Pa:	755.5
Calibration temp. (K) Ta:	300.2

Sample no.	Pressure Drop (H), inch	Flow (corrcted), m^3/min	Actual flow rate (Qstd), m^3/min	Flow indication (I), arbitrary
1	6.5	2.538	1.260	59.0
2	5.6	2.356	1.170	48.0
3	4.8	2.181	1.084	42.0
4	3.9	1.966	0.978	34.0
5	3.0	1.724	0.859	25.0

Correlation Coefficient : 0.9943



Remark
1HPa = 0.750062 mmHg

Calibrated by: **Hui Chun Ming** **Date:** 18.8.08
( )

Checked by: **Tang Hiu Yeung** **Date:** 18.8.08
( )

High Volume Air Sampler Calibration Worksheet

Project Title: **Design and Construction of Tsuen Wan Drainage Tunnel**
Monitoring Location: **Greenview Terrance**
Calibration Date: **15-Aug-08**
Calibration Due Date **15-Oct-08**
Time: **16:28**

Sampler Model:	TE5005X
Serial No.:	0646
Calibrator Orifice no.:	517N
Slope (m):	2.02953
Intercept (b):	-0.01939
Correction coeff. (r)	0.9999

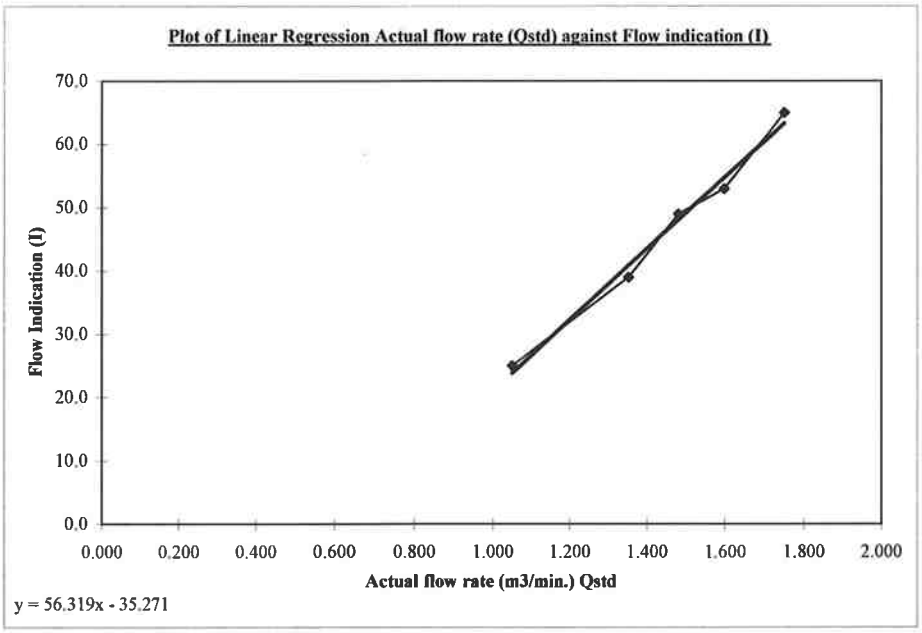
$$Flow(corrected) = \sqrt{H \times \frac{Pa}{Pstd} \times \frac{Tstd}{Ta}}$$

Standard pressure (mmHg) Pstd:	756.9
Standard temp. (K) Tstd:	297.18
Calibration pressure (mmHg) Pa:	755.5
Calibration temp. (K) Ta:	300.2

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

Sample no.	Pressure Drop (H), inch	Flow (corrcted), m^3/min	Actual flow rate (Qstd), m^3/min	Flow indication (I), arbitrary
1	12.6	3.533	1.751	65.0
2	10.5	3.225	1.599	53.0
3	9.0	2.986	1.481	49.0
4	7.5	2.726	1.353	39.0
5	4.5	2.112	1.050	25.0

Correlation Coefficient : 0.9936



Remark
1HPa = 0.750062 mmHg

Calibrated by: **Hui Chun Ming** **Date:** 18-8-08
( )

Checked by: **Tang Hiu Yeung** **Date:** 18.8.08
( )

High Volume Air Sampler Calibration Worksheet

Project Title: Design and Construction of Tsuen Wan Drainage Tunnel
Monitoring Location: Heng Hoi Chi Hong Ship Temple
Calibration Date: 15-Aug-08
Calibration Due Date 15-Oct-08
Time: 08:28

Sampler Model:	BM2000HX
Serial No.:	5875
Calibrator Orifice no.:	517N
Slope (m):	2.02953
Intercept (b):	-0.01939
Correction coeff. (r)	0.9999

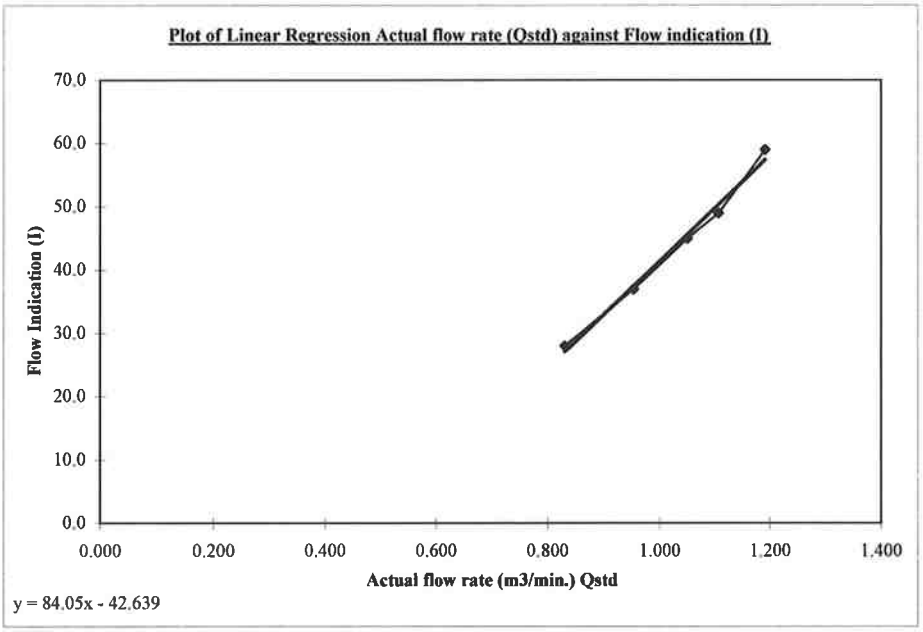
$$Flow(corrected) = \sqrt{H \times \frac{Pa}{Pstd} \times \frac{Tstd}{Ta}}$$

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

Standard pressure (mmHg) Pstd:	756.9
Standard temp. (K) Tstd:	297.18
Calibration pressure (mmHg) Pa:	755.5
Calibration temp. (K) Ta:	300.2

Sample no.	Pressure Drop (H), inch	Flow (corrcted), m^3/min	Actual flow rate (Qstd), m^3/min	Flow indication (I), arbitrary
1	5.8	2.397	1.191	59.0
2	5.0	2.226	1.106	49.0
3	4.5	2.112	1.050	45.0
4	3.7	1.915	0.953	37.0
5	2.8	1.666	0.830	28.0

Correlation Coefficient : 0.9950



Remark
1HPa = 0.750062 mmHg

Calibrated by: **Hui Chun Ming** **Date:** 18-8-08
( )

Checked by: **Tang Hiu Yeung** **Date:** 18.8.08
( )

High Volume Air Sampler Calibration Worksheet

Project Title: Design and Construction of Tsuen Wan Drainage Tunnel
Monitoring Location: Greenview Terrance
Calibration Date: 10-Oct-08
Calibration Due Date 10-Dec-08
Time: 16:15

Sampler Model:	TE5005X
Serial No.:	0646
Calibrator Orifice no.:	517N
Slope (m):	2.02953
Intercept (b):	-0.01939
Correction coeff. (r)	0.9999

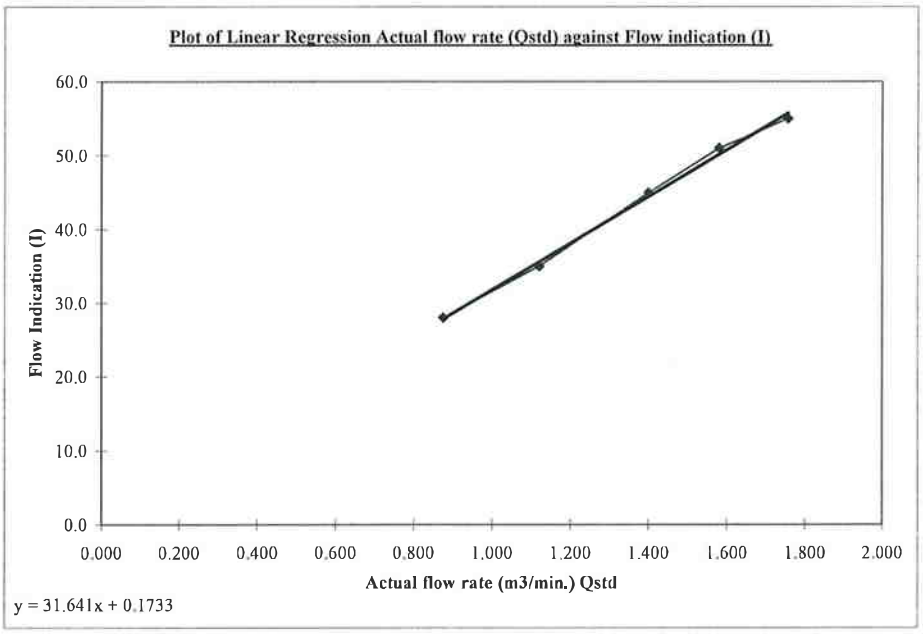
$$Flow\,(corrected) = \sqrt{H \times \frac{Pa}{Pstd} \times \frac{Tstd}{Ta}}$$

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

Standard pressure (mmHg) Pstd:	756.9
Standard temp. (K) Tstd:	297.18
Calibration pressure (mmHg) Pa:	762.1
Calibration temp. (K) Ta:	300.8

Sample no.	Pressure Drop (H), inch	Flow (corrcted), m^3/min	Actual flow rate (Qstd), m^3/min	Flow indication (I), arbitrary
1	12.6	3.545	1.756	55.0
2	10.2	3.190	1.581	51.0
3	8.0	2.825	1.401	45.0
4	5.1	2.256	1.121	35.0
5	3.1	1.759	0.876	28.0

Correlation Coefficient : 0.9982



Remark
1HPa = 0.750062 mmHg

Calibrated by: **Mak Kei Ho** **Date:** 10-10-08
( )

Checked by: **Tang Hiu Yeung** **Date:** 10-10-08
( )

High Volume Air Sampler Calibration Worksheet

Project Title: Design and Construction of Tsuen Wan Drainage Tunnel
Monitoring Location: Ho Fung College
Calibration Date: 10-Oct-08
Calibration Due Date 10-Dec-08
Time: 08:30

Sampler Model:	BM2000HX
Serial No.:	4994
Calibrator Orifice no.:	517N
Slope (m):	2.02953
Intercept (b):	-0.01939
Correction coeff. (r)	0.9999

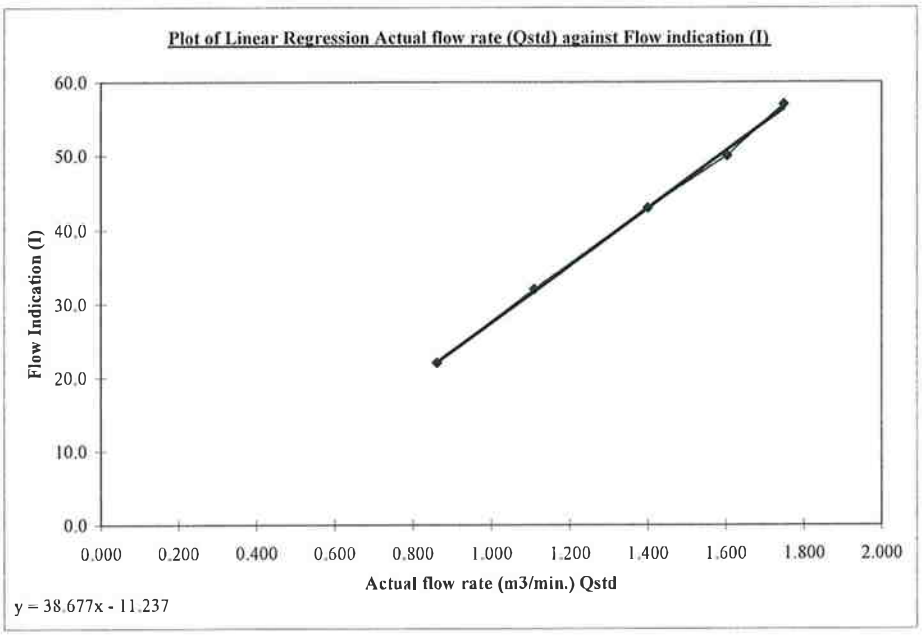
$$Flow(corrected) = \sqrt{H \times \frac{Pa}{Pstd} \times \frac{Tstd}{Ta}}$$

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

Standard pressure (mmHg) Pstd:	756.9
Standard temp. (K) Tstd:	297.18
Calibration pressure (mmHg) Pa:	762.1
Calibration temp. (K) Ta:	300.8

Sample no.	Pressure Drop (H), inch	Flow (corrcted), m^3/min	Actual flow rate (Qstd), m^3/min	Flow indication (I), arbitrary
1	12.5	3.531	1.749	57.0
2	10.5	3.236	1.604	50.0
3	8.0	2.825	1.401	43.0
4	5.0	2.233	1.110	32.0
5	3.0	1.730	0.862	22.0

Correlation Coefficient : 0.9993



Remark
1HPa = 0.750062 mmHg

Calibrated by: **Mak Kei Ho** **Date:** 10-10-08
( )

Checked by: **Tang Hiu Yeung** **Date:** 10-10-08
( )

High Volume Air Sampler Calibration Worksheet

Project Title: Design and Construction of Tsuen Wan Drainage Tunnel
Monitoring Location: Heng Hoi Chi Hong Ship Temple
Calibration Date: 10-Oct-08
Calibration Due Date 10-Dec-08
Time: 10:58

Sampler Model:	BM2000HX
Serial No.:	5875
Calibrator Orifice no.:	517N
Slope (m):	2.02953
Intercept (b):	-0.01939
Correction coeff. (r)	0.9999

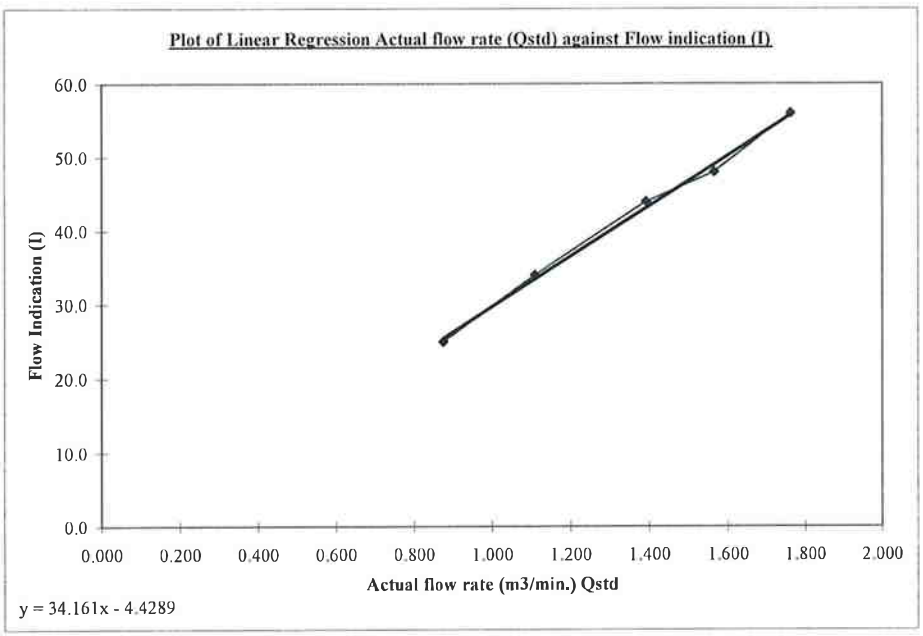
$$Flow(corrected) = \sqrt{H \times \frac{Pa}{Pstd} \times \frac{Tstd}{Ta}}$$

Standard pressure (mmHg) Pstd:	756.9
Standard temp. (K) Tstd:	297.18
Calibration pressure (mmHg) Pa:	762.1
Calibration temp. (K) Ta:	300.8

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

Sample no.	Pressure Drop (H), inch	Flow (corrected), m^3/min	Actual flow rate (Qstd), m^3/min	Flow indication (I), arbitrary
1	12.7	3.559	1.763	56.0
2	10.0	3.158	1.566	48.0
3	7.9	2.807	1.393	44.0
4	5.0	2.233	1.110	34.0
5	3.1	1.759	0.876	25.0

Correlation Coefficient : 0.9980



Remark
1HPa = 0.750062 mmHg

Calibrated by: **Mak Kei Ho** **Date:** 10-10-08
(HO)

Checked by: **Tang Hiu Yeung** **Date:** 10.10.08
( )

High Volume Air Sampler Calibration Worksheet

Project Title: Design and Construction of Tsuen Wan Drainage Tunnel
Monitoring Location: Long Beach Gardan
Calibration Date: 10-Oct-08
Calibration Due Date 10-Dec-08
Time: 15:45

Sampler Model:	TE5005X
Serial No.:	0390
Calibrator Orifice no.:	517N
Slope (m):	2.02953
Intercept (b):	-0.01939
Correction coeff. (r)	0.9999

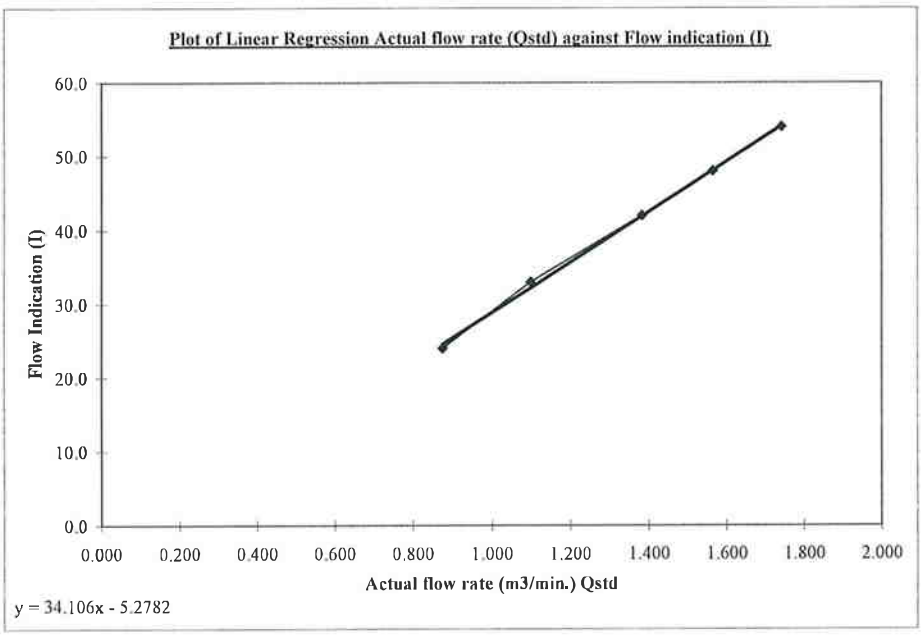
$$Flow(corrected) = \sqrt{H \times \frac{Pa}{Pstd} \times \frac{Tstd}{Ta}}$$

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

Standard pressure (mmHg) Pstd:	756.9
Standard temp. (K) Tstd:	297.18
Calibration pressure (mmHg) Pa:	762.1
Calibration temp. (K) Ta:	300.8

Sample no.	Pressure Drop (H), inch	Flow (corrcted), m^3/min	Actual flow rate (Qstd), m^3/min	Flow indication (I), arbitrary
1	12.4	3.517	1.742	54.0
2	10.0	3.158	1.566	48.0
3	7.8	2.789	1.384	42.0
4	4.9	2.211	1.099	33.0
5	3.1	1.759	0.876	24.0

Correlation Coefficient : 0.9991



Remark
1HPa = 0.750062 mmHg

Calibrated by: **Mak Kei Ho** **Date:** 10.10-08
( )

Checked by: **Tang Hiu Yeung** **Date:** 10.10.08
( )

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

Date - Apr 28, 2008 Rootsmeter S/N 9833620 Ta (K) - 296
Operator. Tisch Orifice I.D. - 517N Pa (mm) - 749.3

PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	DIFF TIME (min)	METER DIFF Hg (mm)	ORFICE DIFF H2O (in.)
1	NA	NA	1.00	1.4040	3.2	2.00
2	NA	NA	1.00	0.9940	6.4	4.00
3	NA	NA	1.00	0.8860	7.9	5.00
4	NA	NA	1.00	0.8450	8.8	5.50
5	NA	NA	1.00	0.6980	12.8	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)		Va	(x axis) Qa	(y axis)
0.9883	0.7039	1.4090		0.9957	0.7092	0.8889
0.9841	0.9901	1.9926		0.9915	0.9975	1.2570
0.9820	1.1084	2.2278		0.9894	1.1167	1.4054
0.9809	1.1608	2.3365		0.9882	1.1695	1.4740
0.9756	1.3977	2.8179		0.9829	1.4082	1.7777

Qstd slope (m) = 2.02953
intercept (b) = -0.01939
coefficient (r) = 0.99999

Qa slope (m) = 1.27086
intercept (b) = -0.01223
coefficient (r) = 0.99999

y axis = SQRT[H2O(Pa/760)(298/Ta)]

y axis = SQRT[H2O(Ta/Pa)]

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}

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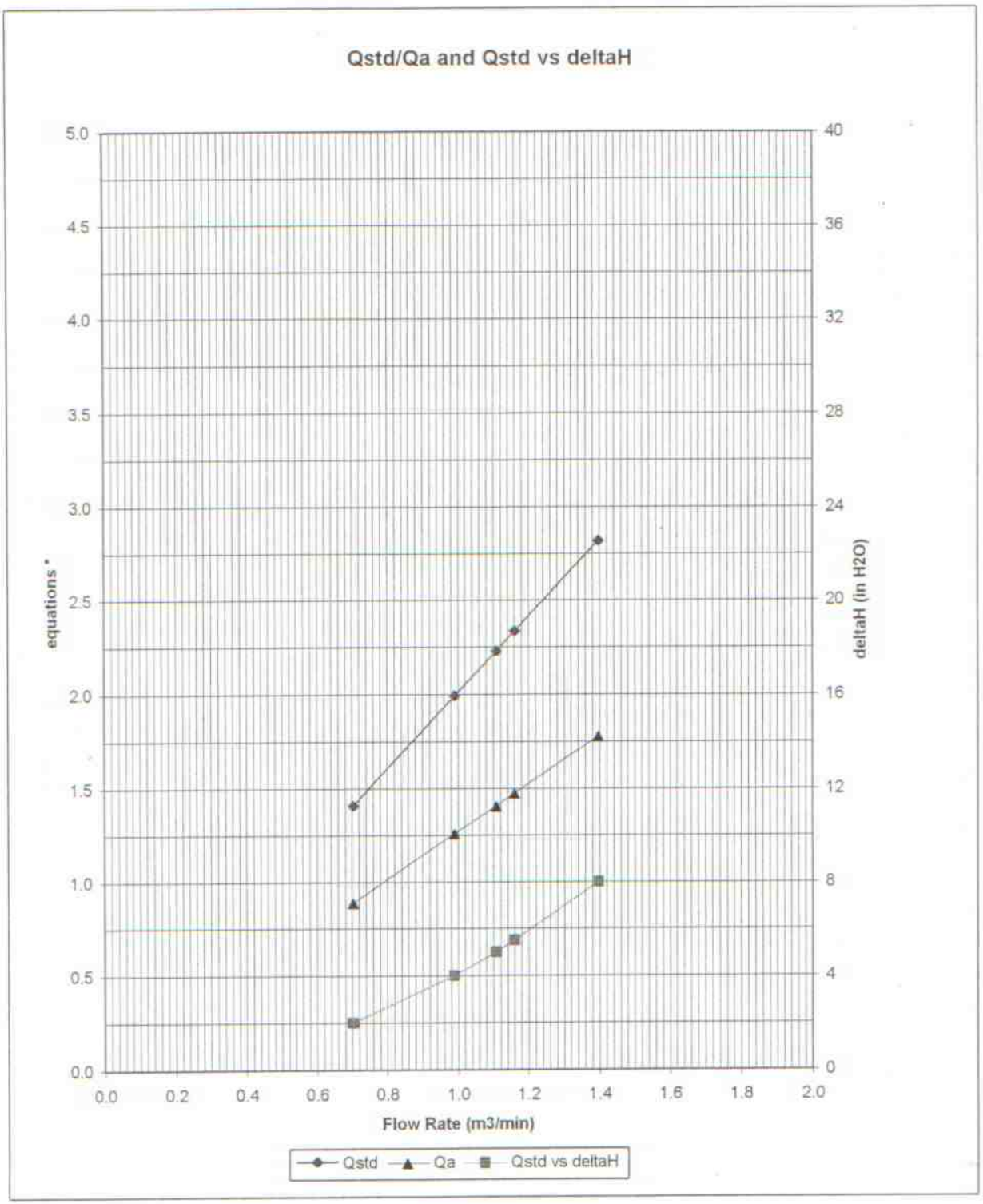
AIR POLLUTION MONITORING EQUIPMENT



* y-axis equations:

Qstd series: $\sqrt{\Delta H \left(\frac{Pa}{Pstd}\right)\left(\frac{Tstd}{Ta}\right)}$

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

#517N

Hong Kong Calibration Ltd.
香港校正有限公司

Calibration Certificate

Certificate No. **80026**

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 ± 3)°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 : P.F. Wong

Approved by : Dorothy Cheuk

Date: 17-Jan-08

This Certificate is issued by:
Hong Kong Calibration Ltd.
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

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Calibration Certificate

Results :

1. SPL Accuracy

UUT Setting				Applied Value (dB)	UUT Reading (dB)
Range	Freq. Wgt.	Bandwith	Center Freq.		
20 ~ 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. : ± 0.7 dB
Uncertainty : ± 0.1 dB

2. Level Stability : 0.0 dB

IEC 651 Type 1 Spec. : ± 0.3 dB
Uncertainty : ± 0.01 dB

3. Linearity

3.1 Level Linearity

UUT Range	Applied Value (dB)	UUT Reading (dB)	Variation (dB)	IEC 651 Type 1 Spec. (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.)	- -	
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

UUT Range	Applied Value (dB)	UUT Reading (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

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Calibration Certificate

4. Frequency Weighting

A weighting

Frequency	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 dB, ± 1 dB
2 kHz	+ 1.2	+ 1.2 dB, ± 1 dB
4 kHz	+ 1.0	+ 1.0 dB, ± 1 dB
8 kHz	- 1.1	- 1.1 dB, + 1.5 dB ~ -3 dB
16 kHz	- 6.7	- 6.6 dB, + 3 dB ~ - ∞

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 ----------

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Calibration Certificate

Certificate No. **80027**

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 Calibrator

Manufacturer : B&K

Model : Type 4231 **Serial No.** : 1770806

Test Conditions

Date of Test : 17-Jan-08 **Supply Voltage** : --

Ambient Temperature : (23 ± 3)°C **Relative Humidity** : (50 ± 25) %

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:

Equipment No.	Description	Cert. No.	Due Date	Traceable to
S014	Spectrum Analyzer	73602	7-Jul-08	NIM-PRC & SCL-HKSAR
S024	Sound Level Calibrator	71791	16-Jul-08	NIM-PRC & SCL-HKSAR
S041	Universal Counter	73453	22-Aug-08	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 : P.F. Wong

Approved by : Dorothy Cheuk

Date: 17-Jan-08

This Certificate is issued by:
Hong Kong Calibration Ltd.
Unit 8B, 24/F., Well Fung Industrial Centre, No. 58-75, Ta Chuen Ping Street, Kwai Chung, NT, Hong Kong.
Tel: 2425 8801 Fax: 2425 8846

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Wissenschaftlich-Technische Werkstätten GmbH
Dr.Karl-Slevogt-Str.1 D-82362 Weilheim

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.

Accuracy of the pH measurement:
≤ 0,01 pH ± 1 digit

Accuracy of the voltage measurement:
≤ 1 mV ± 1 digit

Accuracy of the oxygen measurement:
≤ 0,5% of measured value ± 1 digit

Accuracy of the temperature measurement:
≤ 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.

