Maeda - CREC - SELI Joint Venture

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

Monthly EM&A Report (September 2009)

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Report No	EB000364R0282
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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 September 2009.

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 the non restricted hours, major construction activities undertaken by the Contractor at TWDT included site cleaning and tidying, tree transplanting and breaking up exiting boulder at I-1, I-2, I-3 and Outfall; drilling rig at I-3 and Outfall; soil nailing at I-1, I-3 and Outfall; formation of access road at I-3 and Outfall; erosion control mat and green wire mesh at Outfall; Excavation and Lateral Support (ELS) at I-1; construction of skin wall at I-2; and formation of steel platform at I-2. No construction activities were carried out during restricted hours.

4. No exceedance has been recorded for air quality during the reporting month. For noise monitoring, no exceedance of Limit level was recorded, however, one environmental complaint on noise trigger the excceedance of Action Level.

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 at I-1 on 16 September 2009	Two recorded at I-1 and I-3 on 11 and 14 September 2009

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

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

   - A total of 3,774.2 m^3 C&D material was disposed of to public fill at Tuen Mun and 1, 970.0 m^3 inert C&D materials were reused in other Contracts. Detail information could be referred to Section 5.1.1 of this report.

- About 22.6 m^3 general waste was disposed of to NENT Landfill;
- 300 kg paper/cardboard packaging was recycled;
- Metals was not generated in the reporting month; and
- No plastic waste anf chemical waste were disposed of in the reporting month

8. In this reporting month, two site inspections and one 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 regarding the site inspection was received in the reporting month;
   - One 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 cleaning and tidying at I-1, I-2, I-3 and Outfall;
    - Tree transplanting at I-1, I-2, I-3 and Outfall;
    - Drilling rig at I-3 and Outfall;
    - Soil nailing at I-1, I-3 and Outfall;
    - Breaking up exiting boulder at I-1, I-2, I-3, and Outfall;
    - Formation of access road at I-3 and Outfall;
    - Erosion control mat and green wire mesh at Outfall;
    - Excavation and Lateral Support (ELS) at I-1;
    - Construction of skin wall at I-2 and I-3;
    - Formation of steel platform at I-2
    - Formation of shaft at I-2; and
    - Launching chamber at Outfall.

1 INTRODUCTION

1.1.1 The Drainage Services Department (DSD) proposed 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 eighteenth monthly EM&A report summarising the impact monitoring results and audit findings of the EM&A program in September 2009.

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 cleaning and tidying at I-1, I-2, I-3 and Outfall;
- Tree transplanting at I-1, I-2, I-3 and Outfall;
- Drilling rig at I-3 and Outfall;
- Soil nailing at I-1, I-3 and Outfall;
- Breaking up exiting boulder at I-1, I-2, I-3 and Outfall;
- Formation of access road at I-3 and Outfall;
- Erosion control mat and green wire mesh at Outfall;
- Excavation and Lateral Support (ELS) at I-1;
- Construction of skin wall at I-2; and
- Formation of steel platform 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 desiccators 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	1559	ASR 1
HVAS	BM2000HX	5875	1559	ASR 3
HVAS	TE5005X	0390	1559	ASR 8
HVAS	TE5005X	0646	1559	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 $\mu g/m^3$	
	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 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.	• Check monitoring data submitted by ET; • Check Contractor's working method; • Discuss with ET and Contractor on possible remedial measures; • Advise the ET on the effectiveness of the proposed remedial measures; • Supervise Implementation of remedial measures.	• Confirm receipt of notification of exceedance in writing; • Notify Contractor; • Ensure remedial measures properly implemented.	• Submit proposals for remedial to SOR within 3 working days of notification; • Implement the agreed proposals; • Amend proposal if appropriate.
LIMIT LEVEL				
Exceedance for one sample	• Identify source, investigate the causes of exceedance and propose remedial measures;	• Check monitoring data submitted by ET; • Check Contractor's working method; • Discuss with ET and	• Confirm receipt of notification of exceedance in writing; • Notify Contractor; • Ensure remedial	• Take immediate action to avoid further exceedance; • Submit proposals for remedial actions to IEC within 3 working

EVENT	ACTION			
	ET	IEC	SOR	CONTRACTOR
	• 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.	Contractor on possible remedial measures; • Advise SOR on the effectiveness of the proposed remedial measures; • Supervise implementation of remedial measures.	measures properly implemented.	days of notification; • Implement the agreed proposals; • Amend proposal if appropriate.
Exceedance for two or more consecutive samples	• Notify IEC, SOR, Contractor and EPD; • Identify source; • Repeat measurement to confirm findings; • Increase monitoring frequency to daily; • Carry out analysis of Contractor's working procedures to determine possible 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.	• Discuss amongst SOR, ET, and Contractor on the potential remedial actions; • Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise SOR accordingly; • Supervise the implementation of remedial measures.	• Confirm receipt of notification of exceedance in writing; • Notify Contractor; • In consultation with the IEC, agree with the Contractor on the remedial measures to be implemented; • 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.	• Take immediate action to avoid further exceedance; • Submit proposals for remedial actions to IEC within 3 working days of notification; • Implement the agreed proposals; • Resubmit proposals if problem still not under control; • 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 Rion Precision Sound Level Meters of Type NA-27 and Type NL-18 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 in this reporting month.

3.2.6 Prior to and following each noise measurement, the accuracy of the sound level meters is checked using an acoustic calibrators (Rion Type NC-73) 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	Rion	NA-27	00201194	NSR1, NSR3, NSR6, NSR8 and NSR9
Sound Level Meter	Rion	NL-18	00360030	
Sound Level Calibrator	Rion	NC-73	10786708	
Sound Level Calibrator	Rion	NC-73	10997142	

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. All the locations below are in façade measurement.

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)	Podium (up to 6 July2009) Roof* (from 16 July 2009)

* The noise monitoring location of NSR9 had been adjusted at rooftop from 16 July 2009.

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	• Notify IEC and the Contractor. • Carry out investigation. • Report the results of investigation to IEC and the Contractor. • Discuss with the Contractor and formulate remedial measures. • Increase monitoring frequency to check mitigation measures.	• Review with analysed results submitted by ET. • Review the proposed remedial measures by the Contractor and advise SOR accordingly. • Supervise the implement of remedial measures.	• Confirm receipt of notification of exceedance in writing. • Notify the Contractor. • Require the Contractor to propose remedial measures for the analysed noise problem. • Ensure remedial measures are properly implemented.	• Submit noise mitigation proposals to IEC. • Implement noise mitigation proposals.
Limit Level	• Identify the source. • Notify IEC, SOR, EPD and the Contractor. • Repeat measurement	• Discuss amongst SOR, ET Leader and the Contractor on the potential remedial actions.	• Confirm receipt of notification of exceedance in writing. • Notify the Contractor. • Require the Contractor	• Take immediate action to avoid further exceedance. • Submit proposals for remedial actions to

Event	Action			
	ET Leader	**IEC**	**SOR**	**Contractor**
	to confirm findings. • Increase monitoring frequency. • Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented. • Inform IEC, SOR, and EPD the causes & actions taken for the exceedances. • Assess effectiveness of the Contractor's remedial actions and keep IEC, EPD and SOR informed of the results. • If exceedance stops, cease additional monitoring.	• Review the Contractor's remedial actions whenever necessary to assure their effectiveness and advise SOR accordingly. • Supervise the implementation of remedial measures.	to propose remedial measures for the analysed noise problem. • Ensure remedial measures are properly implemented. • If exceedance continues, consider what activity of the work is responsible and instruct the Contractor to stop that activity of work until the exceedance is abated.	IEC within 3 working days of notification. • Implement the agreed proposals. • Resubmit proposals if problem still not under control. • 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 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 Meter / 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 basin at the seashore has not been started, monitoring of marine water quality is only required during which the stilling basin is placed at the seashore area. 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

The upper stream location (I-3-C) had been relocated from end of February 2009 due to coarse stone blockage.

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

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

Event	ET Leader	IEC	SOR	Contractor
	IEC, SOR and Contractor; • Ensure mitigation measures are implemented; and • 7. Increase the monitoring frequency to daily until no exceedance of Limit level for two consecutive days.	measures.	the implemented mitigation measures; and • Consider and instruct, if necessary, the Contractor to slow down or to stop all or part of the marine work until no exceedance of Limit Level.	and propose mitigation measures to IEC and SOR within 3 working days; • Implement the agreed mitigation measures; and • As directed by the Engineer, to slow down or to stop all or part of the marine work or construction activities.

Table 3-12 Event/Action Plan for Water Quality

4 MONITORING RESULT

4.1 Air Quality

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 were recorded to the nearest 0.1µg/m^3 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	04-Sep-09	95.7	307/500
		85.9	
		95.7	
	10-Sep-09	85.9	
		103.1	
		87.1	
	16-Sep-09	125.2	
		85.9	
		49.1	
	22-Sep-09	97.0	
		81.0	
		71.2	
	28-Sep-09	98.2	
		152.2	
		71.2	
ASR 3	04-Sep-09	83.8	327/500
		71.7	
		62.8	
	10-Sep-09	108.0	
		86.0	
		89.3	
	16-Sep-09	58.4	

Station	Monitoring Date	Monitoring Result (µg/m3)	Action/Limit Levels (µg/m3)
		110.2	
		69.5	
	22-Sep-09	114.6	
		81.6	
		40.8	
	28-Sep-09	119.1	
		118.0	
		80.5	
ASR 8	04-Sep-09	205.0	337/500
		125.4	
		124.1	
	10-Sep-09	175.3	
		137.6	
		133.5	
	16-Sep-09	136.2	
		112.0	
		117.3	
	22-Sep-09	103.9	
		141.6	
		21.6	
	28-Sep-09	126.8	
		126.8	
		152.4	
ASR 9	04-Sep-09	119.2	329/500
		120.3	
		129.6	
	10-Sep-09	159.6	
		79.0	
		87.9	
	16-Sep-09	146.9	
		144.6	

Station	Monitoring Date	Monitoring Result (µg/m3)	Action/Limit Levels (µg/m3)
		91.4	
	22-Sep-09	94.9	
		82.1	
		42.8	
	28-Sep-09	166.6	
		90.2	
		101.8	

Note: *Italic* indicates the occurrence of exceedance of *Action level*

Bold indicates the occurrence of exceedance of **Limit Level**

Table 4-1 Air Quality Monitoring Results

4.1.3 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	10-Sep-09	63.7	70
	16-Sep-09	68.8	
	22-Sep-09	68.5	
	28-Sep-09	67.6	
NSR 3	10-Sep-09	68.4	75
	16-Sep-09	71.8	
	22-Sep-09	72.4	
	28-Sep-09	67.6	
NSR 6	10-Sep-09	55.8	
	16-Sep-09	55.7	
	22-Sep-09	56.2	
	28-Sep-09	55.1	
NSR 8	4-Sep-09*	67.9	

Station	Monitoring Date	$L_{eq\ (30\ min)}$ dB(A)	Limit Levels dB(A)
	10-Sep-09	66.9	
	11-Sep-09*	66.9	
	16-Sep-09	67.1	
	18-Sep-09*	64.0	
	22-Sep-09	67.6	
	25-Sep-09*	66.6	
	28-Sep-09	67.8	
NSR 9	4-Sep-09*	72.8	
	10-Sep-09	69.9	
	11-Sep-09*	71.9	
	16-Sep-09	71.2	
	18-Sep-09*	71.9	
	22-Sep-09	73.2	
	25-Sep-08*	74.8	
	28-Sep-09	72.4	

* Additional noise monitoring due to the documented complaints.

Table 4-2 Noise Monitoring Results

4.2.2 No exceedances of Limit Level were recorded during the reporting month. However, one complaint was received on 7 September 2009 regarding the daytime construction noise at NSR 9. Hence, it would be an Action Level exceedance. Details of the complaints are presented in Section 7 and the notification of exceedances is enclosed in Appendix J.

4.3 Water Quality Monitoring

4.3.1 The water quality monitoring schedule of the reporting period is given in Appendix H. Summaries of exceedances for water quality monitoring are provided in Table 4-3 to Table 4-5.

Parameter	Action Level Exceedance	Limit Level Exceedance
DO	Nil	Nil
Turbidity	Nil	Nil
SS	One recorded on 16 September2009	One recorded on 11 September 2009
Total	One	One

Table 4-3 Summary of Exceedances for I-1

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

Table 4-4 Summary of Exceedances for I-2

Parameter	Action Level Exceedance	Limit Level Exceedance
DO	Nil	Nil
Turbidity	Nil	Nil
SS	Nil	One recorded on 14 September 2009
Total	Nil	One

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 Control Limit Level of SS (130% higher than I-1-C) recorded at I-1 on 11 September 2009 was below baseline Action / Limit Level and was within the range of baseline SS concentration. Only water pumping work was carried out during the measurements. No direct disturbance was observed from the site. The exceedance was considered to be contributed by natural variation and no action was therefore required.

4.3.4 The exceedance of Control Action Level of SS (120% higher than I-1-C) recorded at I-1 on 16 September 2009 was below baseline Action / Limit Level and was within the range of baseline SS concentration. Site cleaning & tidying as well as preparation and formation of working platform were undertaken during the measurement. The exceedance was considered to be contributed by natural variation and no action was therefore required.

4.3.5 The exceedance of Control Limit Level of SS (130% higher than I-3-C) recorded at I-3 on 14 September 2009 was below baseline Action / Limit Level and was within the range of baseline SS concentration. Site cleaning and tidying, soil nailing, formation of access

road and disposal of C&D materials were undertaken during the measurements. No direct disturbance was observed from the site. The exceedance was considered to be contributed by natural variation and no action was therefore required.

4.3.6 The above mentioned exceedances were considered as non project related, however, proper mitigation measures had been implemented during measurements. Details of the above mentioned investigations could 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	02-Sep-09	27.30	5.61	3.42 / 3.34	6.74	2.24	9.75 / 12.47	2.0	8.85 / 10.17
	04-Sep-09	27.70	5.35		6.81	2.56		2.0	
	07-Sep-09	27.90	5.92		5.83	2.92		2.2	
	09-Sep-09	27.90	5.35		7.30	5.32		2.7	
	11-Sep-09	27.10	5.26		7.00	3.89		**4.9**	
	14-Sep-09	26.55	5.06		7.06	3.88		8.3	
	16-Sep-09	26.00	4.47		7.26	6.61		*3.3*	
	18-Sep-09	27.30	3.43		7.52	2.49		2.0	
	21-Sep-09	28.60	3.57		7.66	2.09		2.0	
	23-Sep-09	27.40	3.85		7.65	5.42		4.4	
	25-Sep-09	27.50	5.33		7.71	4.18		4.3	
	28-Sep-09	27.40	5.48		7.22	4.19		2.0	
	30-Sep-09	27.25	7.32		7.52	2.44		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)
I-1-C	02-Sep-09	27.40	5.29	- / -	6.78	2.49	- / -	2.0	- / -
	04-Sep-09	28.05	4.15		6.85	2.81		2.0	
	07-Sep-09	27.65	5.78		5.84	3.73		2.0	
	09-Sep-09	28.15	5.63		7.41	5.54		2.7	
	11-Sep-09	27.20	5.07		6.86	4.06		2.2	
	14-Sep-09	26.95	5.10		7.11	4.01		8.7	
	16-Sep-09	25.70	4.55		7.30	7.10		2.7	
	18-Sep-09	27.20	3.15		7.50	2.67		2.0	
	21-Sep-09	28.30	3.46		7.70	2.21		2.0	
	23-Sep-09	27.20	4.04		7.67	5.92		4.6	
	25-Sep-09	27.45	5.40		7.76	4.35		3.7	
	28-Sep-09	27.20	5.56		7.22	4.35		2.0	
	30-Sep-09	27.35	7.59		7.44	2.60		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-2	02-Sep-09	27.60	4.76	3.66 / 3.63	6.82	1.05	6.63 / 6.99	2.0	7.68 / 8.34
	04-Sep-09	27.95	4.45		6.90	1.03		2.0	
	07-Sep-09	27.80	5.15		5.98	2.41		2.0	
	09-Sep-09	28.20	5.04		7.20	3.11		2.3	
	11-Sep-09	26.80	5.46		7.16	1.46		2.0	
	14-Sep-09	26.55	4.67		7.19	2.08		3.1	
	16-Sep-09	25.25	4.32		7.69	3.31		2.6	
	18-Sep-09	27.70	4.02		7.45	2.45		2.0	
	21-Sep-09	28.80	3.71		7.56	1.32		2.0	
	23-Sep-09	27.20	4.01		7.64	1.41		2.0	
	25-Sep-09	27.70	5.38		7.61	1.07		2.2	
	28-Sep-09	27.40	5.29		7.61	3.46		2.0	
	30-Sep-09	27.35	7.40		7.52	2.39		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-2-C	02-Sep-09	27.80	4.60	- / -	6.81	1.15	- / -	2.0	- / -
	04-Sep-09	27.70	4.60		6.92	1.09		2.0	
	07-Sep-09	28.00	5.45		6.00	2.57		2.0	
	09-Sep-09	28.05	5.00		7.26	3.27		2.6	
	11-Sep-09	26.95	5.24		7.12	1.61		2.0	
	14-Sep-09	26.70	4.91		7.16	2.19		3.1	
	16-Sep-09	25.50	4.39		7.65	3.49		2.4	
	18-Sep-09	27.00	3.16		7.41	2.54		2.0	
	21-Sep-09	28.90	3.58		7.60	1.41		2.0	
	23-Sep-09	27.00	4.13		7.65	1.60		2.0	
	25-Sep-09	27.40	5.29		7.61	1.14		2.0	
	28-Sep-09	27.40	5.50		7.66	4.30		2.0	
	30-Sep-09	27.10	7.55		7.52	2.55		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	02-Sep-09	27.90	5.00	3.65 / 3.51	6.98	1.17	3.99 / 4.18	2.0	6.13 / 7.23
	04-Sep-09	28.05	4.61		7.40	1.33		2.0	
	07-Sep-09	27.70	5.44		6.00	2.13		2.0	
	09-Sep-09	27.85	4.24		7.13	2.07		2.0	
	11-Sep-09	27.15	5.38		7.38	2.21		2.0	
	14-Sep-09	26.20	4.86		6.91	2.38		**2.8**	
	16-Sep-09	25.30	4.62		7.48	3.97		2.0	
	18-Sep-09	27.50	3.74		7.28	2.63		2.0	
	21-Sep-09	28.60	3.75		7.46	1.44		2.0	
	23-Sep-09	26.35	3.91		7.69	1.41		2.0	
	25-Sep-09	27.20	5.58		7.58	1.63		2.0	
	28-Sep-09	27.50	5.31		7.71	3.20		2.0	
	30-Sep-09	27.45	7.50		7.41	2.28		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	02-Sep-09	27.90	5.37	- / -	6.98	1.47	- / -	2.0	- / -
	04-Sep-09	28.10	4.81		7.37	1.44		2.0	
	07-Sep-09	27.60	5.60		6.01	2.51		2.0	
	09-Sep-09	27.95	4.44		7.16	2.15		2.0	
	11-Sep-09	27.20	5.38		7.40	2.29		2.0	
	14-Sep-09	26.25	4.81		6.95	2.48		2.1	
	16-Sep-09	25.35	4.32		7.50	4.08		2.4	
	18-Sep-09	27.20	3.49		7.26	2.68		2.0	
	21-Sep-09	28.50	3.81		7.44	1.55		2.0	
	23-Sep-09	26.05	3.90		7.72	1.48		2.2	
	25-Sep-09	27.20	5.47		7.61	1.74		2.0	
	28-Sep-09	27.40	5.44		7.15	3.40		2.0	
	30-Sep-09	27.50	7.19		7.42	2.56		2.0	

Note: *Italic* indicates the occurrence of exceedance of *Action level*.
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 September 2009. 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	28	1 (Complaint)	3.6	0	0
Water	78	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)	3,774.2
Inert C&D Material Reused in other Contracts* (m^3)	1,970.0
Metals Generated (kg)	Nil
Paper / Cardboard Packaging (kg)	300
Plastics (kg)	Nil
Chemical Waste (kg)	Nil
General Waste Disposed of to NENT Landfill (m^3)	22.6

* Other Contracts include CV/2006/01, DC/2007/08, DC/2007/17, Ocean Park, DC/2008/12 and HY/2007/09.

Table 5-1 Waste Generated in September 2009

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
6 August 2009 Follow-up	1. Movable noise barrier was observed not close to the rock breaker at Outfall.	1. The Contractor was reminded to place the movable noise barrier as closer as to the rock breaker.	1. During the site inspection on 24 September 09, the movable noise barrier was placed closed to the rock breaker. (Closed)
3 September 2009	1. Open slope areas at I-3 were observed not covering with tarpaulin. 2. Haul road area at I-3 was observed dusty and dry.	1. The Contractor was reminded to cover the open slope areas at I-3 with tarpaulin. 2. The Contractor was reminded to spray water regularly on haul road area.	1. During site inspection on 24 September 2009, the open slope areas at I-3 were covered with tarpaulin. (Closed) 2. During site inspection on 24 September 2009, water spraying was provided on haul road area. (Closed)
24 September 2009	1. The site was observed to be dirty and untidy at I-1. 2. Debris and general refuse were observed at the drains at I-3.	1. The Contractor was reminded to maintain site cleanliness and tidiness regularly. 2. The Contractor was reminded to prevent the debris and general refuse from entering the drains.	1. During the site inspection on 8 October 2009, the site cleanliness and tidiness was maintained 2. During the site inspection on 8 October 2009, the debris and general refuse the drains were removed.

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 One complaint was received during the reporting month.

7.1.3 The environmental complaint was received by SOR on 7 September 2009 regarding daytime construction noise exceedance recorded at Greenview Terrace (NSR9) on 22 August 2009 at the outfall construction site. According to the regular noise monitoring from July to August 2009, all measured noise levels were below the Limit Levels. Additional noise measurements taken on 4, 11, 18 and 25 September 2009 (refers to Table 4-2) also reviewed the measured noise levels were complied with the limit level in accordance with the EIAO-TM. However, the documented complaints for noise were considered to trigger the action level and the Contractor was reminded to enhance the on-site noise mitigation measures, such as tools box talk for Contractor's Team would be carried out for reminding that the movable barrier should be placed to the breaking activities as much as possible, three movable noise barriers had been placed on site and the movable noise barriers were modified, a joint filler wall was installed at the vertical face of westbound to mitigate the noise rebound from the vertical face to high level of Greenview Terrace and noise monitoring frequency would be maintained twice per week until no further complaint from Greenview Terrace. Detail of the complaint investigation can be referred to Appendix K.

7.1.4 Cumulative statistics of environmental complaints are shown in Table 7-1.

Complaints Received in the Reporting Month	Cumulative Number of Complaints
1	10

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	
September 09	Cumulative	September 09	Cumulative
0	0	0	0

Table 8-1 Cumulative Statistics of Notification of Summons and Successful Prosecutions

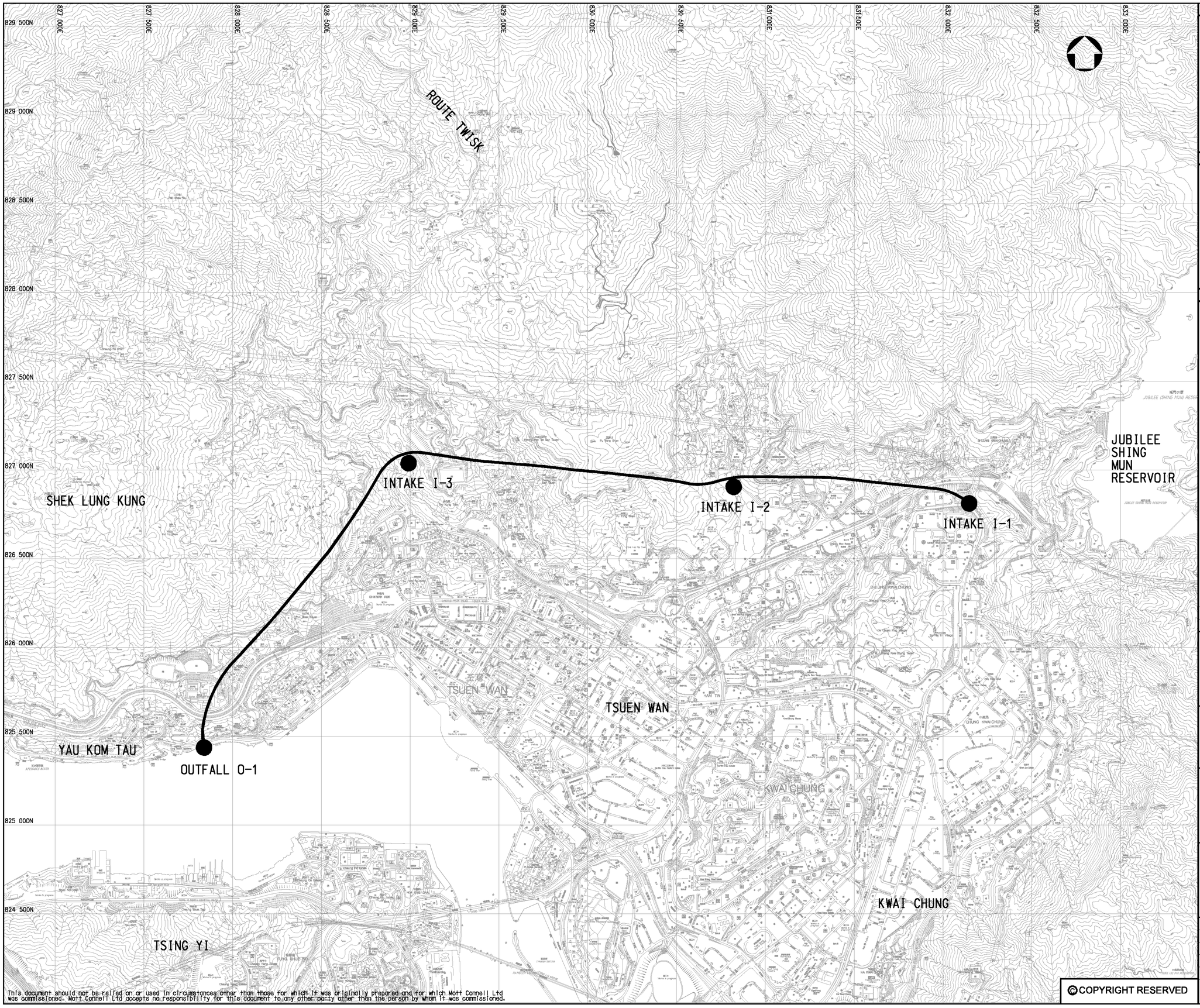
9 FUTURE KEY ISSUE

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

- Site cleaning and tidying at I-1, I-2, I-3 and Outfall;
- Tree transplanting at I-1, I-2, I-3 and Outfall;
- Drilling rig at I-3 and Outfall;
- Soil nailing at I-1, I-3 and Outfall;
- Breaking up exiting boulder at I-1, I-2, I-3, and Outfall;
- Formation of access road at I-3 and Outfall;
- Erosion control mat and green wire mesh at Outfall;
- Excavation and lateral support (ELS) at I-1;
- Construction of skin wall at I-2 and I-3;
- Formation of steel platform at I-2;
- Formation of shaft at I-2; and
- Launching chamber at Outfall.