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

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

Genauigkeit der Spannungsessung:
≤ 1 mV ± 1 Digit

Genauigkeit der Sauerstoff-Messung:
≤ 0,5% vom Meßwert ± 1 Digit

Genauigkeit der Temperaturmessung:
≤ 0,1 K ± 1 Digit

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 -
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TEST REPORT

Report No. : 106627N
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.** : 21151/1
Sample Description : One Turbidimeter and four turbidity standards.
Sample Receipt Date : 18-07-2008 **Test Period** : 19-07-2008

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 : WONG Yau Tim (Operation Manager)

Issue Date : 21-07-2008

TEST REPORT

Report No. : 106627N
Project Name : Calibration of Field measurement equipment
Customer : Hyder Consulting Limited
Lab Job No. : J651 **Lab Sample No.** : 21151/1

Test Results

Value re-assigmnemt for Turbidity Standards:

Customer Ref.	Measured value (NTU)
STD 1	0.03
STD 2	17.99
STD 3	101
STD 4	893

Linearity check for Turbidimeter:

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

- End of Report -

TEST REPORT

Report No. : 107244N
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.** : 21456/1
Sample Description : One Turbidimeter and four turbidity standards.
Sample Receipt Date : 13-10-2008 **Test Period** : 14-10-2008

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 : WONG Yau Tim (Operation Manager)

Issue Date : 14-10-2008

TEST REPORT

Report No. : 107244N
Project Name : Calibration of Field measurement equipment
Customer : Hyder Consulting Limited
Lab Job No. : J651 **Lab Sample No.** : 21456/1

Test Results

Value re-assigmnemt for Turbidity Standards:

Customer Ref.	Measured value (NTU)
STD 1	0.00
STD 2	17.74
STD 3	102
STD 4	893

Linearity check for Turbidimeter:

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

- End of Report -

CERTIFICATE OF ANALYSIS

Batch: HK0810543
Date of Issue: 07/07/2008
Client: HYDER CONSULTING LTD
Client Reference:

Calibration of Thermometer

Item : Multi-parameter Instrument / Mehrparameter-MeBgerat

Model No. : WTW pH / Oxi 340i

Serial No. : 08101283

Equipment No. : --

Calibration Method : In-house Method

Date of Calibration : 07 July, 2008

Testing Results :

Reference Temperature (^{0}C)	Recorded Temperature (^{0}C)
19.0 °C	19.1 °C
27.5 °C	27.3 °C
Allowing Deviation	±2.0^{0}C

Ms Wong Wai Man, Alice
Laboratory Manager - Hong Kong

CERTIFICATE OF ANALYSIS

Batch: HK0816176
Date of Issue: 03/10/2008
Client: HYDER CONSULTING LTD
Client Reference:

Calibration of pH System

Item : Multi-parameter Instrument / Mehrparameter-MeBgerat

Model No. : WTW pH / Oxi 340i

Serial No. : 08101283

Equipment No.: --

Calibration Method : This meter was calibrated in accordance with standard method APHA (19th Ed.) 4500-H^+B

Date of Calibration : 03 October, 2008

Testing Results :

Expected Reading	Recording Reading
4.00	3.90
7.00	6.98
10.0	9.95
Allowing Deviation	± 0.2

Ms Wong Wai Man, Alice
Laboratory Manager - Hong Kong

CERTIFICATE OF ANALYSIS

Batch: HK0816176
Date of Issue: 03/10/2008
Client: HYDER CONSULTING LTD
Client Reference:

Calibration of DO System

Item : Multi-parameter Instrument / Mehrparameter-MeBgerat

Model No. : WTW pH / Oxi 340i

Serial No. : 08101283

Equipment No. : --

Calibration Method : This meter was calibrated in accordance with standard method APHA (18th Ed.) 4500-0C & G

Date of Calibration : 03 October, 2008

Testing Results :

Expected Reading	Recording Reading
3.41 mg/L	3.46 mg/L
5.62 mg/L	5.48 mg/L
7.34 mg/L	7.37 mg/L
Allowing Deviation	±0.2 mg/L

Ms Wong Wai Man, Alice
Laboratory Manager - Hong Kong

Appendix G

Monitoring Locations

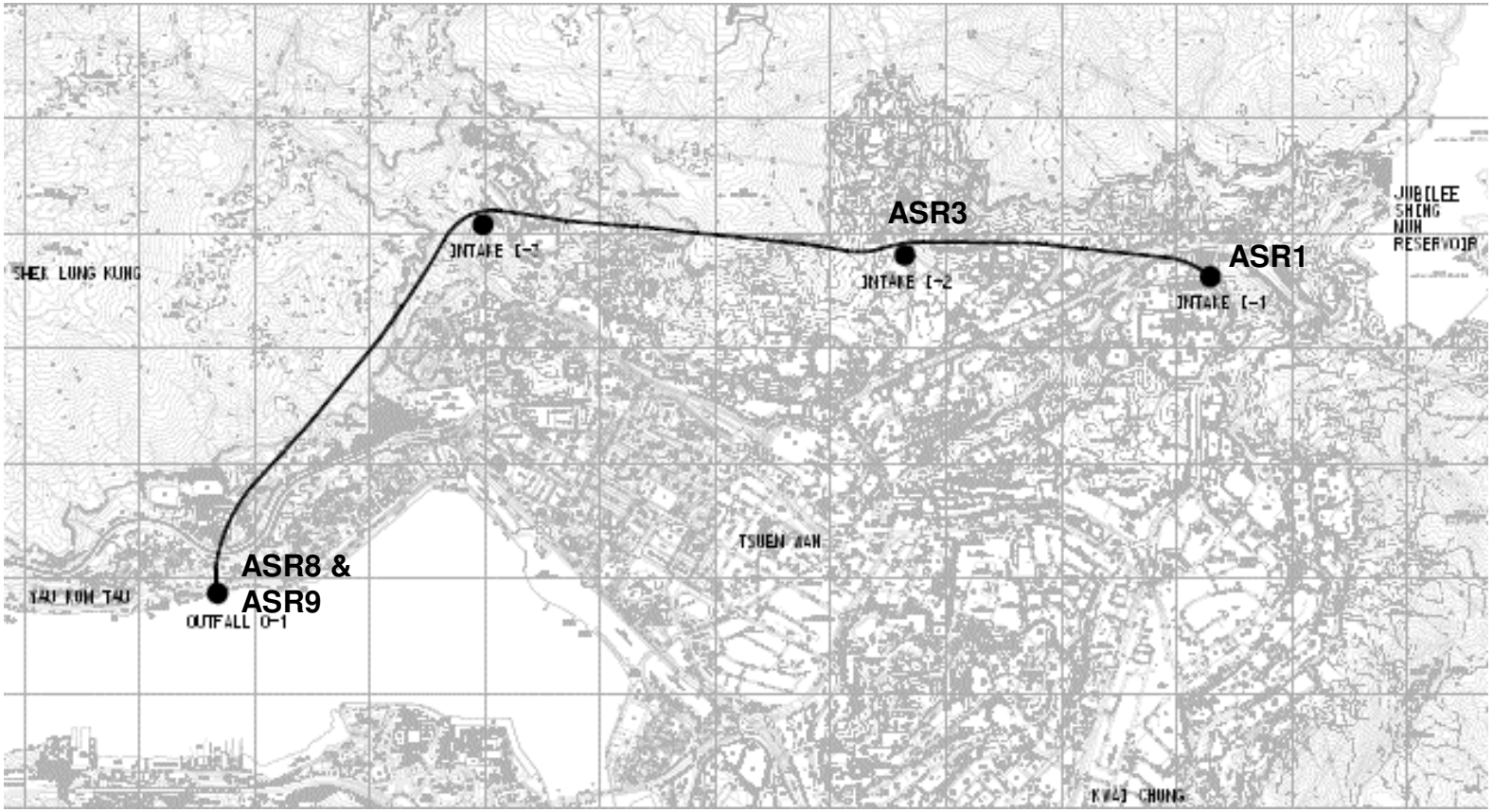


Figure 1 **Air Quality Monitoring Stations**

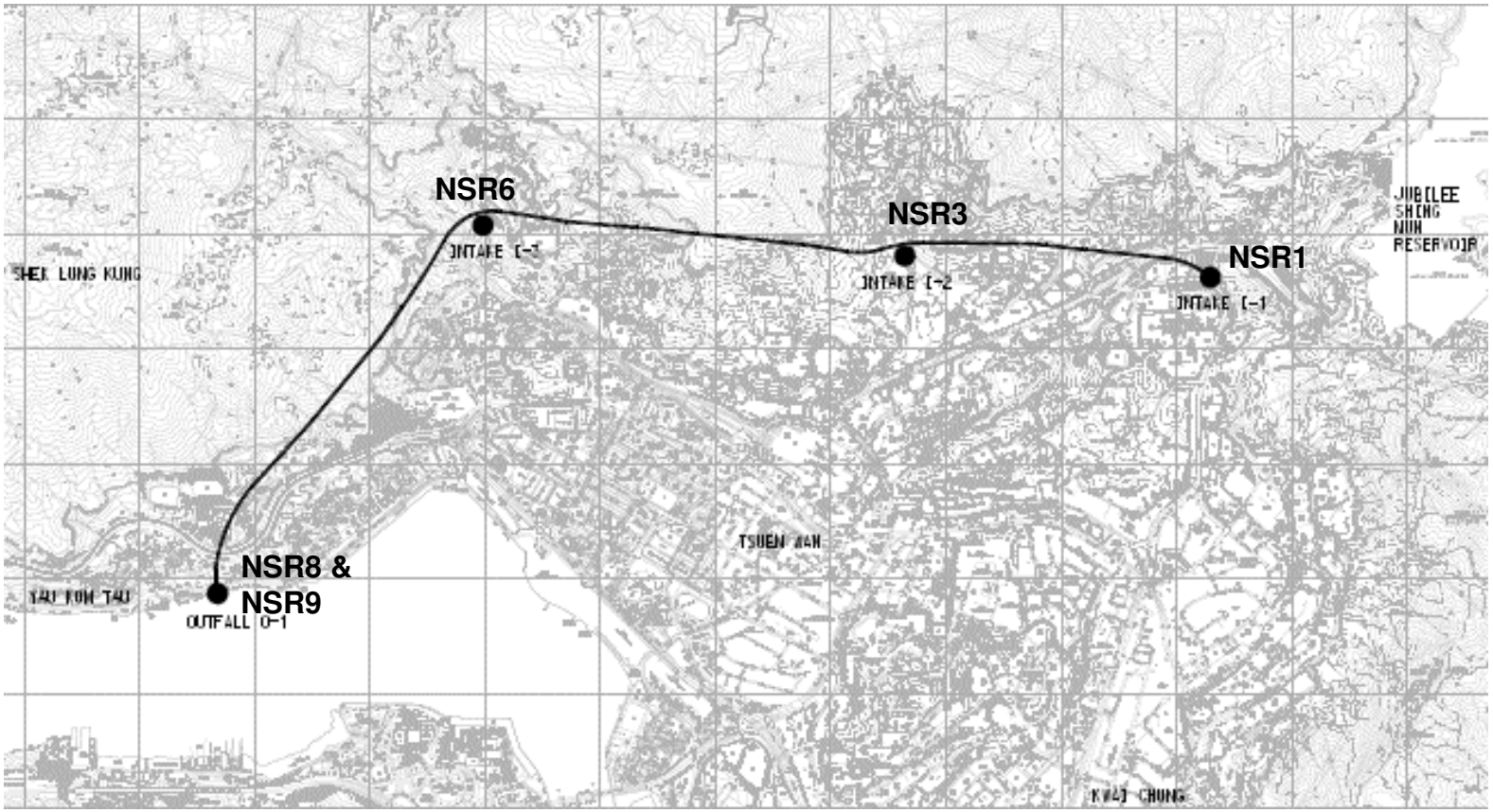


Figure 2 Noise Monitoring Stations

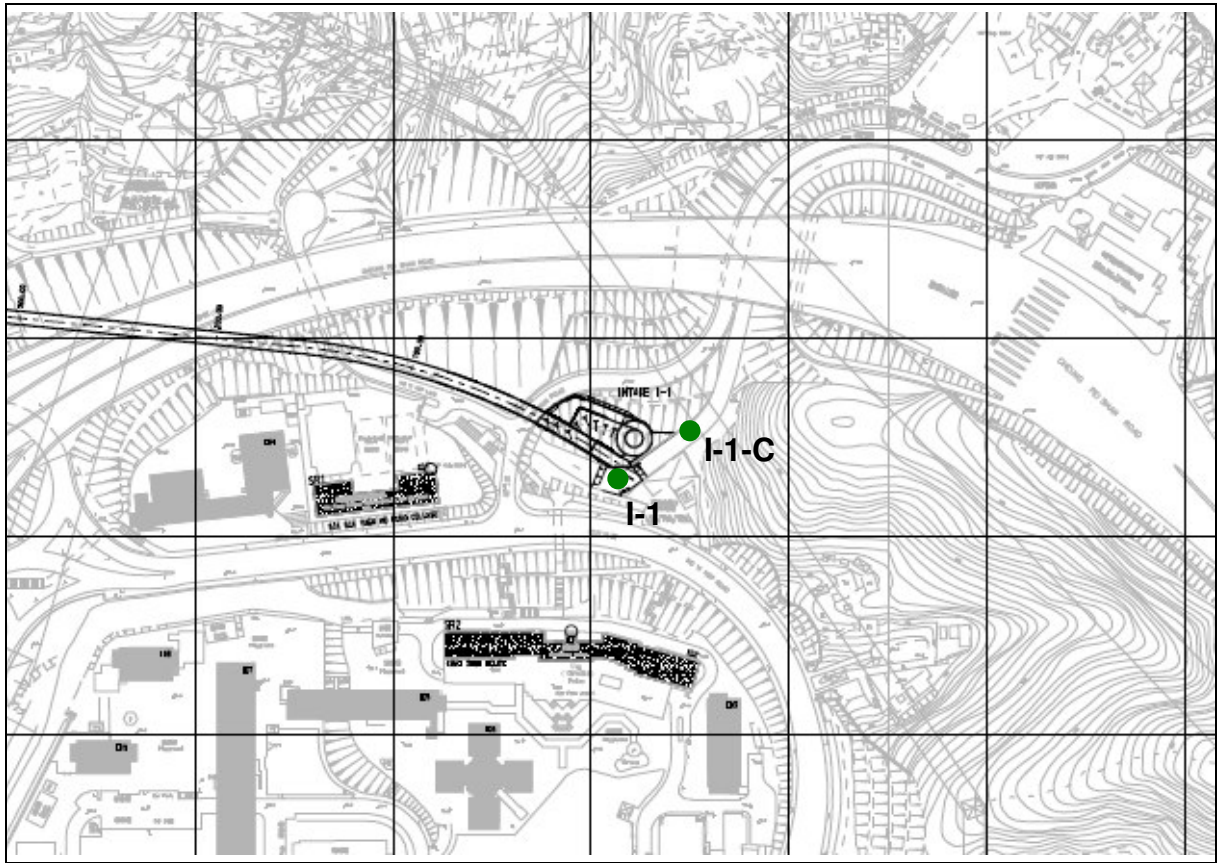


Figure 3 **Water Quality Monitoring Stations: I-1 & I-1-C at Intake I-1**

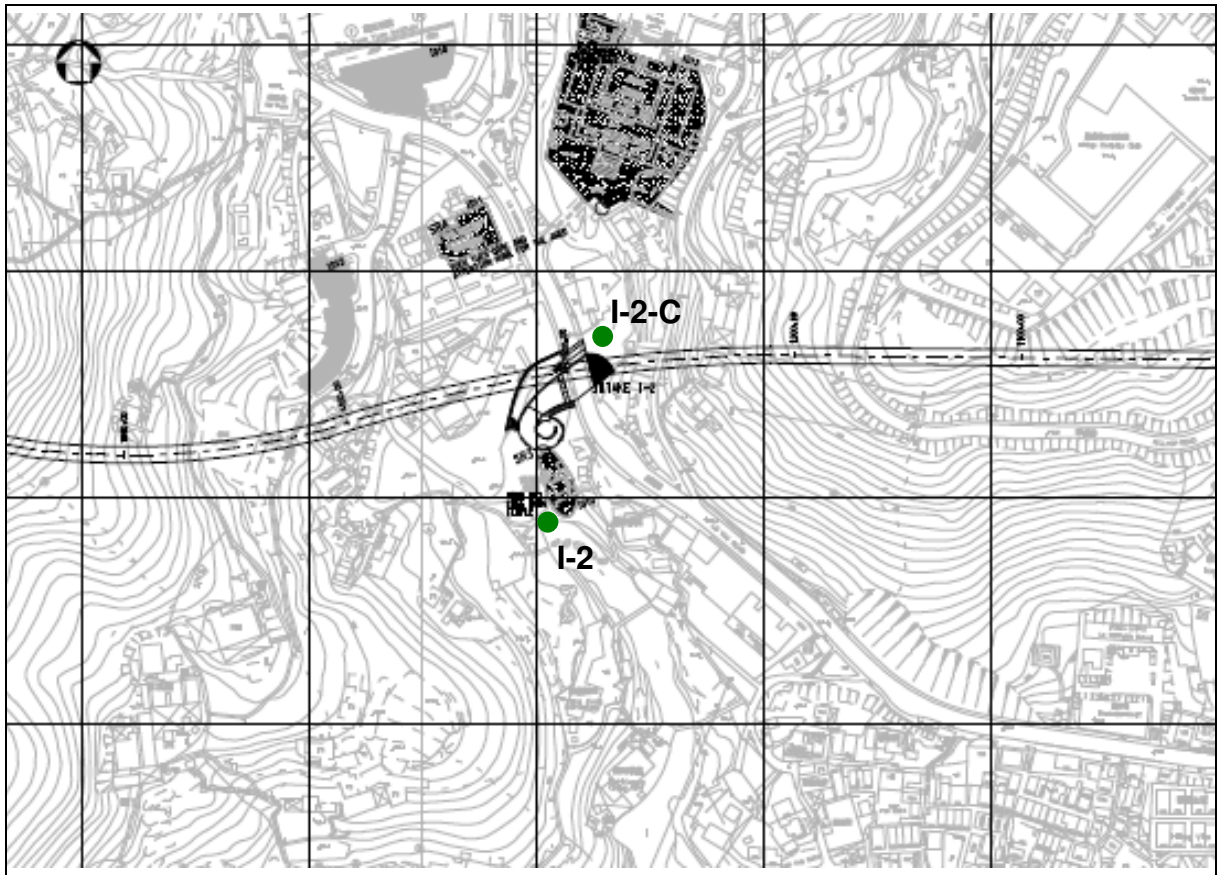


Figure 4 Water Quality Monitoring Stations: I-2 & I-2-C at Intake I-2

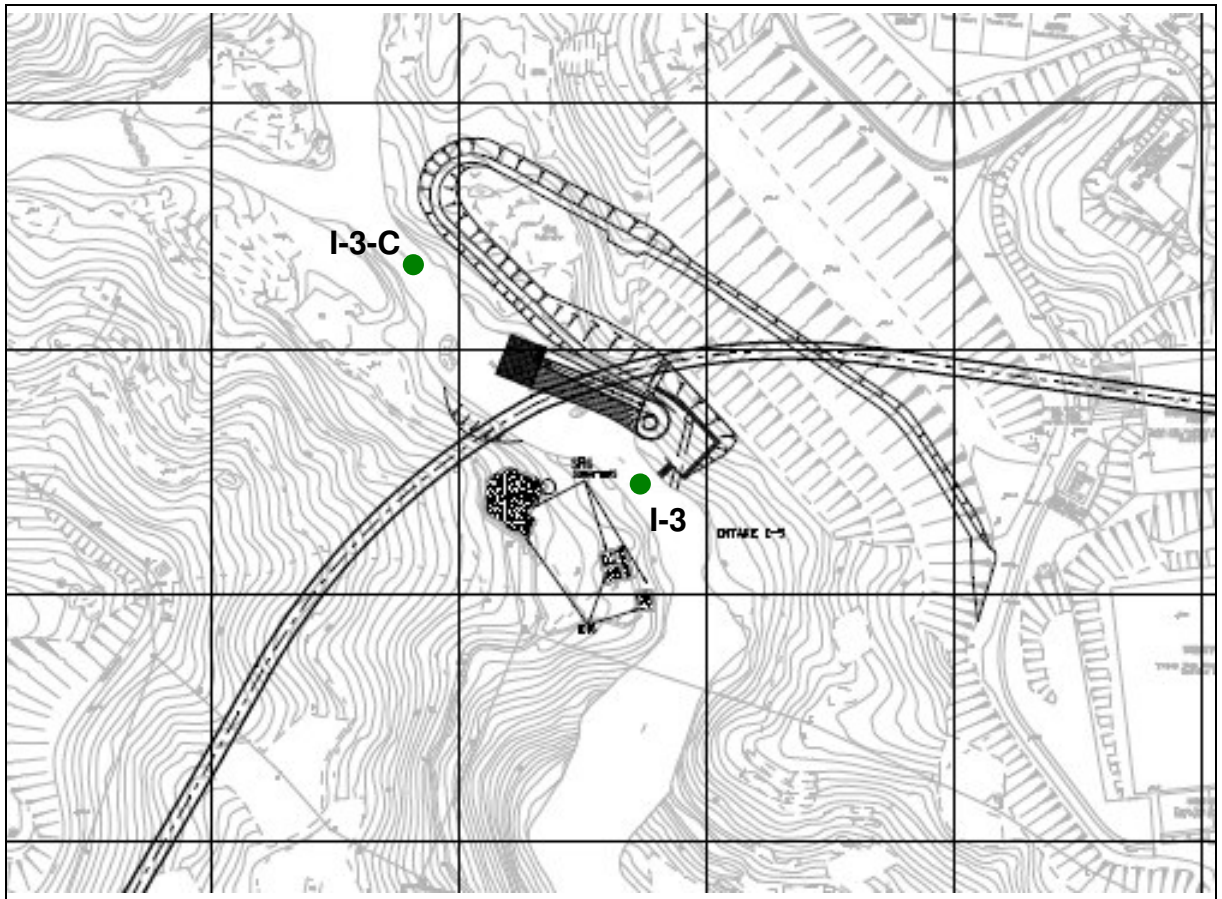


Figure 5 Water Quality Monitoring Stations: I-3 & I-3-C at Intake I-3

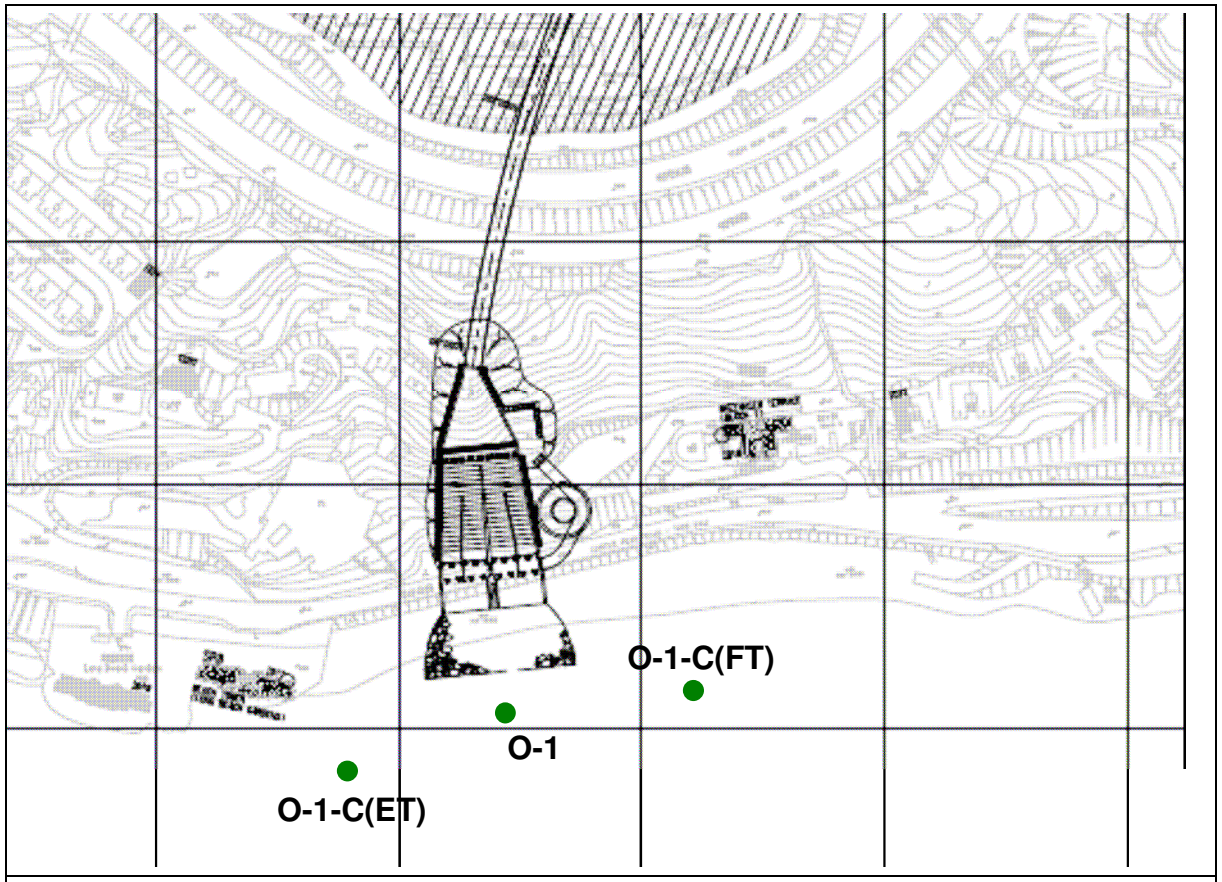


Figure 6 Water Quality Monitoring Stations: O-1, O-1-C(ET) & O-1-C(FT) at Outfall O-1

Appendix H

EM&A Schedule

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

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

Note:
Shaded area indicates public holiday.
Air – Monitoring 1-hour TSP is undertaken three times per every six days
Noise – Noise measurements is undertaken once every week at (0700-1900 Monday to Saturday)
Water – Water measurements is undertaken three times per week

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

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

Note:
Shaded area indicates public holiday.
Air – Monitoring 1-hour TSP is undertaken three times per every six days
Noise – Noise measurements is undertaken once every week at (0700-1900 Monday to Saturday)
Water – Water measurements is undertaken three times per week

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

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

Note:
Shaded area indicates public holiday.
Air – Monitoring 1-hour TSP is undertaken three times per every six days
Noise – Noise measurements is undertaken once every week at (0700-1900 Monday to Saturday)
Water – Water measurements is undertaken three times per week

Contract No. DC/2007/12 – Design and Construction of Tsuen Wan Drainage Tunnel
Impact Monitoring Programme – January 2009 (Tentative)

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

Note:
Shaded area indicates public holiday.
Air – Monitoring 1-hour TSP is undertaken three times per every six days
Noise – Noise measurements is undertaken once every week at (0700-1900 Monday to Saturday)
Water – Water measurements is undertaken 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)