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

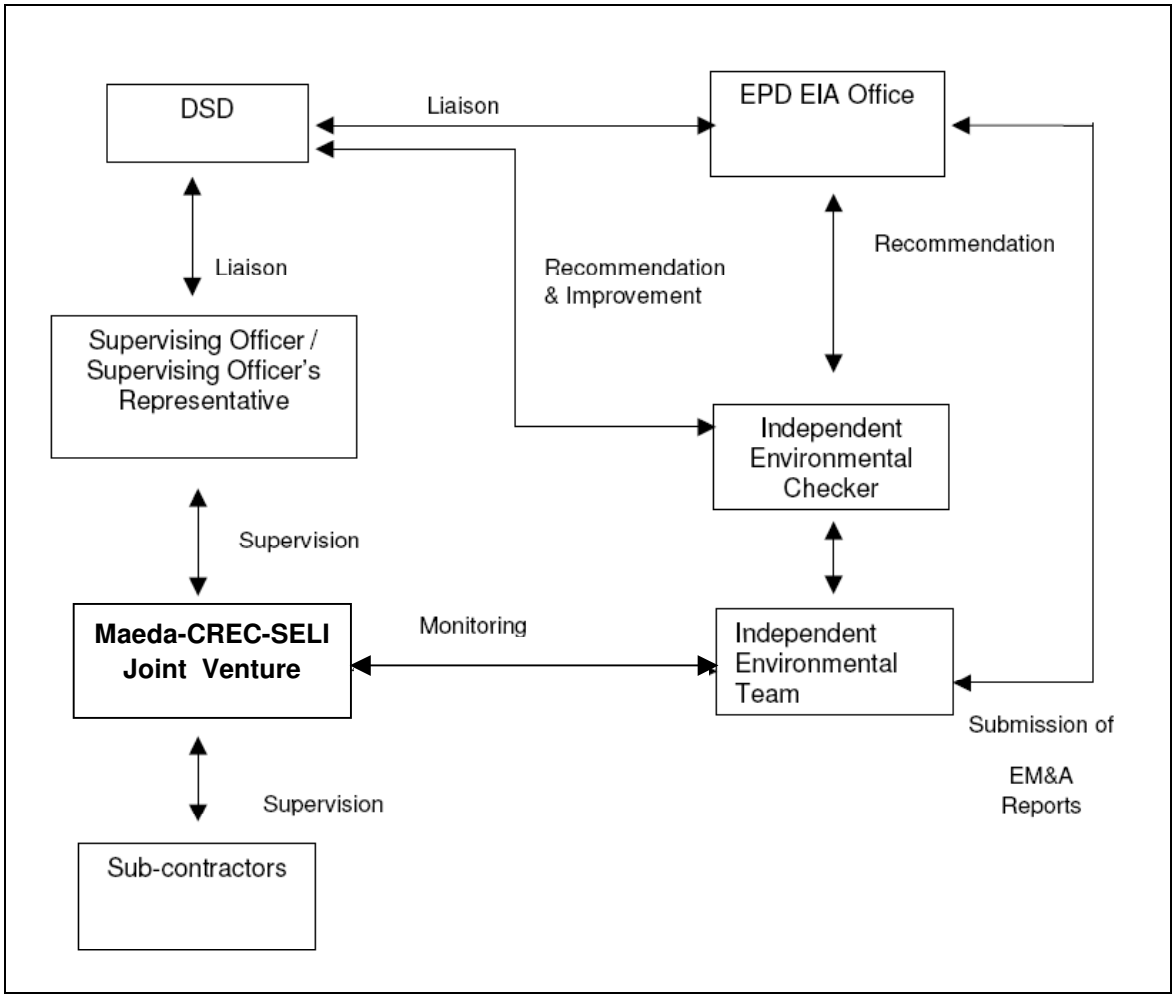
Title

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

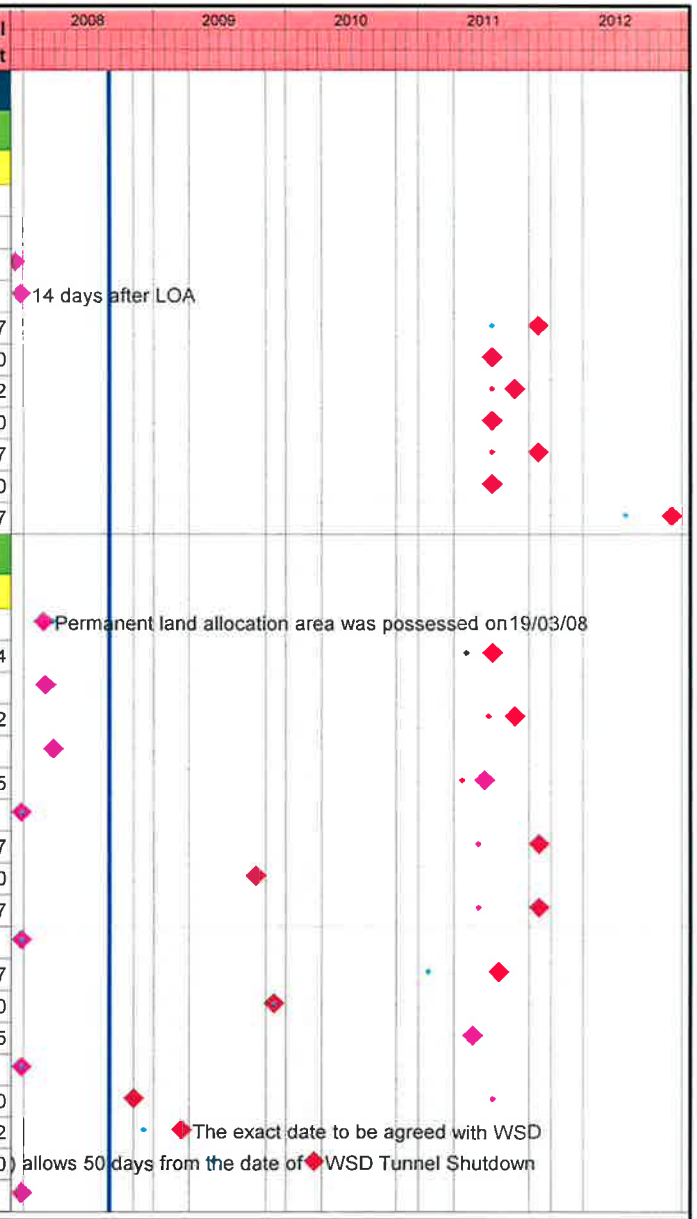
Organization Chart


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	Cal ID	Target Dur	Orig Dur	Target Start	Target Finish	Early Start	Early Finish	% Comp	Total Float
Preliminaries										
Project Dates										
01R0000002	Tender Issue Date	2	0	0	26JUN07A		26JUN07A		100	
01R0000004	Tender Closing Date	2	0	0	05OCT07A		05OCT07A		100	
01R0000006	Letter of Acceptance Issued Date	2	0	0	14DEC07		14DEC07A		100	
01R0000008	Contract Commencement Date	2	0	0	28DEC07		28DEC07A		100	
01R0000010	Completion of Section 1 of the Works	2	0	0		27JUL11*		01DEC11	0	-127
01R0000012	Completion of Section 2 of the Works	2	0	0		27JUL11*		27JUL11	0	0
01R0000014	Completion of Section 3 of the Works	2	0	0		27JUL11*		27SEP11	0	-62
01R0000016	Completion of Section 4 of the Works	2	0	0		27JUL11*		27JUL11	0	0
01R0000018	Completion of Section 5 of the Works	2	0	0		27JUL11*		01DEC11	0	-127
01R0000020	Completion of Section 6 of the Works	2	0	0		27JUL11*		27JUL11	0	0
01R0000022	Completion of Section 7 of the Works	2	0	0		26JUL12*		30NOV12	0	-127
Possession of Area										
01R00A0102	Possession Portion A - 90d of DOC	2	0	0	26MAR08		27FEB08A		100	
01R00A0104	Handover of Section 1 of Works at Portion A	2	0	0		13MAY11		23JUL11	0	4
01R00B0102	Possession of Portion B - 90d of DOC	2	0	0	26MAR08		07MAR08A		100	
01R00B0104	Handover of Portion B	2	0	0		16JUL11		27SEP11	0	-62
01R00C0102	Possession of Portion C - 90d of DOC	2	0	0	26MAR08		26MAR08A		100	
01R00C0104	Handover of Portion C	2	0	0		05MAY11		02JUL11	0	25
01R00D0102	Possession of Portion D on DOC	2	0	0	28DEC07		28DEC07A		100	
01R00D0104	Handover of Portion D	2	0	0		17JUN11		01DEC11	0	-127
01R00E0102	Possession of Portion E - 650d of DOC	2	0	0	07OCT09		07OCT09		0	0
01R00E0104	Handover of Portion E	2	0	0		17JUN11		01DEC11	0	-127
01R00F0102	Possession of Portion F on DOC	2	0	0	28DEC07		28DEC07A		100	
01R00F0104	Handover of Portion F	2	0	0		28JAN11		13AUG11	0	-17
01R00G0102	Possession of Portion G - 700d of DOC	2	0	0	26NOV09		26NOV09		0	0
01R00G0104	Handover of Portion G	2	0	0		02JUN11		02JUN11	0	55
01R00I0102	Possession of Portion I on DOC	2	0	0	28DEC07		28DEC07A		100	
01R00I0104	Handover of Portion I	2	0	0		27JUL11		04NOV08	0	0
01R00J0102	Possession of Portion J	2	0	0	01DEC08*		16MAR09		0	-42
01R00J0104	Handover of Portion J	2	0	0		12JUN09*		17MAR10	0	0
01R0H10102	Possession of Portion H1 on DOC	2	0	0	28DEC07		28DEC07A		100	



Start Date	29JUN07
Finish Date	30DEC12
Data Date	28AUG08
Run Date	30SEP08 15:51

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Early Bar
Target Bar
Progress Bar
Critical Activity

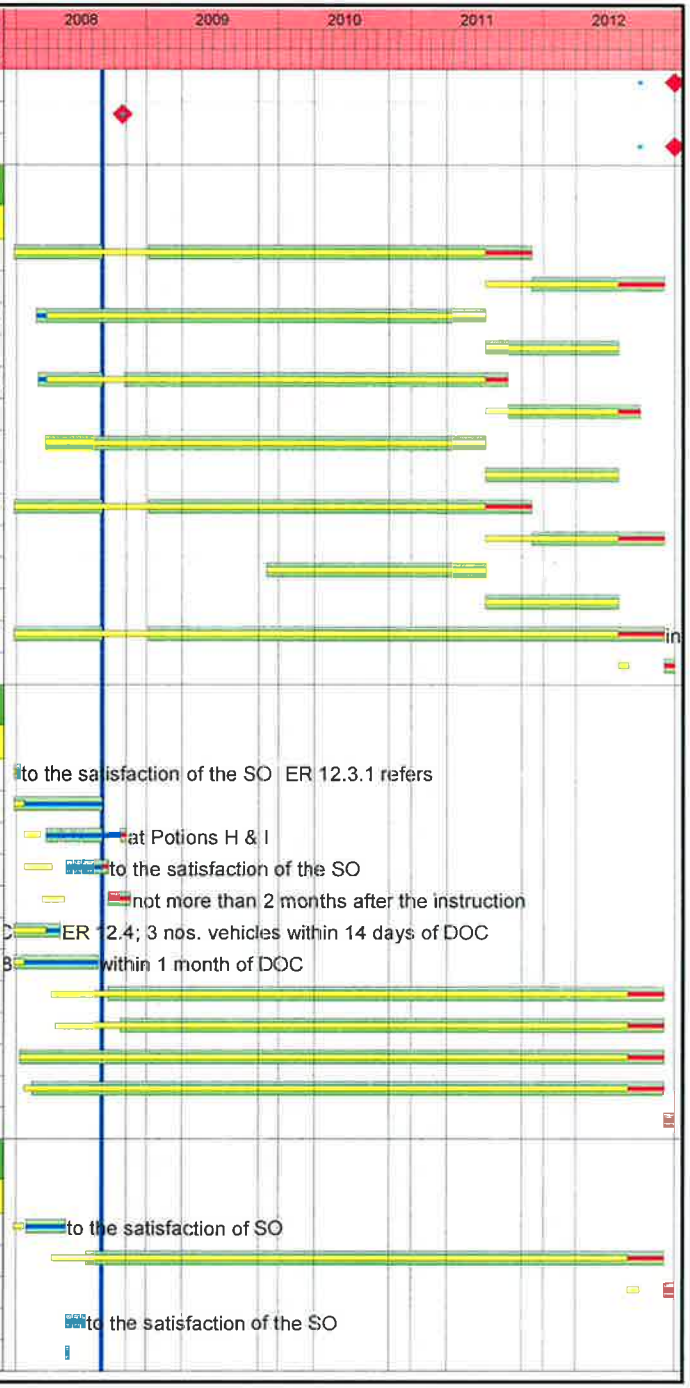
WP00

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

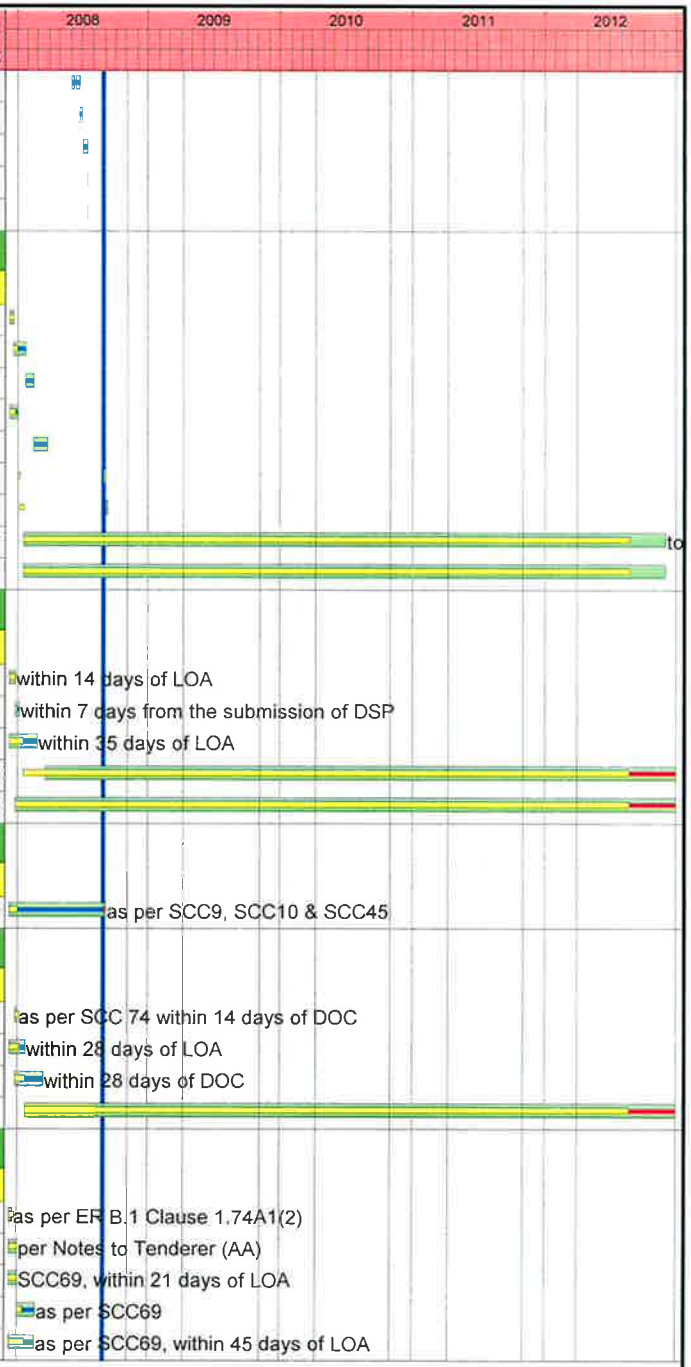
UPDATE UP TO 28 Aug 2008

Date	Revision	Checked	Approved
13FEB08	Draft Works Programme Rev. 1		
22SEP08	Works Programme Rev. 0		

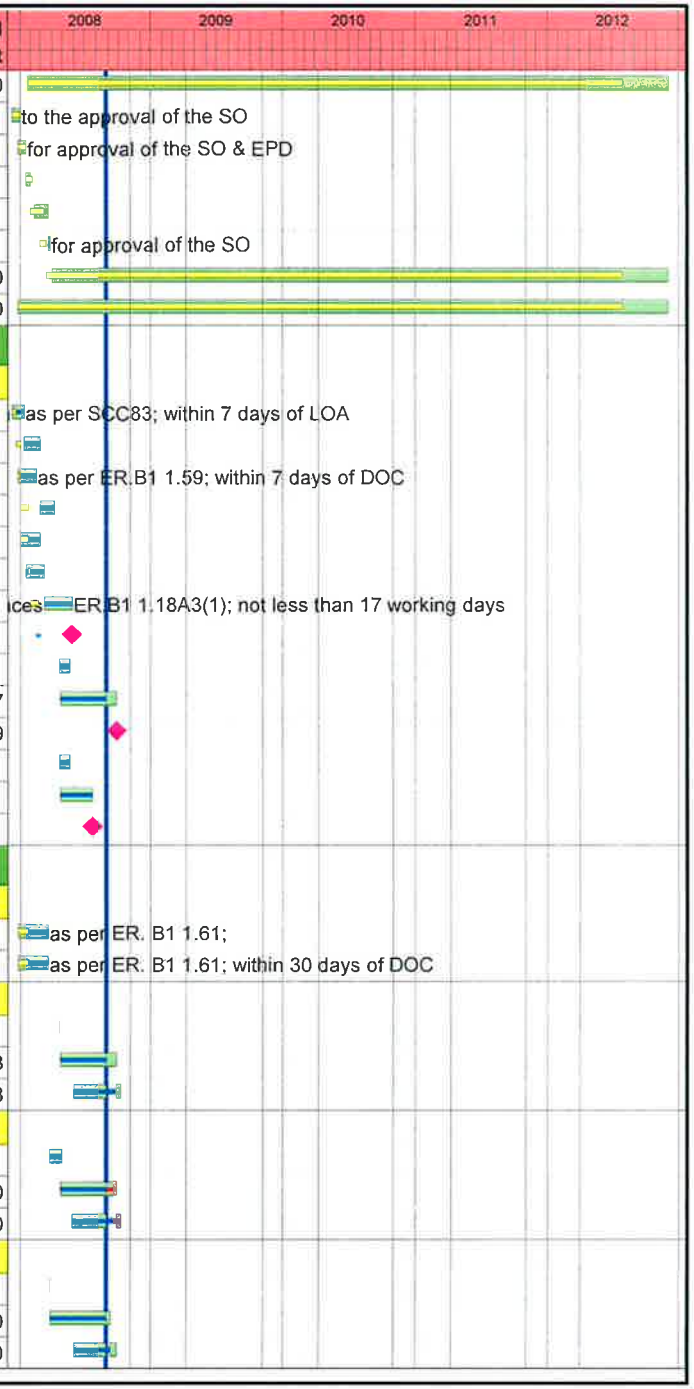
ID	Activity Description	Cal ID	Target Dur	Orig Dur	Target Start	Target Finish	Early Start	Early Finish	% Comp	Total Float
01R0H10104	Handover of Portion H1	2	0	0		24SEP12		30DEC12	0	0
01R0H20102	Possession of Portion H2 - 300d of DOC	2	0	0	22OCT08		22OCT08		0	0
01R0H20104	Handover of Portion H2	2	0	0		24SEP12		30DEC12	0	0
Section of Works - DOP to Completion										
01R1000202	S1-Works in Portions A to F except works in S2-7	2	1,308	1,308	28DEC07	27JUL11	28DEC07A	01DEC11	19	-127
01R1000204	S1-Maintenance Period (365 days)	2	365	365	28JUL11	26JUL12	02DEC11	30NOV12	0	-127
01R20A0206	S2-Slope Stabilization works within Portion A	2	1,218	1,247	26MAR08	26JUL11	27FEB08A	27JUL11	15	0
01R20A0208	S2-Maintenance Period (365 days)	2	365	365	27JUL11	25JUL12	28JUL11	26JUL12	0	0
01R30B0210	S3-Slope Stabilization works within Portion B	2	1,218	1,238	26MAR08	26JUL11	07MAR08A	27SEP11	14	-62
01R30B0212	S3-Maintenance Period (365 days)	2	365	365	27JUL11	25JUL12	28SEP11	26SEP12	0	-62
01R40C0214	S4-Slope Stabilization works within Portion C	2	1,218	1,219	26MAR08	26JUL11	26MAR08A	27JUL11	13	0
01R40C0216	S4-Maintenance Period (365 days)	2	365	365	27JUL11	25JUL12	28JUL11	26JUL12	0	0
01R50D0218	S5-Slope Stabilization works within Portion D	2	1,308	1,308	28DEC07	27JUL11	28DEC07A	01DEC11	19	-127
01R50D0220	S5-Maintenance Period (365 days)	2	365	365	28JUL11	26JUL12	02DEC11	30NOV12	0	-127
01R60G0222	S6-Works within Portion G	2	608	609	26NOV09	26JUL11	26NOV09	27JUL11	0	0
01R60G0224	S6-Maintenance Period (365 days)	2	365	365	27JUL11	25JUL12	28JUL11	26JUL12	0	0
01R7000226	S7-Ladscape softworks & establishment works	2	1,673	1,673	28DEC07	26JUL12	28DEC07A	30NOV12	15	-127
01R7000228	S7-Maintenance Period (30 days)	2	30	30	27JUL12	25AUG12	01DEC12	30DEC12	0	-127
Facilities for the SO as per ER 12										
01R0000302	Provide temporary accommodation	2	7	7	28DEC07	03JAN08	28DEC07A	15JAN08A	100	
01R0000304	Design the SO's principle office	2	30	95	28DEC07	26JAN08	28DEC07A	28AUG08	99	53
01R0000305	Erect Hoarding/Signboard/Gate/Fencing	1	35	35	28JAN08	11MAR08	28MAR08A	04NOV08	60	0
01R0000306	Erect SO's principle office in Portion H1/H2	1	60	100	28JAN08	14APR08	19MAY08A	13SEP08	85	0
01R0000308	Provide secondary offices, directed by SO	2	64	64	14MAR08	16MAY08	14SEP08	16NOV08	0	0
01R0000310	Provide transport for the SO as per App. ER,M	2	90	90	28DEC07	26MAR08	28DEC07A	02MAY08A	100	
01R0000311	Provide survey equipments as per App. ER,M	2	30	30	28DEC07	26JAN08	28DEC07A	19AUG08A	100	
01R0000314	Maintain & Service the Principle Office	2	1,594	1,539	15APR08	25AUG12	14SEP08	30NOV12	0	0
01R0000316	Maintain & Service the Secondary Office	2	1,585	1,504	24APR08	25AUG12	19OCT08	30NOV12	0	0
01R0000318	Maintain & Service the transportation	2	1,688	1,785	12JAN08	25AUG12	12JAN08A	30NOV12	8	0
01R0000319	Maintain & Service the survey equipments	2	1,673	1,748	27JAN08	25AUG12	18FEB08A	30NOV12	6	0
01R0000372	Demolish & removal of Principle Office	2	0	30			01DEC12	30DEC12	0	0
Contractor's Accommodation as per ER.B										
01R0001402	Design Contractor's main office	2	30	30	28DEC07	26JAN08	01FEB08A	19MAY08A	100	
01R0001406	Maintain & service Contractor's office	2	1,594	1,597	15APR08	25AUG12	18JUL08A	30NOV12	0	0
01R0001408	Demolish & removal of Contractor's main office	2	30	30	26AUG12	24SEP12	01DEC12	30DEC12	0	0
01R000141	Erect Contractor's main office in Portion H1	1	0	50*			19MAY08A	17JUL08A	100	
01R0001412	Construct base slab	1	0	10			19MAY08A	30MAY08A	100	



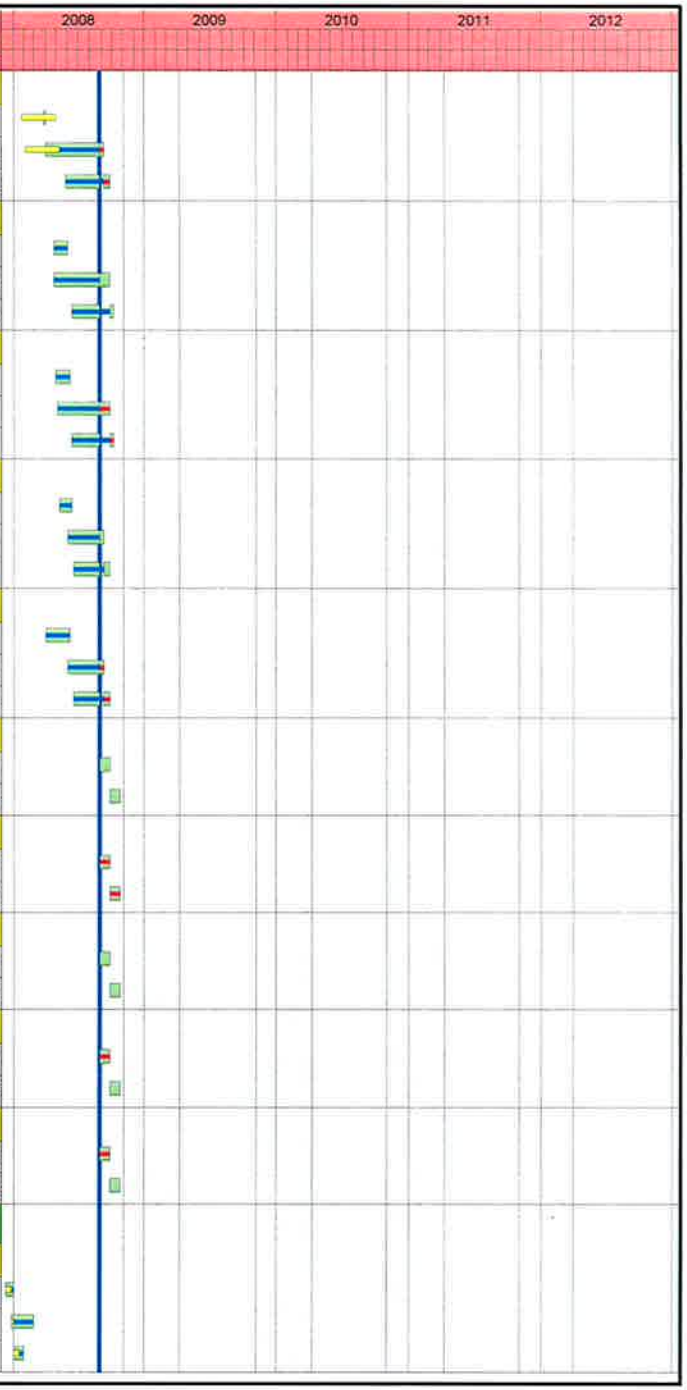
ID	Activity Description	Cal ID	Target Dur	Orig Dur	Target Start	Target Finish	Early Start	Early Finish	% Comp	Total Float
01R0001413	Install steel frames	1	0	12			31MAY08A	21JUN08A	100	
01R0001414	Install wall/roof panels, windows etc	1	0	6			23JUN08A	30JUN08A	100	
01R0001415	Install & E& M/ceiling/floor panels	1	0	8			02JUL08A	12JUL08A	100	
01R0001416	Site clearance	1	0	1			14JUL08A	17JUL08A	100	
01R0001417	Install furnitures/internet & move in	1	0	2			14JUL08A	17JUL08A	100	
Works Programme & Monthly Report as per SCC 27										
01R0000502	Prepare/Submit draft Works Programme	2	7	7	14DEC07	20DEC07	14DEC07A	21DEC07A	100	
01R0000504	SO's review/comment on draft Works Programme	2	14	14	21DEC07	03JAN08	22DEC07A	23JAN08A	100	
01R0000505	Prepare/Submit draft Works Programme Rev. 1	2	0	28			24JAN08A	15FEB08A	100	
01R0000506	Prepare/Submit 1st 3-Month Rolling Programme	2	14	14	14DEC07	27DEC07	14DEC07A	03JAN08A	100	
01R0000507	SO's approval on draft Works Programme	2	0	14			16FEB08A	28MAR08A	100	
01R0000508	Submit Detailed Works Programme	2	7	7	04JAN08	10JAN08	28AUG08	03SEP08	0	172
01R0000510	SO's Approval of Works Programme	2	7	7	11JAN08	17JAN08	04SEP08	10SEP08	0	172
01R0000512	Monthly Update for all Programme	2	1,682	1,779	18JAN08	25AUG12	18JAN08A	30NOV12	13	30
01R0000514	Contractor's Monthly Progress Report	2	1,678	1,775	22JAN08	25AUG12	22JAN08A	30NOV12	12	30
Safety Plan as per SCC 35										
01R0000602	Submit draft Safety Plan	2	14	14	14DEC07	27DEC07	14DEC07A	29DEC07A	100	
01R0000604	Hold an ad hoc meeting with RE on Safety Plan	2	7	7	28DEC07	03JAN08	31DEC07A	09JAN08A	100	
01R0000606	Submit 6 copies of the Safety Plan	2	35	35	14DEC07	17JAN08	14DEC07A	26FEB08A	100	
01R0000608	Submit updated safety orgainiza. chart monthly	2	1,682	1,747	18JAN08	25AUG12	20MAR08A	30DEC12	9	0
17R0000602	Fulfill all relevant safety obligation	2	1,703	1,830	28DEC07	25AUG12	28DEC07A	30DEC12	7	0
Contractor's All Insurances										
01R0000704	Submit documents for all insurances are effected	2	21	21	14DEC07	03JAN08	14DEC07A	02SEP08	71	0
Quality System as per ER 9.3										
01R0000802	Appoint a Quality Manager	2	14	14	28DEC07	10JAN08	28DEC07A	02JAN08A	100	
01R0000804	Submit proposed Quality System for SO's consent	2	28	28	14DEC07	10JAN08	14DEC07A	22JAN08A	100	
01R0000806	Submit QSSP for approval of the SO	2	28	28	28DEC07	24JAN08	28DEC07A	14MAR08A	100	
01R0000808	Maintain & update Quality System	2	1,675	1,802	25JAN08	25AUG12	25JAN08A	30DEC12	13	0
Environment										
01R0000902	Nominate Environmental Officer	2	14	14	14DEC07	27DEC07	14DEC07A	21DEC07A	100	
01R0000903	Establish a billing account for disposal	2	21	21	14DEC07	03JAN08	14DEC07A	02JAN08A	100	
01R0000904	Submit draft EMP	2	21	21	14DEC07	03JAN08	14DEC07A	02JAN08A	100	
01R0000906	Revise draft EMP within 7 days of SO's notice	2	14	14	04JAN08	17JAN08	04JAN08A	21FEB08A	100	
01R0000908	Submit final version of EMP	2	45	45	14DEC07	27JAN08	14DEC07A	21FEB08A	100	