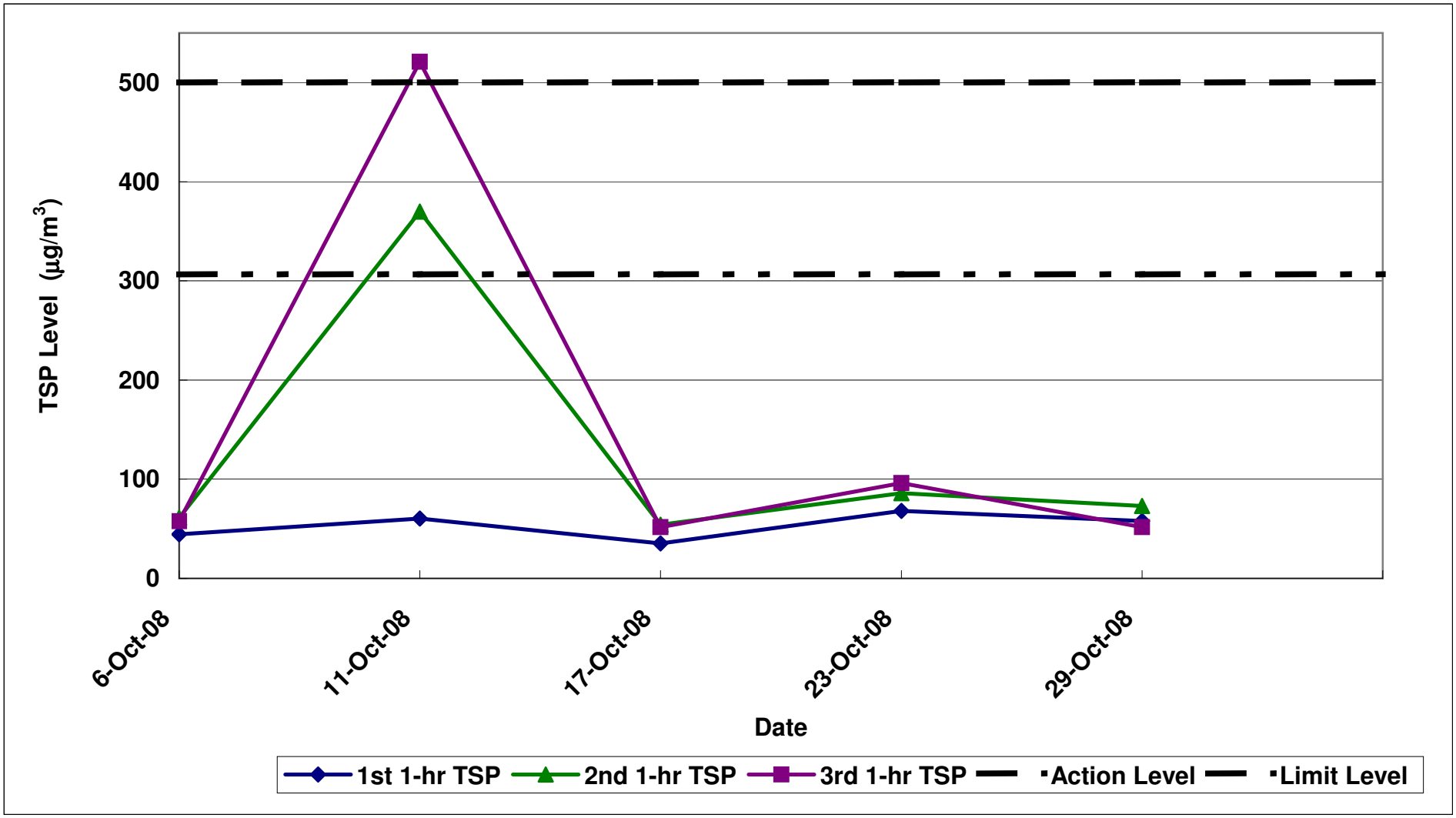
Location	Monitoring Date	Weather Conditions	Wind Speed with Direction (m/s)	Temp (°C)	Timer-I	Timer-F	Time (mins)	Flow-I (CFM)	Flow-F (CFM)	Flow-I (m^3/min)	Flow-F (m^3/min)	Flow-avg (m^3/min)	Volume (m^3)	Weight-I (g)	Weight-f (g)	Weight-diff. (g)	1-hr TSP (µg/m^3)	Average 1-Hr TSP (µg/m^3)	Action/Limit Levels (µg/m^3)	Observation / Site Condition	Remark
Sik Sik Yuen Ho Fung College - Intake (ASR1)	6-Oct-08	Cloudy	0.5E	30	562339	562439	60.0	39	39	1.01	1.01	1.01	60.65	2.7398	2.7425	0.0027	44.5	54.4	306.6/500	Pilling work	
		Cloudy	0.5E	30	562439	562539	60.0	39	39	1.01	1.01	1.01	60.65	2.7273	2.7310	0.0037	61.0				
		Cloudy	0.5E	30	562539	562639	60.0	39	39	1.01	1.01	1.01	60.65	2.7511	2.7546	0.0035	57.7				
	11-Oct-08	Sunny	0.7SE	26	562639	562739	60.0	40	40	1.32	1.32	1.32	79.48	2.8795	2.8843	0.0048	60.4	317.0		backhoe excavator	
		Sunny	0.7SE	26	562739	562839	60.0	40	40	1.32	1.32	1.32	79.48	2.7366	2.7660	0.0294	*369.9*				
		Sunny	0.7SE	26	562839	562939	60.0	40	40	1.32	1.32	1.32	79.48	2.7165	2.7579	0.0414	**520.9**				
	17-Oct-08	Cloudy	0.9NE	27	562939	563039	60.0	40	40	1.32	1.32	1.32	79.48	2.7744	2.7772	0.0028	35.2	47.0			
		Fine	0.9NE	27	563039	563139	60.0	40	40	1.32	1.32	1.32	79.48	2.7548	2.7591	0.0043	54.1				
		Fine	0.9NE	27	563139	563239	60.0	40	40	1.32	1.32	1.32	79.48	2.7148	2.7189	0.0041	51.6				
	23-Oct-08	Sunny	0.7NE	30	563239	563339	60.0	39	39	1.30	1.30	1.30	77.93	2.8318	2.8371	0.0053	68.0	83.4		1st excavator	
		Sunny	0.7NE	30	563339	563439	60.0	39	39	1.30	1.30	1.30	77.93	2.8196	2.8263	0.0067	86.0				
		Sunny	0.7NE	30	563439	563539	60.0	39	39	1.30	1.30	1.30	77.93	2.8130	2.8205	0.0075	96.2				
	29-Oct-08	Fine	0.6NE	27	563539	563639	60.0	40	40	1.32	1.32	1.32	79.48	2.771	2.7756	0.0046	57.9	60.8		Nil	
		Fine	0.6NE	27	563639	563739	60.0	40	40	1.32	1.32	1.32	79.48	2.7738	2.7796	0.0058	73.0				
		Fine	0.6NE	27	563739	563839	60.0	40	40	1.32	1.32	1.32	79.48	2.8068	2.8109	0.0041	51.6				
Hong Hoi Chee Hong Temple - Intake (ASR3)	6-Oct-08	Cloudy	0.6E	29	530789	530889	60.0	40	40	0.98	0.98	0.98	58.99	2.8509	2.8521	0.0012	20.3	50.3	327.4/500		
		Cloudy	0.6E	29	530889	530989	60.0	40	40	0.98	0.98	0.98	58.99	2.8413	2.8451	0.0038	64.4				
		Cloudy	0.6E	29	530989	531089	60.0	40	40	0.98	0.98	0.98	58.99	2.8584	2.8623	0.0039	66.1				
	11-Oct-08	Sunny	0.5E	25	531089	531189	60.0	40	40	1.30	1.30	1.30	78.03	2.8291	2.8352	0.0061	78.2	85.0			
		Sunny	0.5E	25	531189	531289	60.0	40	40	1.30	1.30	1.30	78.03	2.8499	2.8563	0.0064	82.0				
		Sunny	0.5E	25	531289	531389	60.0	40	40	1.30	1.30	1.30	78.03	2.8233	2.8307	0.0074	94.8				
	17-Oct-08	Sunny	0.6NE	28	531389	531489	60.0	40	40	1.30	1.30	1.30	78.03	2.7995	2.8086	0.0091	116.6	141.0			
		Sunny	0.6NE	28	531489	531589	60.0	40	40	1.30	1.30	1.30	78.03	2.8520	2.8620	0.0100	128.1				
		Cloudy	0.6NE	28	531589	531689	60.0	40	40	1.30	1.30	1.30	78.03	2.8376	2.8515	0.0139	178.1				
	23-Oct-08	Sunny	0.4E	30	531689	531789	60.0	40	40	1.30	1.30	1.30	78.03	2.8298	2.8366	0.0068	87.1	87.1			excavator by backhoe, hammer Working
		Sunny	0.4E	30	531789	531889	60.0	40	40	1.30	1.30	1.30	78.03	2.8299	2.8359	0.0060	76.9				
		Sunny	0.4E	30	531889	531989	60.0	40	40	1.30	1.30	1.30	78.03	2.8384	2.8460	0.0076	97.4				
	29-Oct-08	Sunny	0.4NE	28	531989	532089	60.0	40	40	1.30	1.30	1.30	78.03	2.8072	2.8149	0.0077	98.7	105.1			
		Sunny	0.4NE	28	532089	532189	60.0	40	40	1.30	1.30	1.30	78.03	2.7072	2.7149	0.0077	98.7				
		Sunny	0.4NE	28	532189	532289	60.0	40	40	1.30	1.30	1.30	78.03	2.7767	2.7859	0.0092	117.9				
Long Beach Gardens - Outfall (ASR8)	6-Oct-08	Cloudy	0.7E	29	585893	585993	60.0	39	39	1.04	1.04	1.04	62.32	2.7398	2.7425	0.0027	43.3	53.0	336.6/500		
		Cloudy	0.7E	29	585993	586093	60.0	39	39	1.04	1.04	1.04	62.32	2.7273	2.7310	0.0037	59.4				
		Cloudy	0.7E	29	586093	586193	60.0	39	39	1.04	1.04	1.04	62.32	2.7511	2.7546	0.0035	56.2				
	11-Oct-08	Sunny	0.5E	25	586193	586293	60.0	40	40	1.33	1.33	1.33	79.65	2.7783	2.783	0.0047	59.0	46.5			excavator by backhoeX2
		Sunny	0.5E	25	586293	586393	60.0	40	40	1.33	1.33	1.33	79.65	2.7839	2.7869	0.0030	37.7				
		Sunny	0.5E	25	586393	586493	60.0	40	40	1.33	1.33	1.33	79.65	2.7610	2.7644	0.0034	42.7				
	17-Oct-08	Cloudy	0.5NE	26	586493	586593	60.0	40	40	1.33	1.33	1.33	79.65	2.8411	2.8453	0.0042	52.7	54.0			excavator by backhoe, hammer Working
		Cloudy	0.5NE	26	586593	586693	60.0	40	40	1.33	1.33	1.33	79.65	2.8243	2.8287	0.0044	55.2				
		Rainy	0.5NE	26	586693	586793	60.0	40	40	1.33	1.33	1.33	79.65	2.7694	2.7737	0.0043	54.0				
	23-Oct-08	Sunny	0.7NE	30	586793	586893	60.0	41	41	1.36	1.36	1.36	81.41	2.7937	2.8031	0.0094	115.5	101.5			excavator by backhoe X2
		Sunny	0.7NE	30	586893	586993	60.0	41	41	1.36	1.36	1.36	81.41	2.7911	2.7993	0.0082	100.7				
		Sunny	0.7NE	30	586993	587093	60.0	41	41	1.36	1.36	1.36	81.41	2.7942	2.8014	0.0072	88.4				
	29-Oct-08	Sunny	0.7NE	28	587093	587193	60.0	40	40	1.33	1.33	1.33	79.65	2.7355	2.7444	0.0089	111.7	89.6			
		Sunny	0.7NE	28	587193	587293	60.0	40	40	1.33	1.33	1.33	79.65	2.7656	2.7712	0.0056	70.3				
		Sunny	0.7NE	28	587293	587393	60.0	40	40	1.33	1.33	1.33	79.65	2.7685	2.7754	0.0069	86.6				
Greenview Terrance - Outfall (ASR9)	6-Oct-08	cloudy	0.9E	29	517793	517893	60.0	38	38	1.30	1.30	1.30	78.06	2.7477	2.7518	0.0041	52.5	34.6	329.2/500		
		cloudy	0.9E	29	517893	517993	60.0	38	38	1.30	1.30	1.30	78.06	2.7688	2.7701	0.0013	16.7				
		cloudy	0.9E	29	517993	518093	60.0	38	38	1.30	1.30	1.30	78.06	2.7481	2.7508	0.0027	34.6				
	11-Oct-08	Sunny	0.9E	25	518093	518193	60.0	40	40	1.26	1.26	1.26	75.52	2.8195	2.8219	0.0024	31.8	48.6			excavator by backhoeX2
		Sunny	0.9E	25	518193	518293	60.0	40	40	1.26	1.26	1.26	75.52	2.7953	2.7997	0.0044	58.3				
		Sunny	0.9E	25	518293	518393	60.0	40	40	1.26	1.26	1.26	75.52	2.7762	2.7804	0.0042	55.6				
	17-Oct-08	Cloudy	0.9NE	26	518393	518493	60.0	41	41	1.29	1.29	1.29	77.42	2.8252	2.8304	0.0052	67.2	74.5			excavator by backhoe
		Cloudy	0.9NE	26	518493	518593	60.0	40	40	1.26	1.26	1.26	75.52	2.7982	2.8044	0.0062	82.1				
		Rainy	0.9NE	26	518593	518693	60.0	40	40	1.26	1.26	1.26	75.52	2.8419	2.8475	0.0056	74.2				
	23-Oct-08	Sunny	1.2NE	30	518693	518793	60.0	40	40	1.26	1.26	1.26	75.52	2.7580	2.7676	0.0096	127.1	137.3			excavator by backhoe X2
		Sunny	1.2NE	30	518793	518893	60.0	40	40	1.26	1.26	1.26	75.52	2.7432	2.7530	0.0098	129.8				
		Sunny	1.2NE	30	518893	518993	60.0	40	40	1.26	1.26	1.26	75.52	2.7550	2.7667	0.0117	154.9				
	29-Oct-08	Sunny	0.8N	28	518993	519093	60.0	40	40	1.26	1.26	1.26	75.52	2.7429	2.7491	0.0062	82.1	72.8			
		Sunny	0.8N	28	519093	519193	60.0	40	40	1.26	1.26	1.26	75.52	2.75	2.7550	0.0050	66.2				
		Sunny	0.8N	28	519193	519293	60.0	40	40	1.26	1.26	1.26	75.52	2.7556	2.7609	0.0053	70.2				

Note:

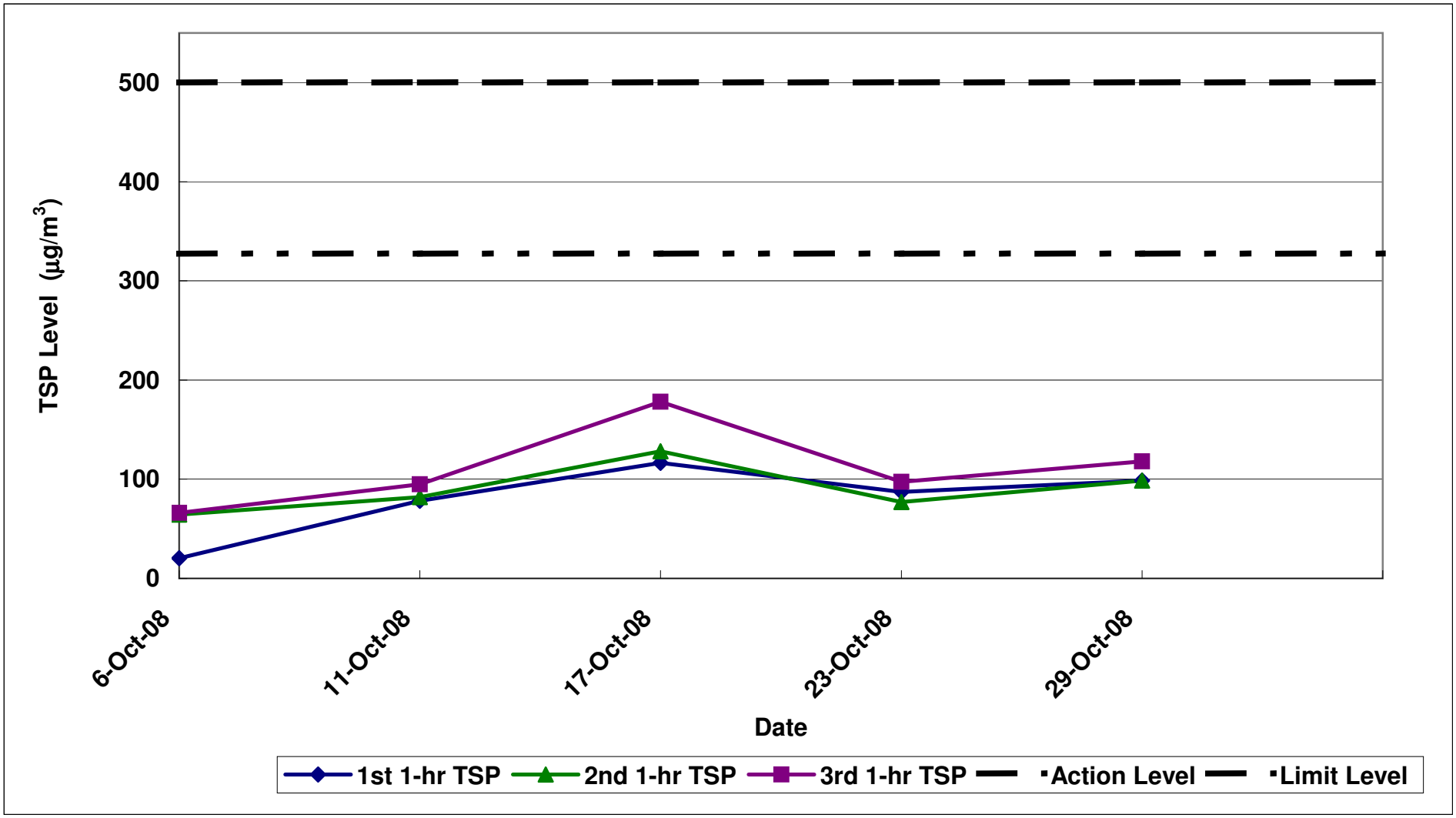
Italic font and yellow shaded indicates an exceedance of Action Level

Bolld font and red shaded area indicates an exceedance of Limit Level

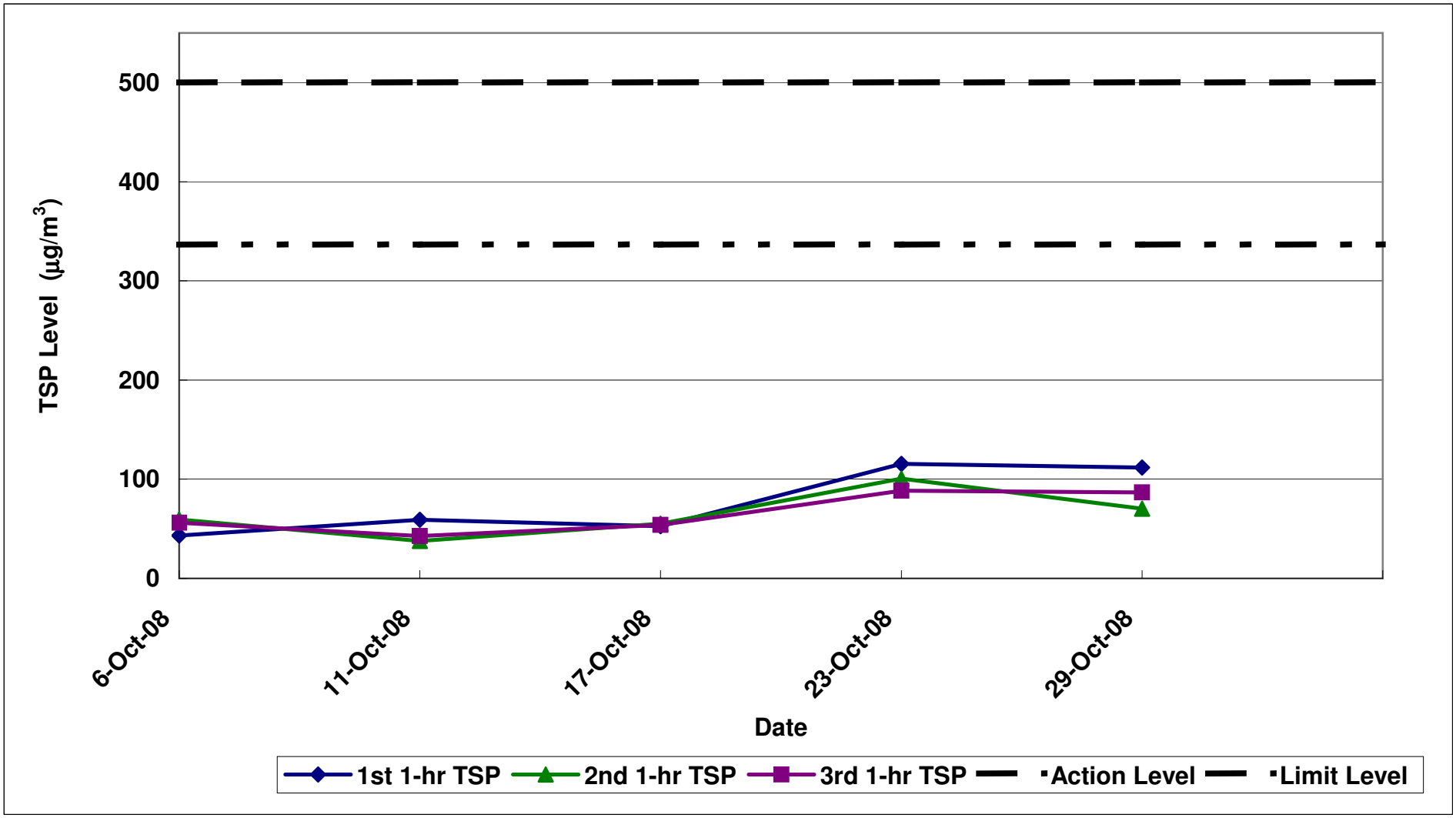
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Air Quality Monitoring (1-hr TSP) Results at Sik Sik Yuen Ho Fung College - Intake (ASR1)
Oct-08



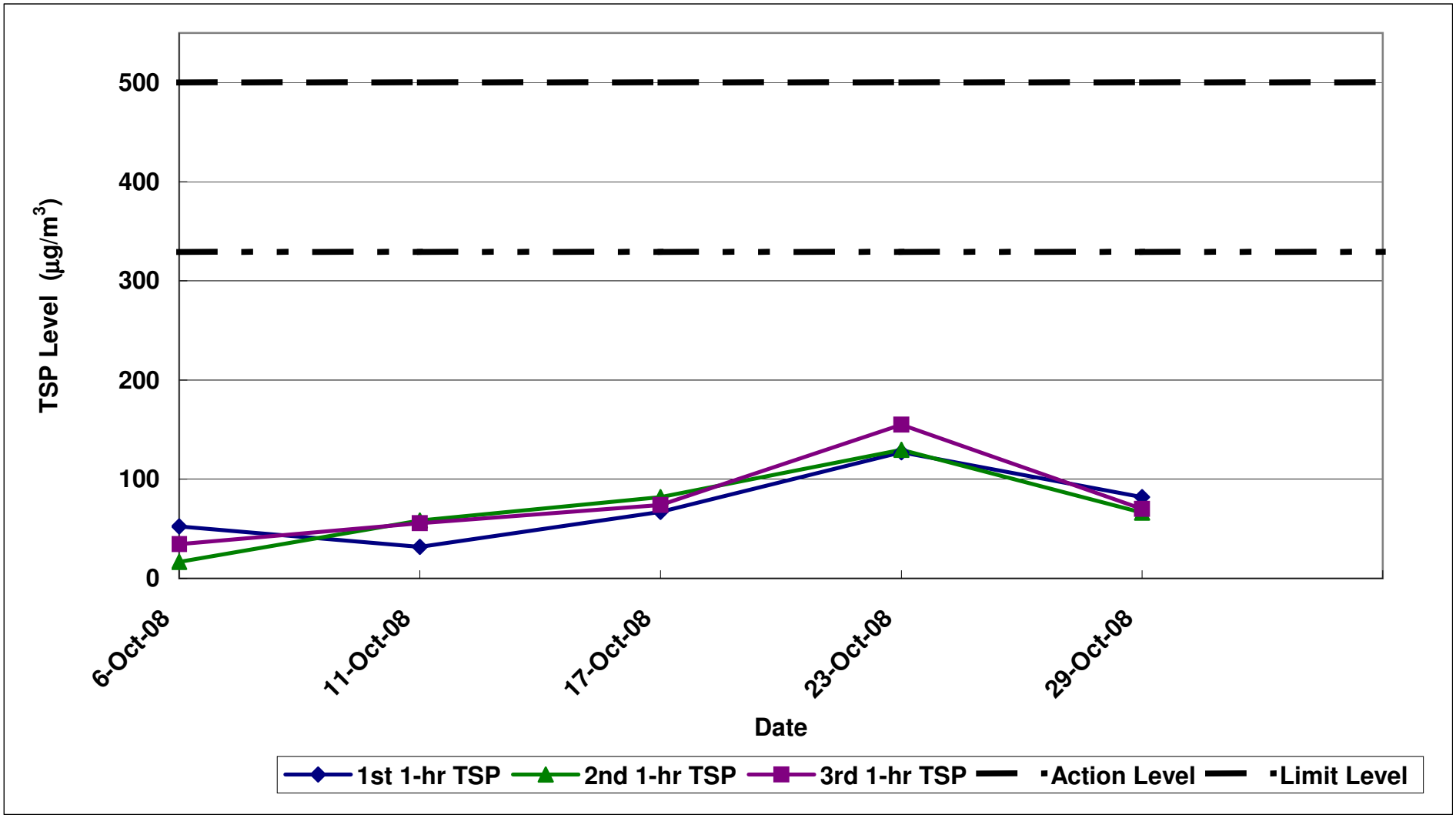
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Air Quality Monitoring (1-hr TSP) Results at Hong Hoi Chee Hong Temple - Intake (ASR3)
Oct-08



Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Air Quality Monitoring (1-hr TSP) Results at Long Beach Gardens - Outfall (ASR8)
Oct-08



Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Air Quality Monitoring (1-hr TSP) Results at Greenview Terrance - Outfall (ASR9)
Oct-08



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

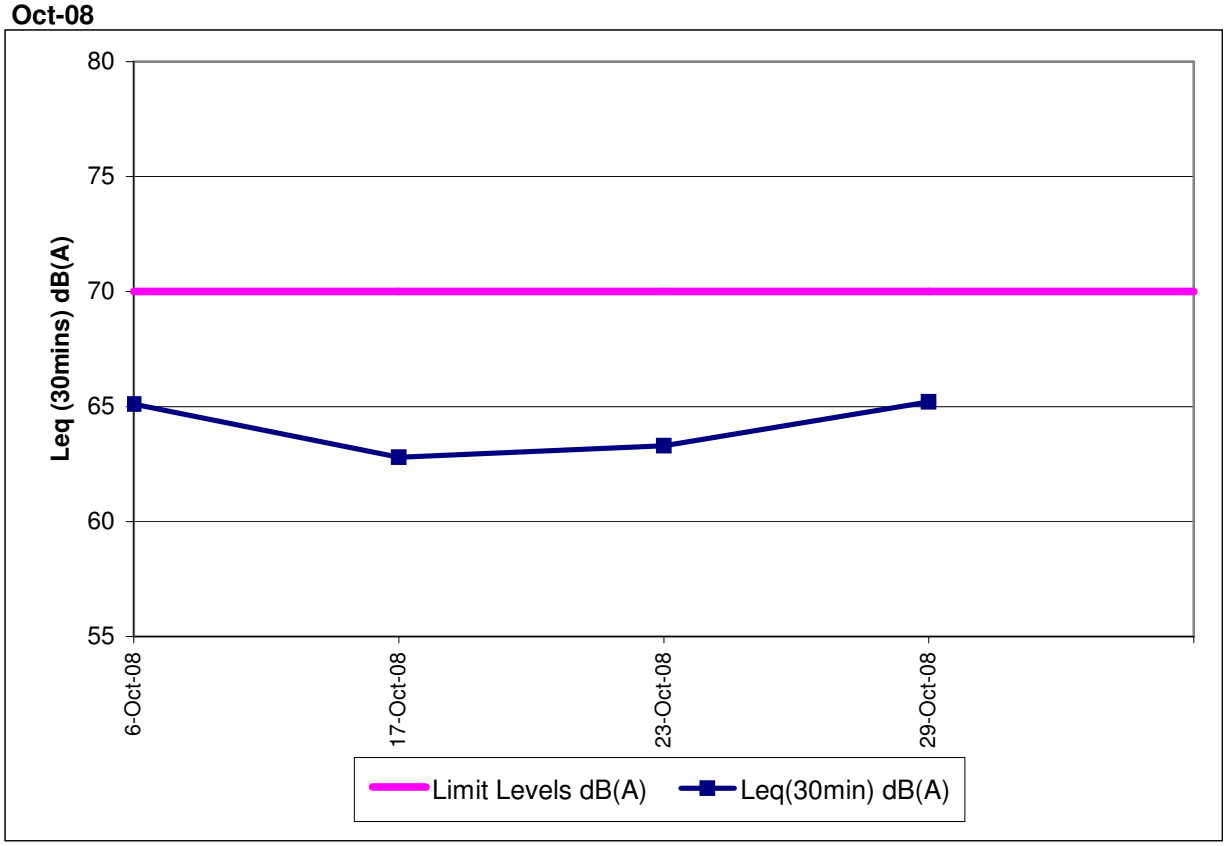
Noise Impact Monitoring Results

Monitoring Locations	Date	Weather Conditions	Temperature (°C)	Wind Speed (m/s)	Wind Direction	Start Time	End Time	BL[1] dB(A)	LL[2] dB(A)	$L_{eq(30min)}$ dB(A)	$L_{10(30min)}$ dB(A)	$L_{90(30min)}$ dB(A)	CNL[3] dB(A)	Observation / Site Condition	Remark
Sik Sik Yuen Ho Fung College NSR 1	6-Oct-08	Cloudy	29	0.5	E	16:10	16:40	66.1	70	65.1	67.2	61.9	-	Nil	Traffic noise
	17-Oct-08	Cloudy	27	0.9	NE	13:00	13:30		70	62.8	64.3	62.1	-	Nil	Traffic noise, School Noise
	23-Oct-08	Sunny	30	0.7	NE	16:15	16:45		70	63.3	64.4	62.1	-	Nil	Traffic noise
	29-Oct-08	Fine	27	0.6	NE	13:30	14:00		70	65.2	67.0	62.4	-	Nil	Traffic noise
									70				-		
Hong Hoi Chee Hong Temple NSR 3	6-Oct-08	Cloudy	29	0.4	E	16:20	16:50	57.9	75	65	66.4	63.0	-	Hammering works	Water fall , Insect noise
	17-Oct-08	Cloudy	30	0.5	NE	11:30	12:00		75	62.5	64.9	60.6	-	Excavation by backhoe	Traffic noise
	23-Oct-08	Sunny	30	0.4	E	11:30	12:00		75	63.6	64.5	58.9	-	Excavator by backhoe	Traffic noise
	29-Oct-08	Sunny	28	0.4	NE	11:30	12:00		75	73.0	75.9	70.7	-	piling work, excavator, cane	Traffic noise
									75				-		
Squatters NSR 6	6-Oct-08	Cloudy	28	0.4	E	14:15	14:45	61.2	75	61.1	64.0	57.7	-	Nil	Dog barking, insect noise
	17-Oct-08	Cloudy	30	0.5	NE	16:10	16:40		75	61.3	64.2	57.6	-	Nil	Dog barking
	23-Oct-08	Sunny	30	0.4	NE	13:20	13:50		75	61.2	63.9	58.0	-	Nil	Dog barking, insect noise
	29-Oct-08	Fine	27	0.3	NE	15:00	15:30		75	63.2	65.3	60.7	-	Nil	Dog barking
									75				-		
Long Beach Gardens NSR 8	6-Oct-08	Cloudy	29	0.7	E	8:40	9:10	60.9	75	63.2	65.3	60.7	-	Excavator by backhoe x2	Traffic noise
	17-Oct-08	Cloudy	26	0.6	NE	8:45	9:15		75	59.4	61.3	56.8	-	excavator by backhoe , hammer work	Traffic noise
	23-Oct-08	Sunny	30	0.7	NE	9:20	9:50		75	62.3	64.2	59.2	-	Excavator by backhoe	Traffic noise
	29-Oct-08	Sunny	28	0.7	NE	8:55	9:25		75	66.5	68.0	64.0	-	Nil	Traffic noise
									75				-		
Greenview Terrace NSR 9	6-Oct-08	Cloudy	29	0.9	E	9:40	10:10	59.7	75	64.2	67.1	60.6	-	Excavator by backhoe	Traffic noise
	17-Oct-08	Cloudy	26	0.9	NE	9:45	10:15		75	58.8	60.7	56.5	-	Excavator by backhoe	Traffic noise
	23-Oct-08	Sunny	30	1.2	NE	10:25	10:55		75	63.3	65.6	59.2	-	Excavator by backhoe	Traffic noise
	29-Oct-08	Sunny	28	0.8	NE	10:00	10:30		75	65.9	68.1	62.7	-	Nil	Traffic noise
									75				-		

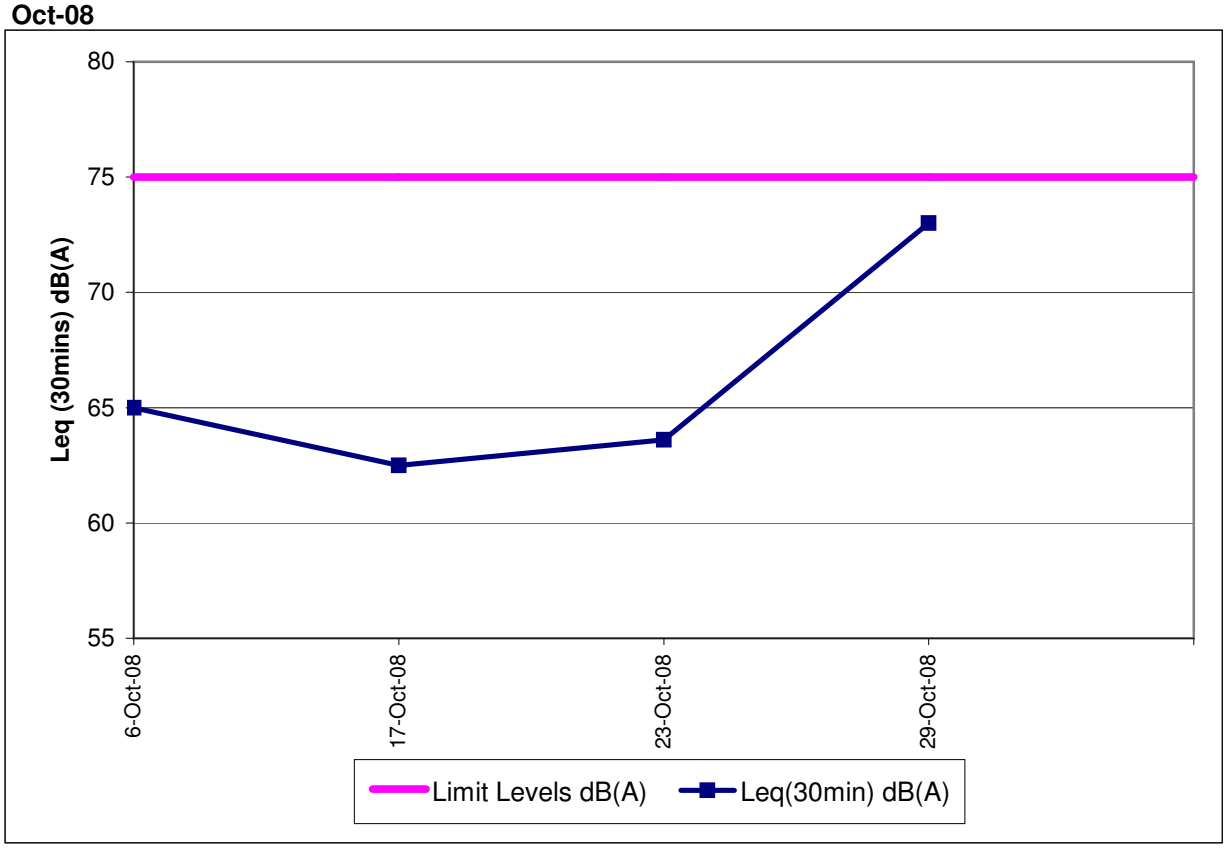
1: Baseline Noise Level
2: Limit Level
3: Corrected Noise Level

Note:
The limit level of NSR1 is 65dB(A) during school examination period.
Red Bold indicates an exceedance of Limit Level

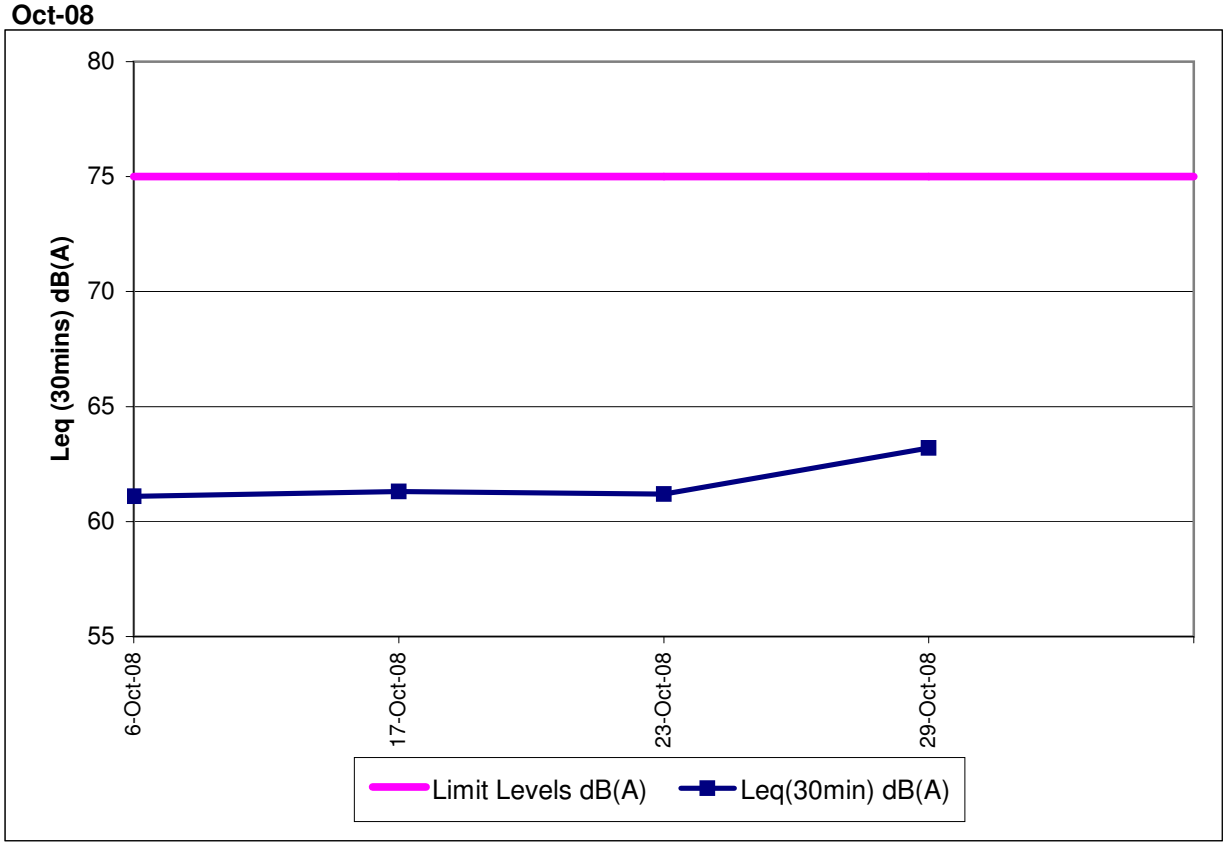
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Noise Monitoring Results at Sik Sik Yuen Ho Fung College (NSR 1)
Oct-08



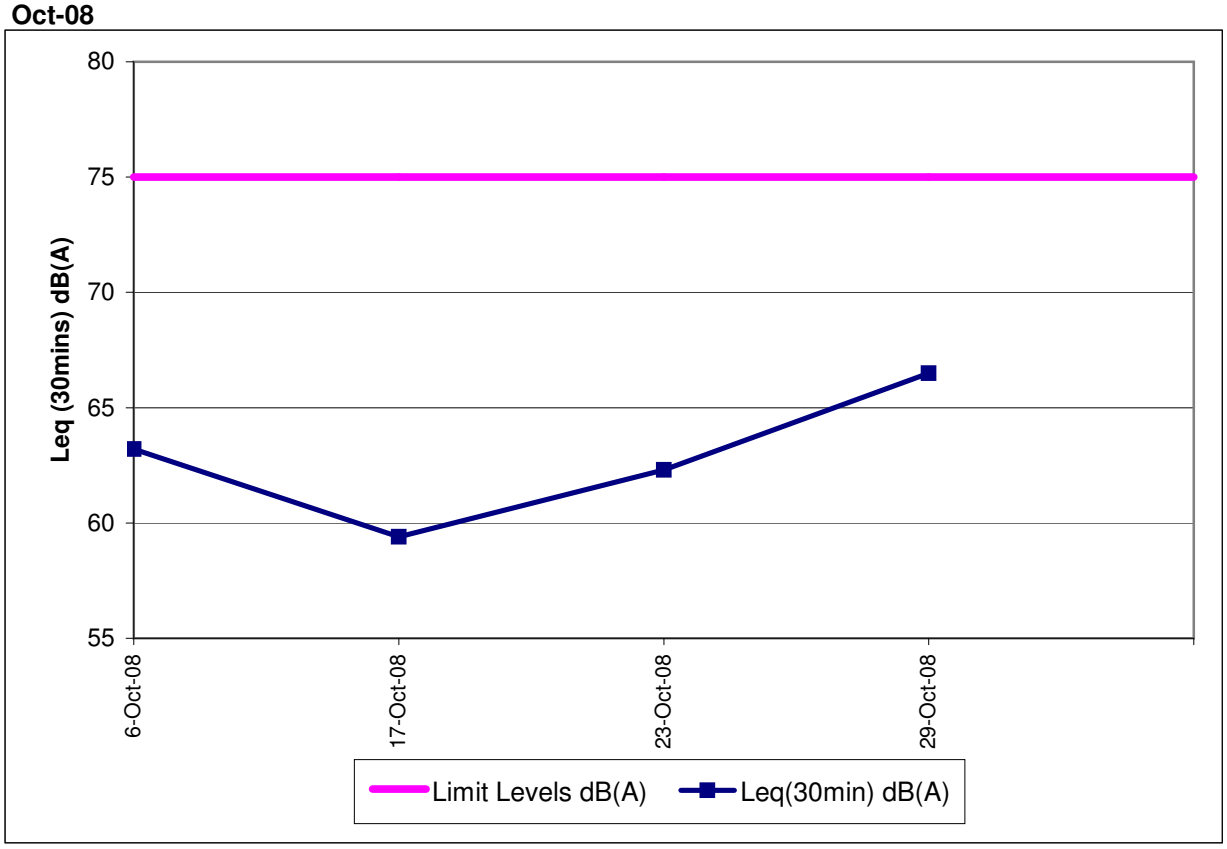
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Noise Monitoring Results at Hong Hoi Chee Hong Temple (NSR 3)
Oct-08



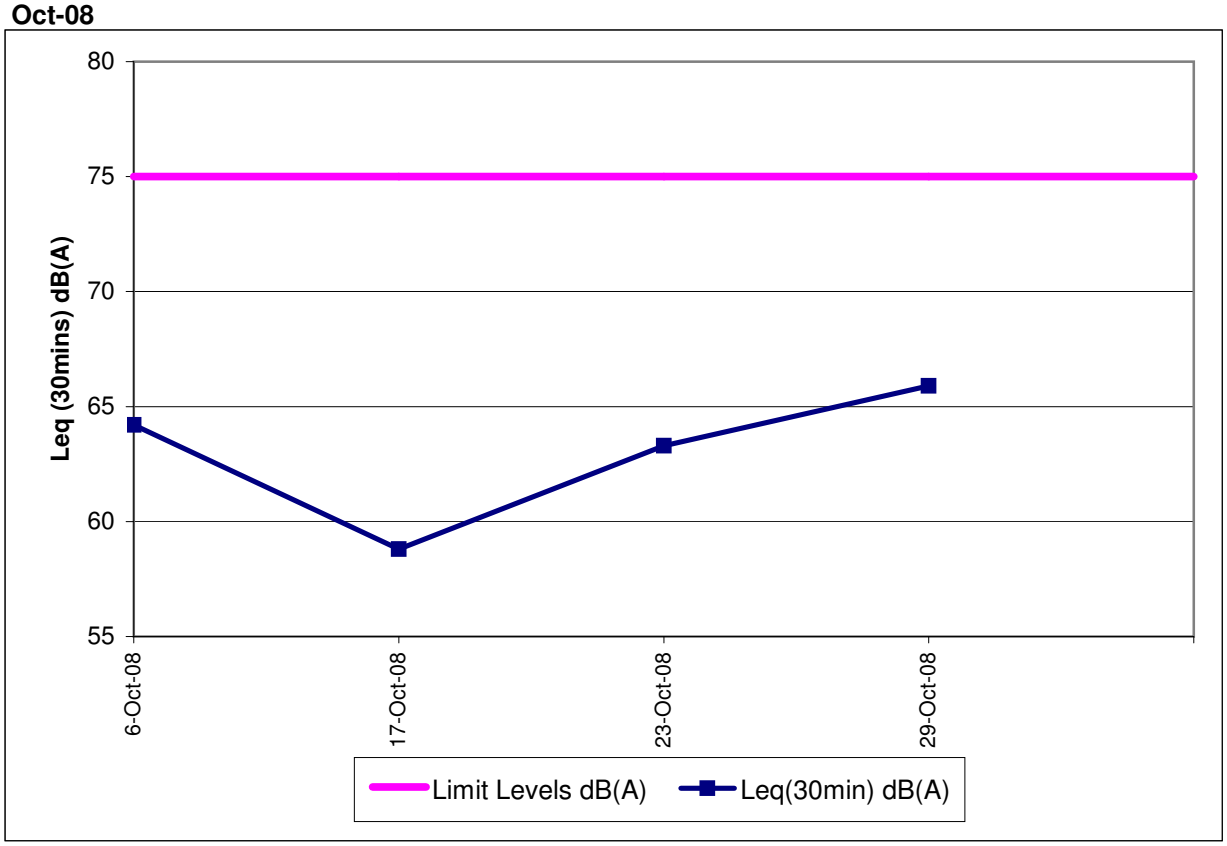
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Noise Monitoring Results at Squatters (NSR 6)
Oct-08



Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Noise Monitoring Results at Long Beach Gardens (NSR 8)
Oct-08



Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Noise Monitoring Results at Greenview Terrace (NSR 9)
Oct-08



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

Water Quality Impact Monitoring Results

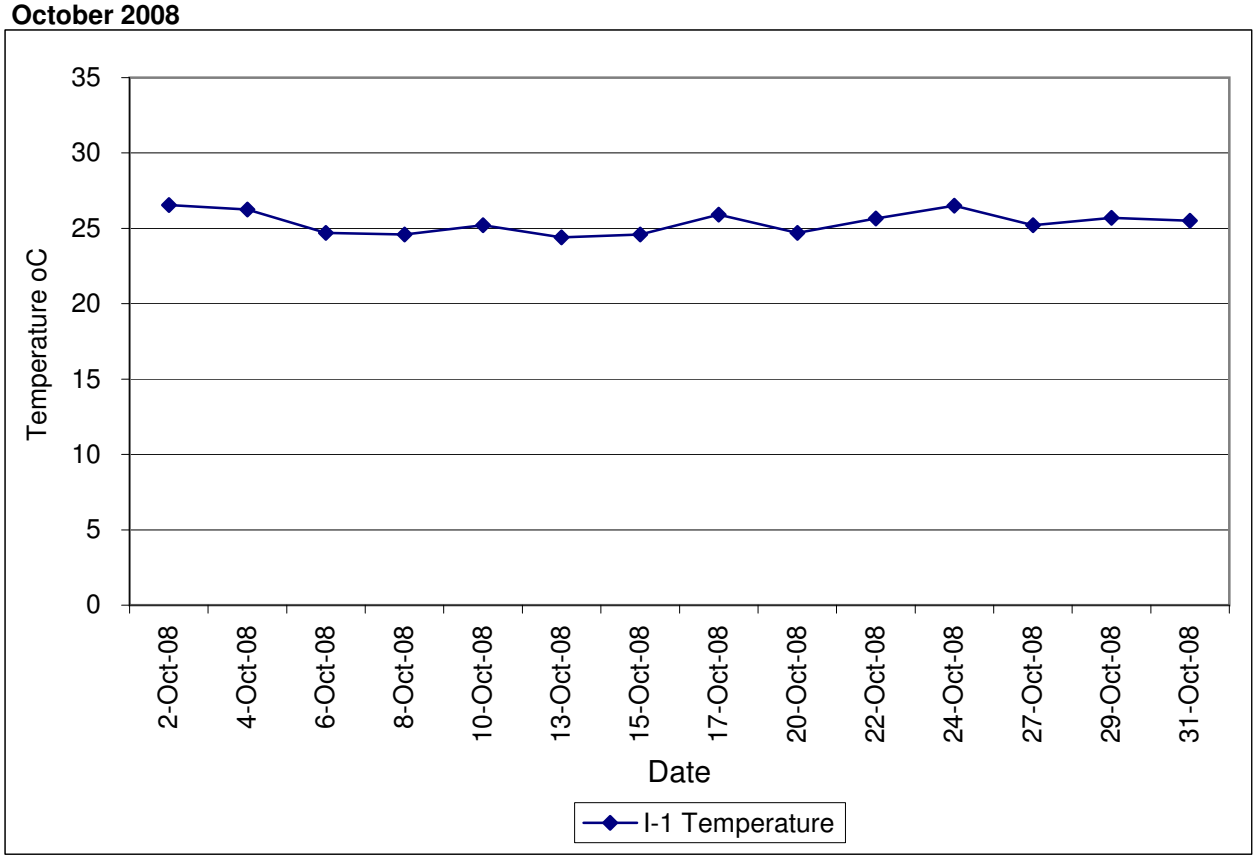
Monitoring Locations	Date	Start Time	Weather	Water Depth(m)	Temp 1	Temp 2	Temp Avg	DO(mg/L) 1	DO(mg/L) 2	DO(mg/L) Avg	Action/Limit Level of DO(mg/L)	pH 1	pH 2	pH Avg	Turbidity(NTU) 1	Turbidity(NTU) 2	Turbidity(NTU) Avg	Action/Limit Level of Tby	SS (mg/L) 1	SS (mg/L) 2	SS (mg/L) Avg	Action/Limit Level of SS(mg/L)	Remarks:	Action to be taken
Sik Sik Yuen Ho Fung College	02-Oct-08	09:07	Sunny	<1	26.60	26.50	26.55	5.25	5.20	5.23		7.80	7.83	7.82	6.57	6.19	6.38		7.1	6.7	6.9		TWDT-ground investigation x2 (drilling rig), Construction of soil nails works by CEDD Site	
I-1	04-Oct-08	10:19	Sunny	<1	26.30	26.20	26.25	5.16	5.12	5.14		7.43	7.43	7.43	9.30	9.26	9.28		67.5	88.2	**77.9**		Construction of soil nails works by CEDD Site	Nil
	06-Oct-08	13:40	Cloudy	<1	24.70	24.70	24.70	5.29	5.38	5.34		7.74	7.33	7.54	7.32	7.33	7.33		5.2	6.3	**5.8**		Construction of soil nails works by CEDD Site	Nil
	08-Oct-08	09:15	Sunny	<1	24.60	24.60	24.60	5.21	5.20	5.21		7.67	7.66	7.67	3.72	3.30	3.51		2.0	2.0	2.0		TWDT-ground investigation (drilling rig)	Nil
	10-Oct-08	09:35	Sunny	<1	25.20	25.20	25.20	4.82	4.81	4.82		7.28	7.28	7.28	4.65	4.53	4.59		3.4	2.7	3.1		Construction of soil nails works by CEDD Site	Nil
	13-Oct-08	09:46	Cloudy	<1	24.40	24.40	24.40	5.10	5.05	5.08	3.42 / 3.34	7.23	7.20	7.22	3.44	3.57	3.51	9.75 / 12.47	2.0	2.0	2.0	8.85 / 10.17	Construction of soil nails works by CEDD Site	Nil
	15-Oct-08	09:40	Sunny	<1	24.60	24.60	24.60	4.74	4.72	4.73		7.11	6.97	7.04	3.22	3.22	3.22		2.0	2.0	2.0		Construction of soil nails works by CEDD Site	Nil
	17-Oct-08	13:28	Cloudy	<1	25.90	25.90	25.90	5.32	5.31	5.32		7.44	7.45	7.45	6.32	6.33	6.33		2.0	2.0	2.0		Nil	Nil
	20-Oct-08	09:40	Sunny	<1	24.70	24.70	24.70	5.00	4.86	4.93		7.66	7.65	7.66	4.23	4.20	4.22		2.0	2.0	2.0		Nil	Nil
	22-Oct-08	09:40	Sunny	<1	25.70	25.60	25.65	4.64	4.57	4.61		7.75	7.75	7.75	3.42	3.46	3.44		2.0	2.0	2.0		Nil	Nil
	24-Oct-08	09:55	Sunny	<1	26.50	26.50	26.50	5.27	5.21	5.24		7.87	7.83	7.85	5.22	5.20	5.21		3.8	3.1	3.5		Nil	Nil
	27-Oct-08	09:38	Sunny	<1	25.20	25.20	25.20	4.67	4.62	4.65		7.70	7.68	7.69	5.20	5.18	5.19		5.0	5.0	5.0		Nil	Nil
	29-Oct-08	13:42	Sunny	<1	25.70	25.70	25.70	4.48	4.48	4.48		7.92	7.96	7.94	6.14	6.12	6.13		4.7	3.5	4.1		Nil	Nil
	31-Oct-08	09:45	Sunny	<1	25.50	25.50	25.50	4.33	4.35	4.34		7.51	7.51	7.51	5.28	5.30	5.29		9.0	7.1	8.1		Nil	Nil
Sik Sik Yuen Ho Fung College	02-Oct-08	09:30	Sunny	<1	25.60	25.60	25.60	5.45	5.44	5.45		7.26	7.20	7.23	6.58	6.27	6.43		7.2	6.2	6.7		Construction of soil nails works by CEDD Site	Nil
I-1-C	04-Oct-08	09:30	Sunny	<1	26.40	26.40	26.40	5.22	5.27	5.25		7.48	7.47	7.48	10.11	10.17	10.14		84.2	75.0	79.6		Construction of soil nails works by CEDD Site	Nil
	06-Oct-08	13:10	Cloudy	<1	25.00	24.90	24.95	5.26	5.22	5.24		7.72	7.70	7.71	8.35	8.44	8.40		3.4	4.6	4.0		Construction of soil nails works by CEDD Site	Nil
	08-Oct-08	09:33	Sunny	<1	24.40	24.50	24.45	5.10	5.07	5.09		7.63	7.63	7.63	3.83	3.35	3.59		2.0	2.0	2.0		Nil	Nil
	10-Oct-08	09:15	Sunny	<1	25.40	25.40	25.40	4.82	4.81	4.82		7.38	7.38	7.38	4.74	4.78	4.76		3.2	2.8	3.0		Construction of soil nails works by CEDD Site	Nil
	13-Oct-08	09:25	Cloudy	<1	24.60	24.60	24.60	5.20	5.11	5.16		7.37	7.34	7.36	3.74	3.73	3.74		2.0	2.0	2.0		Construction of soil nails works by CEDD Site	Nil
	15-Oct-08	09:20	Sunny	<1	24.90	24.80	24.85	5.15	5.13	5.14	- /-	7.03	7.04	7.04	3.33	3.25	3.29	- /-	2.0	2.0	2.0	- /-	Construction of soil nails works by CEDD Site	Nil
	17-Oct-08	13:09	Cloudy	<1	26.30	26.20	26.25	5.11	5.14	5.13		7.45	7.43	7.44	6.23	6.41	6.32		2.0	2.0	2.0		Nil	Nil
	20-Oct-08	09:20	Sunny	<1	25.20	25.20	25.20	4.89	4.86	4.88		7.87	7.85	7.86	4.38	4.52	4.45		2.0	2.2	2.1		Nil	Nil
	22-Oct-08	09:20	Sunny	<1	25.30	25.30	25.30	4.77	4.72	4.75		8.08	8.04	8.06	3.52	3.42	3.47		2.0	2.0	2.0		Nil	Nil
	24-Oct-08	09:30	Sunny	<1	26.40	26.40	26.40	5.34	5.36	5.35		7.95	7.99	7.97	5.23	5.26	5.25		3.4	3.2	3.3		Nil	Nil
	27-Oct-08	09:15	Sunny	<1	25.30	25.30	25.30	4.71	4.62	4.67		7.77	7.68	7.73	5.25	5.30	5.28		5.2	5.8	5.5		Nil	Nil
	29-Oct-08	13:20	Sunny	<1	25.60	25.60	25.60	4.33	4.35	4.34		7.86	7.89	7.88	6.12	6.22	6.17		3.9	4.9	4.4		Nil	Nil
	31-Oct-08	09:19	Sunny	<1	25.60	25.60	25.60	4.45	4.51	4.48		7.56	7.56	7.56	5.32	5.38	5.35		8.0	7.2	7.6		Nil	Nil
Hong Hoi Chee Hong Temple	02-Oct-08	10:56	Sunny	<1	26.60	26.50	26.55	5.23	5.19	5.21		7.75	7.80	7.78	2.89	3.02	2.96		2.0	2.0	2.0		TWDT-ground investigation (drilling rig)	Nil
I-2	04-Oct-08	10:59	Sunny	<1	26.10	26.10	26.10	5.21	5.23	5.22		7.76	7.75	7.76	5.42	5.44	5.43		2.0	2.0	2.0		TWDT-ground investigation (drilling rig)	Nil
	06-Oct-08	10:28	Cloudy	<1	24.80	24.50	24.65	5.44	5.42	5.43		7.68	7.67	7.68	5.44	5.42	5.43		2.0	2.0	2.0		TWDT-ground investigation (drilling rig, no piling operation)	Nil
	08-Oct-08	10:23	Sunny	<1	24.40	24.40	24.40	5.07	4.99	5.03		7.55	7.56	7.56	3.43	3.44	3.44		2.0	2.0	2.0		No piling operation	Nil
	10-Oct-08	10:25	Sunny	<1	25.30	25.30	25.30	4.86	4.90	4.88		7.48	7.48	7.48	3.27	3.23	3.25		2.0	2.0	2.0		No piling operation	Nil
	13-Oct-08	10:48	Cloudy	<1	24.60	24.60	24.60	4.66	4.65	4.66		7.61	7.62	7.62	3.22	3.26	3.24		2.0	2.0	2.0		No piling operation	Nil
	15-Oct-08	10:50	Sunny	<1	25.10	25.10	25.10	4.95	4.86	4.91	3.66 / 3.63	8.13	8.18	8.16	3.21	3.30	3.26	6.63 / 6.99	2.0	2.0	2.0	7.68 / 8.34	No piling operation	Nil
	17-Oct-08	10:54	Cloudy	<1	26.50	26.50	26.50	4.90	4.78	4.84		8.22	8.22	8.22	4.15	4.11	4.13		2.0	2.0	2.0		No piling operation	Nil
	20-Oct-08	10:55	Sunny	<1	25.90	25.90	25.90	4.66	4.64	4.65		8.04	8.05	8.05	3.02	3.34	3.18		2.0	2.0	2.0		Nil	Nil
	22-Oct-08	10:46	Sunny	<1	25.80	25.80	25.80	4.91	4.82	4.87		7.93	7.99	7.96	3.32	3.21	3.27		2.0	2.0	2.0		Nil	Nil
	24-Oct-08	10:59	Sunny	<1	26.50	26.50	26.50	4.72	4.71	4.72		8.22	8.23	8.23	3.15	3.16	3.16		2.2	2.0	2.1		Nil	Nil
	27-Oct-08	10:38	Sunny	<1	25.80	25.80	25.80	4.52	4.45	4.49		8.01	8.00	8.01	3.48	3.55	3.52		2.0	2.0	2.0		Nil	Nil
	29-Oct-08	10:42	Sunny	<1	24.60	24.60	24.60	4.52	4.55	4.54		7.98	7.98	7.98	5.17	5.20	5.19		7.1	5.9	*6.5*		TWDT-ground investigation (drilling rig, no piling operation)	Nil
	31-Oct-08	10:58	Sunny	<1	25.50	25.50	25.50	4.58	4.59	4.59		7.77	7.77	7.77	4.32	4.58	4.45		4.2	3.4	**3.8**		TWDT-ground investigation (drilling rig, no piling operation)	Nil
Hong Hoi Chee Hong Temple	02-Oct-08	10:35	Sunny	<1	26.20	26.20	26.20	5.26	5.24	5.25		7.56	7.57	7.57	3.08	3.06	3.07		2.0	2.0	2.0		Nil	Nil
I-2-C	04-Oct-08	10:47	Sunny	<1	26.50	26.50	26.50	5.19	5.62	5.41		7.83	7.83	7.83	5.43	5.62	5.53		2.1	3.6	2.9		Nil	Nil
	06-Oct-08	10:15	Cloudy	<1	24.60	24.60	24.60	5.03	5.01	5.02		7.65	7.63	7.64	6.58	6.57	6.58		2.0	2.0	2.0		Nil	Nil
	08-Oct-08	10:45	Sunny	<1	24.40	24.40	24.40	5.29	5.26	5.28		7.49	7.47	7.48	3.12	3.20	3.16		2.0	2.0	2.0		Nil	Nil
	10-Oct-08	10:15	Sunny	<1	25.70	25.70	25.70	5.17	5.09	5.13		7.42	7.48	7.45	3.32	3.25	3.29		2.0	2.0	2.0		Nil	Nil
	13-Oct-08	10:32	Cloudy	<1	24.90	24.90	24.90	5.14	5.09	5.12		7.58	7.62	7.60	3.25	3.41	3.33		2.0	2.0	2.0		Nil	Nil
	15-Oct-08	10:39	Sunny	<1	25.20	25.20	25.20	4.69	4.68	4.69	- /-	8.11	8.12	8.12	3.38	3.23	3.31	- /-	2.0	2.0	2.0	- /-	Nil	Nil
	17-Oct-08	10:20	Cloudy	<1	27.00	27.00	27.00	4.78	4.75	4.77		8.19	8.20	8.20	4.28	4.17	4.23		2.0	2.0	2.0		Nil	Nil
	20-Oct-08	10:38	Sunny	<1	25.40	25.40	25.40	4.86	4.84	4.85		7.77	7.80	7.79	3.03	3.34	3.19		2.0	2.0	2.0		Nil	Nil
	22-Oct-08	10:15	Sunny	<1	25.20	25.20	25.20	4.64	4.67	4.66		7.67	7.64	7.66	3.44	3.43	3.44		2.0	2.0	2.0		Nil	Nil
	24-Oct-08	10:40	Sunny	<1	26.10	26.10	26.10	4.29	4.23	4.26		8.08	8.03	8.06	3.22	3.25	3.24		2.3	2.4	2.4		Nil	Nil
	27-Oct-08	10:17	Sunny	<1	25.90	26.00	25.95	5.48	4.57	5.03		7.98	7.98	7.98	3.56	3.64	3.60		2.0	2.0	2.0		Nil	Nil
	29-Oct-08	10:11	Sunny	<1	24.80	24.70	24.75	4.47	4.37	4.42		7.99	8.00	8.00	5.22	5.26	5.24		5.3	4.7	5.0		Nil	Nil
	31-Oct-08	10:45	Sunny	<1	25.60	25.60	25.60	4.63	4.64	4.64		7.67	7.66	7.67	4.73	4.52	4.63		2.0	2.0	2.0		Nil	Nil
Squatters	02-Oct-08	11:45	Sunny	<1	26.50	26.60	26.55	5.32	5.36	5.34		7.92	7.92	7.92	2.57	2.60	2.59		2.0	2.0	2.0		Nil	Nil
I-3	04-Oct-08	11:59	Sunny	<1	26.40	26.40	26.40	5.20	5.23	5.22		7.52	7.55	7.54	3.52	3.53	3.53		2.0	2.0	2.0		Nil	Nil
	06-Oct-08	15:14	Cloudy	<1	26.60	26.60	26.60	5.32	5.34	5.33		7.50	7.53	7.52	3.12	3.15	3.14		2.0	2.0	2.0		Nil	Nil
	08-Oct-08	11:42	Sunny	<1	24.50	24.50	24.50	5.20	5.15	5.18		7.53	7.52	7.53	3.19	3.15	3.17		2.0	2.0	2.0		Nil	Nil
	10-Oct-08	11:55	Sunny	<1	25.80	25.80	25.80	5.27	5.20	5.24		7.51	7.54	7.53	3.55	3.45	3.50		2.0	2.0	2.0		Nil	Nil
	13-Oct-08	12:00	Cloudy	<1	24.30	24.30	24.30	5.29	5.24	5.27		7.54	7.53	7.54	3.03	3.10	3.07		2.0	2.0	2.0		Nil	Nil
	15-Oct-08	11:59	Sunny	<1	25.50	25.50	25.50	5.08	5.04	5.06	3.65 / 3.51	7.73	7.71	7.72	3.17	3.26	3.22	3.99 / 4.18	2.0	2.0	2.0	6.13 / 7.23	Nil	Nil
	17-Oct-08	14:45	Cloudy	<1	26.20	26.20	26.20	4.83	4.85	4.84		7.81	7.83	7.82	3.42	3.50	3.46		2.0	2.0	2.0		Nil	Nil
	20-Oct-08	11:58	Sunny	<1	26.30	26.30	26.30	4.93	4.81	4.87		8.40	8.44	8.42	3.20	3.23	3.22		2.0	2.0	2.0		Nil	Nil
	22-Oct-08	11:40	Sunny	<1	24.60	24.50	24.55	5.22	5.20	5.21		7.89	7.88	7.89	3.19	3.17	3.18		2.0	2.0	2.0		Nil	Nil
	24-Oct-08	12:00	Sunny	<1	24.60	24.60	24.60	5.20	5.18	5.19		7.67	7.66	7.67	3.62	3.60	3.61		2.0	2.0	2.0		Nil	Nil
	27-Oct-08	11:55	Sunny	<1	25.60	25.60	25.60	4.65	4.64	4.65		8.03	8.04	8.04	3.28	3.30	3.29		2.0	2.0	2.0		Nil	Nil
	29-Oct-08	14:50	Sunny	<1	25.70	25.70	25.70	4.77	4.79	4.78		8.04	8.00	8.02	3.38	3.36	3.37		5.6	5.6	5.6		Nil	Nil
	31-Oct-08	12:00	Sunny	<1	25.80	25.80	25.80	5.11	5.14	5.13		7.77	7.77	7.77	3.32	3.40	3.36		2.0	2.0	2.0		Nil	Nil
Squatters	02-Oct-08	11:25	Sunny	<1	26.50	26.50	26.50	4.98	4.97	4.98		8.05	8.05	8.05	2.61	2.64	2.63		2.0	2.0	2.0		Nil	Nil
I-3-C	04-Oct-08	11:45	Sunny	<1	26.80	26.80	26.80	5.42	5.43	5.43		7.54	7.54	7.54	4.02	3.72	3.87		2.0	2.0	2.0		Nil	Nil
	06-Oct-08	15:00	Cloudy	<1	26.70	26.60	26.65	5.09	5.10	5.10		7.43	7.40	7.42	3.32	3.26	3.29		2.0	2.0	2.0		Nil	Nil
	08-Oct-08	11:58	Sunny	<1	24.50	24.50	24.50	5.42	5.32	5.37		7.54	7.54	7.54	3.20	3.18	3.19		2.0	2.0	2.0		Nil	Nil
	10-Oct-08	11:37	Sunny	<1	25.80	25.80	25.80	5.30	5.28	5.29		7.57	7.57	7.57	3.52	3.62	3.57		2.0	2.0	2.0		Nil	Nil
	13-Oct-08	11:40	Cloudy	<1	24.30	24.30	24.30	5.38	5.35	5.37		7.60	7.59	7.60	3.11	3.14	3.13		2.0	2.0	2.0		Nil	Nil
	15-Oct-08	11:45	Sunny	<1	25.60	25.60	25.60	5.19	5.15	5.17	- /-	7.82	7.83	7.83	3.21	3.25	3.23	- /-	2.0	2.0	2.0	- /-	Nil	Nil
	17-Oct-08	14:22	Cloudy	<1	26.20	26.30	26.25	4.68	4.69	4.69		7.73	7.74	7.74	3.58	3.52	3.55		2.0	2.0	2.0		Nil	Nil
	20-Oct-08	11:46	Sunny	<1	26.30	26.30	26.30	4.95	4.90	4.93		8.42	8.44	8.43	3.22	3.26	3.24		2.0	2.0	2.0		Nil	Nil
	22-Oct-08	11:15	Sunny	<1	24.80	24.80	24.80	5.09	5.12	5.11		8.00	8.02	8.01	3.21	3.22	3.22		2.0	2.0	2.0		Nil	Nil
	24-Oct-08	11:38	Sunny	<1	24.90	24.90	24.90	5.10	5.08	5.09		7.63	7.62	7.63	3.72	3.62	3.67		2.0	2.0	2.0		Nil	Nil
	27-Oct-08	11:38	Sunny	<1	25.70	25.70	25.70	4.89	4.90	4.90		7.77	7.80	7.79	3.32	3.35	3.34		2.0	2.0	2.0		Nil	Nil
	29-Oct-08	14:35	Sunny	<1	25.50	25.50	25.50	4.88	4.86	4.87		7.72	7.70	7.71	3.45	3.52	3.49		5.8	5.6	5.7		Nil	Nil
	31-Oct-08	11:45	Sunny	<1	25.60	25.60	25.60	5.17	5.12	5.15		7.82	7.82	7.82	3.42	3.44	3.43		2.0	2.0	2.0		Nil	Nil