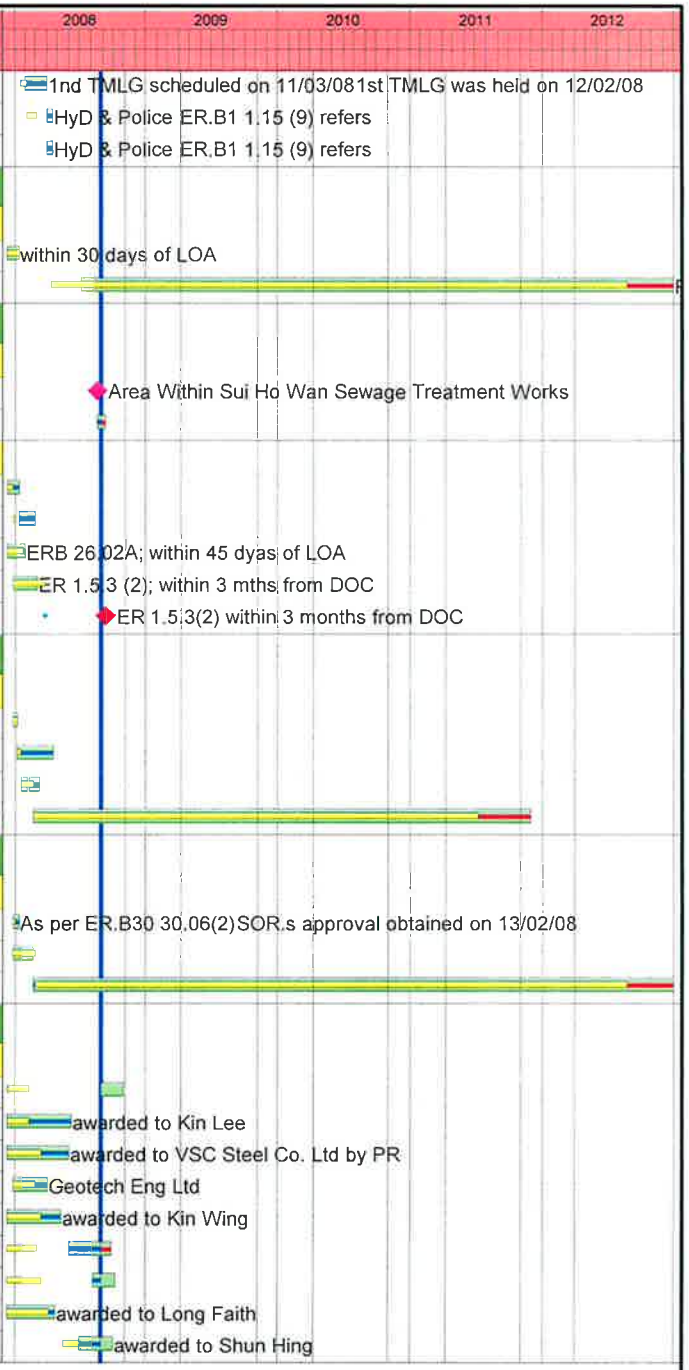
ID	Activity Description	Cal ID	Target Dur	Orig Dur	Target Start	Target Finish	Early Start	Early Finish	% Comp	Total Float
01R0000910	Review/update/submit EMP monthly	2	1,642	1,769	28JAN08	26JUL12	28JAN08A	30NOV12	5	30
01R0000912	Employ IET	2	21	21	14DEC07	03JAN08	14DEC07A	02JAN08A	100	
01R0000914	Submit Baseline Monitoring Plan	2	21	21	28DEC07	17JAN08	28DEC07A	18JAN08A	100	
01R0000915	Seek for EPD's Agreement on WQML & schedule	2	21	21	18JAN08	07FEB08	18JAN08A	31JAN08A	100	
01R0000916	Carry out baseline monitoring	2	37	37	31JAN08	07MAR08	11FEB08A	20MAR08A	100	
01R0000918	Prepare/submit reports for baseline monitoring	2	20	20	27FEB08	17MAR08	21MAR08A	28MAR08A	100	
01R0000920	Impact monitoring & reporting	2	1,592	1,705	18MAR08	26JUL12	01APR08A	30NOV12	2	30
17R0000902	Fulfill all relevant environmental obligation	2	1,673	1,800	28DEC07	26JUL12	28DEC07A	30NOV12	5	30
Excavation Permit/Utilities per SCC 54 & SCC 83										
01R0001002	Nominate IIUMS co-ordinator	2	7	7	14DEC07	20DEC07	14DEC07A	15JAN08A	100	
01R0001004	SO approve IIUMS co-ordinator	2	14	14	21DEC07	03JAN08	16JAN08A	29FEB08A	100	
01R0001006	Submit brand name of UGS detection equipment	2	7	7	28DEC07	03JAN08	28DEC07A	18FEB08A	100	
01R0001008	Utilities detection & report to the SO	2	21	21	04JAN08	24JAN08	29FEB08A	05APR08A	100	
01R0001010	Liaison with UUs	2	21	21	04JAN08	24JAN08	04JAN08A	29FEB08A	100	
01R0001012	Apply XP for site entrance construction	2	7	7	25JAN08	31JAN08	21JAN08A	08MAR08A	100	
01R0001014	HyD process XP for site entrance construction	2	20	20	01FEB08	20FEB08	10MAR08A	28MAY08A	100	
01R0001016	HyD issue XP for site entrance construction	2	0	0		20FEB08		28MAY08A	100	
01R0001018	Apply XP for GI works at I-1 & I-2	2	0	1			22APR08A	20MAY08A	100	
01R0001020	HyD process XP for GI works at I-1 & I-2	2	0	30			23APR08A	26SEP08	0	137
01R0001022	HyD issue XP for GI works at I-1 & I-2	1	0	0				26SEP08	0	109
01R0001024	Apply XP for trial grout at Fault F1	2	0	1			22APR08A	20MAY08A	100	
01R0001026	HyD process XP for trial grout at Fault F1	2	0	30			23APR08A	22JUL08A	100	
01R0001028	HyD issue XP for trial grout at Fault F1	1	0	0				22JUL08A	100	
Pre-construction Condition Survey										
Preliminaries										
01R0001102	Appoint a Qualified Structural Engineer	2	30	30	28DEC07	26JAN08	28DEC07A	19MAR08A	100	
01R0001104	Submit nos. & extent of the affected EBS	2	30	30	28DEC07	26JAN08	28DEC07A	19MAR08A	100	
PCS Stage 1 between I-1 & I-2										
01R0001118	Carry out stg 1 PCS between I-1 & I-2	2	0	6			22APR08A	23APR08A	100	
01R0001120	Prepare/submit reports for stg 1 PCS bet I-1&I-2	2	0	60			24APR08A	23SEP08	55	138
01R0001122	Review/accept reports for stg 1 PCS bet I-1&I-2	2	0	60			31MAY08A	07OCT08	77	138
PCS Stage 1 between I-2 & I-3										
01R0001130	Carry out stg 1 PCS between I-2 & I-3	2	0	5			25MAR08A	30APR08A	100	
01R0001132	Prepare/submit reports for stg 1 PCS bet I-2&I-3	2	0	60			24APR08A	23SEP08	55	-50
01R0001134	Review/accept reports for stg 1 PCS bet I-2&I-3	2	0	60			24MAY08A	07OCT08	77	-50
PCS Stage 1 between I-3 & O-1										
01R0001142	Carry out stg 1 PCS between I-3 & O-1	2	0	5			25MAR08A	26MAR08A	100	
01R0001144	Prepare/submit reports for stg 1 PCS bet I-3&O-1	2	0	60			26MAR08A	11SEP08	75	180
01R0001146	Review/accept reports for stg 1 PCS bet I-3&O-1	2	0	60			31MAY08A	25SEP08	77	180



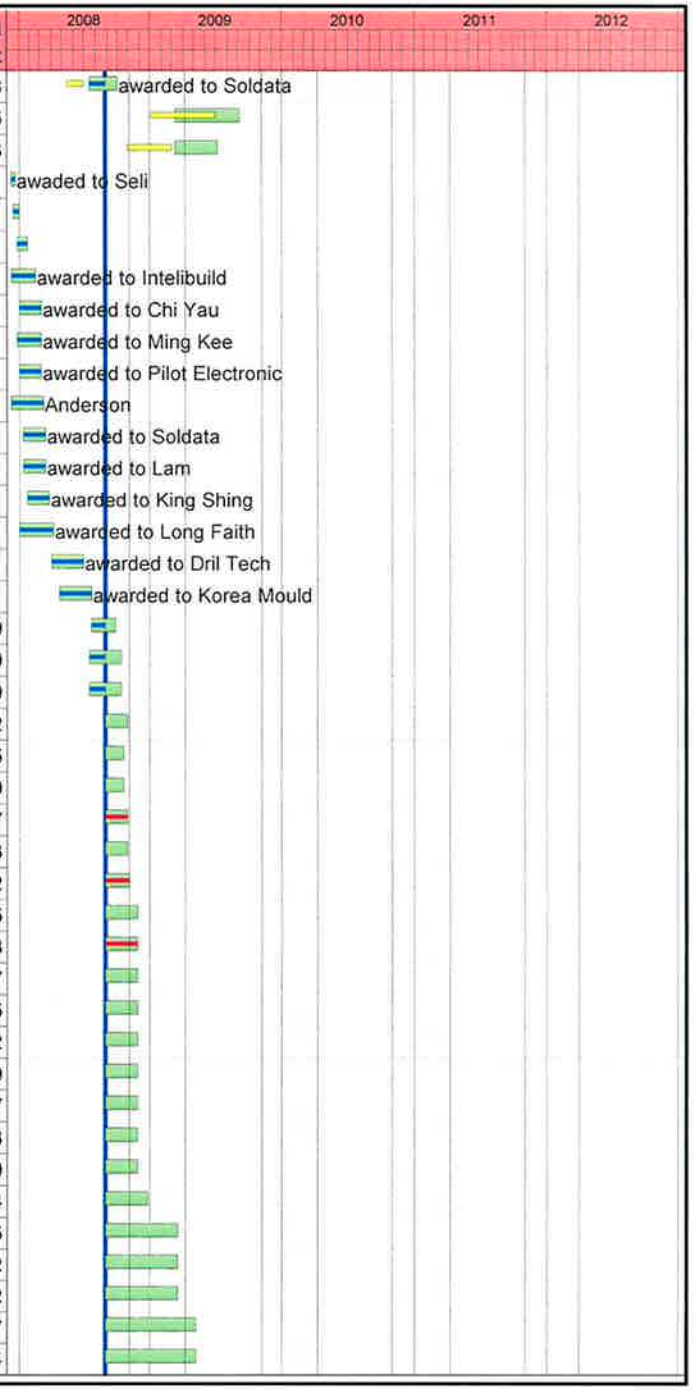
ID	Activity Description	Cal ID	Target Dur	Orig Dur	Target Start	Target Finish	Early Start	Early Finish	% Comp	Total Float
PCS Stage 1 at vicinity of O-1										
01R0001106	Carry out stg 1 PCS at vicinity of O-1	2	72	5	28JAN08	28APR08	25MAR08A	29MAR08A	100	
01R0001108	Prepare/submit reports for stg 1 PCS at O-1	2	72	60	05FEB08	07MAY08	31MAR08A	10SEP08	77	-54
01R0001110	Review/accept reports for stg 1 PCS at O-1	2	0	60			27MAY08A	24SEP08	77	-54
PCS Stage 2 between I-1 & I-2										
01R0001124	Carry out stg 2 PCS between I-1 & I-2	2	0	5			22APR08A	02JUN08A	100	
01R0001126	Prepare/submit reports for stg 2 PCS bet I-1&I-2	2	0	60			24APR08A	23SEP08	55	138
01R0001128	Review/accept reports for stg 2 PCS bet I-1&I-2	2	0	60			11JUN08A	07OCT08	77	138
PCS Stage 2 between I-2 & I-3										
01R0001136	Carry out stg 2 PCS between I-2 & I-3	2	0	5			30APR08A	07JUN08A	100	
01R0001138	Prepare/submit reports for stg 2 PCS bet I-2&I-3	2	0	60			02MAY08A	23SEP08	55	-50
01R0001140	Review/accept reports for stg 2 PCS bet I-2&I-3	2	0	60			13JUN08A	07OCT08	77	-50
PCS Stage 2 between I-3 & O-1										
01R0001148	Carry out stg 2 PCS between I-3 & O-1	2	0	5			09MAY08A	13JUN08A	100	
01R0001150	Prepare/submit reports for stg 2 PCS bet I-3&O-1	2	0	60			04JUN08A	11SEP08	75	207
01R0001152	Review/accept reports for stg 2 PCS bet I-3&O-1	2	0	60			19JUN08A	25SEP08	77	207
PCS Stage 2 at Vicinity of O-1										
01R0001112	Carry out stg 2 PCS at vicinity of O-1	2	0	12			01APR08A	06JUN08A	100	
01R0001114	Prepare/submit reports for stg 2 PCS at O-1	2	0	60			02JUN08A	10SEP08	77	-54
01R0001116	Review/accept reports for stg 2 PCS at O-1	2	0	60			17JUN08A	24SEP08	77	-54
Pre-const. condition construction survey; I-1										
01R0001154	Prepare/submit reports for EBS at I-1	2	0	28			28AUG08	24SEP08	0	161
01R0001156	Review/accept reports for EBS at I-1	2	0	28			25SEP08	22OCT08	0	186
Pre-const. condition construction survey; I-2										
01R0001158	Prepare/submit reports for EBS at I-2	2	0	28			28AUG08	24SEP08	0	-27
01R0001160	Review/accept reports for EBS at I-2	2	0	28			25SEP08	22OCT08	0	-2
Pre-const. condition construction survey; I-3										
01R0001162	Prepare/submit reports for EBS at I-3	2	0	28			28AUG08	24SEP08	0	218
01R0001164	Review/accept reports for EBS at I-3	2	0	28			25SEP08	22OCT08	0	243
Pre-const. condition construction survey; O-1										
01R0001166	Prepare/submit reports for EBS at O-1	2	0	28			28AUG08	24SEP08	0	-44
01R0001168	Review/accept reports for EBS at O-1	2	0	28			25SEP08	22OCT08	0	16
Pre-const. condition construction survey; Tunnel										
01R0001170	Prepare/submit reports for EBS along Tunnel alig	2	0	28			28AUG08	24SEP08	0	-9
01R0001172	Review/accept reports for EBS along Tunnel align	2	0	28			25SEP08	22OCT08	0	16
Traffic										
01R0001202	Appoint Traffic Consultant/Traffic Engineer	2	14	14	14DEC07	27DEC07	14DEC07A	03JAN08A	100	
01R0001204	Eng's Approval of Traffic Consultant	2	7	7	28DEC07	03JAN08	28DEC07A	28FEB08A	100	
01R0001206	Prepare/submit TTA Schemes (ingress & egress)	2	14	14	04JAN08	17JAN08	04JAN08A	31JAN08A	100	



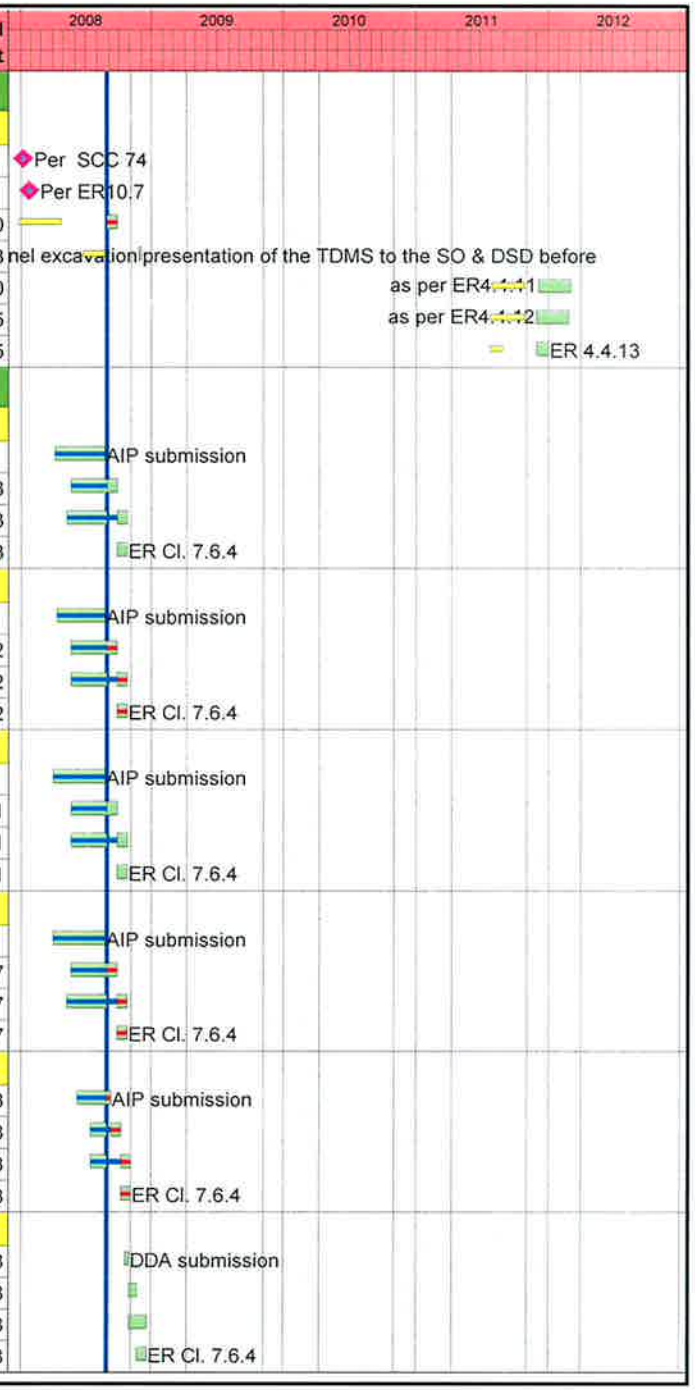
ID	Activity Description	Cal ID	Target Dur	Orig Dur	Target Start	Target Finish	Early Start	Early Finish	% Comp	Total Float
01R0001216	Obtain endorsement of TTA schemes from TMLG	2	21	21	18JAN08	07FEB08	01FEB08A	01APR08A	100	
01R0001234	Approval of TTA schemes by the Authorities	2	28	14	08FEB08	06MAR08	02APR08A	19APR08A	100	
01R0001236	Approval of TTA schemes by the Authorities	2	0	14			02APR08A	19APR08A	100	
Management of Sub-contractors as per SCC 44										
01R0001302	Submit a Sub-contractor Management Plan	2	30	30	14DEC07	12JAN08	14DEC07A	12JAN08A	100	
01R0001304	Submit Quarterly the Updated SMP	2	1,597	1,642	12APR08	25AUG12	03JUL08A	30DEC12	3	0
Trees										
Siu Ho Wan as a New Tree Transplanting Area										
VO028-02	Receive VO28 for new tree transplanting area	1	0	0				16AUG08A	100	
VO028-04	Preparation works for new T.T. area	2	0	20			18AUG08A	07SEP08	45	-115
01R0001502	Appoint Landscape Specialist Contractor	2	14	14	14DEC07	27DEC07	14DEC07A	14JAN08A	100	
01R0001504	SO's Approval of Landscape Contractor	2	7	7	28DEC07	03JAN08	15JAN08A	28FEB08A	100	
01R0001506	Nominate competent person to oversee tree works	2	45	45	14DEC07	27JAN08	14DEC07A	29JAN08A	100	
01R0001510	Obtain Tree Removal Permit by Others	2	90	90	28DEC07	26MAR08	28DEC07A	06MAR08A	100	
01R0001512	Remove / Transplant Trees start	2	0	0	27MAR08		08SEP08		0	-115
Survey										
01R0001602	Appoint Surveyors	2	14	14	28DEC07	10JAN08	28DEC07A	10JAN08A	100	
01R0001604	SO's Approval of Surveyor	2	7	7	11JAN08	17JAN08	11JAN08A	16APR08A	100	
01R0001608	Initial Survey	1	28	28	18JAN08	22FEB08	18JAN08A	10MAR08A	100	
01R0001610	Maintain & carry out survey works	2	1,000	1,378	23FEB08	11JUL11	23FEB08A	01DEC11	8	0
Smart Card System as per ER B.30										
01R0001802	Submit Smart Card Sys for SO's Approval	2	7	7	28DEC07	03JAN08	28DEC07A	15JAN08A	100	
01R0001804	Install & start Operating Smart-Card System	2	60	60	28DEC07	25FEB08	28DEC07A	23FEB08A	100	
01R0001806	Operate & Maintain Smart-Card System	2	1,643	1,771	26FEB08	25AUG12	25FEB08A	30DEC12	4	0
Procurement of Sub-contractor										
01R0001904	Spoil Disposal	2	60	60	14DEC07	11FEB08	28AUG08	26OCT08	0	184
01R0001906	Earthwork for Outfall O-1	2	60	60	14DEC07	11FEB08	14DEC07A	05JUN08A	100	
01R0001910	Re-bar Supply	2	90	90	14DEC07	12MAR08	14DEC07A	30MAY08A	100	
01R0001912	Soil Nailing	2	60	60	28DEC07	25FEB08	28DEC07A	02APR08A	100	
01R0001914	H-piling Works	2	90	90	14DEC07	12MAR08	14DEC07A	09MAY08A	100	
01R0001916	Fabrication of Pre-cast Lining	2	80	80	14DEC07	02MAR08	02JUN08A	26SEP08	63	9
01R0001920	Drainage/Road Works for Access Road at I-3	2	90	60	14DEC07	12MAR08	08AUG08A	06OCT08	56	742
01R0001922	Temp. steel decking over Shing Mun Nullah at I-1	2	90	90	14DEC07	08APR08	14DEC07A	25APR08A	100	
01R0001924	Design/Install Communication System	2	45	94	17MAY08	30JUN08	28JUN08A	29SEP08	45	545