Note:

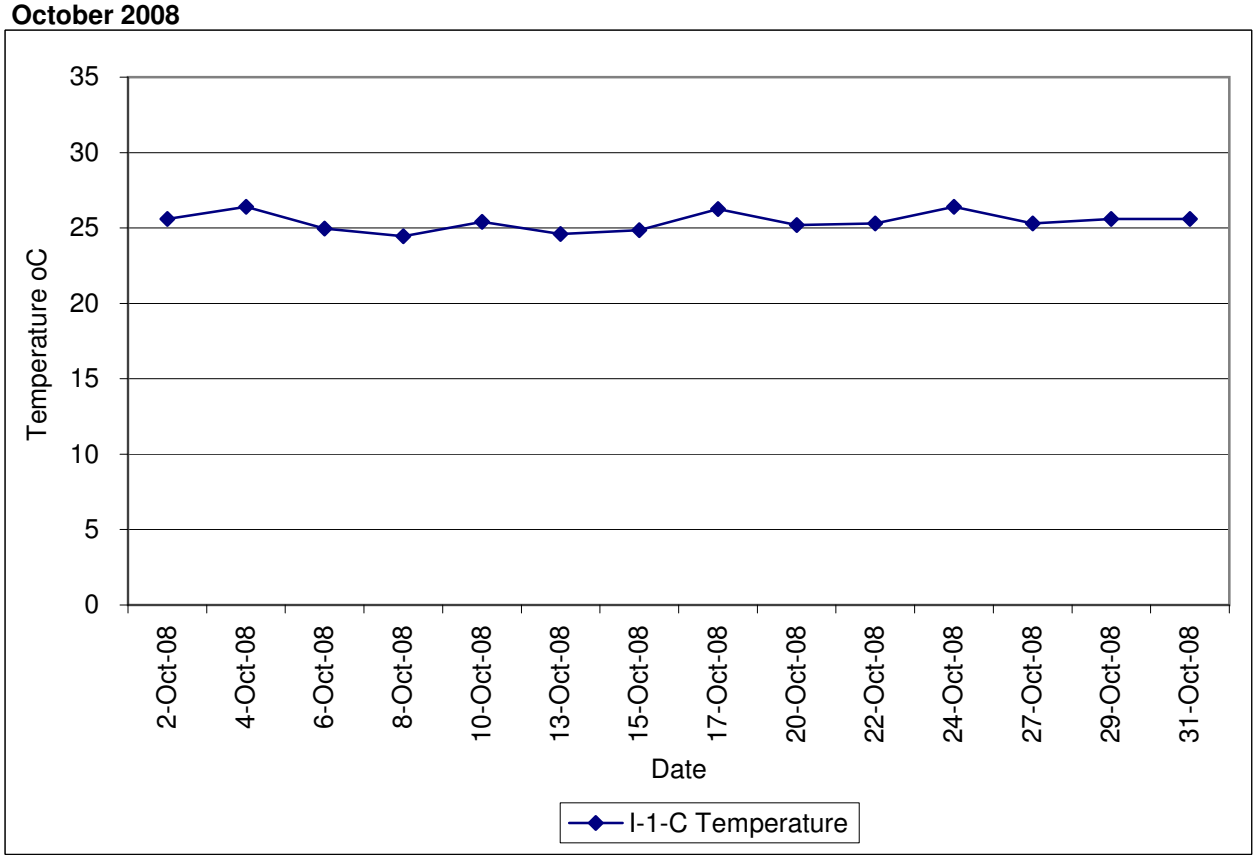
Blue Italic indicates an exceedance of Action Level

Red Bold indicates an exceedance of Limit Level

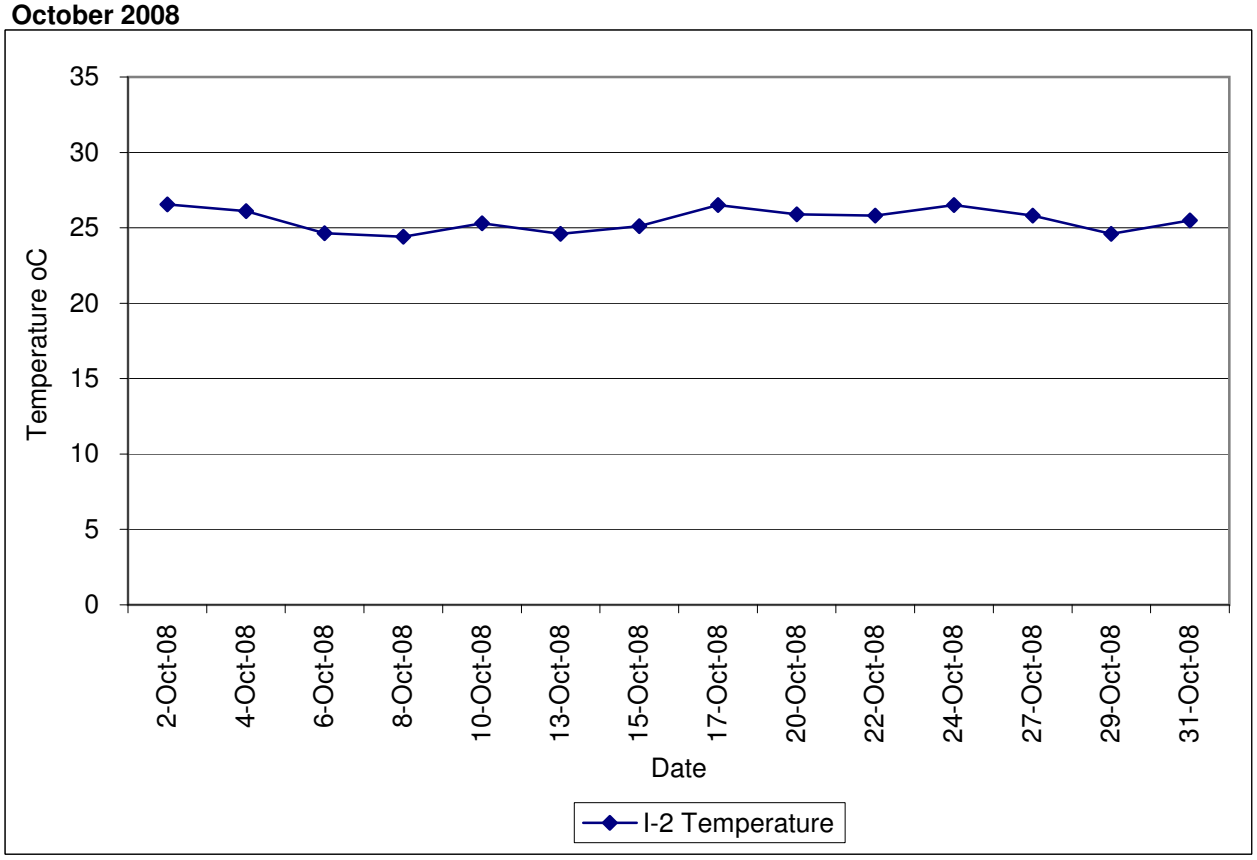
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan DrainageTunnel
Water Quality Results at Sik Sik Yuen Ho Fung College (I-1)
October 2008



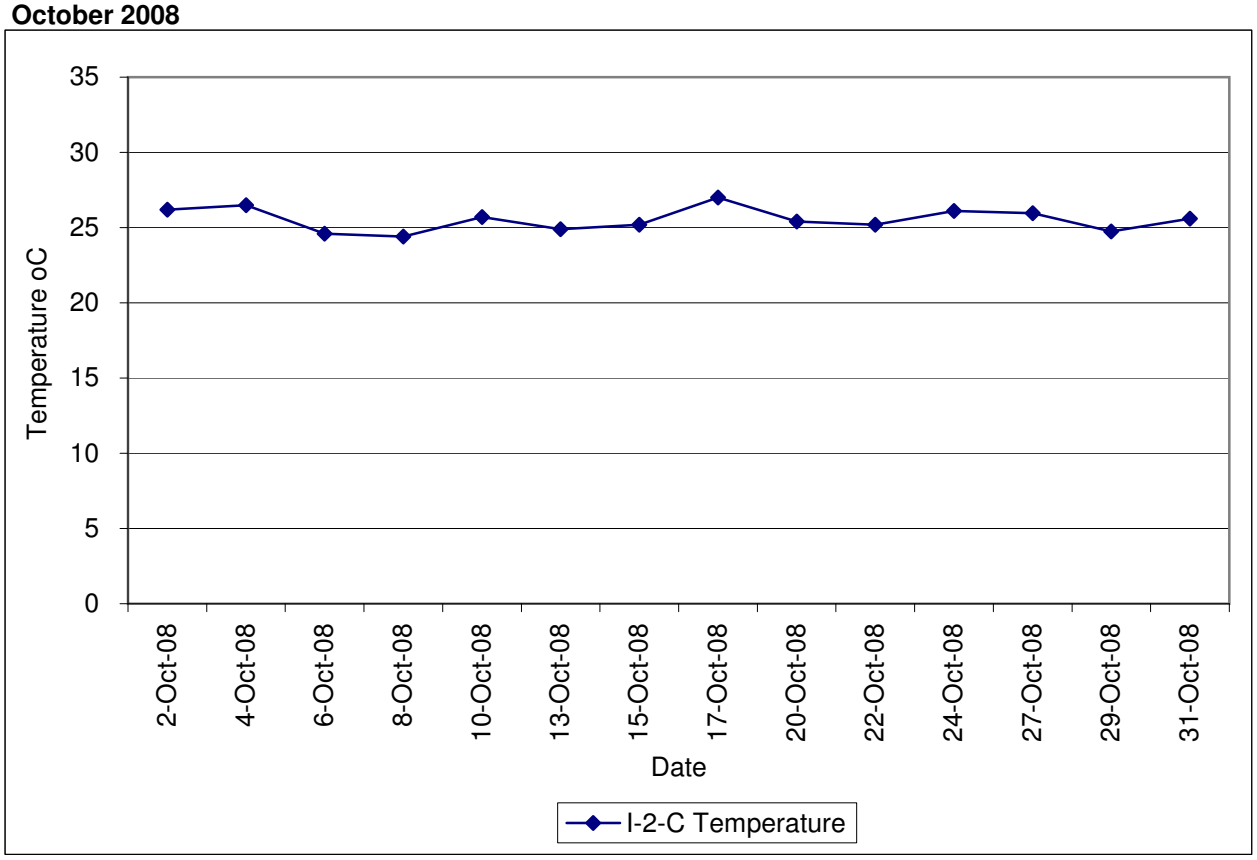
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan DrainageTunnel
Water Quality Results at Sik Sik Yuen Ho Fung College (I-1-C)
October 2008



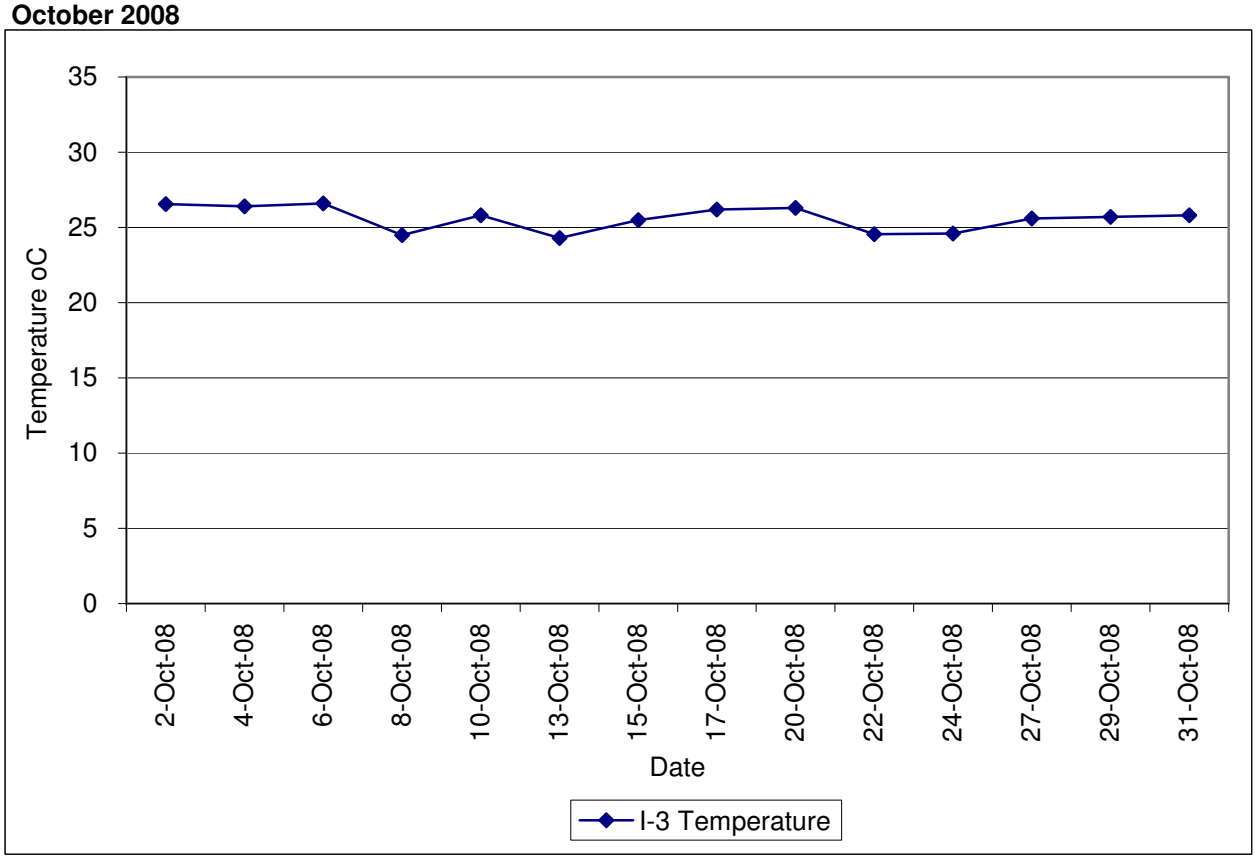
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan DrainageTunnel
Water Quality Results at Hong Hoi Chee Hong Temple (I-2)
October 2008



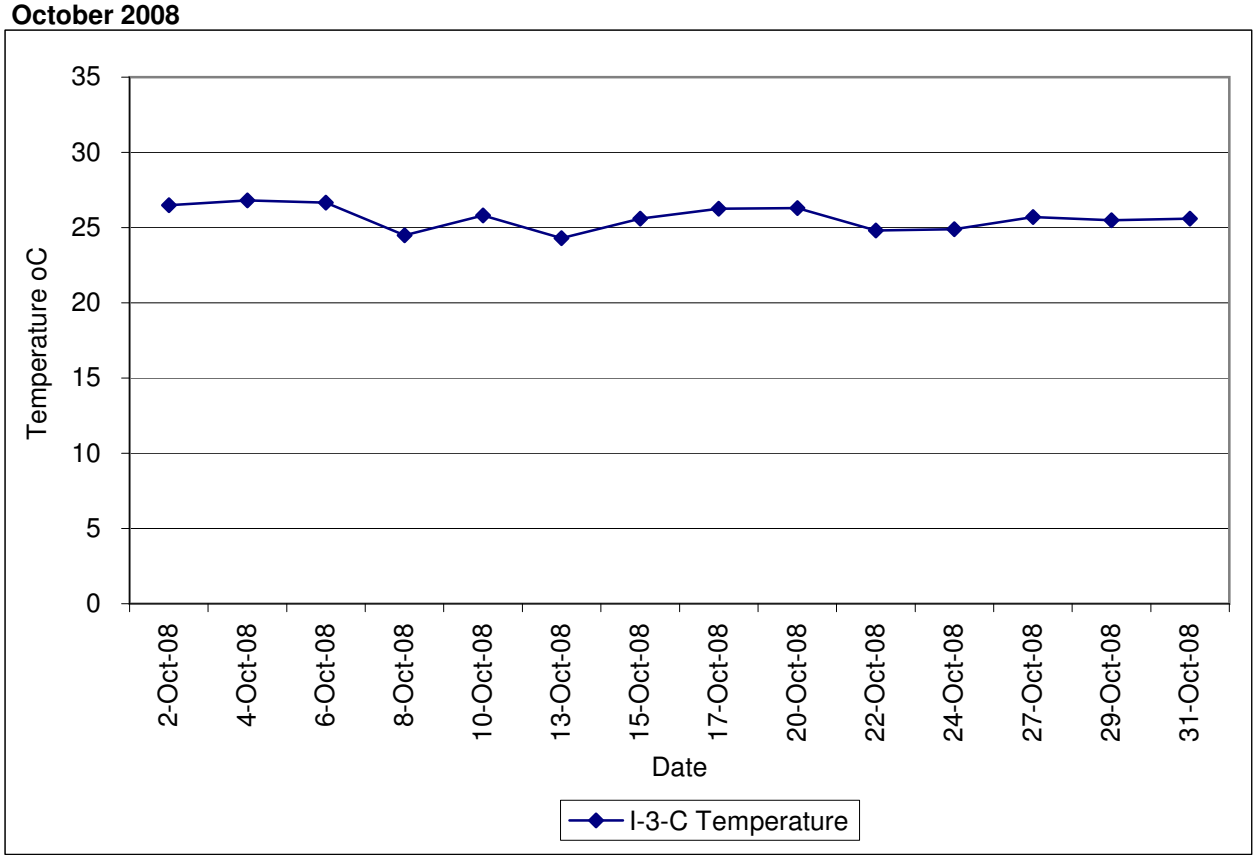
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan DrainageTunnel
Water Quality Results at Hong Hoi Chee Hong Temple (I-2-C)
October 2008



Contract No. DC/2007/12 - Design and Construction of Tsuen Wan DrainageTunnel
Water Quality Results at Squatters (I-3)
October 2008

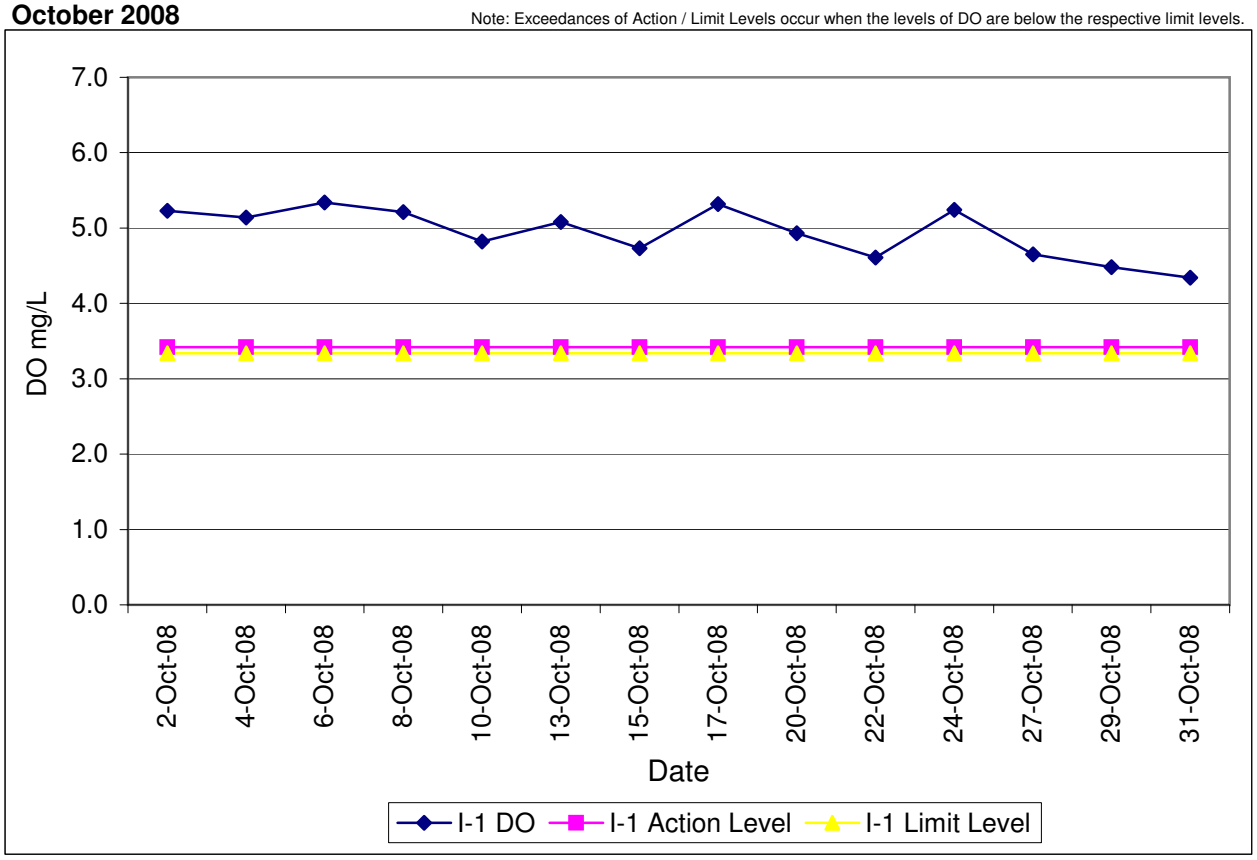


Contract No. DC/2007/12 - Design and Construction of Tsuen Wan DrainageTunnel
Water Quality Results at Squatters (I-3-C)
October 2008