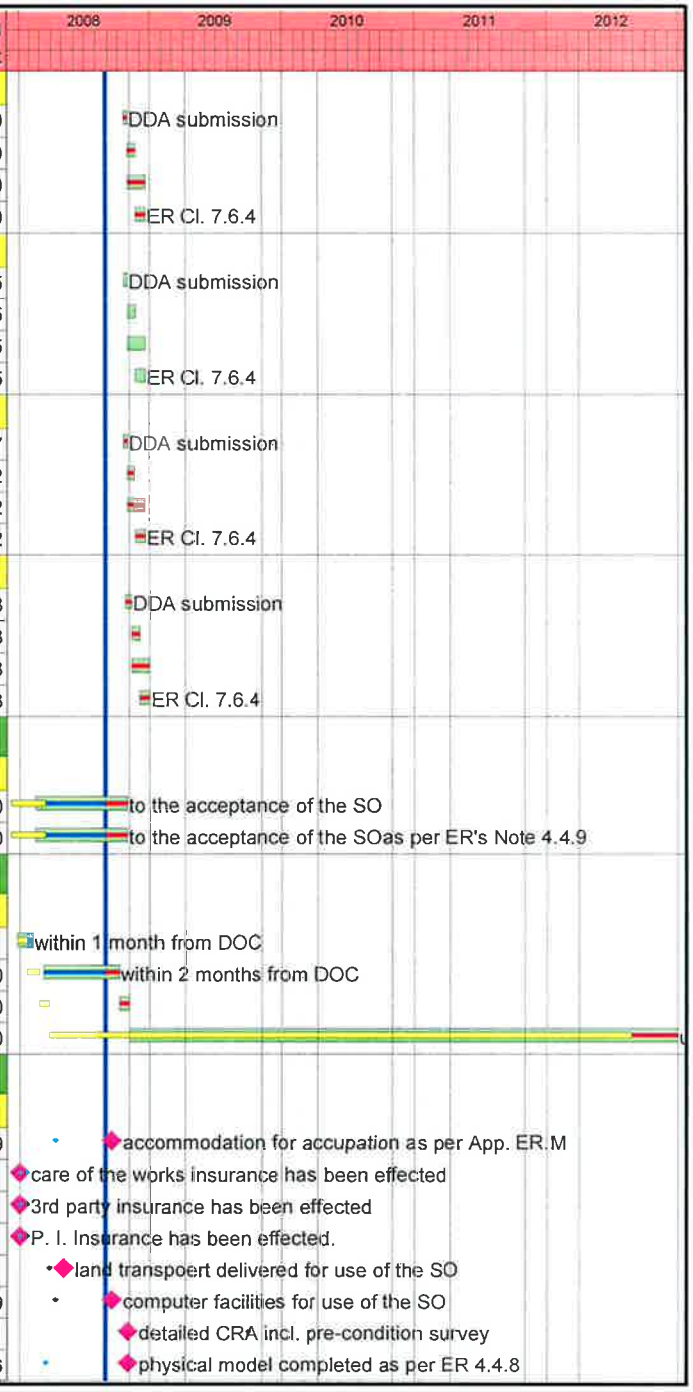
ID	Activity Description	Cal ID	Target Dur	Orig Dur	Target Start	Target Finish	Early Start	Early Finish	% Comp	Total Float
01R0001925	Design/install Flow Monitoring Devices	2	45	78	17MAY08	30JUN08	14JUL08A	29SEP08	27	703
01R0001936	Procurement & delivery of Communication System	2	180	180	03JAN09	01JUL09	09MAR09	04SEP09	0	545
01R0001938	Procurement/delivery of Flow Measurement Devices	2	120	120	30OCT08	26FEB09	09MAR09	06JUL09	0	703
01R0018A02	Supply TBM/Main Tunnel Construction	2	0	7			14DEC07A	21DEC07A	100	
01R0018A04	Security	2	0	17			17DEC07A	02JAN08A	100	
01R0018A06	Progress Photo/Vedio	2	0	25			29DEC07A	22JAN08A	100	
01R0018A08	Webpage/Physical Model/3D Animation	2	0	48			14DEC07A	14FEB08A	100	
01R0018A10	Hoarding/Fencing Erection	2	0	60			04JAN08A	03MAR08A	100	
01R0018A12	Erection of Contractor's Office	2	0	67			28DEC07A	03MAR08A	100	
01R0018A14	Remote Control CCTV	2	0	60			04JAN08A	03MAR08A	100	
01R0018A16	Concrete Supply	2	0	45			14DEC07A	11MAR08A	100	
01R0018A18	Geotechnical Instrumentation	2	0	60			15JAN08A	14MAR08A	100	
01R0018A20	Drilling/Grouting for Geotchnical Instrumentat.	2	0	60			16JAN08A	15MAR08A	100	
01R0018A22	Site Clearance	2	0	60			26JAN08A	25MAR08A	100	
01R0018A24	Erection of SOR's Office	2	0	95			02JAN08A	05APR08A	100	
01R0018A26	Carry out Grout Trial at Fault F1	2	0	90			02APR08A	30JUN08A	100	
01R0018A28	Design/Fabricate Segmental Lining Mould	2	0	90			23APR08A	21JUL08A	100	
01R0018A30	Construction of Skin Walls	2	0	90			21JUL08A	26SEP08	67	179
01R0018A32	Design/Fabricate/Supply/Install Conveyor Belt	2	0	90			14JUL08A	11OCT08	50	250
01R0018A34	Supply of Locomotive	2	0	90			14JUL08A	11OCT08	50	199
01R0018A36	Excavation Works at I-1	2	0	60			28AUG08	26OCT08	0	182
01R0018A38	Construction of Steel Platform at O-1	2	0	50			28AUG08	16OCT08	0	115
01R0018A40	Construction of Steel Platform at I-2	2	0	50			28AUG08	16OCT08	0	59
01R0018A42	Pre-excavation Grouting for Shaft Excavation	2	0	60			28AUG08	26OCT08	0	-37
01R0018A44	Strengthening Works for WSD Tunnel No. 3	2	0	60			28AUG08	26OCT08	0	98
01R0018A46	Excavation/Construction of TBM Launching Chamber	2	0	70			28AUG08	05NOV08	0	2
01R0018A48	Construction of Subgrade Structure at I-1	2	0	90			28AUG08	25NOV08	0	465
01R0018A50	Shaft Excavation by RCD at I-2	2	0	90			28AUG08	25NOV08	0	-43
01R0018A52	Excavation/Construction of Shafts/Adits/Chambers	2	0	90			28AUG08	25NOV08	0	127
01R0018A54	Construction of Hopper at O-1	2	0	90			28AUG08	25NOV08	0	205
01R0018A56	Suttering of Spiral Ramp	2	0	90			28AUG08	25NOV08	0	542
01R0018A58	Open Cut Excavation & Construction at I-3	2	0	90			28AUG08	25NOV08	0	219
01R0018A60	Lining Formworks for Underground Structures	2	0	90			28AUG08	25NOV08	0	787
01R0018A61	Tunnel Data Management System (TDMS)	2	0	90			28AUG08	25NOV08	0	58
01R0018A62	Supply of Rail Track	2	0	90			28AUG08	25NOV08	0	110
01R0018A64	Supply of Aggregate	2	0	120			28AUG08	25DEC08	0	124
01R0018A66	Marine Works at O-1	2	0	200			28AUG08	15MAR09	0	575
01R0018A68	Construct Box Culvert/Cascade/Spiral Ramp at O-1	2	0	200			28AUG08	15MAR09	0	372
01R0018A70	Metal Works	2	0	200			28AUG08	15MAR09	0	792
01R0018A72	Pipe Jacking Works at Lo Wai	2	0	250			28AUG08	04MAY09	0	597
01R0018A74	Finishing Works	2	0	250			28AUG08	04MAY09	0	764



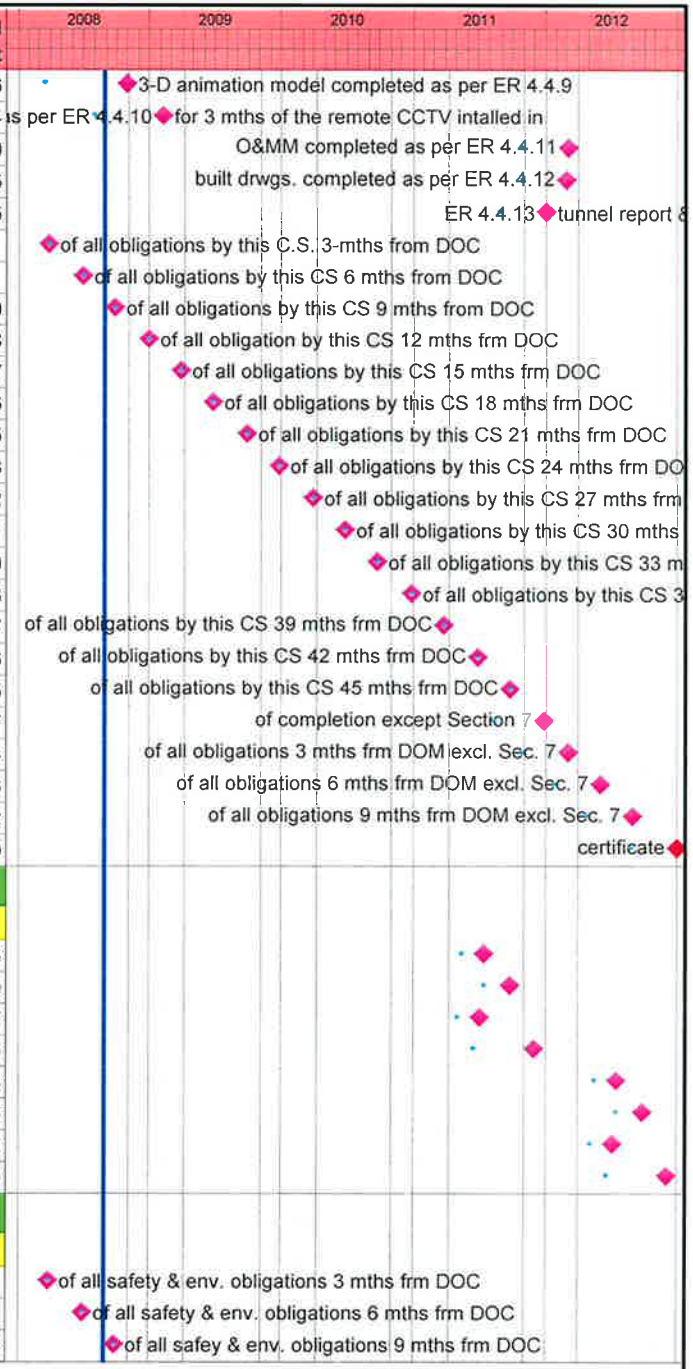
ID	Activity Description	Cal ID	Target Dur	Orig Dur	Target Start	Target Finish	Early Start	Early Finish	% Comp	Total Float
Others										
01R0001928	Submit Contractor's Management Team	2	0	0		10JAN08		10JAN08A	100	
01R0001930	Submit Photographer for Monthly Progress Photo	2	0	0	27JAN08		28JAN08A		100	
01R0001932	Install Project Signboards at Potions A,B,C & D	2	120	30	28DEC07	25APR08	28AUG08	26SEP08	0	0
01R0001934	Presentation of TDMS to SOR/ Employer; ER 4.4.6	2	60	6	22JUN08	20AUG08	26NOV08	01DEC08	0	58
01R0001940	Prepare/submit Operation & Maintenance Manual	2	90	90	02AUG11	30OCT11	07DEC11	05MAR12	0	300
01R0001942	Prepare/submit As-built Drawings	2	90	90	28JUL11	25OCT11	02DEC11	29FEB12	0	305
01R0001944	Produce 2 documentary video for tunnel	2	30	30	28JUL11	26AUG11	02DEC11	31DEC11	0	365
Construction Risk Assessment (CRA) as per ER 7										
PCRA for Works at Portion A (I-1)										
01R00PCRA2	Prepare/submit PCRA for works at I-1	2	0	21			07APR08A	20AUG08A	100	
01R00PCRA4	DC review & certify PCRA for works at I-1	2	0	60			22MAY08A	26SEP08	50	128
01R00PCRA6	SOR review & accept PCRA at works at I-1	2	0	60			12MAY08A	24OCT08	50	128
01R00PCRA8	GEO review/agree DCRA	2	0	28			27SEP08	24OCT08	0	128
PCRA for Works at Portion B (I-2)										
01R00PCRB2	Prepare/submit PCRA for works at I-2	2	0	21			14APR08A	20AUG08A	100	
01R00PCRB4	DC review & certify PCRA for works at I-2	2	0	60			22MAY08A	26SEP08	50	-62
01R00PCRB6	SOR review & accept PCRA at works at I-2	2	0	60			22MAY08A	24OCT08	50	-62
01R00PCRB8	GEO review/agree DCRA	2	0	28			27SEP08	24OCT08	0	-62
PCRA for Works at Portion C (I-3)										
01R00PCRC2	Prepare/submit PCRA for works at I-3	2	0	21			01APR08A	20AUG08A	100	
01R00PCRC4	DC review & certify PCRA for works at I-3	2	0	60			21MAY08A	26SEP08	50	181
01R00PCRC6	SOR review & accept PCRA at works at I-3	2	0	60			21MAY08A	24OCT08	50	181
01R00PCRC8	GEO review/agree DCRA	2	0	28			27SEP08	24OCT08	0	181
PCRA for Works at Portion D/E (O-1)										
01R00PCRD2	Prepare/submit PCRA for works at O-1	2	0	21			01APR08A	20AUG08A	100	
01R00PCRD4	DC review & certify PCRA for works at O-1	2	0	60			21MAY08A	26SEP08	50	-77
01R00PCRD6	SOR review & accept PCRA at works at O-1	2	0	60			12MAY08A	24OCT08	50	-77
01R00PCRD8	GEO review/agree DCRA	2	0	28			27SEP08	24OCT08	0	-77
PCRA for Works at Portion F/J (Main Tunnel)										
01R00PCRF2	Prepare/submit PCRA for main tunnel works	2	0	21			09JUN08A	07SEP08	50	-53
01R00PCRF4	DC review & certify PCRA for main tunnel works	2	0	60			14JUL08A	07OCT08	50	-53
01R00PCRF6	SOR review & accept PCRA for main tunnel works	2	0	60			16JUL08A	04NOV08	50	-53
01R00PCRF8	GEO review/agree DCRA	2	0	28			08OCT08	04NOV08	0	-53
DCRA for Works at Portion A (I-1)										
01R00DCRA2	Prepare/submit DCRA for works at I-1	2	0	14			18OCT08	31OCT08	0	128
01R00DCRA4	DC review & certify DCRA for works at I-1	2	0	21			01NOV08	21NOV08	0	128
01R00DCRA6	SOR review & accept DCRA at works at I-1	2	0	49			01NOV08	19DEC08	0	128
01R00DCRA8	GEO review/agree DCRA	2	0	28			22NOV08	19DEC08	0	128



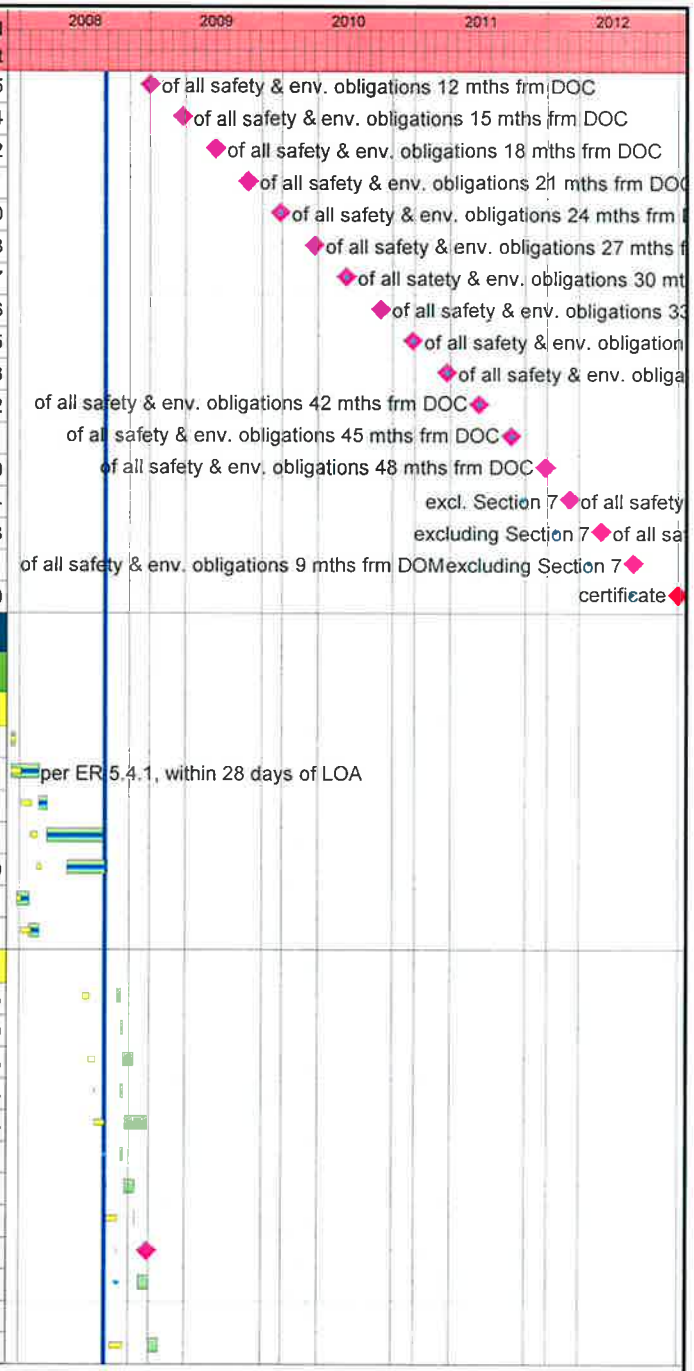
ID	Activity Description	Cal ID	Target Dur	Orig Dur	Target Start	Target Finish	Early Start	Early Finish	% Comp	Total Float
DCRA for Works at Portion B (I-2)										
01R00DCRB2	Prepare/submit DCRA for works at I-2	2	0	14			18OCT08	31OCT08	0	-60
01R00DCRB4	DC review & certify DCRA for works at I-2	2	0	21			01NOV08	21NOV08	0	-60
01R00DCRB6	SOR review & accept DCRA at works at I-2	2	0	49			01NOV08	19DEC08	0	-60
01R00DCRB8	GEO review/agree DCRA	2	0	28			22NOV08	19DEC08	0	-60
DCRA for Works at Portion C (I-3)										
01R00DCRC2	Prepare/submit DCRA for works at I-3	2	0	14			18OCT08	31OCT08	0	185
01R00DCRC4	DC review & certify DCRA for works at I-3	2	0	21			01NOV08	21NOV08	0	185
01R00DCRC6	SOR review & accept DCRA at works at I-3	2	0	49			01NOV08	19DEC08	0	185
01R00DCRC8	GEO review/agree DCRA	2	0	28			22NOV08	19DEC08	0	185
DCRA for Works at Portion D/E (O-1)										
01R00DCRD2	Prepare/submit DCRA for works at O-1	2	0	14			18OCT08	31OCT08	0	-77
01R00DCRD4	DC review & certify DCRA for works at O-1	2	0	21			01NOV08	21NOV08	0	-42
01R00DCRD6	SOR review & accept DCRA at works at O-1	2	0	49			01NOV08	19DEC08	0	-42
01R00DCRD8	GEO review/agree DCRA	2	0	28			22NOV08	19DEC08	0	-42
DCRA for Works at Portion F/J (Main Tunnel)										
01R00DCRF2	Prepare/submit DCRA for main tunnel works	2	0	21			22OCT08	11NOV08	0	-53
01R00DCRF4	DC review & certify DCRA for main tunnel works	2	0	21			12NOV08	02DEC08	0	-53
01R00DCRF6	SOR review & accept DCRA for main tunnel works	2	0	49			12NOV08	30DEC08	0	-53
01R00DCRF8	GEO review/agree DCRA	2	0	28			03DEC08	30DEC08	0	-53
Physical Models & Other Material Display										
01R0002302	Prepare/submit a physical model as per ER 4.4.8	2	90	255	14DEC07	12MAR08	15FEB08A	26OCT08	73	0
01R0002304	Prepare/submit a 3-D animation model	2	90	255	14DEC07	12MAR08	15FEB08A	26OCT08	73	0
Internet Website as per ER 4.4.7										
01R0002402	Propose the design of web page	2	30	30	28DEC07	26JAN08	28DEC07A	09FEB08A	100	
01R0002404	Produce the web page for approval of SO	2	30	211	27JAN08	25FEB08	10MAR08A	06OCT08	81	0
01R0002406	SO's approval of web page	2	30	30	26FEB08	26MAR08	07OCT08	05NOV08	0	0
01R0002408	Submit updated web pages monthly	2	1,613	1,500	27MAR08	25AUG12	06NOV08	30DEC12	0	0
Schedule of Milestones for Cost Centre No. 1R										
01R0002501	1R 1; On provision of SO's Accommodation	2	0	0		14APR08		13SEP08	0	1,569
01R0002502	1R 2; On providing documents of effected CWI	2	0	0		03JAN08		03JAN08A	100	
01R0002503	1R 3; On providing documents of effected TPI	2	0	0		03JAN08		03JAN08A	100	
01R0002504	1R 4; On Pproviding documents of effected PII	2	0	0		03JAN08		03JAN08A	100	
01R0002505	1R 5; On delivery of all Land Transport for SO	2	0	0		26MAR08		02MAY08A	100	
01R0002506	1R 6; On install. of computer facilities for SO	2	0	0		14APR08		13SEP08	0	1,569
01R0002507	1R 7; On accept. of detailed CRA incl. PCS	2	0	0		25SEP09		31OCT08	0	1,521
01R0002508	1R 8; On acceptance of Physical Model by the SO	2	0	0		12MAR08		26OCT08	0	1,526



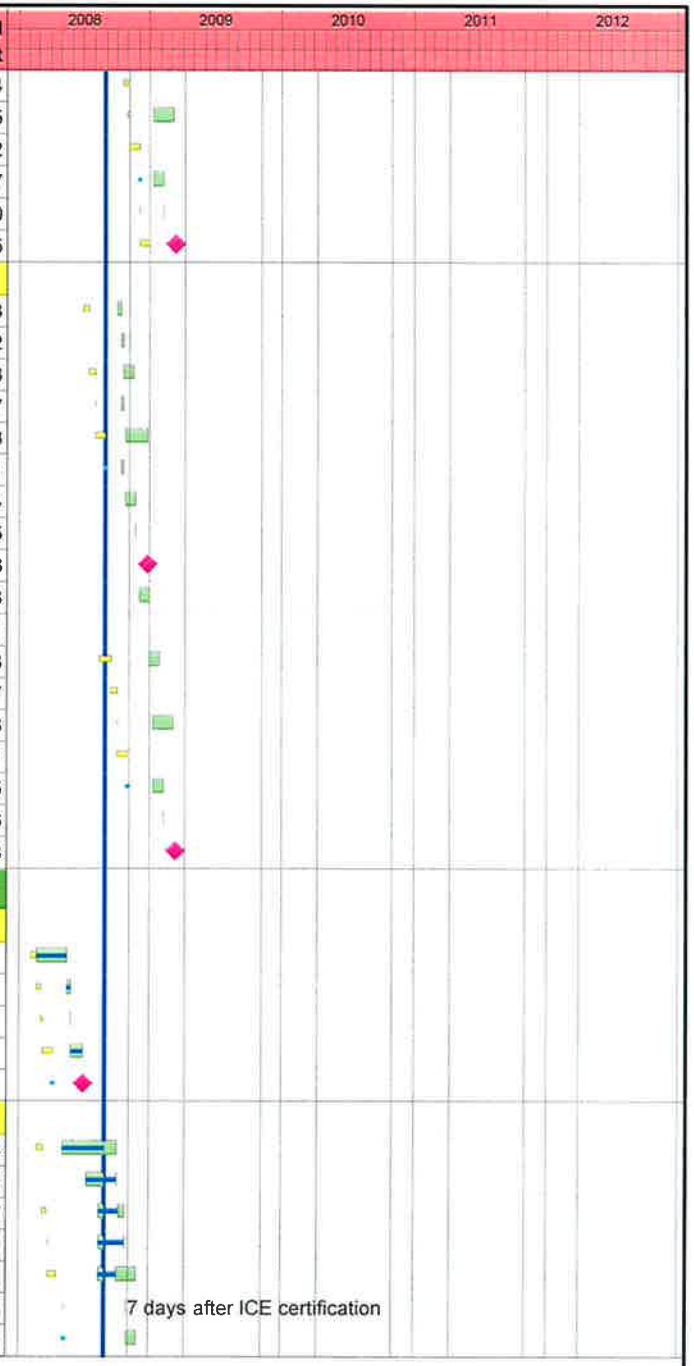
ID	Activity Description	Cal ID	Target Dur	Orig Dur	Target Start	Target Finish	Early Start	Early Finish	% Comp	Total Float
01R0002509	1R 9; On acceptance of 3-D Animation Model	2	0	0		12MAR08		26OCT08	0	1,526
01R0002510	1R 10; On satisf. operation of CCTV for 3 mth	2	0	0		31JUL08		05FEB09	0	1,424
01R0002511	1R 11; On acceptance of O&MM	2	0	0		30OCT11		05MAR12	0	300
01R0002512	1R 12; On acceptance of as-built drwgs.	2	0	0		25OCT11		29FEB12	0	305
01R0002513	1R 13; On acceptance of T.R/Video/Brouchure	2	0	0		26AUG11		31DEC11	0	365
01R0002514	1R 14; On complete all wks for 3 mth frm DOC	2	0	0		27MAR08		27MAR08A	100	
01R0002515	1R 15; On complete all wks for 6 mth frm DOC	2	0	0		26JUN08		27JUN08A	100	
01R0002516	1R 16; On complete all wks for 9 mth frm DOC	2	0	0		25SEP08		25SEP08	0	1,400
01R0002517	1R 17; On complete all wks for 12 mth frm DOC	2	0	0		26DEC08		26DEC08	0	1,308
01R0002518	1R 18; On complete all wks for 15 mth frm DOC	2	0	0		27MAR09		27MAR09	0	1,217
01R0002519	1R 19; On complete all wks for 18 mth frm DOC	2	0	0		26JUN09		26JUN09	0	1,126
01R0002520	1R 20; On complete all wks for 21 mth frm DOC	2	0	0		25SEP09		25SEP09	0	1,035
01R0002521	1R 21; On complete all wks for 24 mth frm DOC	2	0	0		26DEC09		26DEC09	0	943
01R0002522	1R 22; On complete all wks for 27 mth frm DOC	2	0	0		27MAR10		27MAR10	0	852
01R0002523	1R 23; On complete all wks for 30 mth frm DOC	2	0	0		26JUN10		26JUN10	0	761
01R0002524	1R 24; On complete all wks for 33 mth frm DOC	2	0	0		25SEP10		25SEP10	0	670
01R0002525	1R 25; On complete all wks for 36 mth frm DOC	2	0	0		26DEC10		26DEC10	0	578
01R0002526	1R 26; On complete all wks for 39 mth frm DOC	2	0	0		27MAR11		27MAR11	0	487
01R0002527	1R 27; On complete all wks for 42 mth frm DOC	2	0	0		26JUN11		26JUN11	0	396
01R0002528	1R 28; On complete all wks for 45 mth frm DOC	2	0	0		25SEP11		25SEP11	0	305
01R0002529	1R 29; On issuance of completion certificates	2	0	0		13AUG11		29DEC11	0	367
01R0002530	1R 30; On complete all wks for 3 mth frm CMP	2	0	0		26OCT11		01MAR12	0	304
01R0002531	1R 31; On complete all wks for 6 mth frm CMP	2	0	0		25JAN12		31MAY12	0	213
01R0002532	1R 32; On complete all wks for 9 mth frm CMP	2	0	0		25APR12		30AUG12	0	122
01R0002533	1R 33; On issuance of maintenance certificate	2	0	0		25AUG12		30DEC12	0	0
Schedule of Milestones for Cost Centre No. 16R										
16R7003001	16R 1; On completion of landscape wks; Portion A	2	0	0		13MAY11		16JUL11	0	533
16R7003002	16R 2; On completion of landscape wks; Portion B	2	0	0		16JUL11		27SEP11	0	460
16R7003003	16R 3; On completion of landscape wks; Portion C	2	0	0		05MAY11		02JUL11	0	547
16R7003004	16R 4; On completion of landscape wks; Portion D	2	0	0		17JUN11		01DEC11	0	395
16R7003005	16R 5; On completion of establish wks; Portion A	2	0	0		12MAY12		15JUL12	0	168
16R7003006	16R 6; On completion of establish wks; Portion B	2	0	0		15JUL12		26SEP12	0	95
16R7003007	16R 7; On completion of establish wks; Portion C	2	0	0		04MAY12		01JUL12	0	182
16R7003008	16R 8; On completion of establish wks; Portion D	2	0	0		16JUN12		30NOV12	0	30
Schedule of Milestones for Cost Centre No. 17R										
17R0003101	17R 1; On complet of all wks for 3 mth frm DOC	2	0	0		27MAR08		27MAR08A	100	
17R0003102	17R 2; On complet of all wks for 6 mth frm DOC	2	0	0		26JUN08		27JUN08A	100	
17R0003103	17R 3; On complet of all wks for 9 mth frm DOC	2	0	0		26SEP08		26SEP08	0	1,556



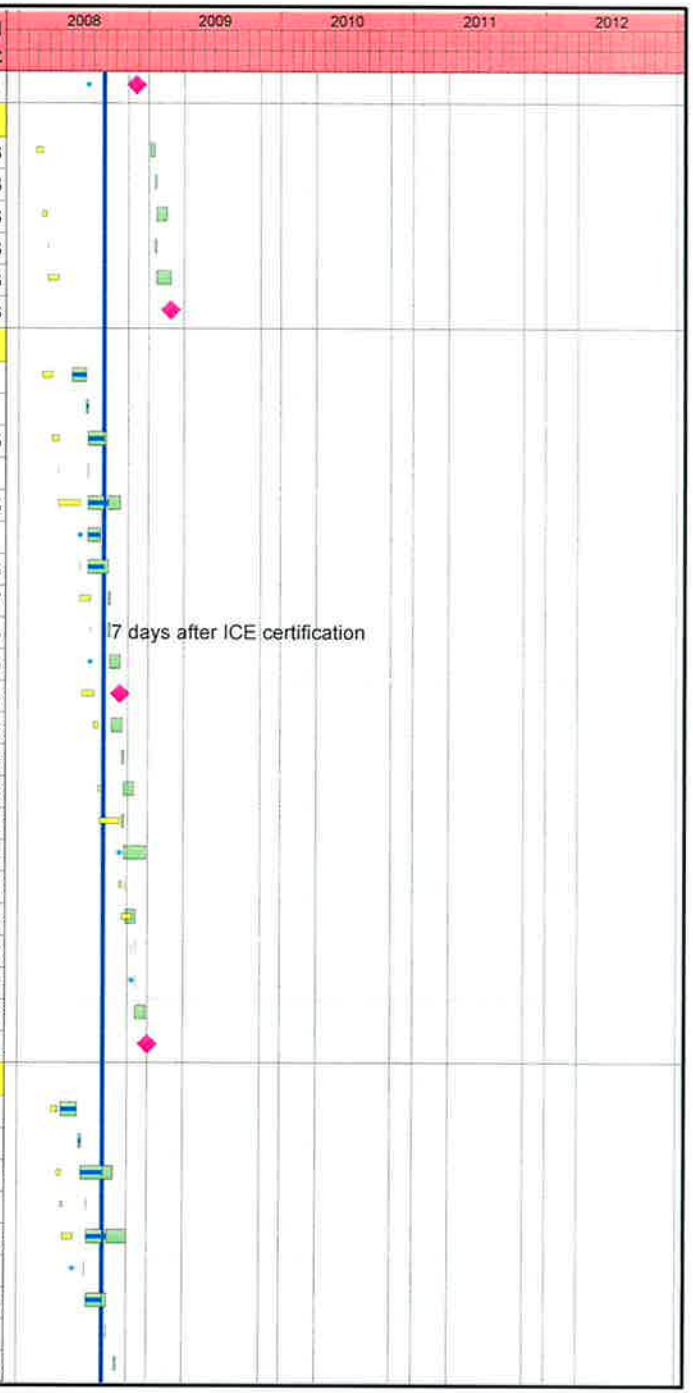
ID	Activity Description	Cal ID	Target Dur	Orig Dur	Target Start	Target Finish	Early Start	Early Finish	% Comp	Total Float
17R0003104	17R 4; On complet of all wks for 12 mth frm DOC	2	0	0		26DEC08		26DEC08	0	1,465
17R0003105	17R 5; On complet of all wks for 15 mth frm DOC	2	0	0		27MAR09		27MAR09	0	1,374
17R0003106	17R 6; On complet of all wks for 18 mth frm DOC	2	0	0		27JUN09		27JUN09	0	1,282
17R0003107	17R 7; On complet of all wks for 21 mth frm DOC	2	0	0		26SEP09		26SEP09	0	1,191
17R0003108	17R 8; On complet of all wks for 24 mth frm DOC	2	0	0		26DEC09		26DEC09	0	1,100
17R0003109	17R 9; On complet of all wks for 27 mth frm DOC	2	0	0		28MAR10		28MAR10	0	1,008
17R0003110	17R 10; On complet all wks for 30 mth frm DOC	2	0	0		27JUN10		27JUN10	0	917
17R0003111	17R 11; On complet all wks for 33 mth frm DOC	2	0	0		26SEP10		26SEP10	0	826
17R0003112	17R 12; On complet all wks for 36 mth frm DOC	2	0	0		26DEC10		26DEC10	0	735
17R0003113	17R 13; On complet all wks for 39 mth frm DOC	2	0	0		28MAR11		28MAR11	0	643
17R0003114	17R 14; On complet all wks for 42 mth frm DOC	2	0	0		27JUN11		27JUN11	0	552
17R0003115	17R 15; On complet all wks for 45 mth frm DOC	2	0	0		26SEP11		26SEP11	0	461
17R0003116	17R 16; On complet all wks for 48 mth frm DOC	2	0	0		26DEC11		26DEC11	0	370
17R0003117	17R 17; On complet of all wks for 3 mth frm CMP	2	0	0		26OCT11		01MAR12	0	304
17R0003118	17R 18; On complet of all wks for 6 mth frm CMP	2	0	0		25JAN12		31MAY12	0	213
17R0003119	17R 19; On complet of all wks for 9 mth frm CMP	2	0	0		26APR12		31AUG12	0	121
17R0003120	17R 20; On issuance of maintenance certificate	2	0	0		25AUG12		30DEC12	0	0
Design/Design Check for Permanent Works										
Project -wide Packages										
Project Design Plan (PDP)										
02L10D0102	Employ Independent Designer	2	7	7	14DEC07	20DEC07	14DEC07A	20DEC07A	100	
02L10D0104	Prepare & submit Project Design Plan (PDP)	2	28	28	14DEC07	10JAN08	14DEC07A	26FEB08A	100	
02L10D0106	SO's review & comment on PDP	2	28	28	11JAN08	07FEB08	27FEB08A	18MAR08A	100	
02L10D0108	Provide further information of (PDP)	2	14	28	08FEB08	21FEB08	19MAR08A	21AUG08A	100	
02L10D0110	SO approves PDP	2	14	14	22FEB08	06MAR08	14MAY08A	04SEP08	93	0
02L10D0112	Employ Independent Design Checker	2	14	14	28DEC07	10JAN08	28DEC07A	01FEB08A	100	
02L10D0114	Approval of Design Checker by the SO	2	28	28	11JAN08	07FEB08	02FEB08A	28FEB08A	100	
Design for Communication System										
02L1FE0102	Design preparation for the AIP submission	2	15	15	01JUL08	15JUL08	30SEP08	14OCT08	0	545
02L1FE0103	Design (AIP) submission for the DC's approval	1	0	1			15OCT08	15OCT08	0	440
02L1FE0104	Design (AIP) certification by the Design Checker	2	15	28	16JUL08	30JUL08	16OCT08	12NOV08	0	545
02L1FE0106	Design (AIP) submission for the SO's approval	1	1	1	31JUL08	31JUL08	15OCT08	15OCT08	0	446
02L1FE0108	Design (AIP) review by the SO	2	30	60	01AUG08	30AUG08	23OCT08	21DEC08	0	545
02L1FE0110	AIP submission for rel. authorities' approval	1	0	1		30AUG08	15OCT08	15OCT08	0	471
02L1FE0112	Design (AIP) review by the rel. authorities	2	1	28	01SEP08	01SEP08	23OCT08	19NOV08	0	575
02L1FE0114	Obtain rel. authorities's approval for AIP	1	28	1	02SEP08	29SEP08	20NOV08	20NOV08	0	463
02L1FE0116	Obtain SO's consent for design (AIP)	2	1	0	30SEP08	30SEP08		22DEC08	0	545
02L1FE0118	Design preparation for the DDA submission	2	0	30		02OCT08	30NOV08	29DEC08	0	545
02L1FE0119	Design (DDA) submission for the DC's approval	1	0	1			30DEC08	30DEC08	0	439
02L1FE0120	Design (DDA) certification by the Design Checker	2	30	28	17SEP08	16OCT08	31DEC08	27JAN09	0	545



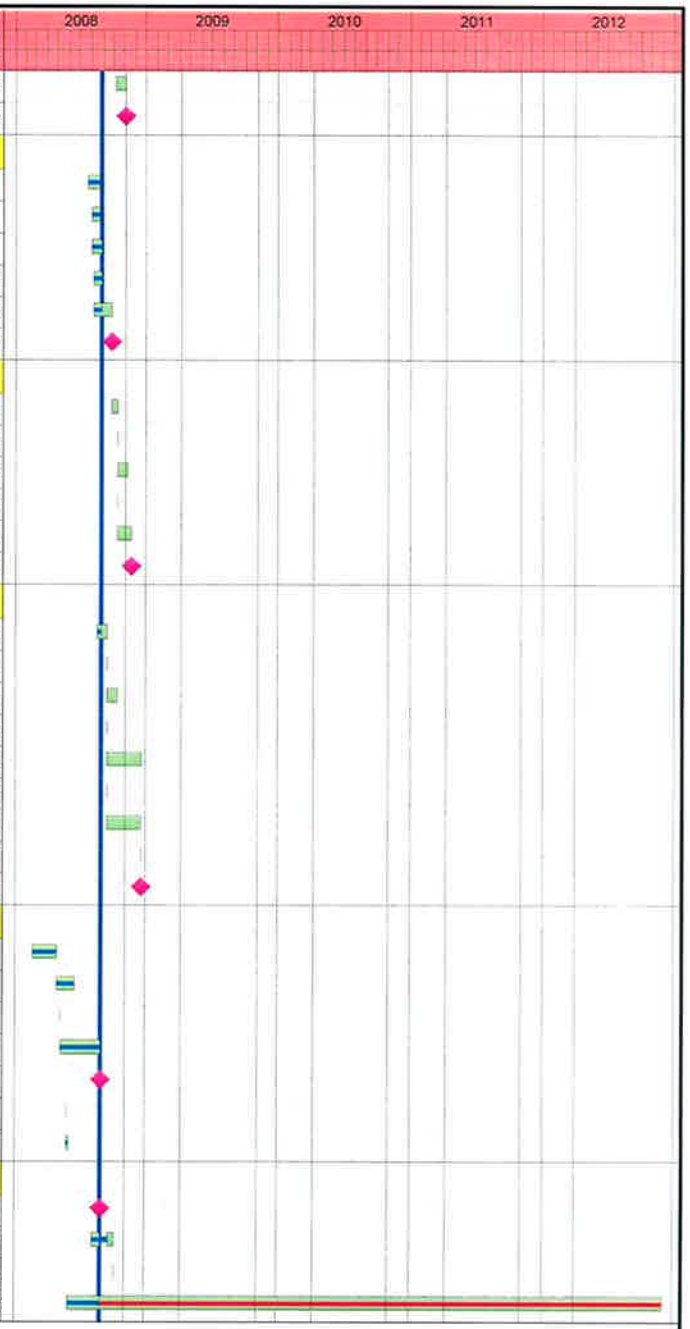
ID	Activity Description	Cal ID	Target Dur	Orig Dur	Target Start	Target Finish	Early Start	Early Finish	% Comp	Total Float
02L1FE0122	Design (DDA) submission for the SO's approval	1	15	1	17OCT08	31OCT08	30DEC08	30DEC08	0	444
02L1FE0124	Design (DDA) review by the SO	2	1	60	01NOV08	01NOV08	07JAN09	07MAR09	0	545
02L1FE0126	DDA submission for rel. authorities' approval	1	30	1	02NOV08	01DEC08	30DEC08	30DEC08	0	472
02L1FE0128	Design (DDA) review by the rel. authorities	2	0	28		01DEC08	07JAN09	03FEB09	0	577
02L1FE0130	Obtain rel. authorities's approval for DDA	1	1	1	02DEC08	02DEC08	04FEB09	04FEB09	0	470
02L1FE0132	Obtain SO's consent for design (DDA)	2	28	0	03DEC08	30DEC08		08MAR09	0	545
Design for Flow Measurement System										
02L1FE0202	Design preparation for the AIP submission	2	15	15	01JUL08	15JUL08	30SEP08	14OCT08	0	703
02L1FE0203	Design (AIP) submission for the DC's approval	1	0	1			15OCT08	15OCT08	0	572
02L1FE0204	Design (AIP) certification by the Design Checker	2	15	28	16JUL08	30JUL08	16OCT08	12NOV08	0	703
02L1FE0206	Design (AIP) submission for the SO's approval	1	1	1	31JUL08	31JUL08	15OCT08	15OCT08	0	577
02L1FE0208	Design (AIP) review by the SO	2	30	60	01AUG08	30AUG08	23OCT08	21DEC08	0	703
02L1FE0210	AIP submission for rel. authorities' approval	1	0	1		30AUG08	15OCT08	15OCT08	0	601
02L1FE0212	Design (AIP) review by the rel. authorities	2	0	28			23OCT08	19NOV08	0	734
02L1FE0214	Obtain rel. authorities's approval for AIP	1	0	1			20NOV08	20NOV08	0	595
02L1FE0216	Obtain SO's consent for design (AIP)	2	0	0				22DEC08	0	703
02L1FE0218	Design preparation for the DDA submission	2	0	30			30NOV08	29DEC08	0	703
02L1FE0219	Design (DDA) submission for the DC's approval	1	0	1			30DEC08	30DEC08	0	571
02L1FE0220	Design (DDA) certification by the Design Checker	2	30	28	15AUG08	13SEP08	31DEC08	27JAN09	0	703
02L1FE0222	Design (DDA) submission for the SO's approval	1	15	1	14SEP08	28SEP08	30DEC08	30DEC08	0	577
02L1FE0224	Design (DDA) review by the SO	2	1	60	29SEP08	29SEP08	07JAN09	07MAR09	0	703
02L1FE0226	DDA submission for rel. authorities' approval	1	30	1	30SEP08	29OCT08	30DEC08	30DEC08	0	601
02L1FE0228	Design (DDA) review by the rel. authorities	2	0	28		29OCT08	07JAN09	03FEB09	0	735
02L1FE0230	Obtain rel. authorities's approval for DDA	1	0	1			04FEB09	04FEB09	0	596
02L1FE0232	Obtain design (DDA) approval from the SO	2	0	0				08MAR09	0	703
Design Packages for Works in Portion A										
Temp. Steel Decking Design Over Shing Mun Nullah										
02L1AA0102	Design preparation by the Designer	2	14	14	08FEB08	21FEB08	22FEB08A	15MAY08A	100	
02L1AA0104	Design certification by the Design Checker	2	14	14	22FEB08	06MAR08	16MAY08A	26MAY08A	100	
02L1AA0106	Design submission for the SO's approval	1	1	1	07MAR08	07MAR08	26MAY08A	26MAY08A	100	
02L1AA0108	Design review by the SO	2	28	21	08MAR08	04APR08	27MAY08A	30JUN08A	100	
02L1AA0110	Obtain design approval from the SO	2	0	0		04APR08		30JUN08A	100	
ELS Design for Spiral Ramp/Cascade/Box Culvert										
02L1AA0202	Design preparation for the DDA submission	2	15	158	22FEB08	07MAR08	02MAY08A	29SEP08	18	134
02L1AA0203	Design submission for the DC's approval	1	0	2			10JUL08A	30SEP08	50	120
02L1AA0204	Design (DDA) certification by the Design Checker	2	15	30	08MAR08	22MAR08	11AUG08A	20OCT08	50	147
02L1AA0206	Design (DDA) submission for the SO's approval	1	1	2	25MAR08	25MAR08	12AUG08A	21OCT08	50	120
02L1AA0208	Design (DDA) review by the SO	2	21	68	26MAR08	15APR08	13AUG08A	25NOV08	22	151
02L1AA0216	SO submit design (DDA) for approval of GEO	1	1	1	08MAY08	08MAY08	28OCT08	28OCT08	0	124
02L1AA0218	Design (DDA) review/approval by the GEO	2	0	28		09MAY08	29OCT08	25NOV08	0	151



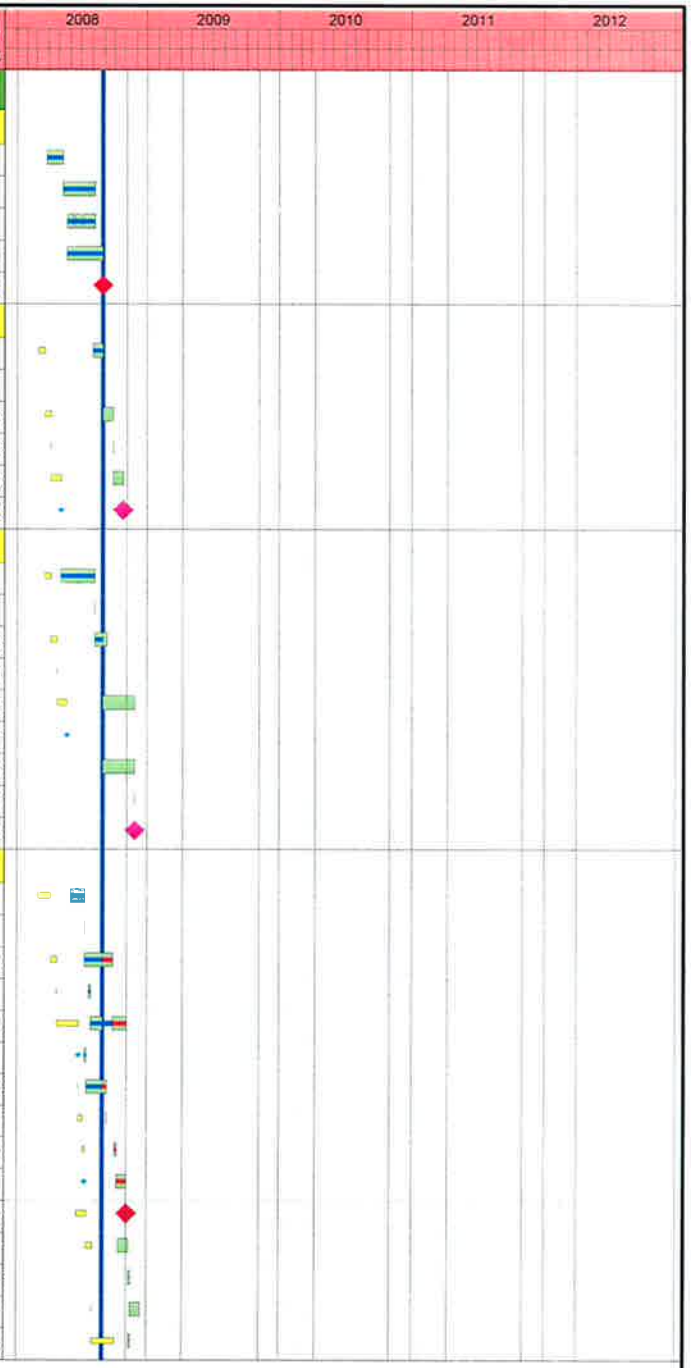
ID	Activity Description	Cal ID	Target Dur	Orig Dur	Target Start	Target Finish	Early Start	Early Finish	% Comp	Total Float
02L1AA0238	Obtain SO's consent for design (DDA)	2	0	0		17JUL08		26NOV08	0	151
Temp. Platform Design for H-Piling										
02L1AA0302	Design preparation by the Designer	2	15	15	22FEB08	07MAR08	02JAN09*	16JAN09	0	653
02L1AA0303	Design submission for the DC's approval	1	0	1			17JAN09	17JAN09	0	528
02L1AA0304	Design certification by the Design Checker	2	15	28	08MAR08	22MAR08	18JAN09	14FEB09	0	653
02L1AA0306	Design submission for the SO's approval	1	1	1	25MAR08	25MAR08	17JAN09	17JAN09	0	528
02L1AA0308	Design review by the SO	2	28	42	26MAR08	22APR08	18JAN09	28FEB09	0	653
02L1AA0310	Obtain design approval from the SO	2	0	0				28FEB09	0	653
Cascade & Box Culver Design for Portion A										
02L1AA0402	Design preparation for the AIP submission	2	30	30	08MAR08	06APR08	02JUN08A	11JUL08A	100	
02L1AA0403	Design (AIP) submission for the DC's approval	1	0	1			12JUL08A	12JUL08A	100	
02L1AA0404	Design (AIP) certification by the Design Checker	2	15	28	07APR08	21APR08	14JUL08A	04SEP08	75	435
02L1AA0406	Design (AIP) submission for the SO's approval	1	1	1	22APR08	22APR08	15JUL08A	15JUL08A	100	
02L1AA0408	Design (AIP) review by the SO	2	60	66	23APR08	21JUN08	16JUL08A	10OCT08	50	435
02L1AA0410	AIP submission for rel. authorities' approval	1	0	1		21JUN08	14JUL08A	19AUG08A	100	
02L1AA0412	Design (AIP) review by the rel. authorities	2	1	28	23JUN08	23JUN08	15JUL08A	11SEP08	50	463
02L1AA0414	Obtain rel. authorities's approval for AIP	1	28	1	24JUN08	21JUL08	12SEP08	12SEP08	0	377
02L1AA0416	SO submit design (AIP) for approval of GEO	1	1	1	22JUL08	22JUL08	12SEP08	12SEP08	0	353
02L1AA0418	Design (AIP) review/approval by the GEO	2	0	28		23JUL08	13SEP08	10OCT08	0	435
02L1AA0420	Obtain SO's consent for design (AIP)	2	30	0	01JUL08	30JUL08		11OCT08	0	435
02L1AA0422	Design preparation for the DDA submission	2	15	30	31JUL08	14AUG08	19SEP08	18OCT08	0	435
02L1AA0423	Design (DDA) submission for the DC's approval	1	0	1			20OCT08	20OCT08	0	355
02L1AA0424	Design (DDA) certification by the Design Checker	2	1	28	15AUG08	15AUG08	21OCT08	17NOV08	0	436
02L1AA0426	Design (DDA) submission for the SO's approval	1	60	1	16AUG08	14OCT08	20OCT08	20OCT08	0	353
02L1AA0428	Design (DDA) review by the SO	2	0	66		14OCT08	21OCT08	25DEC08	0	434
02L1AA0430	DDA submission for rel. authorities' approval	1	1	1	15OCT08	15OCT08	27OCT08	27OCT08	0	379
02L1AA0432	Design (DDA) review by the rel. authorities	2	28	28	16OCT08	12NOV08	28OCT08	24NOV08	0	465
02L1AA0434	Obtain rel. authorities's approval for DDA	1	1	1	13NOV08	13NOV08	25NOV08	25NOV08	0	376
02L1AA0436	SO submit design (DDA) for approval of GEO	1	0	1		14NOV08	25NOV08	25NOV08	0	354
02L1AA0438	Design (DDA) review/approval by the GEO	2	0	28			26NOV08	23DEC08	0	436
02L1AA0440	Obtain SO's consent for design (DDA)	2	0	0				26DEC08	0	434
Impact Assessment on WSD Wo Yip Hop V. S. P. H.										
02L1AA0502	Design preparation for the DDA submission	2	15	30	07APR08	21APR08	02MAY08A	16JUN08A	100	
02L1AA0503	Design (DDA) submission for the DC's approval	1	0	1			26JUN08A	26JUN08A	100	
02L1AA0504	Design (DDA) certification by the Design Checker	2	15	60	22APR08	06MAY08	27JUN08A	26SEP08	50	175
02L1AA0506	Design (DDA) submission for the SO's approval	1	1	1	07MAY08	07MAY08	14JUL08A	14JUL08A	100	
02L1AA0508	Design (DDA) review by the SO	2	30	66	08MAY08	06JUN08	15JUL08A	01NOV08	20	175
02L1AA0510	DDA submission for rel. authorities' approval	1	0	1		06JUN08	10JUL08A	10JUL08A	100	
02L1AA0512	Design (DDA) review by the rel. authorities	2	0	28			14JUL08A	10SEP08	50	226
02L1AA0514	Obtain rel. authorities's approval for DDA	1	0	1			11SEP08	11SEP08	0	181
02L1AA0516	SO submit design (DDA) for approval of GEO	1	0	1			04OCT08	04OCT08	0	143



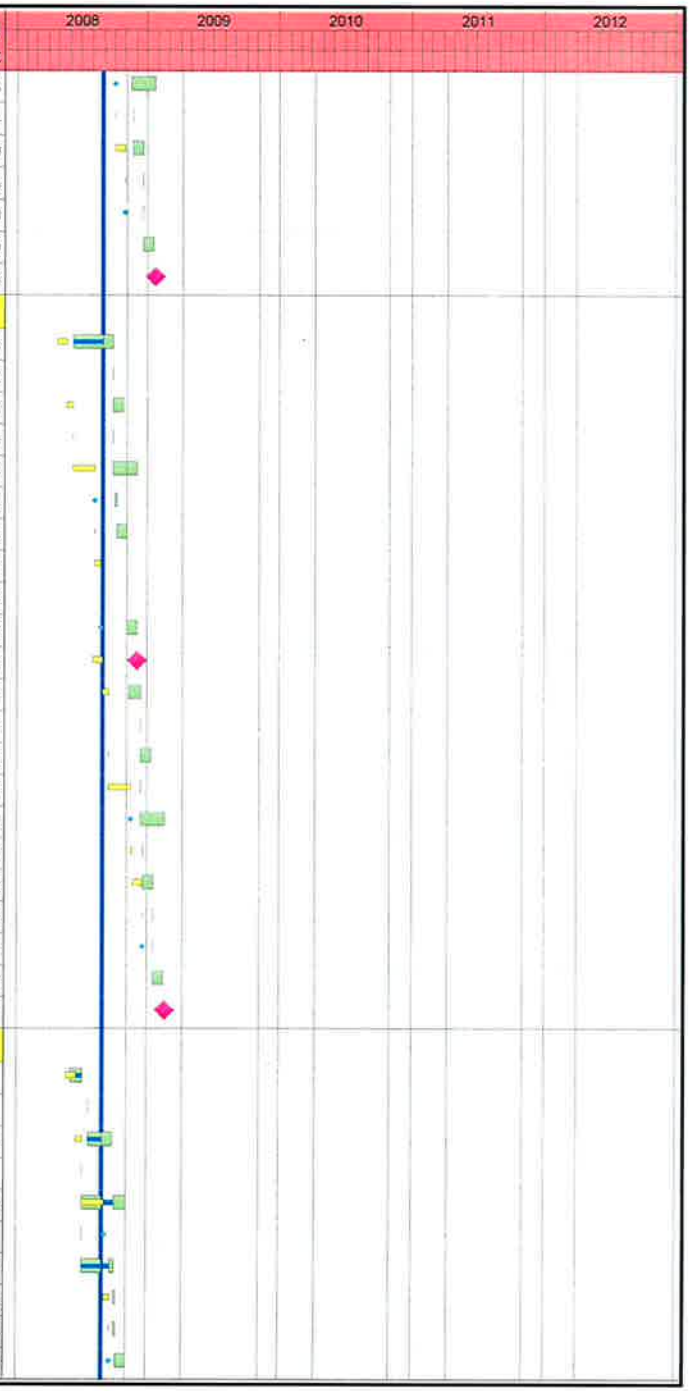
ID	Activity Description	Cal ID	Target Dur	Orig Dur	Target Start	Target Finish	Early Start	Early Finish	% Comp	Total Float
02L1AA0518	Design (DDA) review/approval by the GEO	2	0	28			05OCT08	01NOV08	0	175
02L1AA0520	Obtain SO's consent for design (DDA)	2	0	0				02NOV08	0	175
Temporary Platform for Pipe Piling										
02L1AA0602	Design preparation by the Designer	2	0	11			21JUL08A	23AUG08A	100	
02L1AA0603	Design submission for the DC's approval	1	0	1			01AUG08A	25AUG08A	100	
02L1AA0604	Design certification by the Design Checker	2	0	21			02AUG08A	26AUG08A	100	
02L1AA0606	Design submission for the SO's approval	1	0	1			08AUG08A	28AUG08	0	112
02L1AA0608	Design review by the SO	2	0	28			09AUG08A	25SEP08	0	138
02L1AA0610	Obtain design approval from the SO	2	0	0				25SEP08	0	138
Overhead Gantry For Retrieval of TBM										
02L1AA0702	Design preparation by the Designer	2	0	15			26SEP08	10OCT08	0	154
02L1AA0703	Design submission for the DC's approval	1	0	1			11OCT08	11OCT08	0	126
02L1AA0704	Design certification by the Design Checker	2	0	28			12OCT08	08NOV08	0	155
02L1AA0706	Design submission for the SO's approval	1	0	1			11OCT08	11OCT08	0	126
02L1AA0708	Design review by the SO	2	0	42			12OCT08	22NOV08	0	155
02L1AA0710	Obtain design approval from the SO	2	0	0				22NOV08	0	155
Temporary Drainage Management Plan for Portion A										
02L1AA0802	TDMP preparation by the Designer	2	0	28			18AUG08A	14SEP08	36	605
02L1AA0804	TDMP submission for the DC's approval	1	0	1			16SEP08	16SEP08	0	493
02L1AA0806	TDMP certification by the Design Checker	2	0	28			17SEP08	14OCT08	0	610
02L1AA0808	TDMP submission for the SO's approval	1	0	1			16SEP08	16SEP08	0	488
02L1AA0810	TDMP review by the SO	2	0	90			17SEP08	15DEC08	0	604
02L1AA0812	TDMP submission for DSD's approval	1	0	1			16SEP08	16SEP08	0	488
02L1AA0814	TDMP review by the DSD	2	0	90			17SEP08	15DEC08	0	604
02L1AA0816	Obtain DSD's approval for DDA	1	0	1			16DEC08	16DEC08	0	487
02L1AA0818	Obtain SO's consent for TDMP	2	0	0				16DEC08	0	604
Geotechnical Instrumentation Stg 1 for GL Works										
3DL1AAG102	Design preparation by the Designer	2	0	14			22FEB08A	28APR08A	100	
3DL1AAG104	Design certification by the Design Checker	2	0	7			29APR08A	16JUN08A	100	
3DL1AAG106	Design submission for the SO's approval	1	0	1			10MAY08A	10MAY08A	100	
3DL1AAG108	Design review by the SO	2	0	14			12MAY08A	28AUG08	93	161
3DL1AAG110	Obtain design approval from the SO	2	0	0				28AUG08	0	161
3DL1AAG112	Install Geotechnical Instruments	1	0	6			26MAY08A	26MAY08A	100	
3DL1AAG114	Baseline Monitoring	2	0	14			27MAY08A	31MAY08A	100	
Geotechnical Instrumentation Stg 2 for Deep Exc.										
3DL1AAG210	Obtain design approval from the SO	2	0	0				28AUG08	0	161
3DL1AAG212	Install Geotechnical Instruments	1	0	28			07AUG08A	04OCT08	64	109
3DL1AAG214	Baseline Monitoring	2	0	3			05OCT08	07OCT08	0	136
3DL1AAG216	Monitor/report Geotechnical Instrumentation	2	0	1,643			02JUN08A	30NOV12	5	0