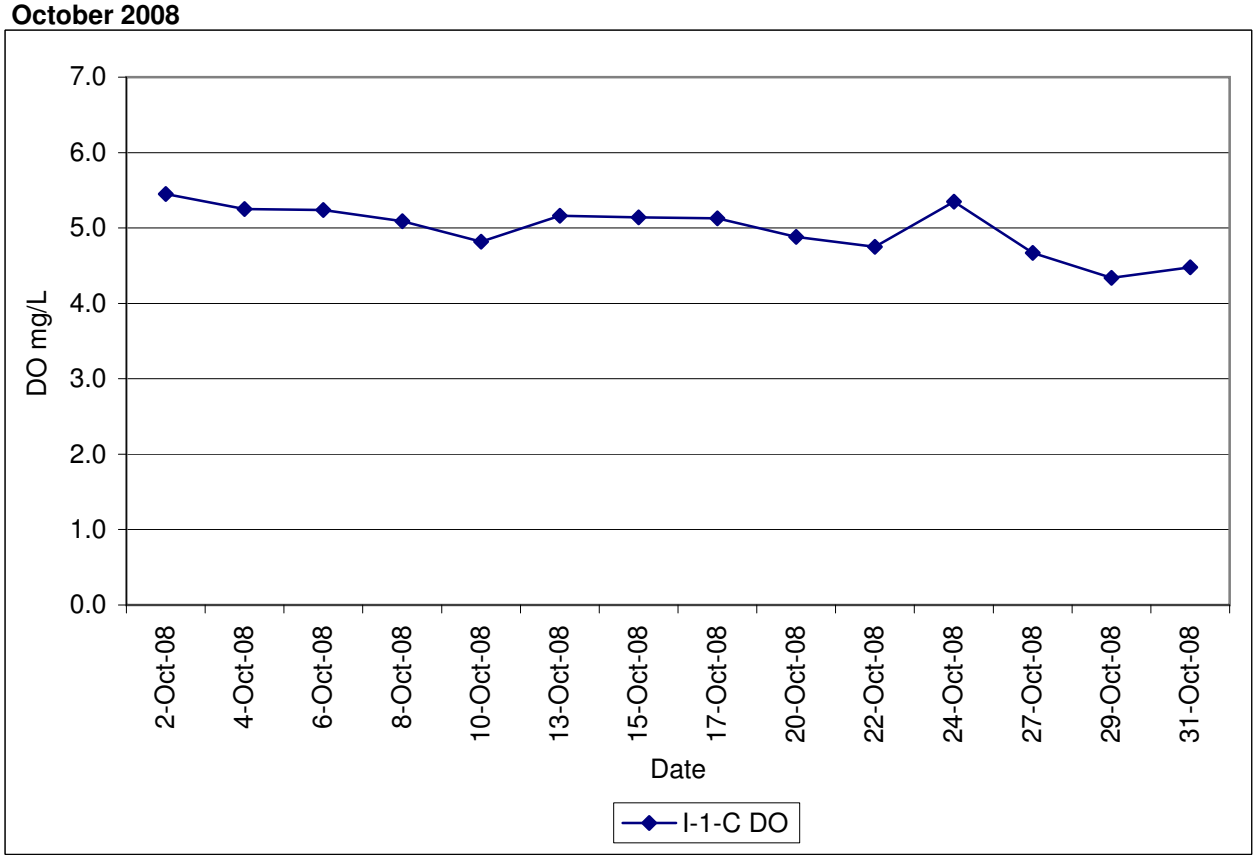


Contract No. DC/2007/12 - Design and Construction of Tsuen Wan DrainageTunnel
Water Quality Results at Sik Sik Yuen Ho Fung College (I-1)
October 2008

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

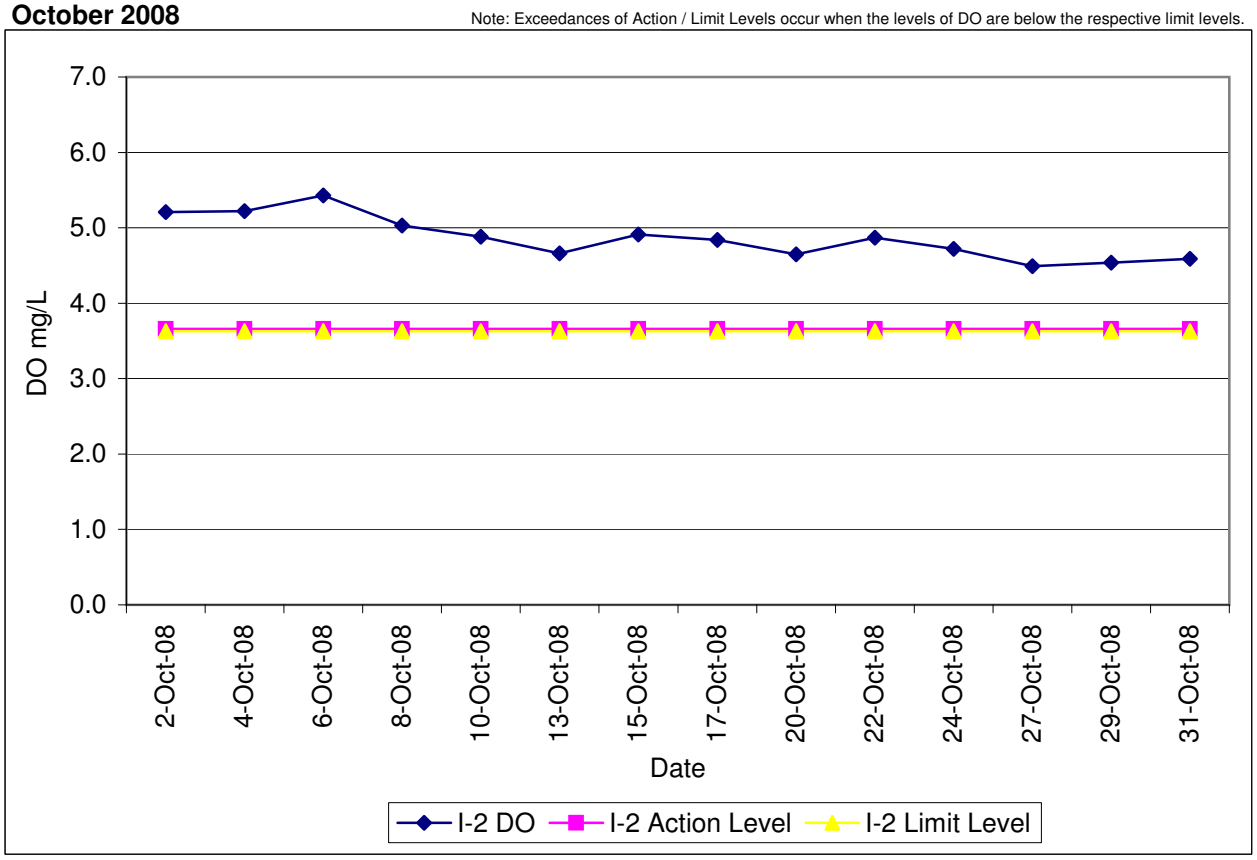


Contract No. DC/2007/12 - Design and Construction of Tsuen Wan DrainageTunnel
Water Quality Results at Sik Sik Yuen Ho Fung College (I-1-C)
October 2008

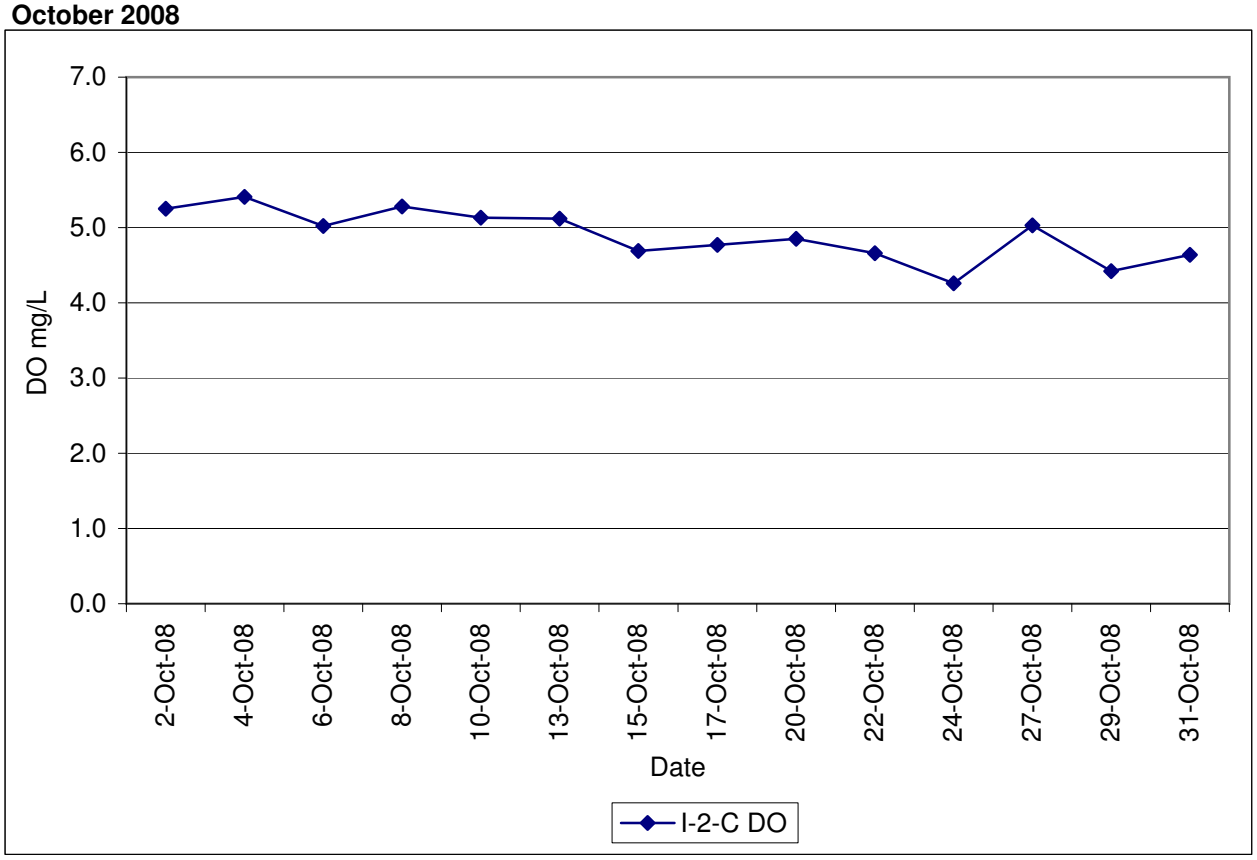


Contract No. DC/2007/12 - Design and Construction of Tsuen Wan DrainageTunnel
Water Quality Results at Hong Hoi Chee Hong Temple (I-2)
October 2008

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

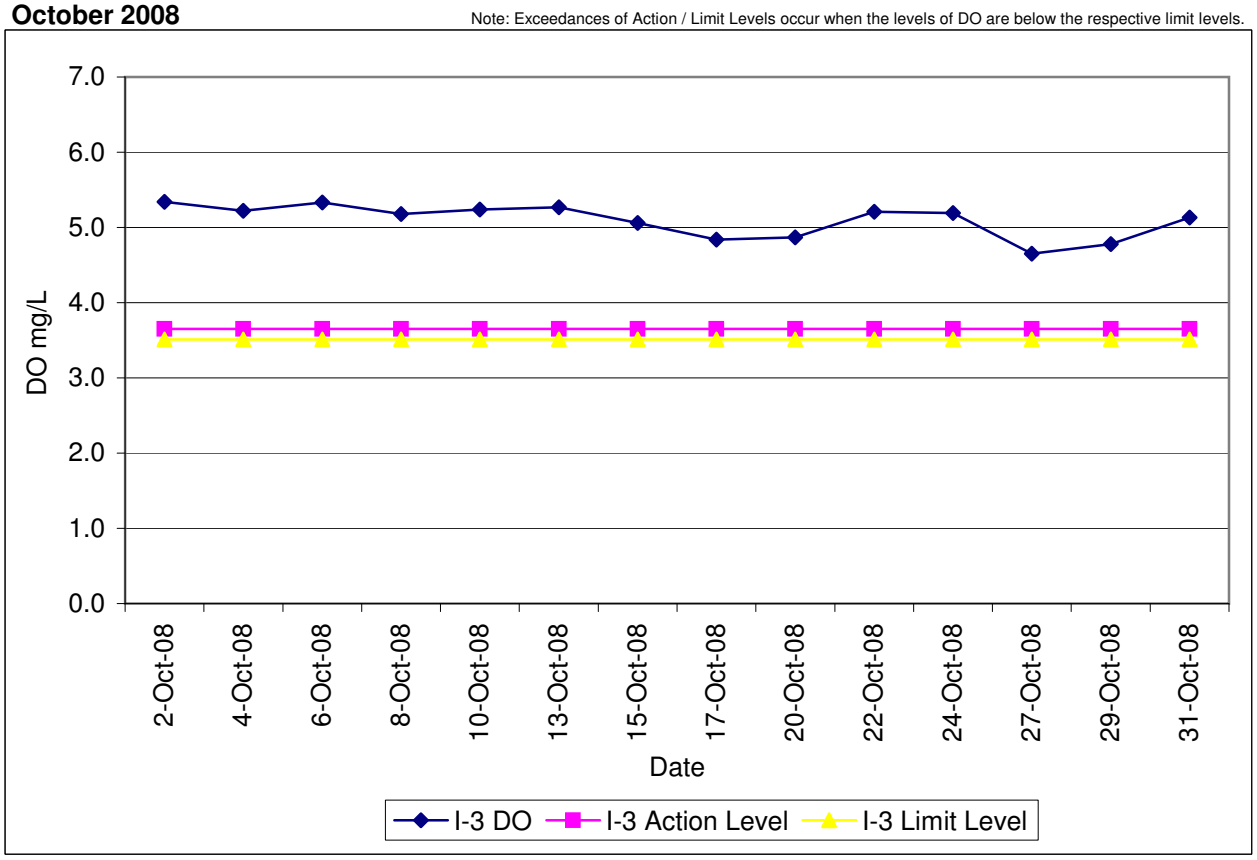


Contract No. DC/2007/12 - Design and Construction of Tsuen Wan DrainageTunnel
Water Quality Results at Hong Hoi Chee Hong Temple (I-2-C)
October 2008

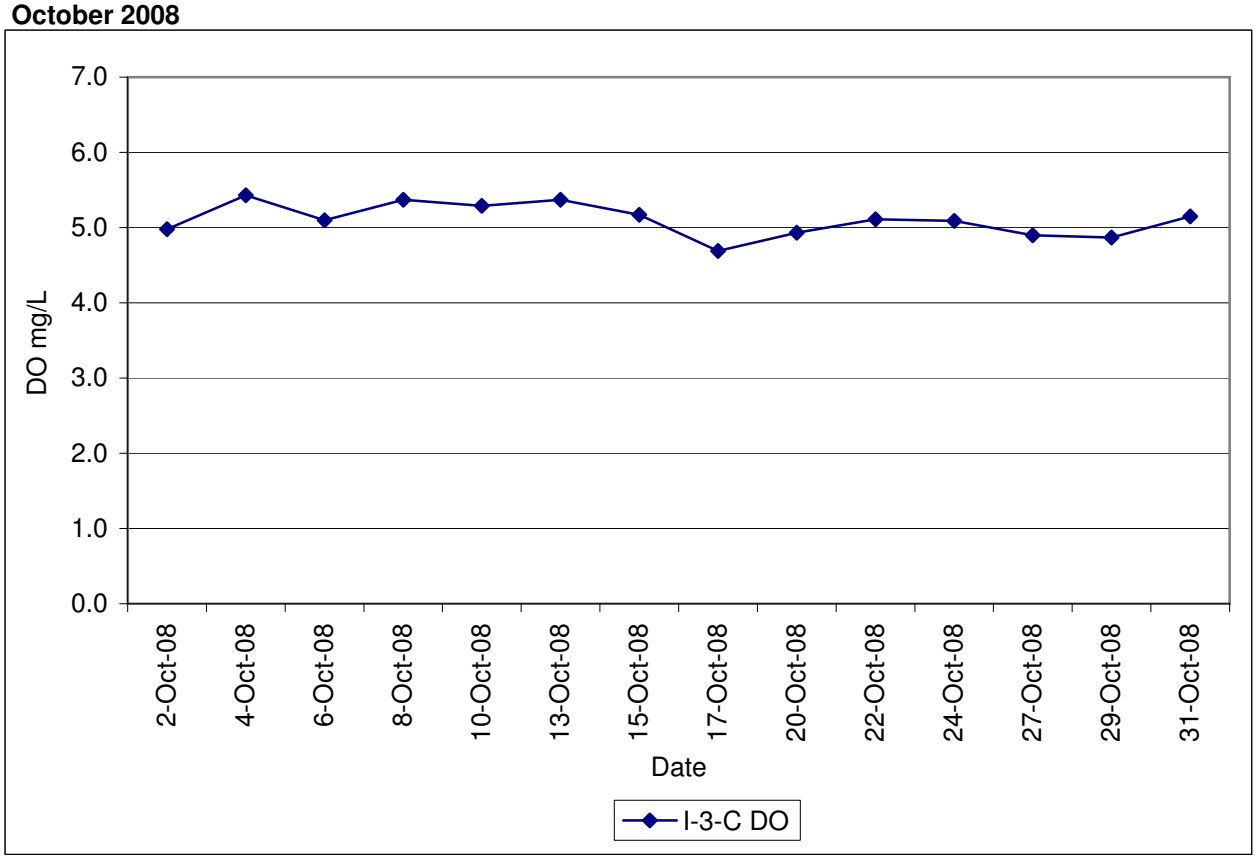


Contract No. DC/2007/12 - Design and Construction of Tsuen Wan DrainageTunnel
Water Quality Results at Squatters (I-3)
October 2008

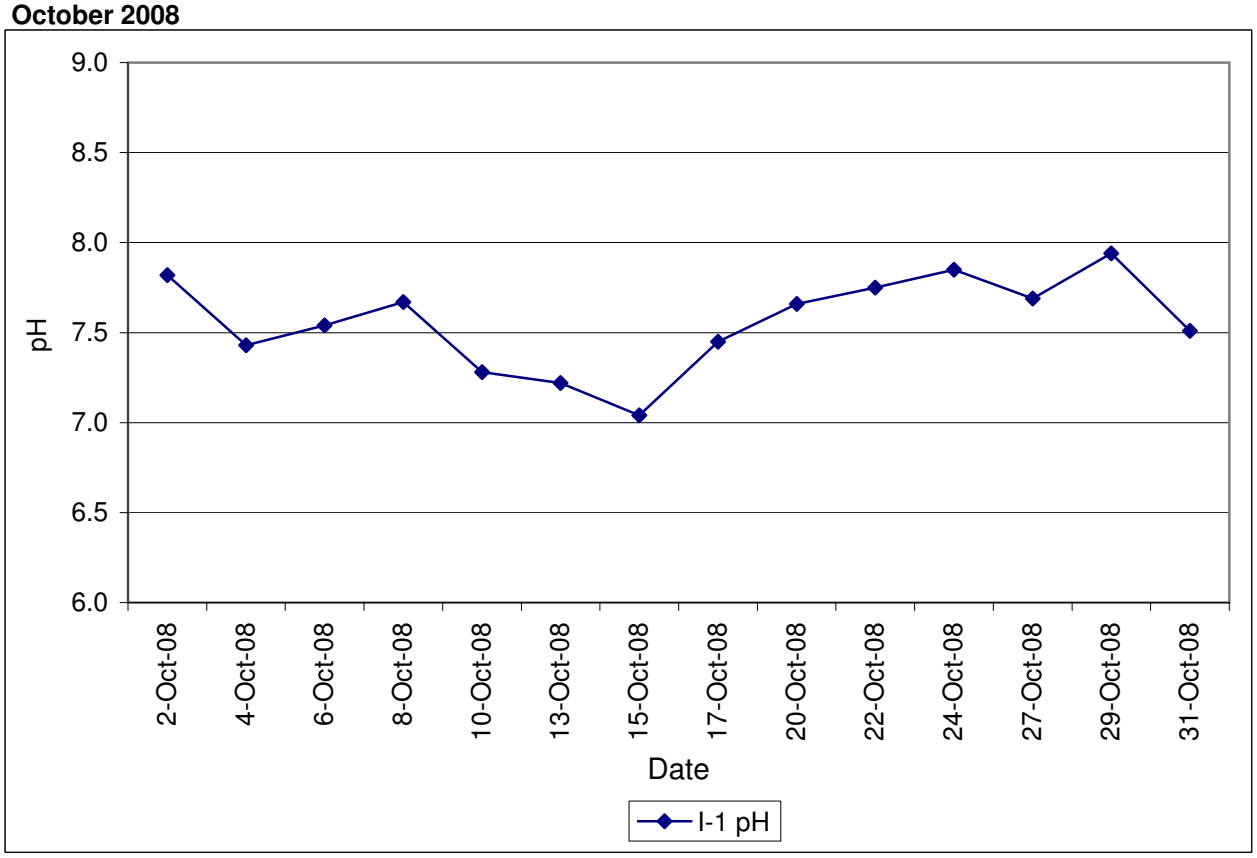
Note: Exceedances of Action / Limit Levels occur when the levels of DO are below the respective limit levels.



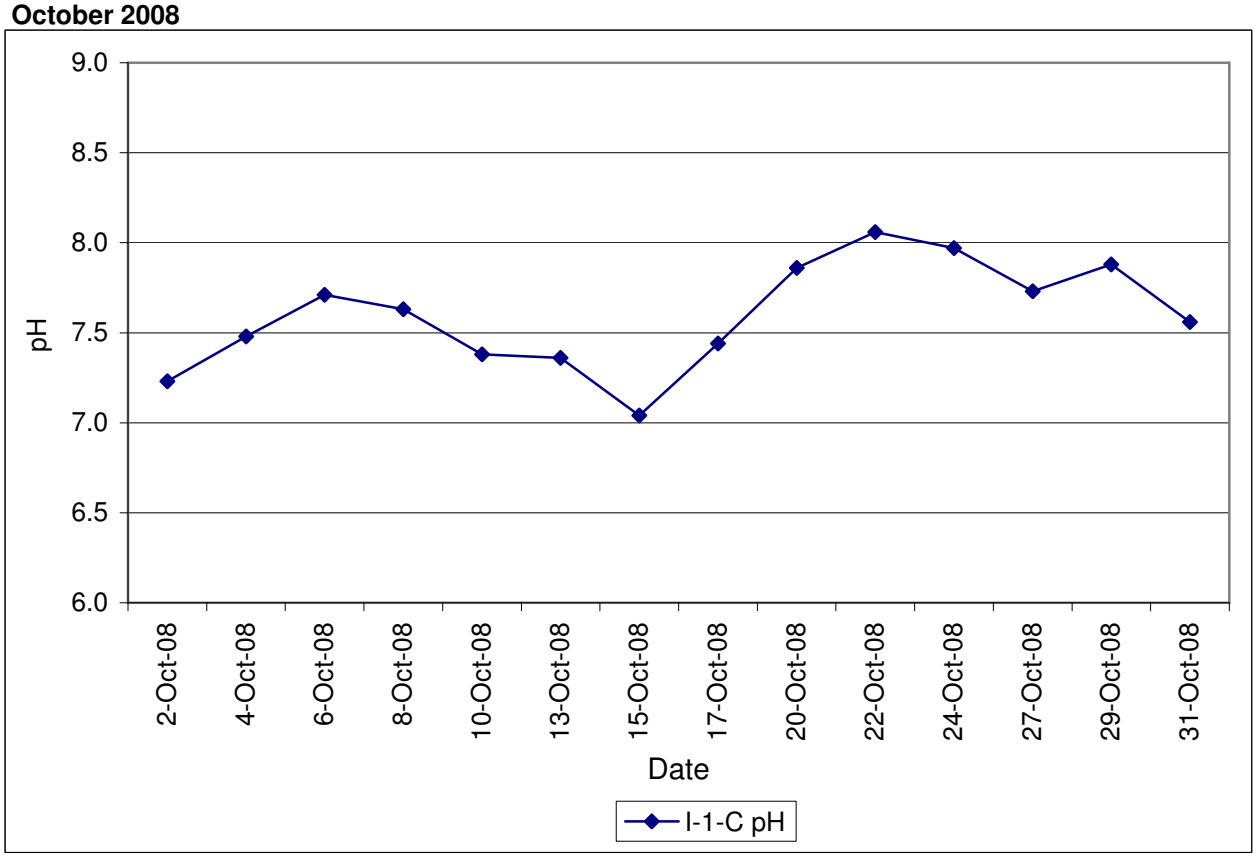
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan DrainageTunnel
Water Quality Results at Squatters (I-3-C)
October 2008



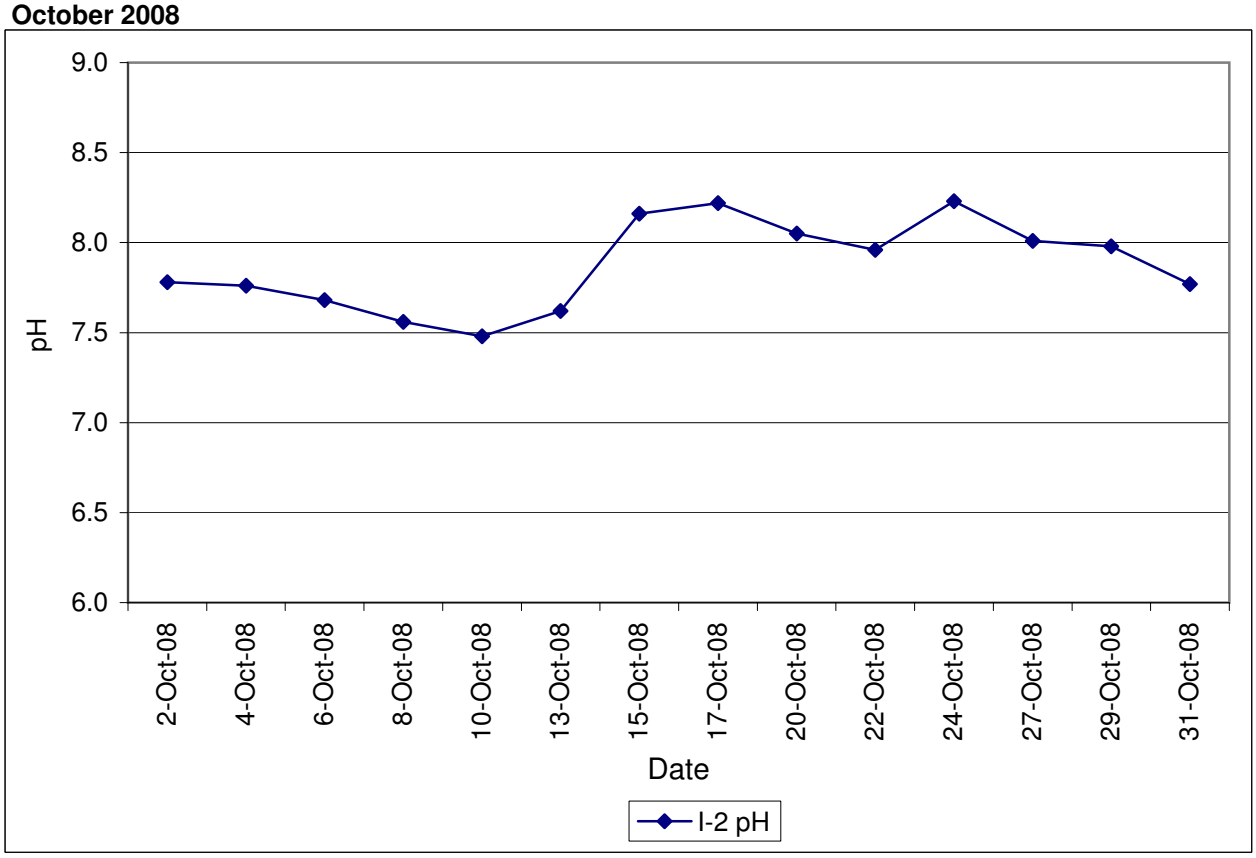
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan DrainageTunnel
Water Quality Results at Sik Sik Yuen Ho Fung College (I-1)
October 2008



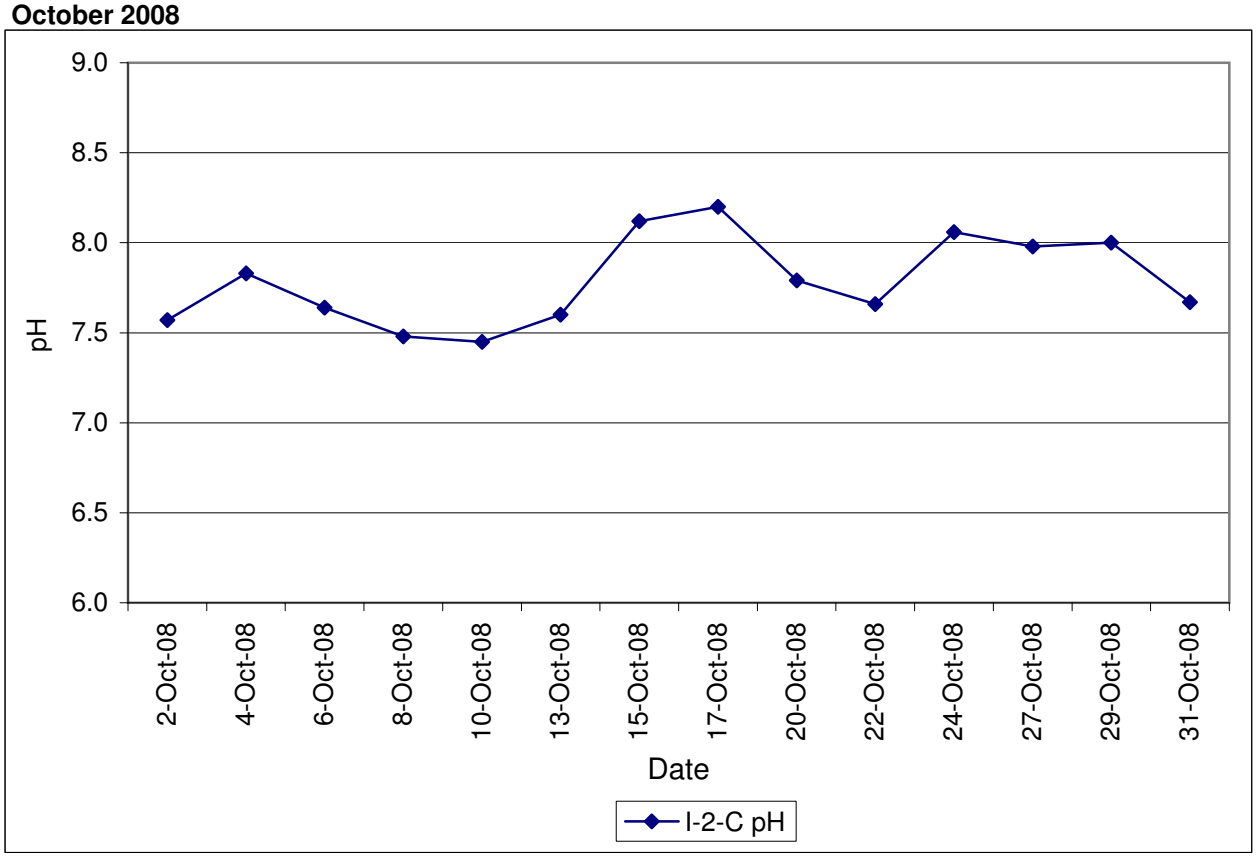
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan DrainageTunnel
Water Quality Results at Sik Sik Yuen Ho Fung College (I-1-C)
October 2008



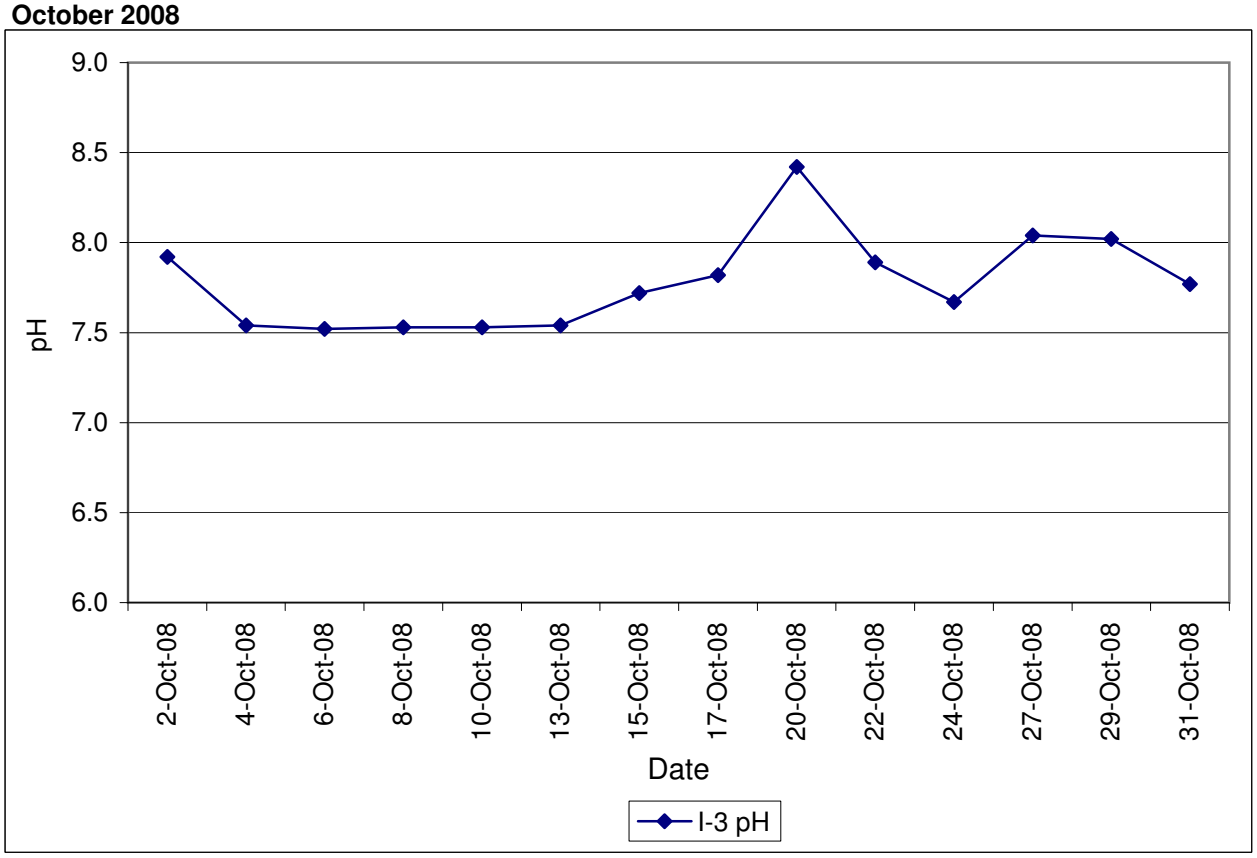
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan DrainageTunnel
Water Quality Results at Hong Hoi Chee Hong Temple (I-2)
October 2008



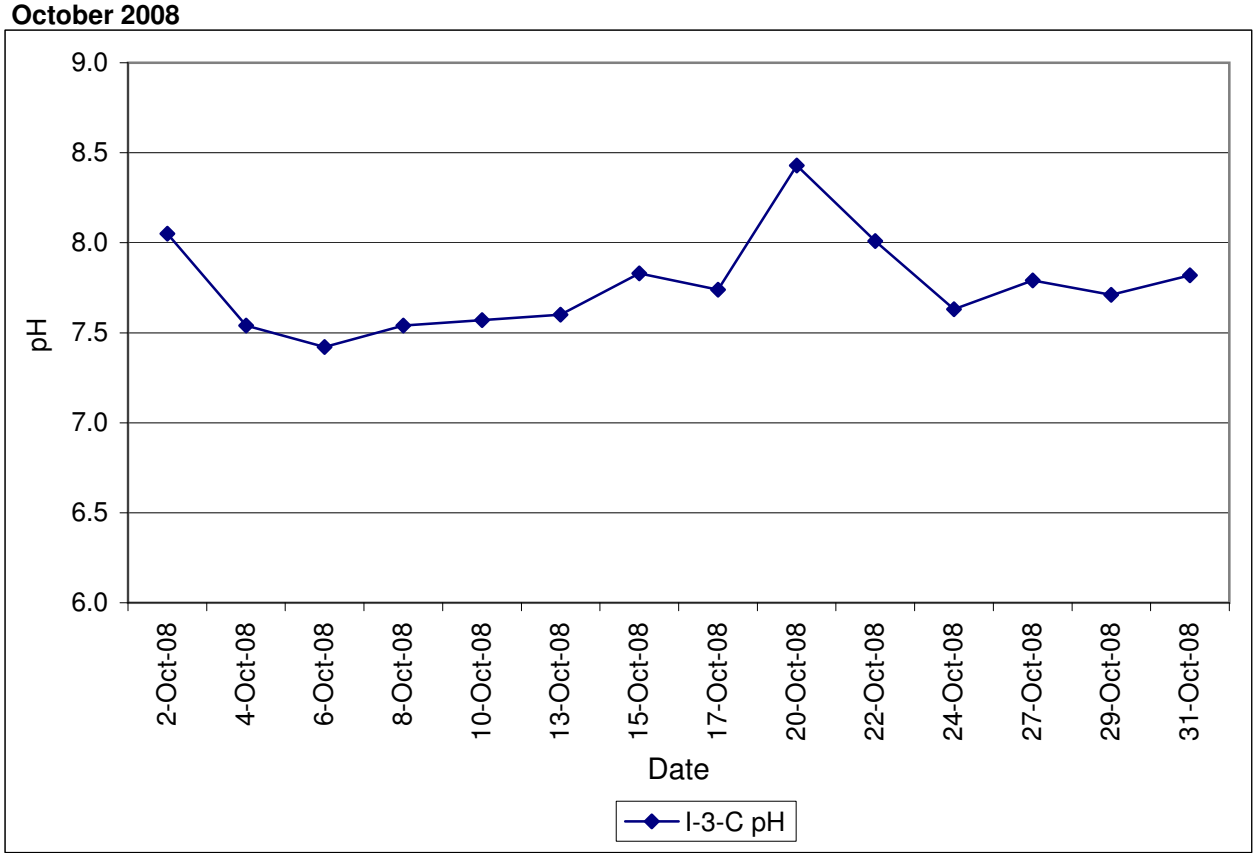
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan DrainageTunnel
Water Quality Results at Hong Hoi Chee Hong Temple (I-2-C)
October 2008



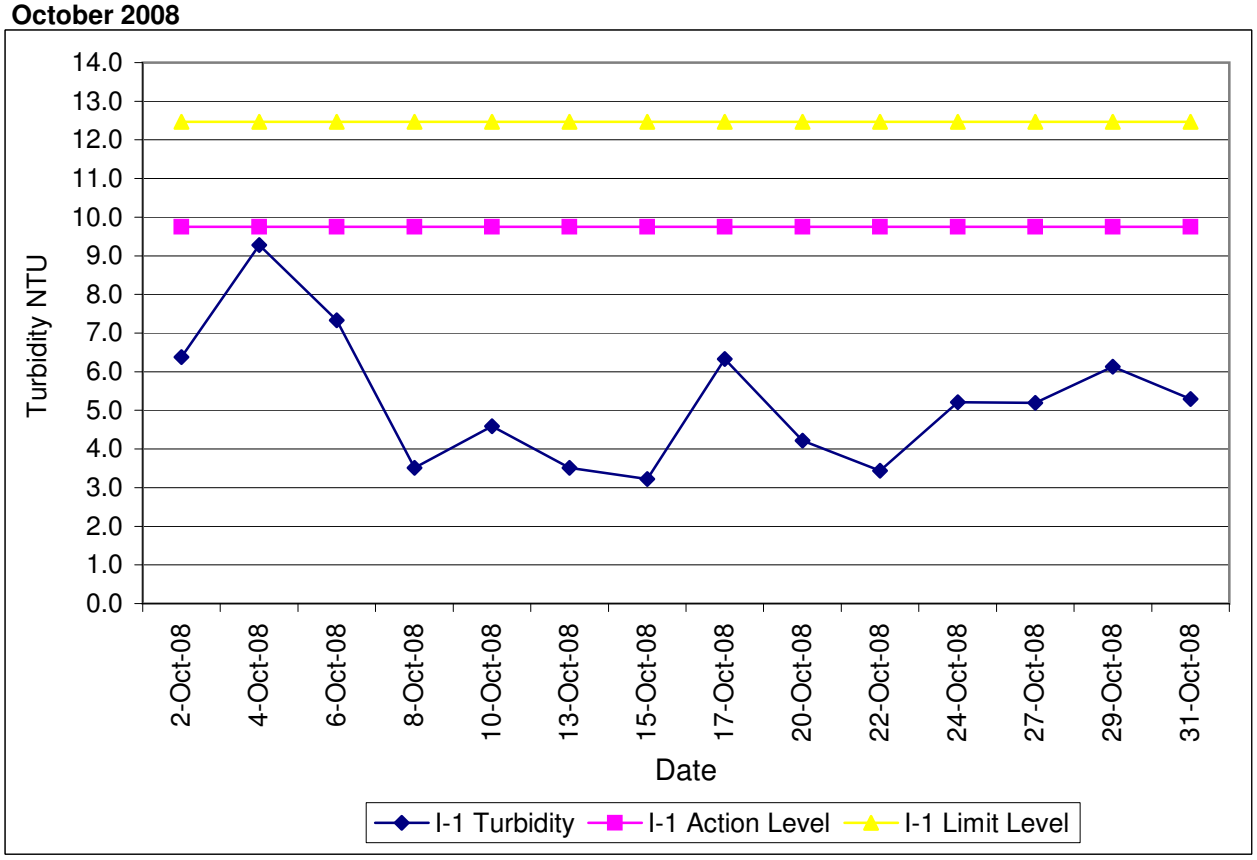
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan DrainageTunnel
Water Quality Results at Squatters (I-3)
October 2008



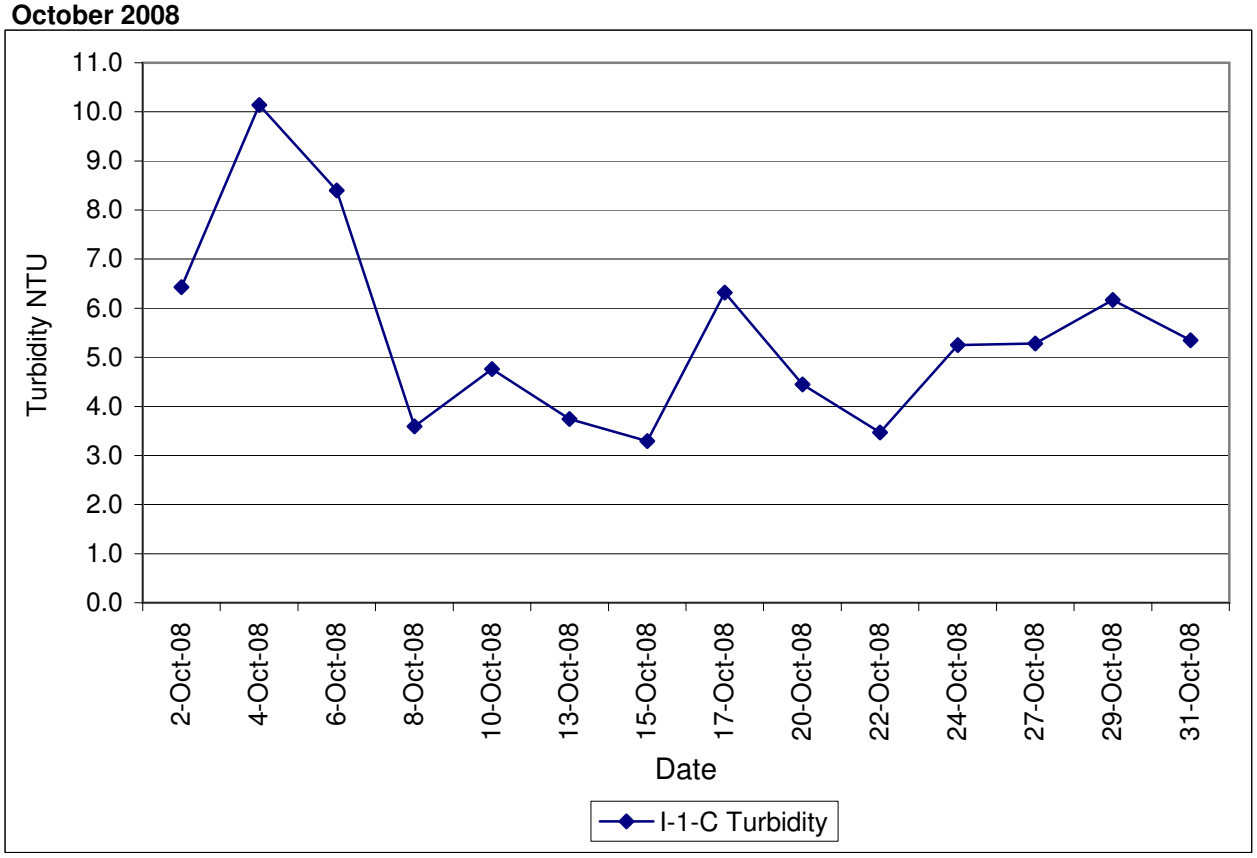
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan DrainageTunnel
Water Quality Results at Squatters (I-3-C)
October 2008



Contract No. DC/2007/12 - Design and Construction of Tsuen Wan DrainageTunnel
Water Quality Results at Sik Sik Yuen Ho Fung College (I-1)
October 2008



Contract No. DC/2007/12 - Design and Construction of Tsuen Wan DrainageTunnel
Water Quality Results at Sik Sik Yuen Ho Fung College (I-1-C)
October 2008



Contract No. DC/2007/12 - Design and Construction of Tsuen Wan DrainageTunnel
Water Quality Results at Hong Hoi Chee Hong Temple (I-2)
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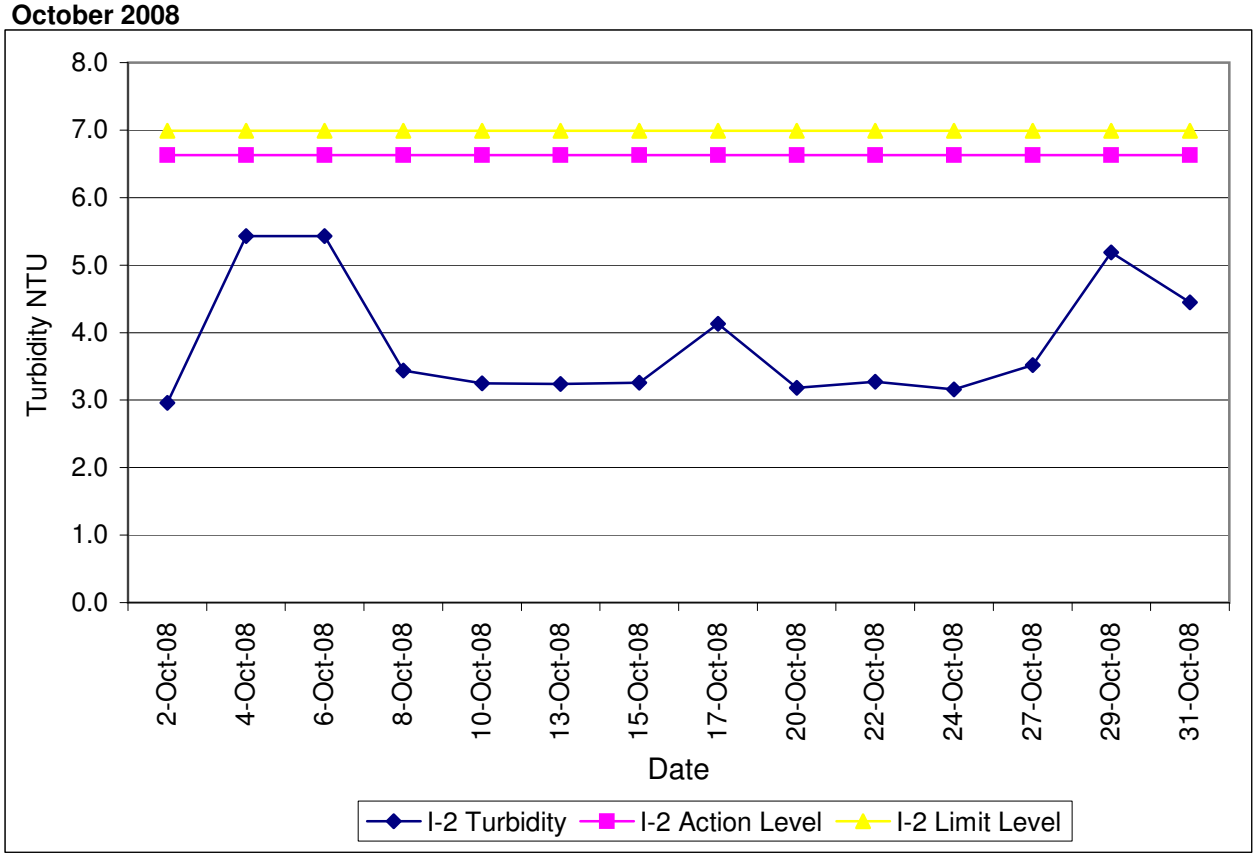

Contract No. DC/2007/12 - Design and Construction of Tsuen Wan DrainageTunnel
Water Quality Results at Hong Hoi Chee Hong Temple (I-2-C)
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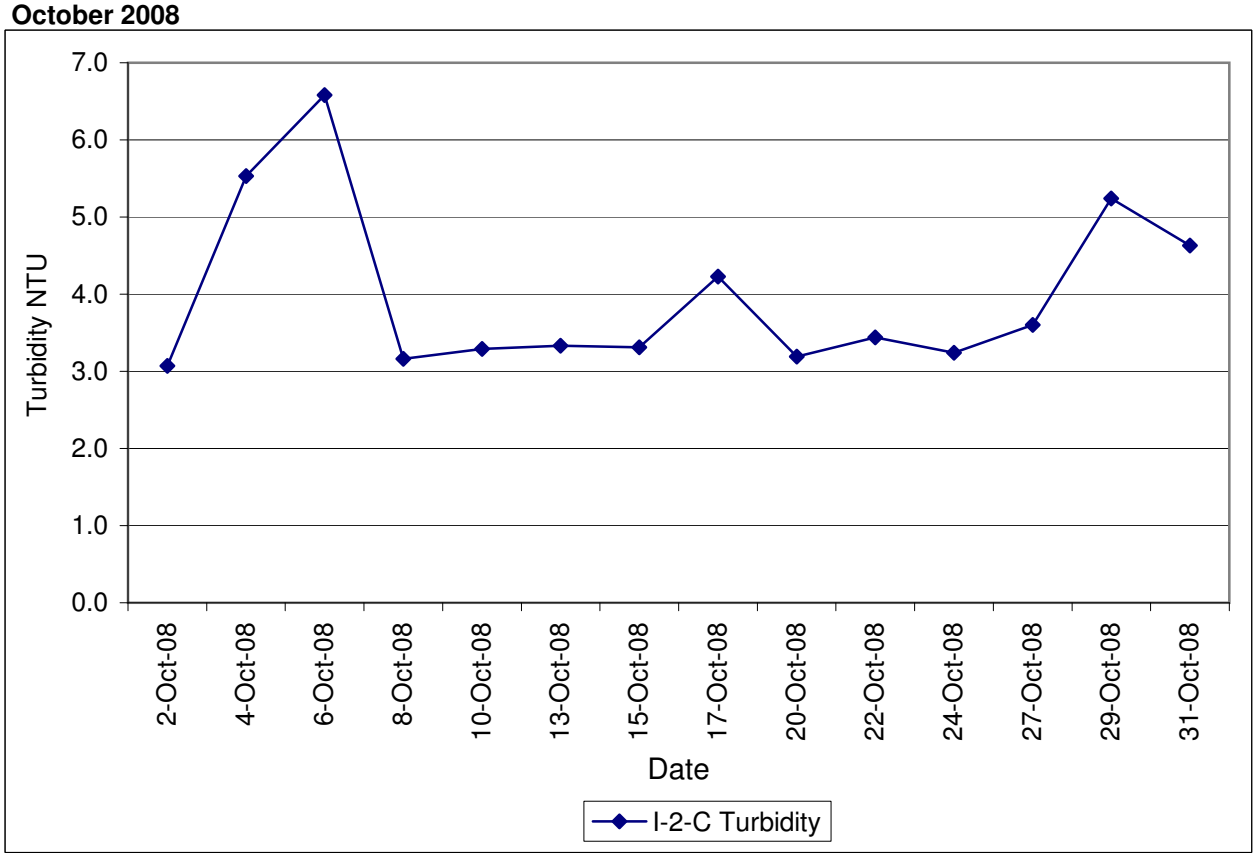
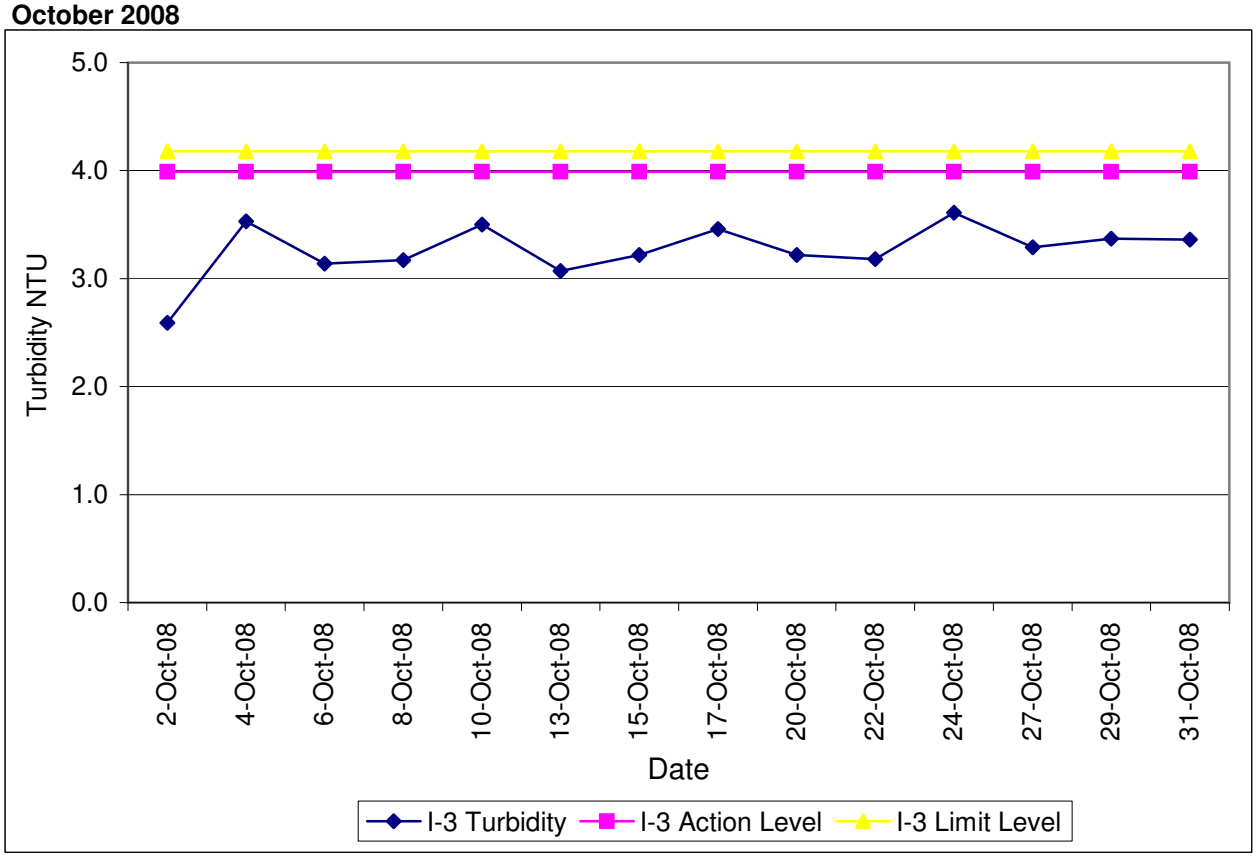
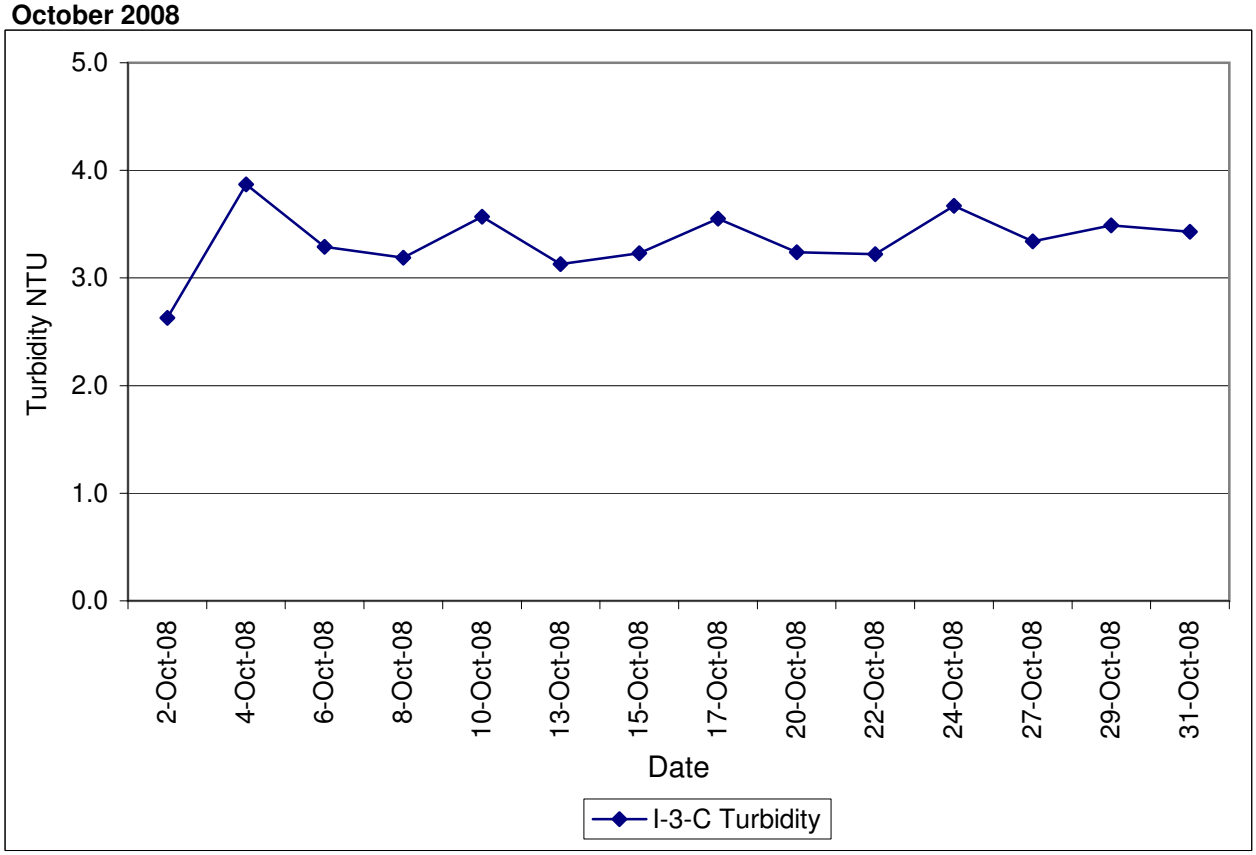