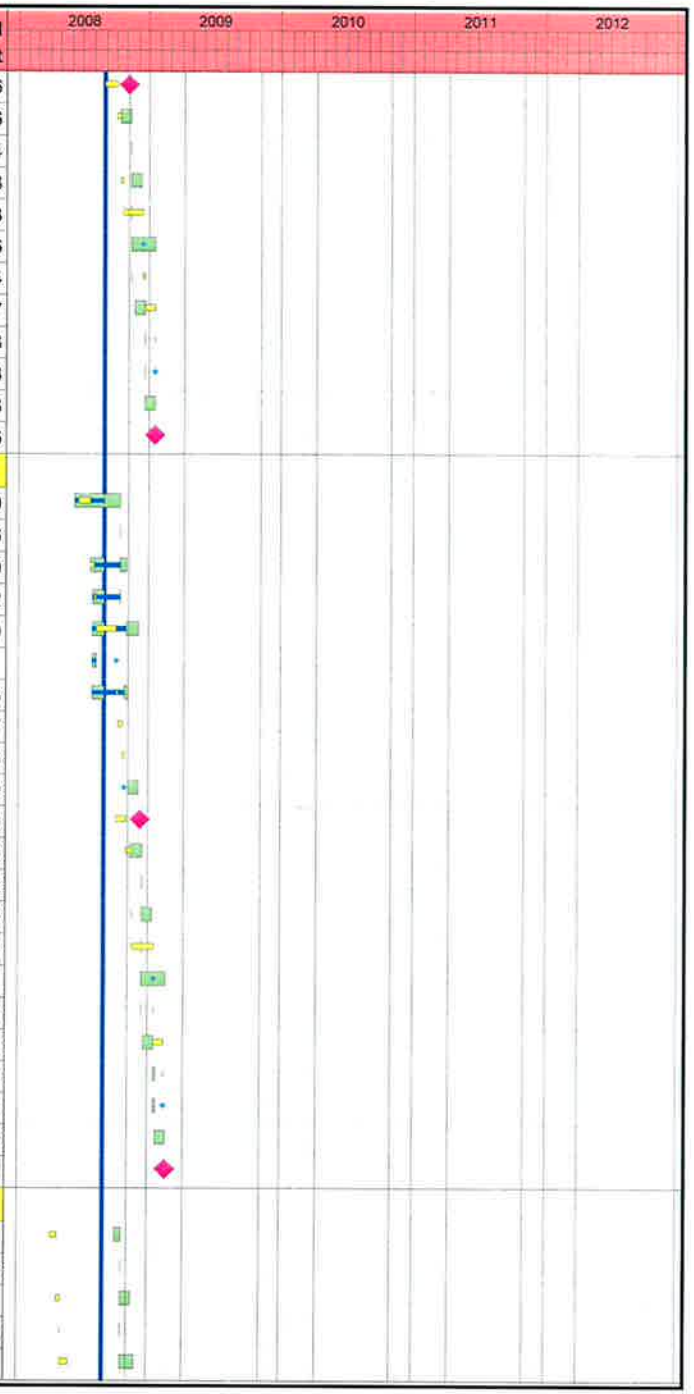
ID	Activity Description	Cal ID	Target Dur	Orig Dur	Target Start	Target Finish	Early Start	Early Finish	% Comp	Total Float
Design Packages for Works in Portion B										
Piling Platform to Construct H-pile Wall										
02L1BB0202	Design preparation by the Designer	2	0	15			24MAR08A	09MAY08A	100	
02L1BB0204	Design certification by the Design Checker	2	0	14			10MAY08A	08AUG08A	100	
02L1BB0206	Design submission for the SO's approval	1	0	1			21MAY08A	08AUG08A	100	
02L1BB0208	Design review by the SO	2	0	21			22MAY08A	28AUG08	95	-51
02L1BB0210	Obtain design approval from the SO	2	0	0				28AUG08	0	-51
Temp. Platform to Construct Air Vent/Drop Shafts										
02L1BB0302	Design preparation by the Designer	2	15	22	07MAR08	21MAR08	04AUG08A	26AUG08A	100	
02L1BB0303	Design submission for the DC's approval	1	0	1			27AUG08A	27AUG08A	100	
02L1BB0304	Design certification by the Design Checker	2	15	30	22MAR08	05APR08	28AUG08	26SEP08	0	28
02L1BB0306	Design submission for the SO's approval	1	1	1	07APR08	07APR08	27SEP08	27SEP08	0	22
02L1BB0308	Design review by the SO	2	28	28	08APR08	05MAY08	28SEP08	25OCT08	0	29
02L1BB0310	Obtain design approval from the SO	2	0	0		05MAY08		25OCT08	0	29
Temporary Drainage Management Plan										
02L1BB0402	TDMP preparation by the Designer	2	15	14	22MAR08	05APR08	05MAY08A	04AUG08A	100	
02L1BB0403	TDMP submission for the DC's approval	1	0	1			05AUG08A	05AUG08A	100	
02L1BB0404	TDMP certification by the Design Checker	2	15	28	06APR08	20APR08	06AUG08A	07SEP08	50	86
02L1BB0406	TDMP submission for the SO's approval	1	1	1	21APR08	21APR08	28AUG08	28AUG08	0	50
02L1BB0408	TDMP review by the SO	2	28	90	22APR08	19MAY08	29AUG08	26NOV08	0	62
02L1BB0410	TDMP submission for DSD's approval	1	0	1		19MAY08	28AUG08	28AUG08	0	47
02L1BB0412	TDMP review by the DSD	2	0	90			29AUG08	26NOV08	0	58
02L1BB0414	Obtain DSD's approval for DDA	1	0	1			27NOV08	27NOV08	0	47
02L1BB0416	Obtain SO's consent for TDMP	2	0	0				27NOV08	0	62
Temp. Support Design for MAA/MAS/VDS/DC/AVS										
02L1BB0502	Design preparation for the AIP submission	2	30	30	07MAR08	05APR08	02JUN08A	10JUL08A	100	
02L1BB0503	Design (AIP) submission for the DC's approval	1	0	1			11JUL08A	11JUL08A	100	
02L1BB0504	Design (AIP) certification by the Design Checker	2	15	60	06APR08	20APR08	12JUL08A	26SEP08	50	-43
02L1BB0506	Design (AIP) submission for the SO's approval	1	1	1	21APR08	21APR08	24JUL08A	24JUL08A	100	
02L1BB0508	Design (AIP) review by the SO	2	60	66	22APR08	20JUN08	25JUL08A	03NOV08	39	-43
02L1BB0510	AIP submission for rel. authorities' approval	1	0	1		20JUN08	12JUL08A	12JUL08A	100	
02L1BB0512	Design (AIP) review by the rel. authorities	2	1	28	21JUN08	21JUN08	14JUL08A	10SEP08	50	9
02L1BB0514	Obtain rel. authorities's approval for AIP	1	15	1	22JUN08	06JUL08	11SEP08	11SEP08	0	7
02L1BB0516	SO submit design (AIP) for approval of GEO	1	1	1	07JUL08	07JUL08	04OCT08	04OCT08	0	-34
02L1BB0518	Design (AIP) review/approval by the GEO	2	0	28		08JUL08	05OCT08	01NOV08	0	-41
02L1BB0520	Obtain SO's consent for design (AIP)	2	30	0	16JUN08	15JUL08		04NOV08	0	-43
02L1BB0522	Design preparation for the DDA submission	2	15	30	16JUL08	30JUL08	13OCT08	11NOV08	0	37
02L1BB0523	Design (DDA) submission for the DC's approval	1	0	1			12NOV08	12NOV08	0	32
02L1BB0524	Design (DDA) certification by the Design Checker	2	1	28	31JUL08	31JUL08	13NOV08	10DEC08	0	37
02L1BB0526	Design (DDA) submission for the SO's approval	1	60	1	01AUG08	29SEP08	12NOV08	12NOV08	0	33



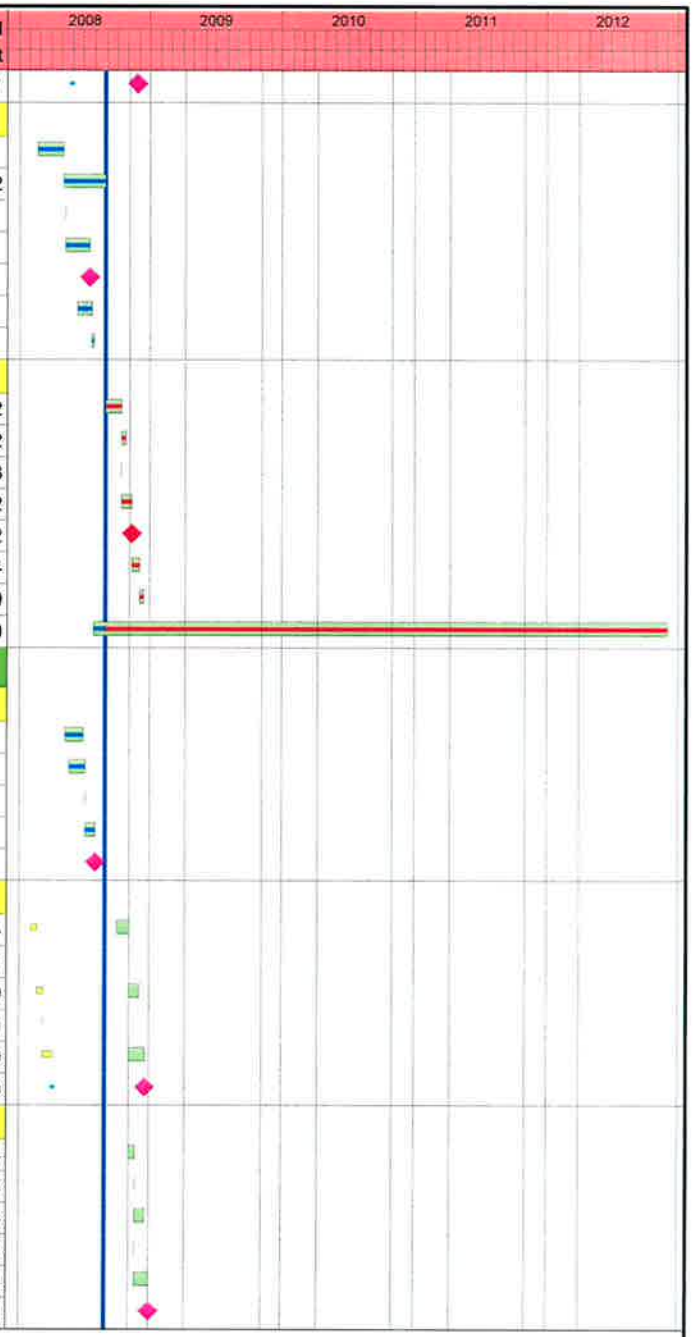
ID	Activity Description	Cal ID	Target Dur	Orig Dur	Target Start	Target Finish	Early Start	Early Finish	% Comp	Total Float
02L1BB0528	Design (DDA) review by the SO	2	0	66		29SEP08	13NOV08	17JAN09	0	38
02L1BB0530	DDA submission for rel. authorities' approval	1	1	1	30SEP08	30SEP08	19NOV08	19NOV08	0	54
02L1BB0532	Design (DDA) review by the rel. authorities	2	28	28	01OCT08	28OCT08	20NOV08	17DEC08	0	69
02L1BB0534	Obtain rel. authorities's approval for DDA	1	1	1	29OCT08	29OCT08	18DEC08	18DEC08	0	53
02L1BB0536	SO submit design (DDA) for approval of GEO	1	0	1		30OCT08	18DEC08	18DEC08	0	29
02L1BB0538	Design (DDA) review/approval by the GEO	2	0	28			19DEC08	15JAN09	0	40
02L1BB0540	Obtain SO's consent for design (DDA)	2	0	0				18JAN09	0	38
Temp. Support Design for MA and MA/MT Connection										
02L1BB0602	Design preparation for the AIP submission	2	30	110	21APR08	20MAY08	09JUN08A	26SEP08	73	704
02L1BB0603	Design (AIP) submission for the DC's approval	1	0	1			27SEP08	27SEP08	0	572
02L1BB0604	Design (AIP) certification by the Design Checker	2	15	28	21MAY08	04JUN08	28SEP08	25OCT08	0	706
02L1BB0606	Design (AIP) submission for the SO's approval	1	1	1	05JUN08	05JUN08	27SEP08	27SEP08	0	570
02L1BB0608	Design (AIP) review by the SO	2	60	66	06JUN08	04AUG08	28SEP08	02DEC08	0	704
02L1BB0610	AIP submission for rel. authorities' approval	1	0	1		04AUG08	04OCT08	04OCT08	0	594
02L1BB0612	Design (AIP) review by the rel. authorities	2	1	28	05AUG08	05AUG08	05OCT08	01NOV08	0	733
02L1BB0614	Obtain rel. authorities's approval for AIP	1	15	1	06AUG08	20AUG08	03NOV08	03NOV08	0	594
02L1BB0616	SO submit design (AIP) for approval of GEO	1	1	1	21AUG08	21AUG08	03NOV08	03NOV08	0	572
02L1BB0618	Design (AIP) review/approval by the GEO	2	0	28		22AUG08	04NOV08	01DEC08	0	705
02L1BB0620	Obtain SO's consent for design (AIP)	2	30	0	31JUL08	29AUG08		03DEC08	0	704
02L1BB0622	Design preparation for the DDA submission	2	15	30	30AUG08	13SEP08	11NOV08	10DEC08	0	704
02L1BB0623	Design (DDA) submission for the DC's approval	1	0	1			11DEC08	11DEC08	0	571
02L1BB0624	Design (DDA) certification by the Design Checker	2	1	28	16SEP08	16SEP08	12DEC08	08JAN09	0	706
02L1BB0626	Design (DDA) submission for the SO's approval	1	60	1	17SEP08	15NOV08	11DEC08	11DEC08	0	569
02L1BB0628	Design (DDA) review by the SO	2	0	66		15NOV08	12DEC08	15FEB09	0	704
02L1BB0630	DDA submission for rel. authorities' approval	1	1	1	17NOV08	17NOV08	18DEC08	18DEC08	0	596
02L1BB0632	Design (DDA) review by the rel. authorities	2	28	28	18NOV08	15DEC08	19DEC08	15JAN09	0	735
02L1BB0634	Obtain rel. authorities's approval for DDA	1	1	1	16DEC08	16DEC08	16JAN09	16JAN09	0	596
02L1BB0636	SO submit design (DDA) for approval of GEO	1	0	1		17DEC08	16JAN09	16JAN09	0	574
02L1BB0638	Design (DDA) review/approval by the GEO	2	0	28			17JAN09	13FEB09	0	706
02L1BB0640	Obtain SO's consent for design (DDA)	2	0	0				16FEB09	0	704
Permanent Design for MAA/MAS/VDS/DC/AVS										
02L1BB0702	Design preparation for the AIP submission	2	30	30	21MAY08	19JUN08	02JUN08A	03JUL08A	100	
02L1BB0703	Design submission for the DC's approval	1	0	1			23JUL08A	23JUL08A	100	
02L1BB0704	Design (AIP) certification by the Design Checker	2	15	60	20JUN08	04JUL08	24JUL08A	26SEP08	50	586
02L1BB0706	Design (AIP) submission for the SO's approval	1	1	1	05JUL08	05JUL08	04JUL08A	04JUL08A	100	
02L1BB0708	Design (AIP) review by the SO	2	60	66	06JUL08	03SEP08	05JUL08A	01NOV08	50	586
02L1BB0710	AIP submission for rel. authorities' approval	1	0	1		03SEP08	03JUL08A	03JUL08A	100	
02L1BB0712	Design (AIP) review by the rel. authorities	2	1	28	04SEP08	04SEP08	04JUL08A	03OCT08	50	614
02L1BB0714	Obtain rel. authorities's approval for AIP	1	15	1	05SEP08	19SEP08	04OCT08	04OCT08	0	496
02L1BB0716	SO submit design (AIP) for approval of GEO	1	1	1	20SEP08	20SEP08	04OCT08	04OCT08	0	473
02L1BB0718	Design (AIP) review/approval by the GEO	2	0	28		22SEP08	05OCT08	01NOV08	0	586



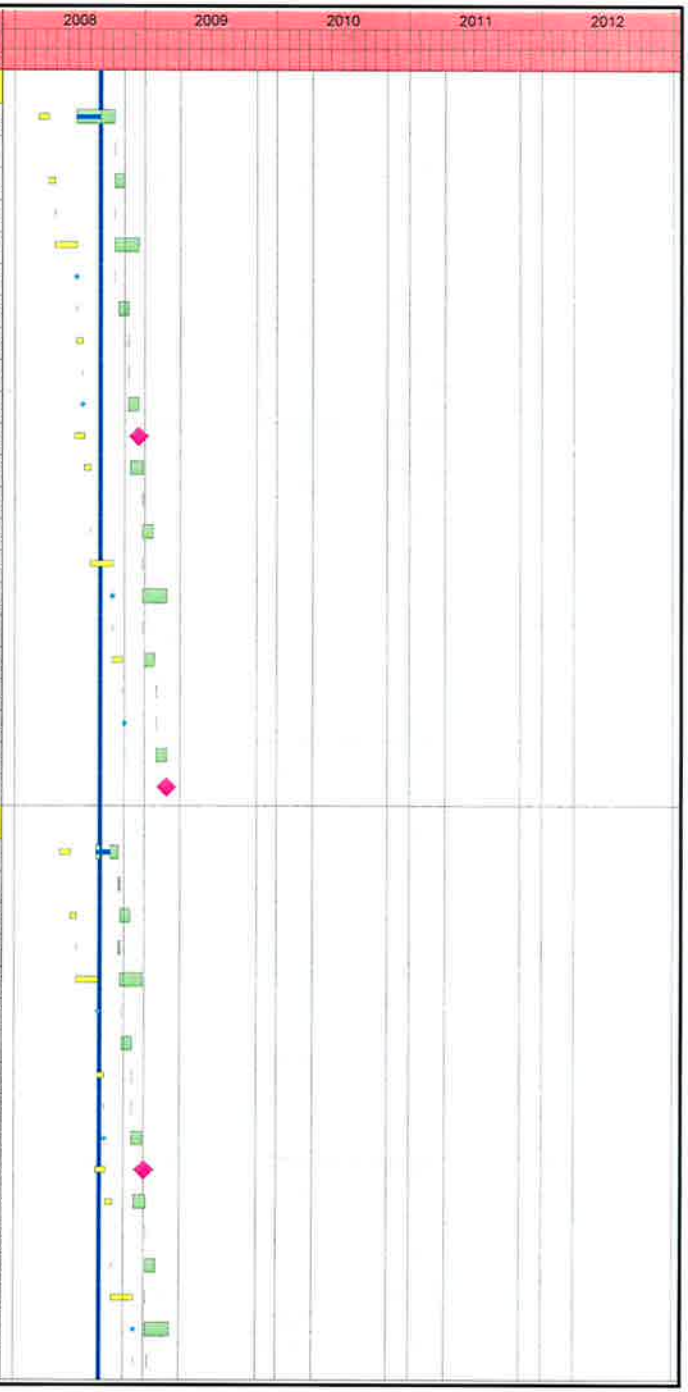
ID	Activity Description	Cal ID	Target Dur	Orig Dur	Target Start	Target Finish	Early Start	Early Finish	% Comp	Total Float
02L1BB0720	Obtain SO's consent for design (AIP)	2	30	0	31AUG08	29SEP08		02NOV08	0	586
02L1BB0722	Design preparation for the DDA submission	2	15	30	30SEP08	14OCT08	11OCT08	09NOV08	0	586
02L1BB0723	Design submission for the DC's approval	1	0	1			10NOV08	10NOV08	0	474
02L1BB0724	Design (DDA) certification by the Design Checker	2	1	28	15OCT08	15OCT08	11NOV08	08DEC08	0	588
02L1BB0726	Design (DDA) submission for the SO's approval	1	60	1	16OCT08	14DEC08	10NOV08	10NOV08	0	473
02L1BB0728	Design (DDA) review by the SO	2	0	66		14DEC08	11NOV08	15JAN09	0	586
02L1BB0730	DDA submission for rel. authorities' approval	1	1	1	15DEC08	15DEC08	10NOV08	10NOV08	0	504
02L1BB0732	Design (DDA) review by the rel. authorities	2	28	28	16DEC08	12JAN09	18NOV08	15DEC08	0	617
02L1BB0734	Obtain rel. authorities's approval for DDA	1	1	1	13JAN09	13JAN09	16DEC08	16DEC08	0	498
02L1BB0736	SO submit design (DDA) for approval of GEO	1	0	1		14JAN09	16DEC08	16DEC08	0	473
02L1BB0738	Design (DDA) review/approval by the GEO	2	0	28			17DEC08	13JAN09	0	588
02L1BB0740	Obtain SO's consent for design (DDA)	2	0	0				16JAN09	0	586
Permanent Design for MA and MA/MT Connection										
02L1BB0802	Design preparation for AIP submission	2	30	90	20JUN08	19JUL08	09JUN08A	12OCT08	49	400
02L1BB0803	Design (AIP) submission for the DC's approval	1	0	1			13OCT08	13OCT08	0	326
02L1BB0804	Design (AIP) certification by the Design Checker	2	15	28	20JUL08	03AUG08	24JUL08A	28OCT08	50	400
02L1BB0806	Design (AIP) submission for the SO's approval	1	1	2	04AUG08	04AUG08	25JUL08A	13OCT08	50	342
02L1BB0808	Design (AIP) review by the SO	2	60	66	05AUG08	03OCT08	26JUL08A	03DEC08	50	400
02L1BB0810	AIP submission for rel. authorities' approval	1	0	1		03OCT08	25JUL08A	07AUG08A	100	
02L1BB0812	Design (AIP) review by the rel. authorities	2	1	28	04OCT08	04OCT08	26JUL08A	04NOV08	50	428
02L1BB0814	Obtain rel. authorities's approval for AIP	1	15	1	05OCT08	19OCT08	05NOV08	05NOV08	0	347
02L1BB0816	SO submit design (AIP) for approval of GEO	1	1	1	20OCT08	20OCT08	05NOV08	05NOV08	0	326
02L1BB0818	Design (AIP) review/approval by the GEO	2	0	28		21OCT08	06NOV08	03DEC08	0	400
02L1BB0820	Obtain SO's consent for design (AIP)	2	30	0	29SEP08	28OCT08		04DEC08	0	400
02L1BB0822	Design preparation for the DDA submission	2	15	30	29OCT08	12NOV08	12NOV08	11DEC08	0	400
02L1BB0823	Design (DDA) submission for the DC's approval	1	0	1			12DEC08	12DEC08	0	325
02L1BB0824	Design (DDA) certification by the Design Checker	2	1	28	13NOV08	13NOV08	13DEC08	09JAN09	0	403
02L1BB0826	Design (DDA) submission for the SO's approval	1	60	1	14NOV08	12JAN09	12DEC08	12DEC08	0	323
02L1BB0828	Design (DDA) review by the SO	2	0	66		12JAN09	13DEC08	16FEB09	0	401
02L1BB0830	DDA submission for rel. authorities' approval	1	1	1	13JAN09	13JAN09	12DEC08	12DEC08	0	353
02L1BB0832	Design (DDA) review by the rel. authorities	2	28	28	14JAN09	10FEB09	20DEC08	16JAN09	0	432
02L1BB0834	Obtain rel. authorities's approval for DDA	1	1	1	11FEB09	11FEB09	17JAN09	17JAN09	0	350
02L1BB0836	SO submit design (DDA) for approval of GEO	1	0	1		12FEB09	17JAN09	17JAN09	0	325
02L1BB0838	Design (DDA) review/approval by the GEO	2	0	28			18JAN09	14FEB09	0	403
02L1BB0840	Obtain SO's consent for design (DDA)	2	0	0				17FEB09	0	401
ELS for Perm. Approach Channel Construction										
02L1BB0902	Design preparation by the Designer	2	15	14	06APR08	20APR08	02OCT08*	15OCT08	0	41
02L1BB0903	Design submission for the DC's approval	1	0	1			16OCT08	16OCT08	0	35
02L1BB0904	Design certification by the Design Checker	2	15	28	21APR08	05MAY08	17OCT08	13NOV08	0	41
02L1BB0906	Design submission for the SO's approval	1	1	1	06MAY08	06MAY08	16OCT08	16OCT08	0	35
02L1BB0908	Design review by the SO	2	21	42	07MAY08	27MAY08	17OCT08	27NOV08	0	41