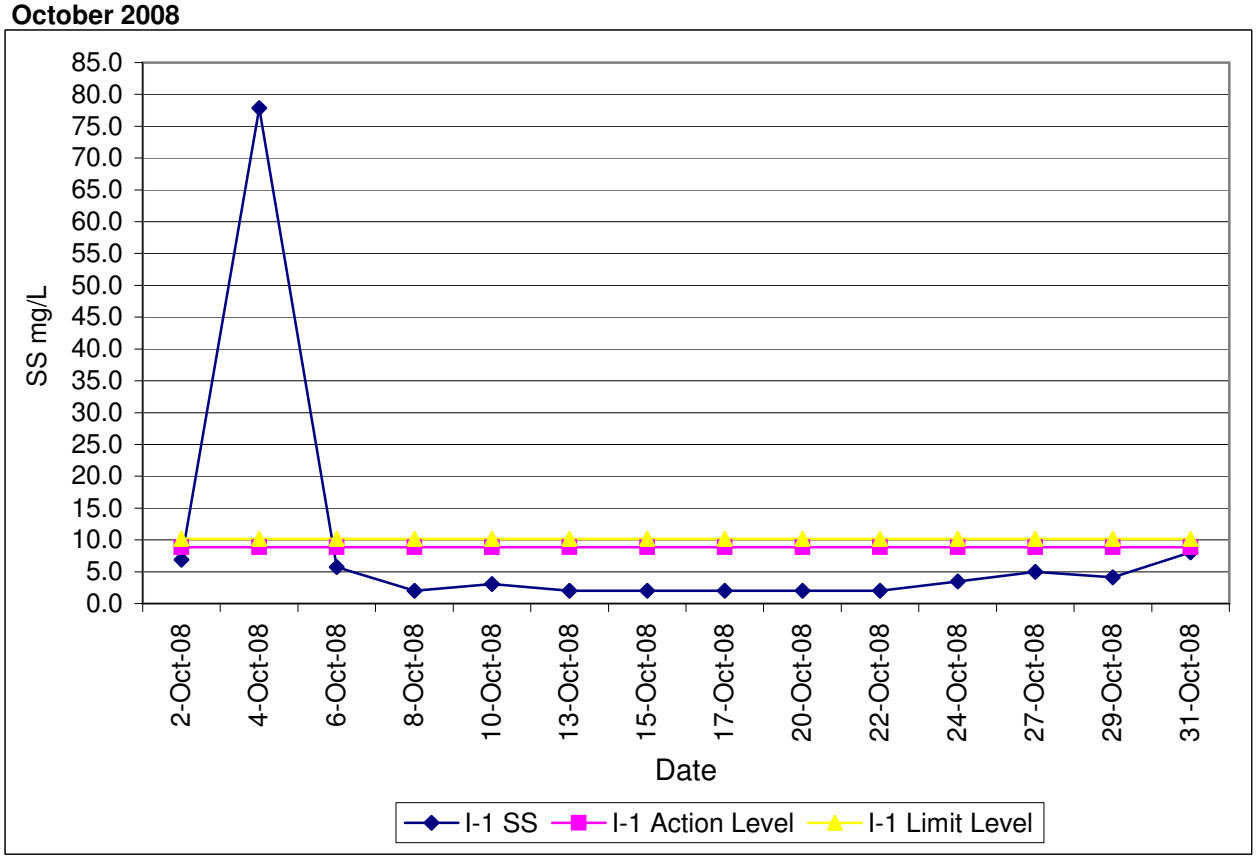
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan DrainageTunnel
Water Quality Results at Squatters (I-3)
October 2008



Contract No. DC/2007/12 - Design and Construction of Tsuen Wan DrainageTunnel
Water Quality Results at Squatters (I-3-C)
October 2008



Contract No. DC/2007/12 - Design and Construction of Tsuen Wan DrainageTunnel
Water Quality Results at Sik Sik Yuen Ho Fung College (I-1)
October 2008



Contract No. DC/2007/12 - Design and Construction of Tsuen Wan DrainageTunnel
Water Quality Results at Sik Sik Yuen Ho Fung College (I-1-C)
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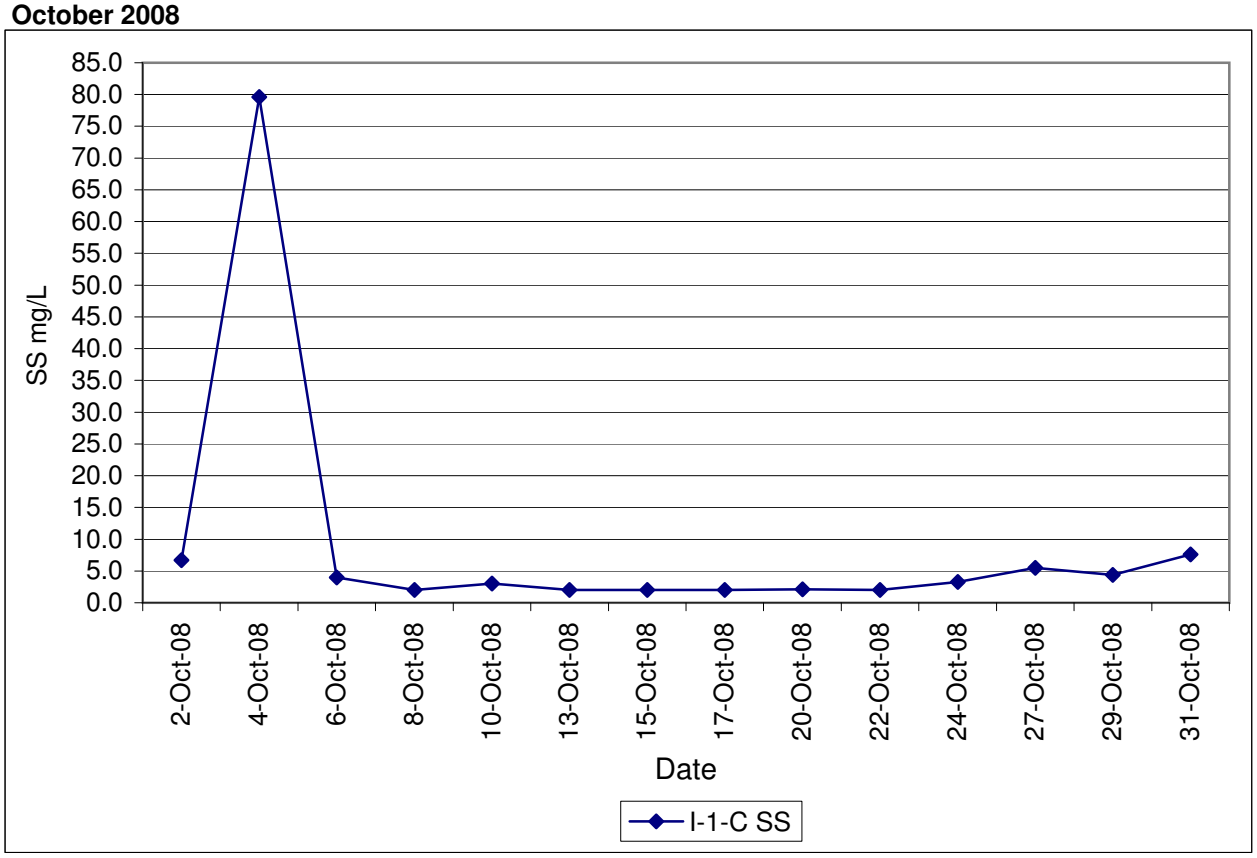

Contract No. DC/2007/12 - Design and Construction of Tsuen Wan DrainageTunnel
Water Quality Results at Hong Hoi Chee Hong Temple (I-2)
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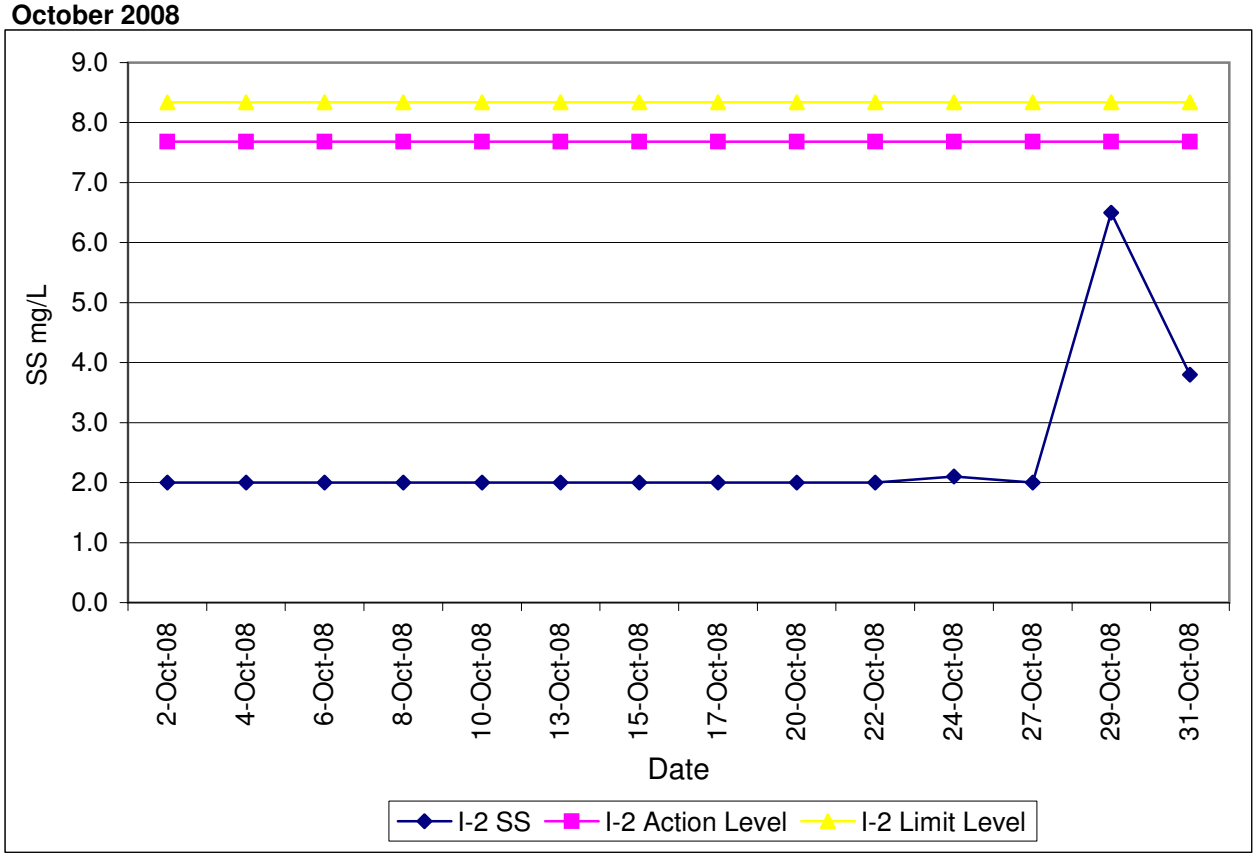

Contract No. DC/2007/12 - Design and Construction of Tsuen Wan DrainageTunnel
Water Quality Results at Hong Hoi Chee Hong Temple (I-2-C)
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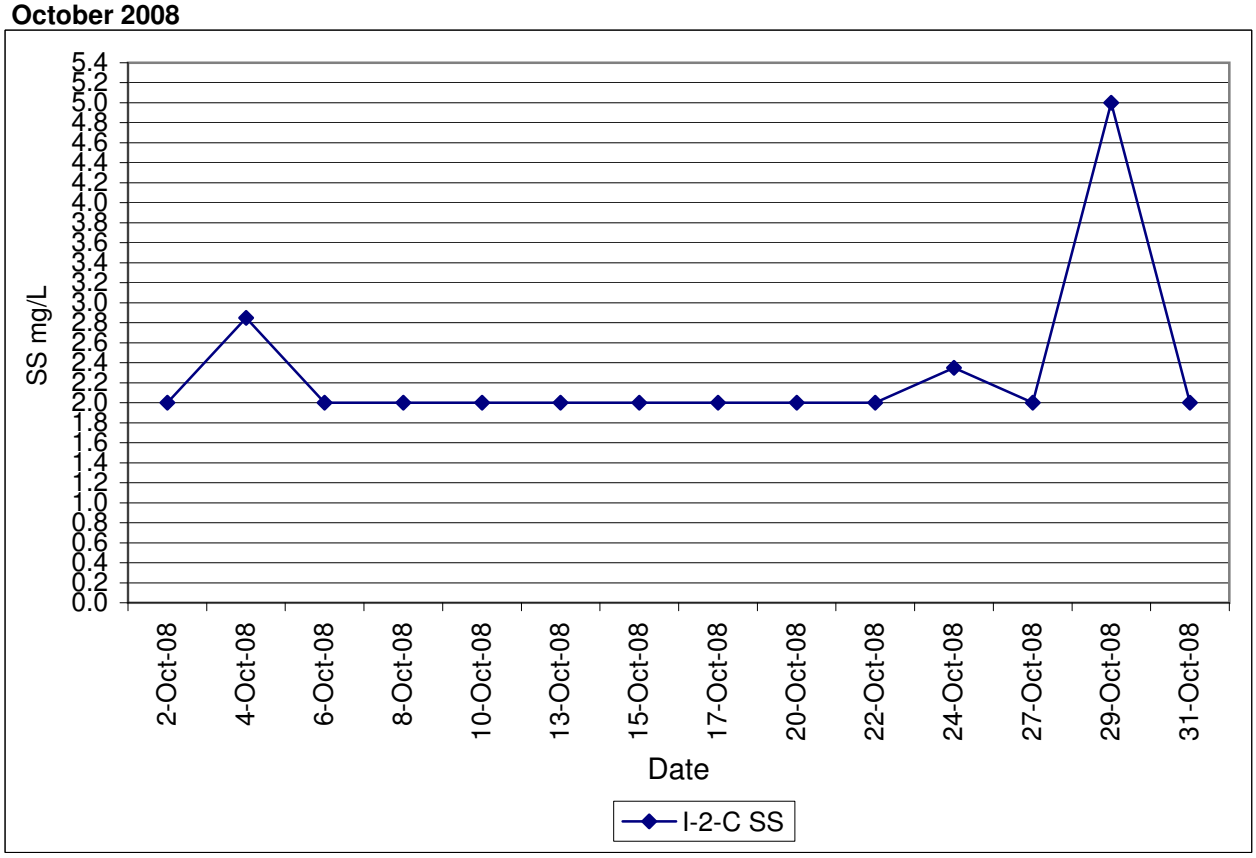
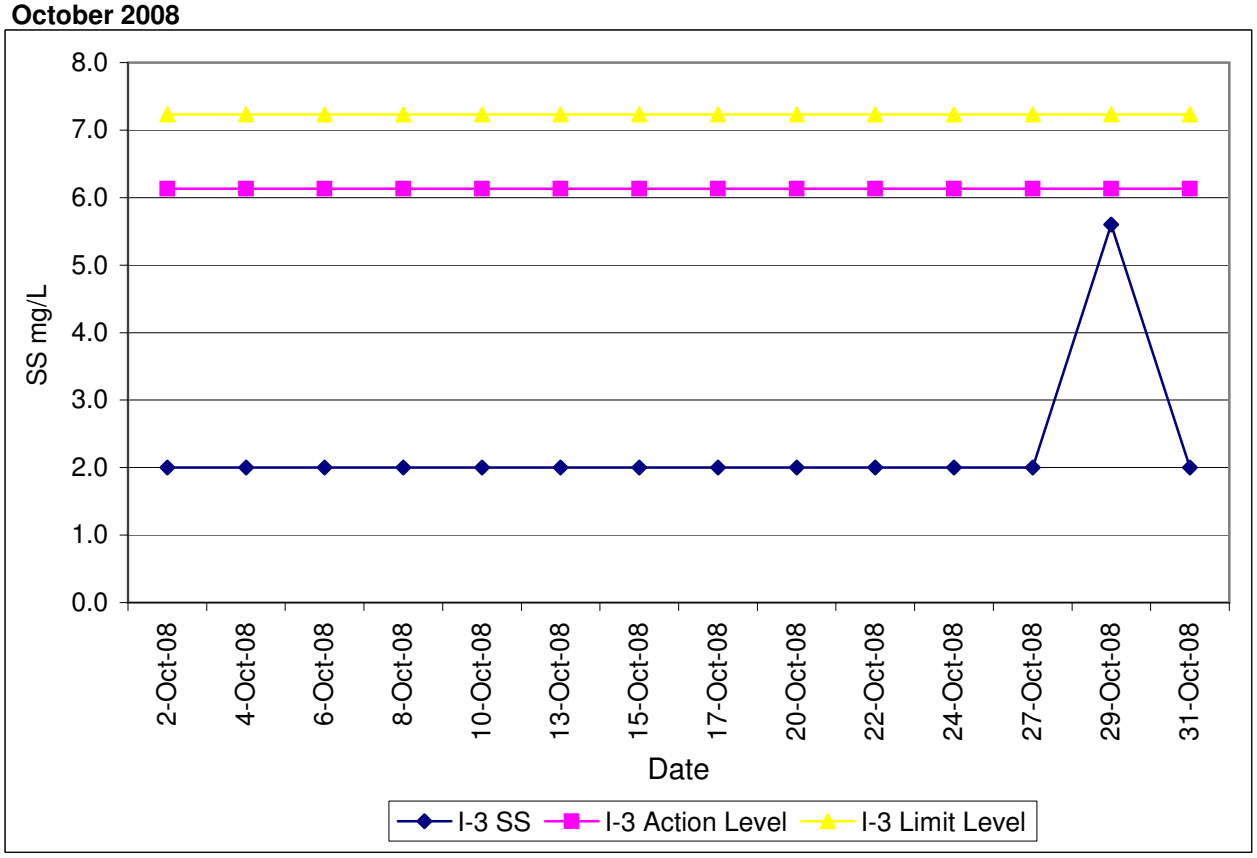
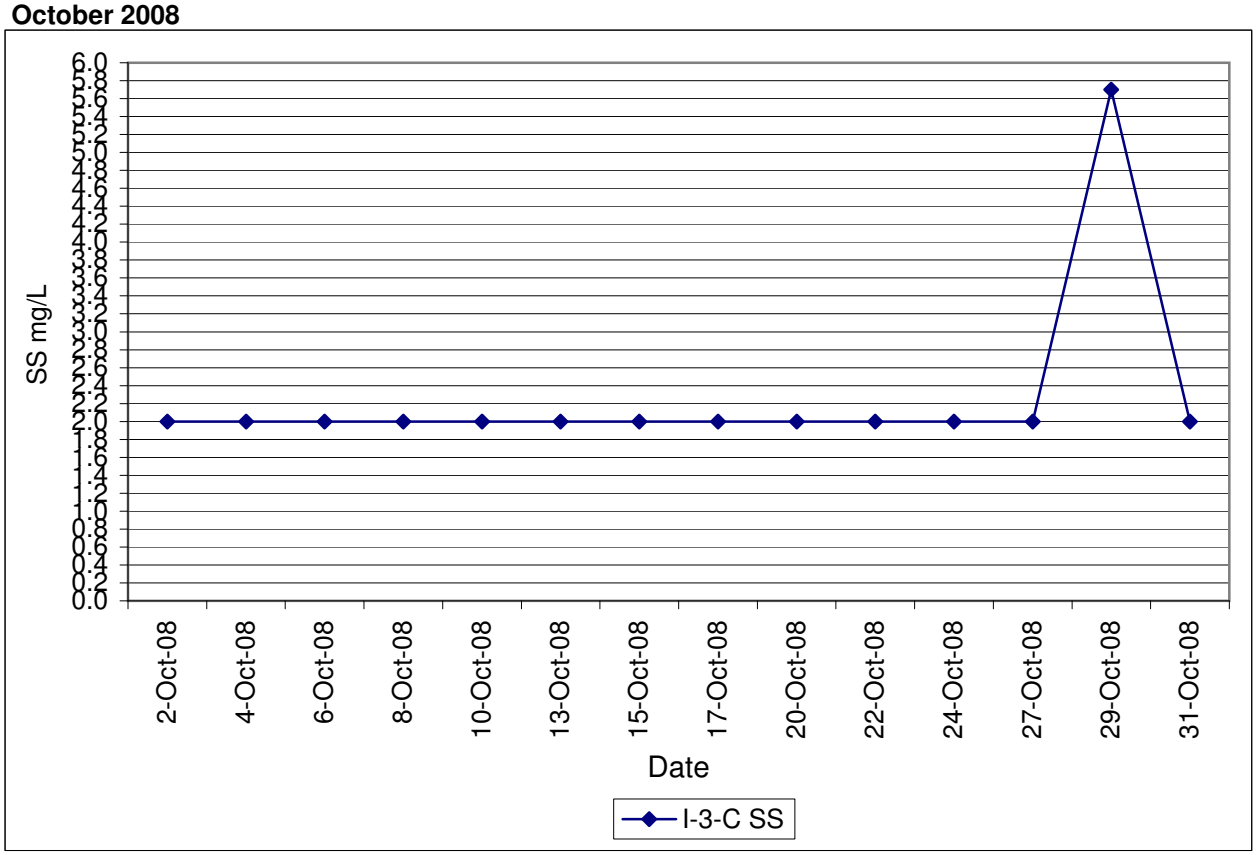


Contract No. DC/2007/12 - Design and Construction of Tsuen Wan DrainageTunnel
Water Quality Results at Squatters (I-3)
October 2008



Contract No. DC/2007/12 - Design and Construction of Tsuen Wan DrainageTunnel
Water Quality Results at Squatters (I-3-C)
October 2008



Appendix J

Interim Notifications of Environmental Quality Limits Exceedances

Interim Notifications of Environmental Quality Limits Exceedances

Incident Report on Action Level or Limit Level Non-compliance

Project	Tsuen Wan Drainage Tunnel
Date	04-Oct-08
Time	10:19 AM
Monitoring Location	Sik Sik Yuen Ho Fung College (I-1)
Parameter	Suspended Solid
Action & Limit Levels	8.85 / 10.17
Measured Level	77.9
Possible reason for Action or Limit Level Non-compliance	Muddy water was observed generated from CEDD's project (Yick Hing) at upper steam regarding to site investigation. Refer to attached photos for details
Actions taken / to be taken	No action is taken as the result of monitoring station was below the control station and no direct disturbance was observed contributed by the project construction activities (site tidiness).
Remarks	The baseline limit level exceedance is considered not to be project-related.

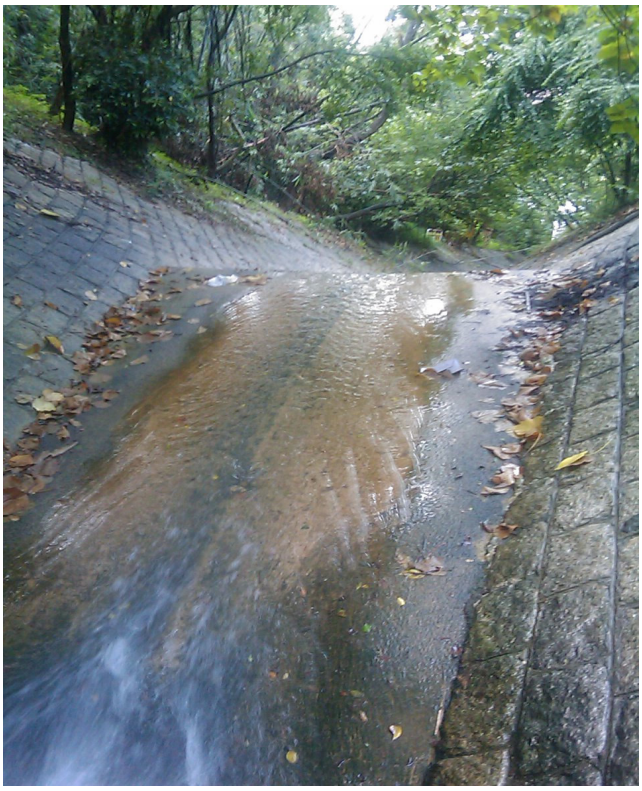
Prepared by: Desmond Chan

Designation: Senior Environmental Consultant

Signature: Desmond Chan

Date: 14-Oct-08

Photographic record for exceedance of Suspended Solid recorded at Sik Sik Yuen Ho Fung College (I-1) on 04-Oct-08



Interim Notifications of Environmental Quality Limits Exceedances

Incident Report on Action Level or Limit Level Non-compliance

Project	Tsuen Wan Drainage Tunnel
Date	06-Oct-08
Time	01:40 PM
Monitoring Location	Sik Sik Yuen Ho Fung College (I-1)
Parameter	Suspended Solid
Action & Limit Levels	8.85 / 10.17
Measured Level	5.8 (higher than 130% of control station's SS)
Possible reason for Action or Limit Level Non-compliance	A low SS level of 4.0 is recorded at Control Station (I-1-C)
Actions taken / to be taken	No action is taken as the monitoring result was well below both baseline action & limit levels and no direct disturbance was observed contributed by project construction activities (dismantle timber platform for additional borehole). There is no evidence to show the exceedance is project-related.
Remarks	The control limit level exceedance is considered not to be project-related.

Prepared by: Desmond Chan

Designation: Senior Environmental Consultant

Signature: Desmond Chan

Date: 15-Oct-08

Photographic record for exceedance of Suspended Solid recorded at Sik Sik Yuen Ho Fung College (I-1) on 06-Oct-08

Interim Notifications of Environmental Quality Limits Exceedances

Incident Report on Action Level or Limit Level Non-compliance

Project	Tsuen Wan Drainage Tunnel
Date	11-Oct-08
Time	14:00 - 16:00
Monitoring Location	Sik Sik Yuen Ho Fung College (ASR1)
Parameter	Total Suspended Particulate
Action & Limit Levels	306.6 / 500
Measured Level	369.9 (2nd measurement exceed Action Level) 520.9 (3rd measurement exceed Limit Level)
Possible reason for Action or Limit Level Non-compliance	River clearance by a small backhoe was undertaken during measurement. No major fugitive dust was generated from on-site activities. As such, the sources of the above mentioned exceedances may not be identified.
Actions taken / to be taken	There is no evidence that the exceedance was caused by the on-site activities. The Contractor was reminded to provide dust suppression measures for all dusty works to minimise the fugitive dust impact, if necessary.
Remarks	The effectiveness of dust mitigation measures will be monitored and rectified in subsequent monitoring on 17 October.

Prepared by: Desmond Chan

Designation: Environmental Team Leader

Signature: Desmond Chan

Date: 17-Oct-08

Interim Notifications of Environmental Quality Limits Exceedances

Incident Report on Action Level or Limit Level Non-compliance

Project	Tsuen Wan Drainage Tunnel
Date	29-Oct-08
Time	10:42 AM
Monitoring Location	Hong Hoi Chee Hong Temple (I-2)
Parameter	Suspended Solid
Action & Limit Levels	7.68 / 8.34
Measured Level	6.5 (higher than 120% of control station's SS)
Possible reason for Action or Limit Level Non-compliance	A low SS level of 5.0 is recorded at Control Station (I-2-C)
Actions taken / to be taken	No action is taken as the monitoring result was well below both Baseline Action & Baseline Limit Levels and no direct disturbance was observed contributed by project construction activities (hole drilling for ground investigation). There is no evidence to show the exceedance is project-related.
Remarks	The control action level exceedance is considered not project-related.

Prepared by: Desmond Chan

Designation: Senior Environmental Consultant

Signature: Desmond Chan

Date: 06-Nov-08

Photographic record for exceedance of Suspended Solid recorded at Hong Hoi Chee Hong Temple (I-2) on 29-Oct-08

Interim Notifications of Environmental Quality Limits Exceedances

Incident Report on Action Level or Limit Level Non-compliance

Project	Tsuen Wan Drainage Tunnel
Date	31-Oct-08
Time	10:58 AM
Monitoring Location	Hong Hoi Chee Hong Temple (I-2)
Parameter	Suspended Solid
Action & Limit Levels	7.68 / 8.34
Measured Level	3.8 (higher than 130% of control station's SS)
Possible reason for Action or Limit Level Non-compliance	A low SS level of 2.0 is recorded at Control Station (I-2-C)
Actions taken / to be taken	No action is taken as the monitoring result was well below both Baseline Action & Baseline Limit Levels and no direct disturbance was observed contributed by project construction activities (hole drilling for ground investigation, driving temporary casing for pre-bore H-pile, pre-bore H-pile and site tidiness). The Contractor is suggested to increase the frequency of cleaning the geo-textile and sandbags and to improve the efficiency of sedimentation tank. No exceedance was recorded for the subsequence measurement performed on 04/11/2008.
Remarks	The control limit level exceedance is considered not project-related.

Prepared by: Desmond Chan

Designation: Senior Environmental Consultant

Signature: Desmond Chan

Date: 10-Nov-08

Photographic record for exceedance of Suspended Solid recorded at Hong Hoi Chee Hong Temple (I-2) on 31-Oct-08