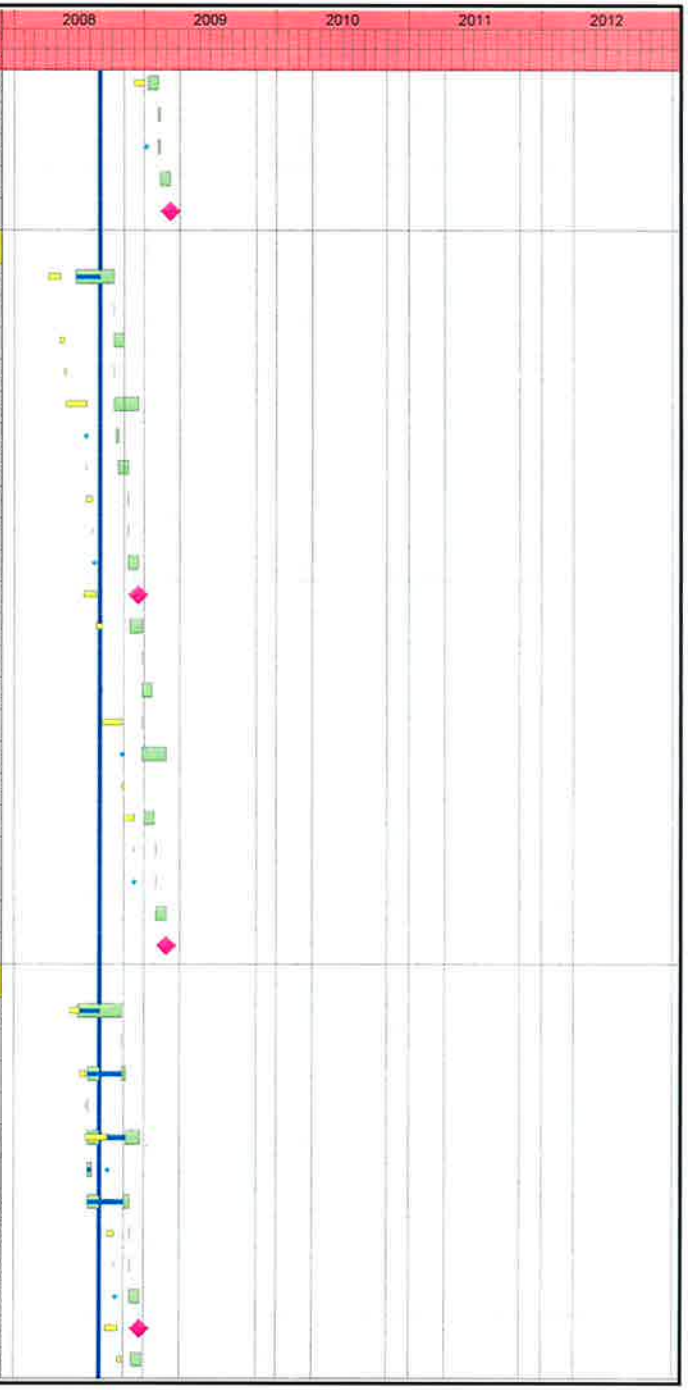
ID	Activity Description	Cal ID	Target Dur	Orig Dur	Target Start	Target Finish	Early Start	Early Finish	% Comp	Total Float
02L1BB0910	Obtain design approval from the SO	2	0	0		27MAY08		27NOV08	0	41
Geotechnical Instrumentation Stg 1 for GL Works										
3DL1BBG102	Design preparation by the Designer	2	0	14			22FEB08A	05MAY08A	100	
3DL1BBG104	Design certification by the Design Checker	2	0	7			06MAY08A	29AUG08	75	-42
3DL1BBG106	Design submission for the SO's approval	1	0	1			10MAY08A	10MAY08A	100	
3DL1BBG108	Design review by the SO	2	0	14			12MAY08A	14JUL08A	100	
3DL1BBG110	Obtain design approval from the SO	2	0	0				14JUL08A	100	
3DL1BBG112	Install Geotechnical Instruments	1	0	6			11JUN08A	19JUL08A	100	
3DL1BBG114	Baseline Monitoring	2	0	14			21JUL08A	26JUL08A	100	
Geotechnical Instrumentation Stg 2 for Deep Exc.										
3DL1BBG202	Design preparation by the Designer	2	0	40			31AUG08	09OCT08	0	-42
3DL1BBG204	Design certification by the Design Checker	2	0	14			10OCT08	23OCT08	0	-42
3DL1BBG206	Design submission for the SO's approval	1	0	1			10OCT08	10OCT08	0	-33
3DL1BBG208	Design review by the SO	2	0	28			11OCT08	07NOV08	0	-42
3DL1BBG210	Obtain design approval from the SO	2	0	0				07NOV08	0	-42
3DL1BBG212	Install Geotechnical Instruments	1	0	18			08NOV08	28NOV08	0	-34
3DL1BBG214	Baseline Monitoring	2	0	14			29NOV08	12DEC08	0	-39
3DL1BBG216	Monitor/report Geotechnical Instrumentation	2	0	1,587			28JUL08A	30NOV12	2	0
Design Packages for Works in Portion C										
Piling Platform for H-pile Wall A										
02L1CC0002	Design preparation by the Designer	2	0	15			12MAY08A	27JUN08A	100	
02L1CC0004	Design certification by the Design Checker	2	0	14			22MAY08A	03JUL08A	100	
02L1CC0006	Design submission for the SO's approval	1	0	1			04JUL08A	04JUL08A	100	
02L1CC0008	Design review by the SO	2	0	14			05JUL08A	29JUL08A	100	
02L1CC0010	Obtain design approval from the SO	2	0	0				29JUL08A	100	
Design for Temp. Access Road to Wall B										
02L1CC0102	Design preparation by the Designer	2	15	40	08FEB08	22FEB08	02OCT08*	03NOV08	18	714
02L1CC0103	Design submission for the DC's approval	1	0	1			04NOV08	04NOV08	0	591
02L1CC0104	Design certification by the Design Checker	2	15	28	23FEB08	08MAR08	05NOV08	02DEC08	0	729
02L1CC0106	Design submission for the SO's approval	1	1	1	10MAR08	10MAR08	04NOV08	04NOV08	0	591
02L1CC0108	Design review by the SO	2	28	42	11MAR08	07APR08	05NOV08	16DEC08	0	729
02L1CC0110	Obtain design approval from the SO	2	0	0		07APR08		16DEC08	0	729
Piling Platform for H-pile Wall B										
02L1CC0202	Design preparation by the Designer	2	0	15			04NOV08	18NOV08*	0	714
02L1CC0203	Design submission for the DC's approval	1	0	1			19NOV08	19NOV08	0	578
02L1CC0204	Design certification by the Design Checker	2	0	28			20NOV08	17DEC08	0	714
02L1CC0206	Design submission for the SO's approval	1	0	1			19NOV08	19NOV08	0	578
02L1CC0208	Design review by the SO	2	0	42			20NOV08	31DEC08	0	714
02L1CC0210	Obtain design approval from the SO	2	0	0				31DEC08	0	714



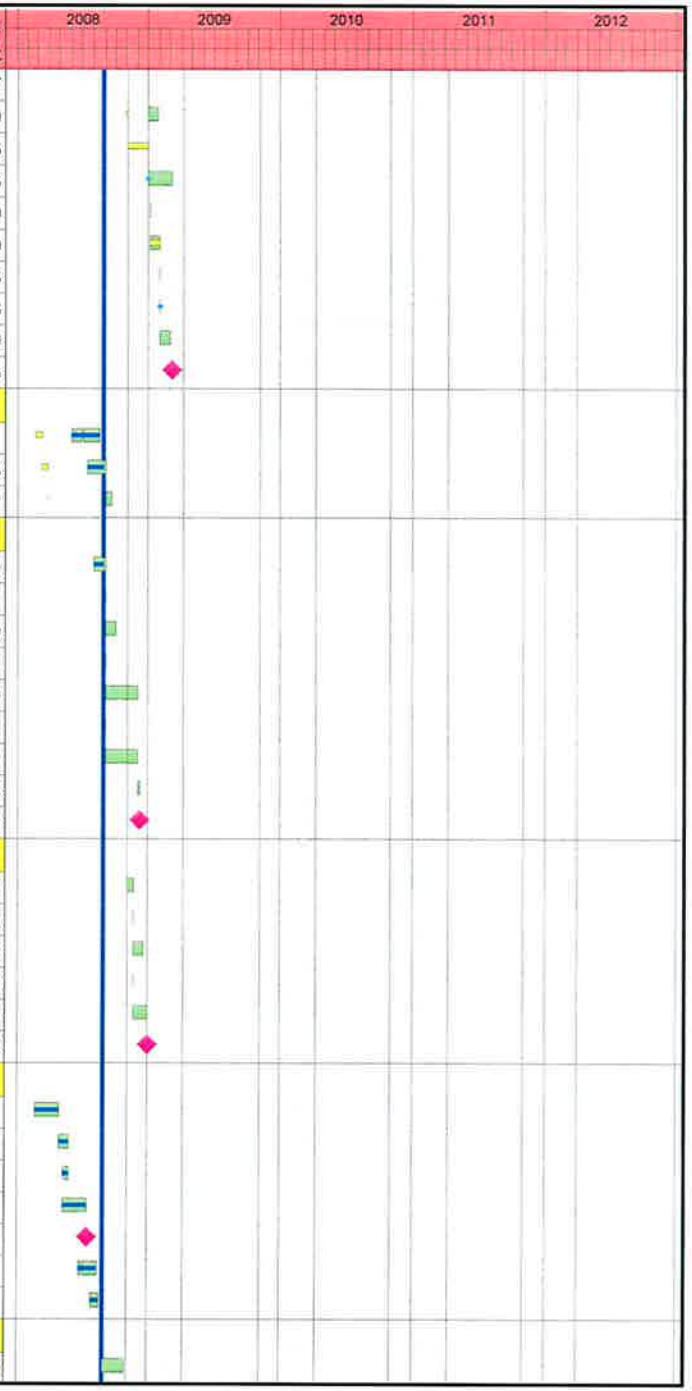
ID	Activity Description	Cal ID	Target Dur	Orig Dur	Target Start	Target Finish	Early Start	Early Finish	% Comp	Total Float
Temp. Support Design for MAA/MAS/VDS/DC/AVS										
02L1CC0302	Design preparation for the AIP submission	2	30	103	09MAR08	07APR08	26JUN08A	06OCT08	61	213
02L1CC0303	Design (AIP) submission for the DC's approval	1	0	1			08OCT08	08OCT08	0	171
02L1CC0304	Design (AIP) certification by the Design Checker	2	15	28	08APR08	22APR08	09OCT08	05NOV08	0	214
02L1CC0306	Design (AIP) submission for the SO's approval	1	1	1	23APR08	23APR08	08OCT08	08OCT08	0	170
02L1CC0308	Design (AIP) review by the SO	2	60	66	24APR08	22JUN08	09OCT08	13DEC08	0	212
02L1CC0310	AIP submission for rel. authorities' approval	1	0	1		22JUN08	08OCT08	08OCT08	0	200
02L1CC0312	Design (AIP) review by the rel. authorities	2	1	28	23JUN08	23JUN08	16OCT08	12NOV08	0	242
02L1CC0314	Obtain rel. authorities's approval for AIP	1	15	1	24JUN08	08JUL08	13NOV08	13NOV08	0	193
02L1CC0316	SO submit design (AIP) for approval of GEO	1	1	1	09JUL08	09JUL08	13NOV08	13NOV08	0	170
02L1CC0318	Design (AIP) review/approval by the GEO	2	0	28		10JUL08	14NOV08	11DEC08	0	214
02L1CC0320	Obtain SO's consent for design (AIP)	2	30	0	18JUN08	17JUL08		14DEC08	0	212
02L1CC0322	Design preparation for the DDA submission	2	15	30	18JUL08	01AUG08	22NOV08	21DEC08	0	212
02L1CC0323	Design (DDA) submission for the DC's approval	1	0	1			22DEC08	22DEC08	0	170
02L1CC0324	Design (DDA) certification by the Design Checker	2	1	28	02AUG08	02AUG08	23DEC08	19JAN09	0	214
02L1CC0326	Design (DDA) submission for the SO's approval	1	60	1	03AUG08	01OCT08	22DEC08	22DEC08	0	168
02L1CC0328	Design (DDA) review by the SO	2	0	66		01OCT08	23DEC08	26FEB09	0	212
02L1CC0330	DDA submission for rel. authorities' approval	1	1	1	02OCT08	02OCT08	22DEC08	22DEC08	0	200
02L1CC0332	Design (DDA) review by the rel. authorities	2	28	28	03OCT08	30OCT08	30DEC08	26JAN09	0	242
02L1CC0334	Obtain rel. authorities's approval for DDA	1	1	1	31OCT08	31OCT08	29JAN09	29JAN09	0	198
02L1CC0336	SO submit design (DDA) for approval of GEO	1	0	1		01NOV08	29JAN09	29JAN09	0	174
02L1CC0338	Design (DDA) review/approval by the GEO	2	0	28			30JAN09	26FEB09	0	212
02L1CC0340	Obtain SO's consent for design (DDA)	2	0	0				27FEB09	0	212
Temp. Support Design for MA and MA/MT Connection										
02L1CC0402	Design preparation for the AIP submission	2	30	30	08MAY08	06JUN08	18AUG08A	18OCT08	20	514
02L1CC0403	Design (AIP) submission for the DC's approval	1	0	1			20OCT08	20OCT08	0	419
02L1CC0404	Design (AIP) certification by the Design Checker	2	15	28	07JUN08	21JUN08	21OCT08	17NOV08	0	515
02L1CC0406	Design (AIP) submission for the SO's approval	1	1	1	23JUN08	23JUN08	20OCT08	20OCT08	0	417
02L1CC0408	Design (AIP) review by the SO	2	60	66	24JUN08	22AUG08	21OCT08	25DEC08	0	513
02L1CC0410	AIP submission for rel. authorities' approval	1	0	1		22AUG08	27OCT08	27OCT08	0	437
02L1CC0412	Design (AIP) review by the rel. authorities	2	1	28	23AUG08	23AUG08	28OCT08	24NOV08	0	541
02L1CC0414	Obtain rel. authorities's approval for AIP	1	15	1	24AUG08	07SEP08	25NOV08	25NOV08	0	436
02L1CC0416	SO submit design (AIP) for approval of GEO	1	1	1	08SEP08	08SEP08	25NOV08	25NOV08	0	415
02L1CC0418	Design (AIP) review/approval by the GEO	2	0	28		09SEP08	26NOV08	23DEC08	0	515
02L1CC0420	Obtain SO's consent for design (AIP)	2	30	0	18AUG08	16SEP08		26DEC08	0	513
02L1CC0422	Design preparation for the DDA submission	2	15	30	17SEP08	01OCT08	04DEC08	02JAN09	0	513
02L1CC0423	Design submission for the DC's approval	1	0	1			03JAN09	03JAN09	0	415
02L1CC0424	Design (DDA) certification by the Design Checker	2	1	28	02OCT08	02OCT08	04JAN09	31JAN09	0	515
02L1CC0426	Design (DDA) submission for the SO's approval	1	60	1	03OCT08	01DEC08	03JAN09	03JAN09	0	413
02L1CC0428	Design (DDA) review by the SO	2	0	66		01DEC08	04JAN09	10MAR09	0	513
02L1CC0430	DDA submission for rel. authorities' approval	1	1	1	02DEC08	02DEC08	10JAN09	10JAN09	0	437



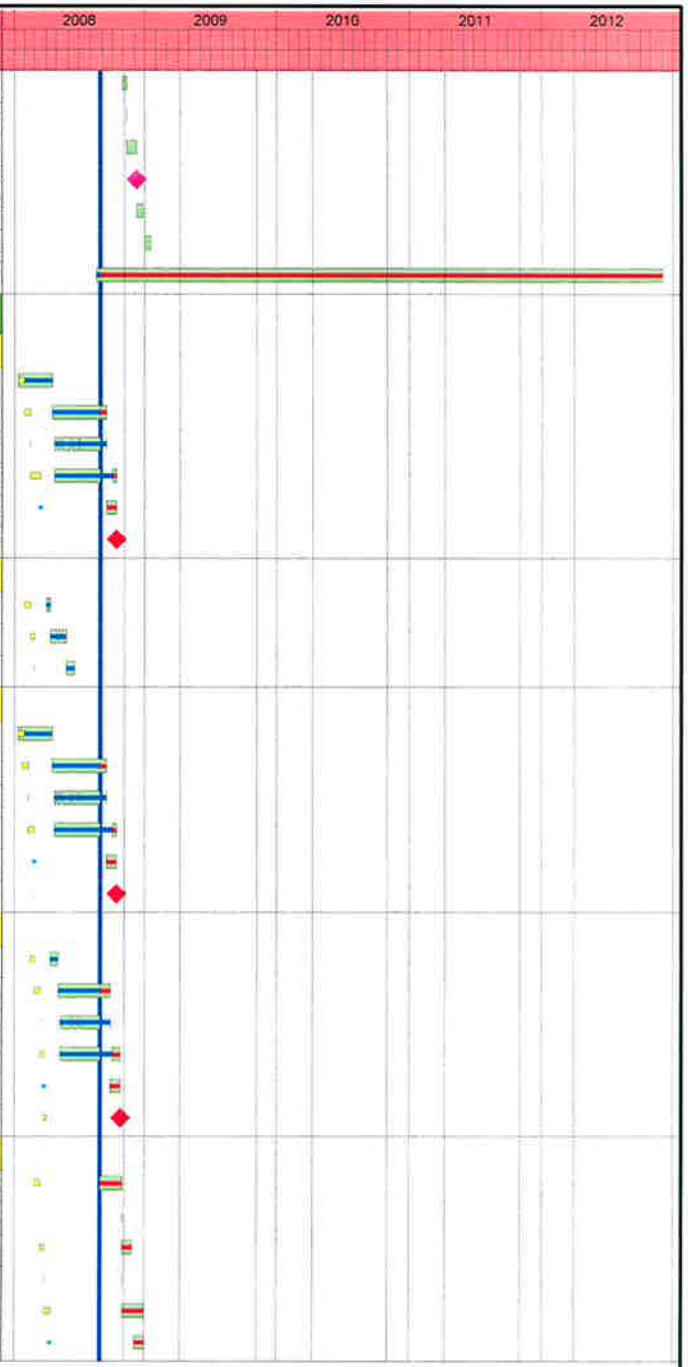
ID	Activity Description	Cal ID	Target Dur	Orig Dur	Target Start	Target Finish	Early Start	Early Finish	% Comp	Total Float
02L1CC0432	Design (DDA) review by the rel. authorities	2	28	28	03DEC08	30DEC08	11JAN09	07FEB09	0	543
02L1CC0434	Obtain rel. authorities's approval for DDA	1	1	1	31DEC08	31DEC08	09FEB09	09FEB09	0	440
02L1CC0436	SO submit design (DDA) for approval of GEO	1	0	1		02JAN09	09FEB09	09FEB09	0	416
02L1CC0438	Design (DDA) review/approval by the GEO	2	0	28			10FEB09	09MAR09	0	514
02L1CC0440	Obtain SO's consent for design (DDA)	2	0	0				10MAR09	0	513
Permanent Design for MAA/MAS/VDS/DC/AVS										
02L1CC0502	Design preparation for the AIP submission	2	30	103	08APR08	07MAY08	26JUN08A	06OCT08	61	650
02L1CC0503	Design submission for the DC's approval	1	0	1			08OCT08	08OCT08	0	527
02L1CC0504	Design (AIP) certification by the Design Checker	2	15	28	08MAY08	22MAY08	09OCT08	05NOV08	0	651
02L1CC0506	Design (AIP) submission for the SO's approval	1	1	1	23MAY08	23MAY08	08OCT08	08OCT08	0	525
02L1CC0508	Design (AIP) review by the SO	2	60	66	24MAY08	22JUL08	09OCT08	13DEC08	0	649
02L1CC0510	AIP submission for rel. authorities' approval	1	0	1		22JUL08	15OCT08	15OCT08	0	550
02L1CC0512	Design (AIP) review by the rel. authorities	2	1	28	23JUL08	23JUL08	16OCT08	12NOV08	0	678
02L1CC0514	Obtain rel. authorities's approval for AIP	1	15	1	24JUL08	07AUG08	13NOV08	13NOV08	0	550
02L1CC0516	SO submit design (AIP) for approval of GEO	1	1	1	08AUG08	08AUG08	13NOV08	13NOV08	0	527
02L1CC0518	Design (AIP) review/approval by the GEO	2	0	28		09AUG08	14NOV08	11DEC08	0	651
02L1CC0520	Obtain SO's consent for design (AIP)	2	30	0	18JUL08	16AUG08		14DEC08	0	649
02L1CC0522	Design preparation for the DDA submission	2	15	30	17AUG08	31AUG08	22NOV08	21DEC08	0	649
02L1CC0523	Design submission for the DC's approval	1	0	1			22DEC08	22DEC08	0	526
02L1CC0524	Design (DDA) certification by the Design Checker	2	1	28	01SEP08	01SEP08	23DEC08	19JAN09	0	652
02L1CC0526	Design (DDA) submission for the SO's approval	1	60	1	02SEP08	31OCT08	22DEC08	22DEC08	0	524
02L1CC0528	Design (DDA) review by the SO	2	0	66		31OCT08	23DEC08	26FEB09	0	650
02L1CC0530	DDA submission for rel. authorities' approval	1	1	1	01NOV08	01NOV08	29DEC08	29DEC08	0	552
02L1CC0532	Design (DDA) review by the rel. authorities	2	28	28	02NOV08	29NOV08	30DEC08	26JAN09	0	681
02L1CC0534	Obtain rel. authorities's approval for DDA	1	1	1	01DEC08	01DEC08	29JAN09	29JAN09	0	554
02L1CC0536	SO submit design (DDA) for approval of GEO	1	0	1		02DEC08	29JAN09	29JAN09	0	529
02L1CC0538	Design (DDA) review/approval by the GEO	2	0	28			30JAN09	26FEB09	0	650
02L1CC0540	Obtain SO's consent for design (DDA)	2	0	0				27FEB09	0	650
Permanent Design for MA and MA/MT Connection										
02L1CC0602	Design preparation for the AIP submission	2	30	84	07JUN08	06JUL08	01JUL08A	26OCT08	29	750
02L1CC0603	Design (AIP) submission for the DC's approval	1	0	1					100	
02L1CC0604	Design (AIP) certification by the Design Checker	2	15	28	07JUL08	21JUL08	26JUL08A	10NOV08	50	750
02L1CC0606	Design (AIP) submission for the SO's approval	1	1	1	22JUL08	22JUL08	26JUL08A	26JUL08A	100	
02L1CC0608	Design (AIP) review by the SO	2	60	66	23JUL08	20SEP08	28JUL08A	16DEC08	47	750
02L1CC0610	AIP submission for rel. authorities' approval	1	0	1		20SEP08	25JUL08A	08AUG08A	100	
02L1CC0612	Design (AIP) review by the rel. authorities	2	1	28	22SEP08	22SEP08	26JUL08A	17NOV08	50	778
02L1CC0614	Obtain rel. authorities's approval for AIP	1	15	1	23SEP08	07OCT08	18NOV08	18NOV08	0	630
02L1CC0616	SO submit design (AIP) for approval of GEO	1	1	1	08OCT08	08OCT08	18NOV08	18NOV08	0	609
02L1CC0618	Design (AIP) review/approval by the GEO	2	0	28		09OCT08	19NOV08	16DEC08	0	750
02L1CC0620	Obtain SO's consent for design (AIP)	2	30	0	17SEP08	16OCT08		17DEC08	0	750
02L1CC0622	Design preparation for the DDA submission	2	15	30	17OCT08	31OCT08	25NOV08	24DEC08	0	750



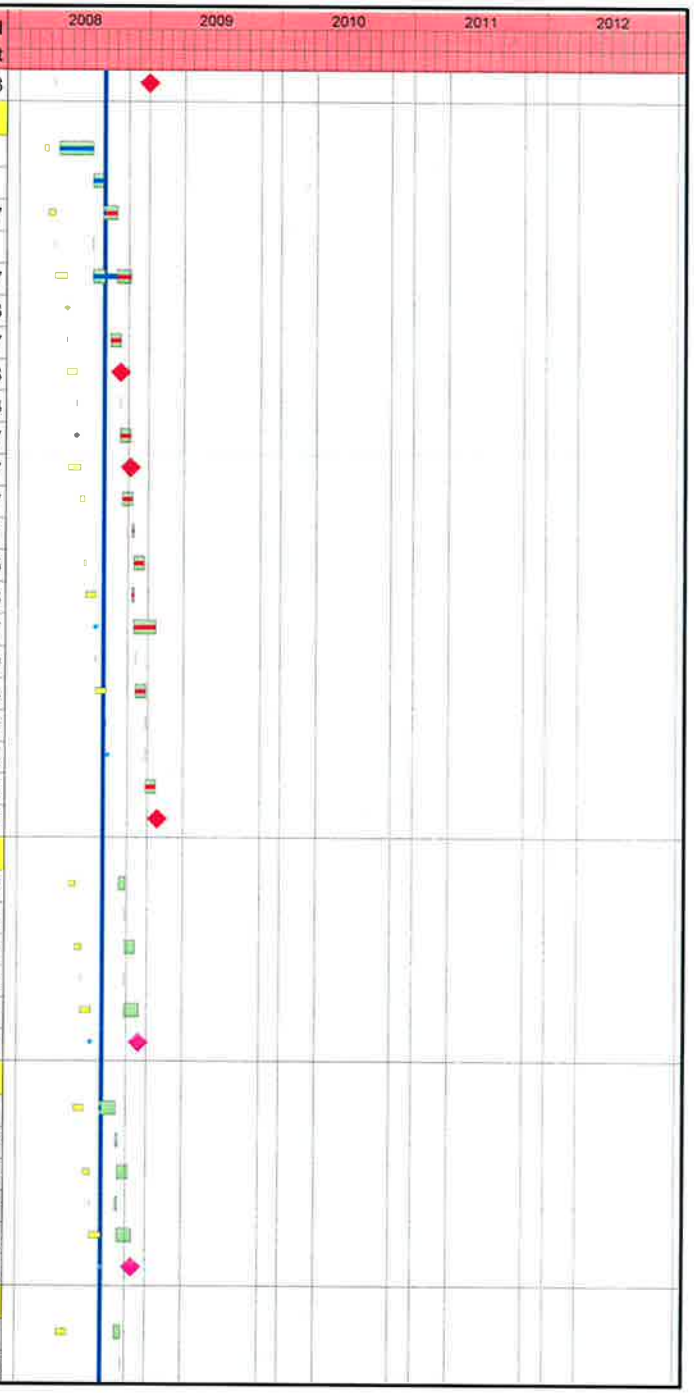
ID	Activity Description	Cal ID	Target Dur	Orig Dur	Target Start	Target Finish	Early Start	Early Finish	% Comp	Total Float
02L1CC0623	Design (DDA) submission for the DC's approval	1	0	1			27DEC08	27DEC08	0	607
02L1CC0624	Design (DDA) certification by the Design Checker	2	1	28	01NOV08	01NOV08	28DEC08	24JAN09	0	750
02L1CC0626	Design (DDA) submission for the SO's approval	1	60	1	02NOV08	31DEC08	27DEC08	27DEC08	0	606
02L1CC0628	Design (DDA) review by the SO	2	0	66		31DEC08	28DEC08	03MAR09	0	748
02L1CC0630	DDA submission for rel. authorities' approval	1	1	1	02JAN09	02JAN09	03JAN09	03JAN09	0	630
02L1CC0632	Design (DDA) review by the rel. authorities	2	28	28	03JAN09	30JAN09	04JAN09	31JAN09	0	779
02L1CC0634	Obtain rel. authorities's approval for DDA	1	1	1	31JAN09	31JAN09	02FEB09	02FEB09	0	633
02L1CC0636	SO submit design (DDA) for approval of GEO	1	0	1		02FEB09	02FEB09	02FEB09	0	608
02L1CC0638	Design (DDA) review/approval by the GEO	2	0	28			03FEB09	02MAR09	0	749
02L1CC0640	Obtain SO's consent for design (DDA)	2	0	0				04MAR09	0	748
Boulder Assessment & Design for Stabili. Measure										
02L1CC0702	Boulder Surevey	1	15	30	23FEB08	08MAR08	02JUN08A	15AUG08A	100	
02L1CC0704	Prepare/submit boulder surevey report	1	15	25	09MAR08	23MAR08	14JUL08A	05SEP08	68	163
02L1CC0706	SO review boulder survey report	2	1	14	25MAR08	25MAR08	06SEP08	19SEP08	0	201
Temporary Drainage Management Plan										
02L1CC0802	TDMP preparation by the Designer	2	0	14			04AUG08A	03SEP08	50	210
02L1CC0803	TDMP submission for the DC's approval	1	0	1			04SEP08	04SEP08	0	171
02L1CC0804	TDMP certification by the Design Checker	2	0	28			05SEP08	02OCT08	0	210
02L1CC0806	TDMP submission for the SO's approval	1	0	1			04SEP08	04SEP08	0	171
02L1CC0808	TDMP review by the SO	2	0	90			05SEP08	03DEC08	0	210
02L1CC0810	TDMP submission for DSD's approval	1	0	1			04SEP08	04SEP08	0	171
02L1CC0812	TDMP review by the DSD	2	0	90			05SEP08	03DEC08	0	210
02L1CC0814	Obtain DSD's approval for DDA	1	0	1			04DEC08	04DEC08	0	166
02L1CC0816	Obtain SO's consent for TDMP	2	0	0				04DEC08	0	210
ELS for Permanent Approach Channel Construction										
02L1CC0902	Design preparation by the Designer	2	0	15			03NOV08*	17NOV08	0	643
02L1CC0903	Design submission for the DC's approval	1	0	1			18NOV08	18NOV08	0	520
02L1CC0904	Design certification by the Design Checker	2	0	28			19NOV08	16DEC08	0	643
02L1CC0906	Design submission for the SO's approval	1	0	1			18NOV08	18NOV08	0	520
02L1CC0908	Design review by the SO	2	0	42			19NOV08	30DEC08	0	643
02L1CC0910	Obtain design approval from the SO	2	0	0				30DEC08	0	643
Geotechnical Instrumentation Stg 1 for GL Works										
3DL1CCG102	Design preparation by the Designer	2	0	14			22FEB08A	29APR08A	100	
3DL1CCG104	Design certification by the Design Checker	2	0	7			30APR08A	26MAY08A	100	
3DL1CCG106	Design submission for the SO's approval	1	0	1			10MAY08A	26MAY08A	100	
3DL1CCG108	Design review by the SO	2	0	14			12MAY08A	14JUL08A	100	
3DL1CCG110	Obtain design approval from the SO	2	0	0				14JUL08A	100	
3DL1CCG112	Install Geotechnical Instruments	1	0	19			24JUN08A	09AUG08A	100	
3DL1CCG114	Baseline Monitoring	2	0	14			26JUL08A	16AUG08A	100	
Geotechnical Instrumentation Stg 2 for Deep Exc.										
3DL1CCG202	Design preparation by the Designer	2	0	60			28AUG08	26OCT08	0	256



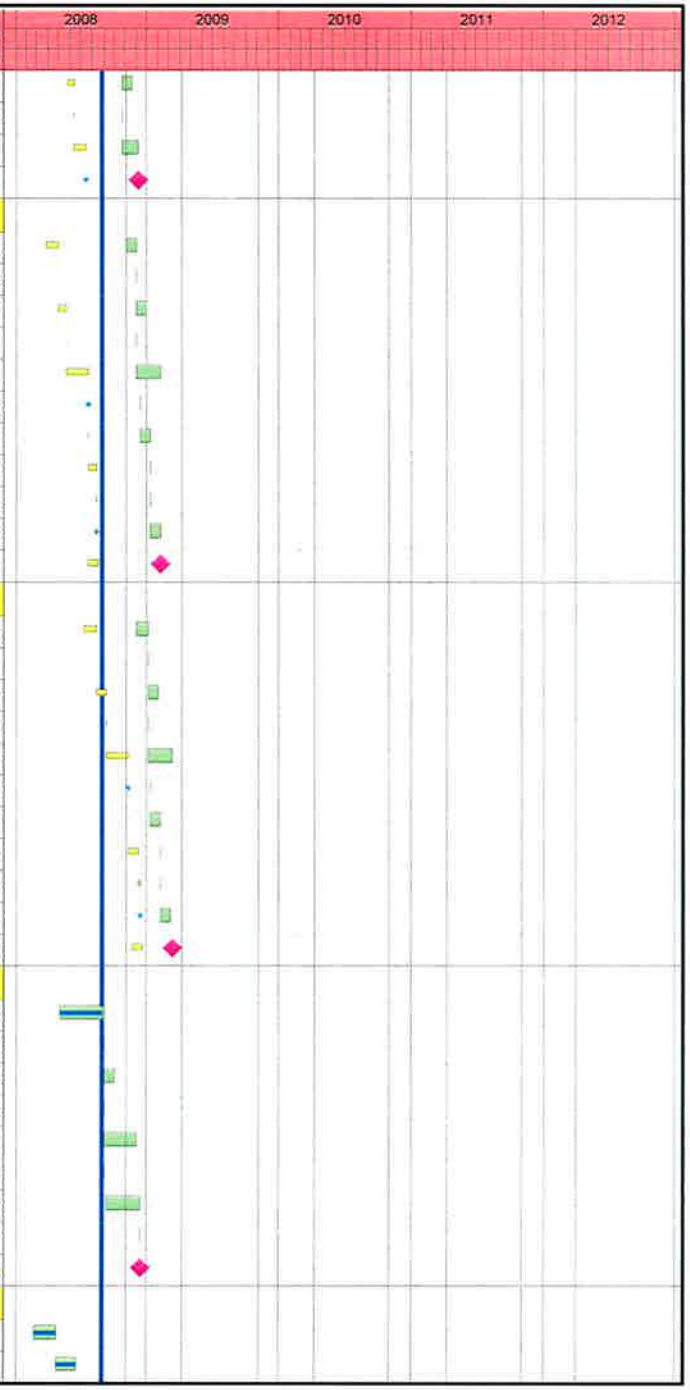
ID	Activity Description	Cal ID	Target Dur	Orig Dur	Target Start	Target Finish	Early Start	Early Finish	% Comp	Total Float
3DL1CCG204	Design certification by the Design Checker	2	0	14			27OCT08	09NOV08	0	256
3DL1CCG206	Design submission for the SO's approval	1	0	1			10NOV08	10NOV08	0	206
3DL1CCG210	Design review by the SO	2	0	28			11NOV08	08DEC08	0	256
3DL1CCG212	Obtain design approval from the SO	2	0	0				08DEC08	0	256
3DL1CCG214	Install Geotechnical Instruments	1	0	18			09DEC08	31DEC08	0	206
3DL1CCG216	Baseline Monitoring	2	0	14			01JAN09	14JAN09	0	254
3DL1CCG218	Monitor/report Geotechnical Instrumentation	2	0	1,566			18AUG08A	30NOV12	1	0
Design Packages for Works in Portion D										
Temp. Access Rd Design at P. D; +14mPD to +69mPD										
02L1DD0102	Design preparation by the Designer	2	14	14	17JAN08	30JAN08	17JAN08A	16APR08A	100	
02L1DD0104	Design certification by the Design Checker	2	14	150	01FEB08	14FEB08	17APR08A	13SEP08	89	-90
02L1DD0106	Design submission for the SO's approval	1	1	2	15FEB08	15FEB08	25APR08A	16SEP08	50	-77
02L1DD0108	Design review by the SO	2	28	90	16FEB08	14MAR08	26APR08A	14OCT08	83	-92
02L1DD0110	Design review by GEO	2	0	28		14MAR08	17SEP08	14OCT08	0	-92
02L1DD0112	Obtain design approval from the SO	2	0	0				14OCT08	0	-92
Boulder Assessment & Design for Stabili. Measure										
02L1DD0302	Boulder Surevey	1	15	14	31JAN08	14FEB08	03APR08A	11APR08A	100	
02L1DD0304	Prepare/submit boulder surevey report	1	14	25	15FEB08	28FEB08	12APR08A	26MAY08A	100	
02L1DD0306	SO review boulder survey report	2	1	14	29FEB08	29FEB08	27MAY08A	16JUN08A	100	
Site Formation Design; +69mPD to +40mPD										
02L1DD0402	Design preparation by the Designer	2	14	14	17JAN08	30JAN08	17JAN08A	16APR08A	100	
02L1DD0404	Design certification by the Design Checker	2	14	150	27JAN08	09FEB08	17APR08A	13SEP08	89	-17
02L1DD0406	Design submission for the SO's approval	1	1	2	11FEB08	11FEB08	25APR08A	16SEP08	50	-15
02L1DD0408	Design review by the SO	2	14	90	12FEB08	25FEB08	26APR08A	14OCT08	83	-19
02L1DD0410	Design review by GEO	2	0	28		25FEB08	17SEP08	14OCT08	0	-19
02L1DD0412	Obtain design approval from the SO	2	1	0	26FEB08	26FEB08		14OCT08	0	-19
Site Formation Design; +40mPD to +24mPD										
02L1DD0502	Design preparation by the Designer	2	14	14	15FEB08	28FEB08	14APR08A	03MAY08A	100	
02L1DD0504	Design certification by the Design Checker	2	14	145	29FEB08	13MAR08	05MAY08A	26SEP08	79	-29
02L1DD0506	Design submission for the SO's approval	1	1	2	14MAR08	14MAR08	10MAY08A	26SEP08	50	-24
02L1DD0508	Design review by the SO	2	14	90	15MAR08	28MAR08	12MAY08A	24OCT08	77	-29
02L1DD0510	Design review by GEO	2	0	28		28MAR08	27SEP08	24OCT08	0	-29
02L1DD0512	Obtain design approval from the SO	2	1	0	29MAR08	29MAR08		24OCT08	0	-29
Site Formation Design; +24mPD to 14mPD										
02L1DD0602	Design preparation by the Designer	2	14	60	29FEB08	13MAR08	28AUG08	26OCT08	0	-18
02L1DD0603	Design submission for the DC's approval	1	0	1			27OCT08	27OCT08	0	-15
02L1DD0604	Design certification by the Design Checker	2	14	28	14MAR08	27MAR08	28OCT08	24NOV08	0	-18
02L1DD0606	Design submission for the SO's approval	1	1	1	28MAR08	28MAR08	27OCT08	27OCT08	0	-15
02L1DD0608	Design review by the SO	2	14	63	29MAR08	11APR08	28OCT08	29DEC08	0	-18
02L1DD0610	Design review by GEO	2	0	28		11APR08	02DEC08	29DEC08	0	-18



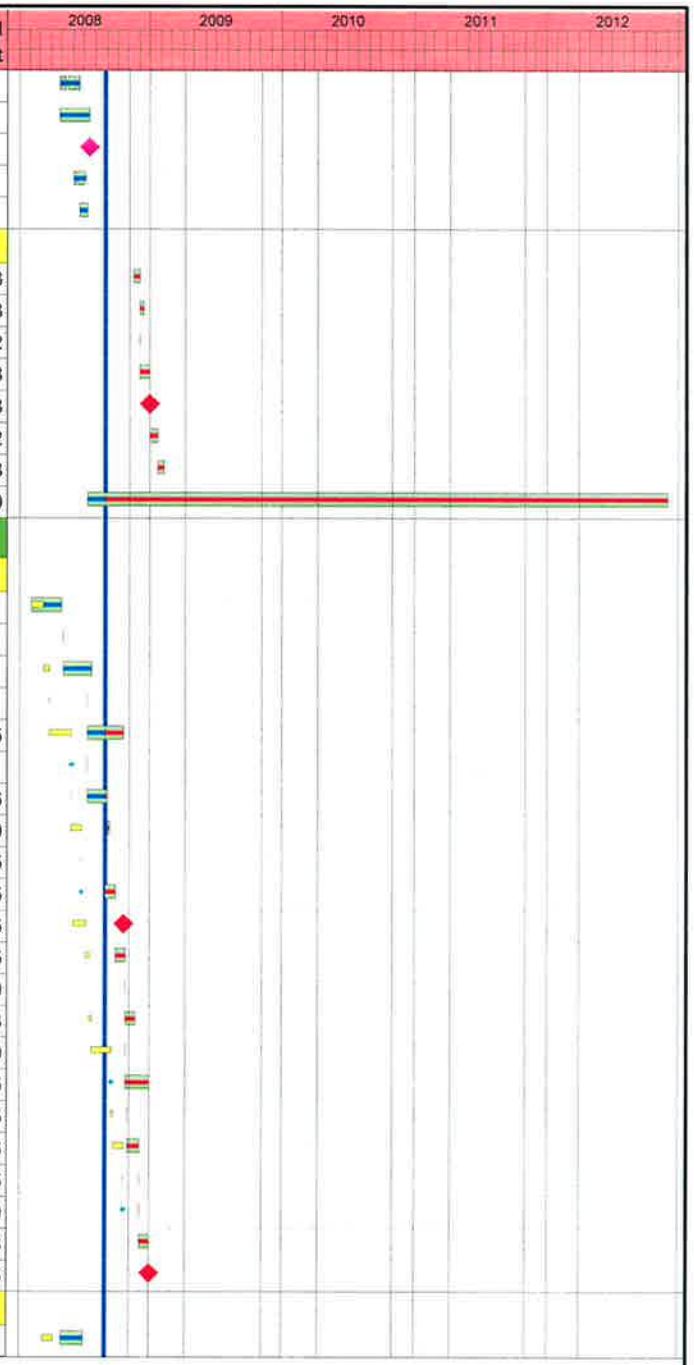
ID	Activity Description	Cal ID	Target Dur	Orig Dur	Target Start	Target Finish	Early Start	Early Finish	% Comp	Total Float
02L1DD0612	Obtain design approval from the SO	2	1	0	12APR08	12APR08		29DEC08	0	-18
TBM Launching Chamber Design										
02L1DD0702	Design (AIP) preparation by the Designer	2	15	60	14MAR08	28MAR08	21APR08A	26JUL08A	100	
02L1DD0703	Design (AIP) submission for the DC's approval	1	0	1			28JUL08A	20AUG08A	100	
02L1DD0704	Design (AIP) certification by the Design Checker	2	15	37	29MAR08	12APR08	21AUG08A	03OCT08	0	-77
02L1DD0706	Design (AIP) submission for the SO's approval	1	1	1	14APR08	14APR08	28JUL08A	28JUL08A	100	
02L1DD0708	Design (AIP) review by the SO	2	30	66	15APR08	14MAY08	29JUL08A	08NOV08	46	-77
02L1DD0710	AIP submission for rel. authorities' approval	1	0	1		14MAY08	28AUG08	28AUG08	0	-28
02L1DD0712	Design (AIP) review by the rel. authorities	2	1	28	15MAY08	15MAY08	13SEP08	10OCT08	0	-47
02L1DD0714	Obtain rel. authorities's approval for AIP	1	28	0	16MAY08	12JUN08		10OCT08	0	-38
02L1DD0716	SO submit Design (AIP) for approval of GEO	1	1	1	13JUN08	13JUN08	11OCT08	11OCT08	0	-63
02L1DD0718	Design (AIP) review/approval by the GEO	2	0	28		14JUN08	12OCT08	08NOV08	0	-77
02L1DD0720	Obtain SO's consent for design (AIP)	2	30	0	23MAY08	21JUN08		09NOV08	0	-77
02L1DD0722	Design preparation for the DDA submission	2	15	30	22JUN08	06JUL08	18OCT08	16NOV08	0	-77
02L1DD0723	Design (DDA) submission for the DC's approval	1	0	1			17NOV08	17NOV08	0	-61
02L1DD0724	Design (DDA) certification by the Design Checker	2	1	28	07JUL08	07JUL08	18NOV08	15DEC08	0	-75
02L1DD0726	Design (DDA) submission for the SO's approval	1	30	1	08JUL08	06AUG08	17NOV08	17NOV08	0	-63
02L1DD0728	Design (DDA) review by the SO	2	0	66		06AUG08	18NOV08	22JAN09	0	-77
02L1DD0730	DDA submission for rel. authorities' approval	1	1	1	07AUG08	07AUG08	24NOV08	24NOV08	0	-39
02L1DD0732	Design (DDA) review by the rel. authorities	2	28	28	08AUG08	04SEP08	25NOV08	22DEC08	0	-46
02L1DD0734	Obtain rel. authorities's approval for DDA	1	1	1	05SEP08	05SEP08	23DEC08	23DEC08	0	-39
02L1DD0736	SO submit design (DDA) for approval of GEO	1	0	1		06SEP08	23DEC08	23DEC08	0	-64
02L1DD0738	Design (DDA) review/approval by the GEO	2	0	28			24DEC08	20JAN09	0	-75
02L1DD0740	Obtain SO's consent for design (DDA)	2	0	0				23JAN09	0	-77
Hopper Design										
02L1DD0802	Design preparation by the Designer	2	15	14	28MAY08	11JUN08	13OCT08*	26OCT08	0	37
02L1DD0803	Design submission for the DC's approval	1	0	1			27OCT08	27OCT08	0	32
02L1DD0804	Design certification by the Design Checker	2	15	28	12JUN08	26JUN08	28OCT08	24NOV08	0	37
02L1DD0806	Design submission for the SO's approval	1	1	1	27JUN08	27JUN08	27OCT08	27OCT08	0	32
02L1DD0808	Design review by the SO	2	30	42	28JUN08	27JUL08	28OCT08	08DEC08	0	37
02L1DD0810	Obtain design approval from the SO	2	0	0		27JUL08		08DEC08	0	37
Steel Platform Design										
02L1DD0902	Design preparation by the Designer	2	30	45	12JUN08	11JUL08	25AUG08A	08OCT08	7	41
02L1DD0903	Design submission for the DC's approval	1	0	1			09OCT08	09OCT08	0	47
02L1DD0904	Design certification by the Design Checker	2	15	28	12JUL08	26JUL08	10OCT08	06NOV08	0	55
02L1DD0906	Design submission for the SO's approval	1	1	1	28JUL08	28JUL08	09OCT08	09OCT08	0	47
02L1DD0908	Design review by the SO	2	30	42	29JUL08	27AUG08	10OCT08	20NOV08	0	55
02L1DD0910	Obtain design approval from the SO	2	0	0		27AUG08		20NOV08	0	55
Overhead Gantry Support & Noise Enclosure Design										
02L1DD1002	Design preparation by the Designer	2	30	14	28APR08	27MAY08	09OCT08	22OCT08	0	41
02L1DD1003	Design submission for the DC's approval	1	0	1			23OCT08	23OCT08	0	35



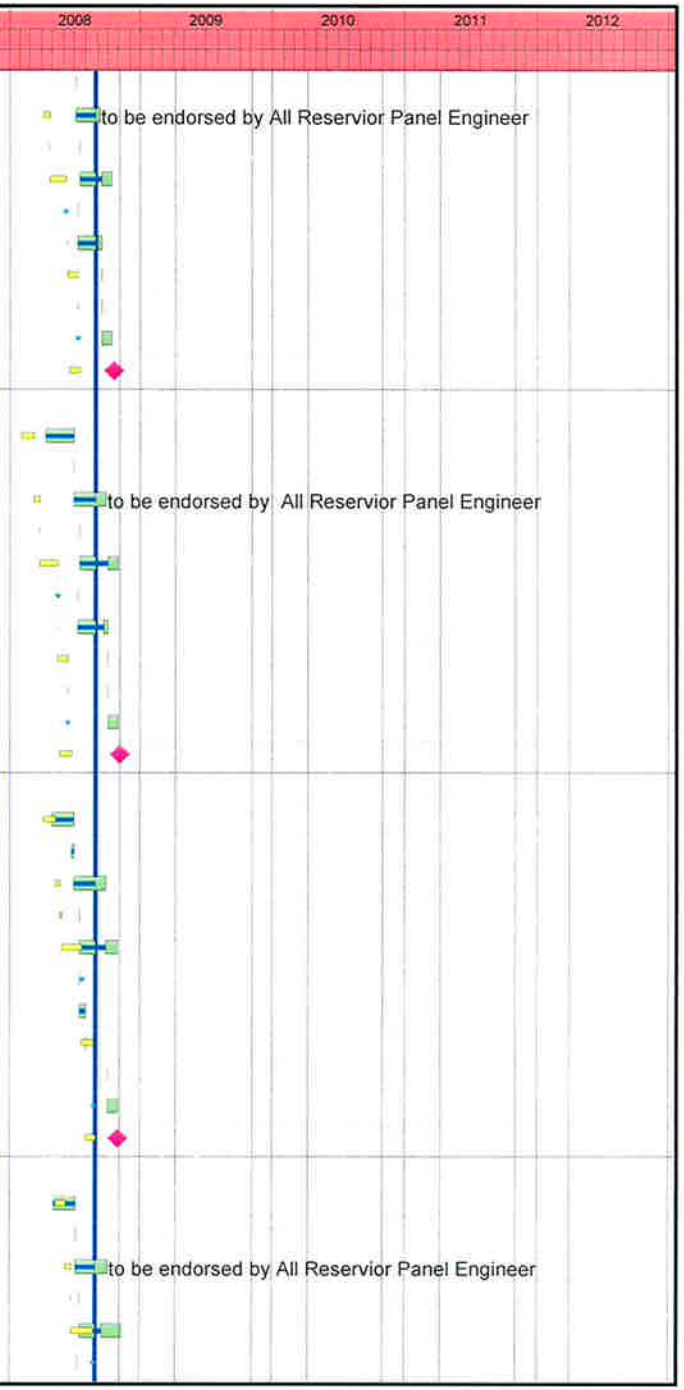
ID	Activity Description	Cal ID	Target Dur	Orig Dur	Target Start	Target Finish	Early Start	Early Finish	% Comp	Total Float
02L1DD1004	Design certification by the Design Checker	2	15	28	28MAY08	11JUN08	24OCT08	20NOV08	0	41
02L1DD1006	Design submission for the SO's approval	1	1	1	12JUN08	12JUN08	23OCT08	23OCT08	0	35
02L1DD1008	Design review by the SO	2	30	42	13JUN08	12JUL08	24OCT08	04DEC08	0	41
02L1DD1010	Obtain design approval from the SO	2	0	0		12JUL08		04DEC08	0	41
ELS Design for Spiral Ramp & Vehicular Access										
02L1DD1102	Design preparation for the AIP submission	2	30	30	29MAR08	27APR08	03NOV08*	02DEC08	0	175
02L1DD1103	Design (DDA) submission for the DC's approval	1	0	1			03DEC08	03DEC08	0	152
02L1DD1104	Design (DDA) certification by the Design Checker	2	21	28	28APR08	18MAY08	04DEC08	31DEC08	0	193
02L1DD1106	Design (DDA) submission for the SO's approval	1	1	1	19MAY08	19MAY08	03DEC08	03DEC08	0	151
02L1DD1108	Design (DDA) review by the SO	2	60	66	20MAY08	18JUL08	04DEC08	07FEB09	0	191
02L1DD1110	DDA submission for rel. authorities' approval	1	0	1		18JUL08	10DEC08	10DEC08	0	176
02L1DD1112	Design (DDA) review by the rel. authorities	2	1	28	19JUL08	19JUL08	11DEC08	07JAN09	0	222
02L1DD1114	Obtain rel. authorities's approval for DDA	1	21	1	20JUL08	09AUG08	08JAN09	08JAN09	0	179
02L1DD1116	SO submit design (DDA) for approval of GEO	1	1	1	11AUG08	11AUG08	08JAN09	08JAN09	0	154
02L1DD1118	Design (DDA) review/approval by the GEO	2	0	28		12AUG08	09JAN09	05FEB09	0	193
02L1DD1120	Obtain SO's consent for design (DDA)	2	30	0	21JUL08	19AUG08		08FEB09	0	191
ELS Design for Box Culvert & Open Channel										
02L1DD1202	Design preparation for the AIP submission	2	30	30	12JUL08	10AUG08	03DEC08	01JAN09	0	175
02L1DD1203	Design (DDA) submission for the DC's approval	1	0	1			02JAN09	02JAN09	0	141
02L1DD1204	Design (DDA) certification by the Design Checker	2	30	28	11AUG08	09SEP08	03JAN09	30JAN09	0	177
02L1DD1206	Design (DDA) submission for the SO's approval	1	1	1	10SEP08	10SEP08	02JAN09	02JAN09	0	140
02L1DD1208	Design (DDA) review by the SO	2	60	66	11SEP08	09NOV08	03JAN09	09MAR09	0	175
02L1DD1210	DDA submission for rel. authorities' approval	1	0	1		09NOV08	09JAN09	09JAN09	0	165
02L1DD1212	Design (DDA) review by the rel. authorities	2	1	28	10NOV08	10NOV08	10JAN09	06FEB09	0	206
02L1DD1214	Obtain rel. authorities's approval for DDA	1	28	1	11NOV08	08DEC08	07FEB09	07FEB09	0	168
02L1DD1216	SO submit design (DDA) for approval of GEO	1	1	1	09DEC08	09DEC08	07FEB09	07FEB09	0	143
02L1DD1218	Design (DDA) review/approval by the GEO	2	0	28		10DEC08	08FEB09	07MAR09	0	177
02L1DD1220	Obtain SO's consent for design (DDA)	2	30	0	18NOV08	17DEC08		10MAR09	0	175
Temporary Drainage Management Plan										
02L1DD1302	TDMP preparation by the Designer	2	0	14			05MAY08A	02SEP08	57	223
02L1DD1303	TDMP submission for the DC's approval	1	0	1			03SEP08	03SEP08	0	178
02L1DD1304	TDMP certification by the Design Checker	2	0	28			04SEP08	01OCT08	0	223
02L1DD1306	TDMP submission for the SO's approval	1	0	1			03SEP08	03SEP08	0	184
02L1DD1308	TDMP review by the SO	2	0	90			04SEP08	02DEC08	0	230
02L1DD1310	TDMP submission for DSD's approval	1	0	1			03SEP08	03SEP08	0	184
02L1DD1312	TDMP review by the DSD	2	0	90			11SEP08	09DEC08	0	223
02L1DD1314	Obtain DSD's approval for DDA	1	0	1			10DEC08	10DEC08	0	177
02L1DD1316	Obtain SO's consent for TDMP	2	0	0				10DEC08	0	223
Geotechnical Instrumentation Stg 1 for GL Works										
3DL1DDG102	Design preparation by the Designer	2	0	14			22FEB08A	24APR08A	100	
3DL1DDG104	Design certification by the Design Checker	2	0	7			25APR08A	16JUN08A	100	



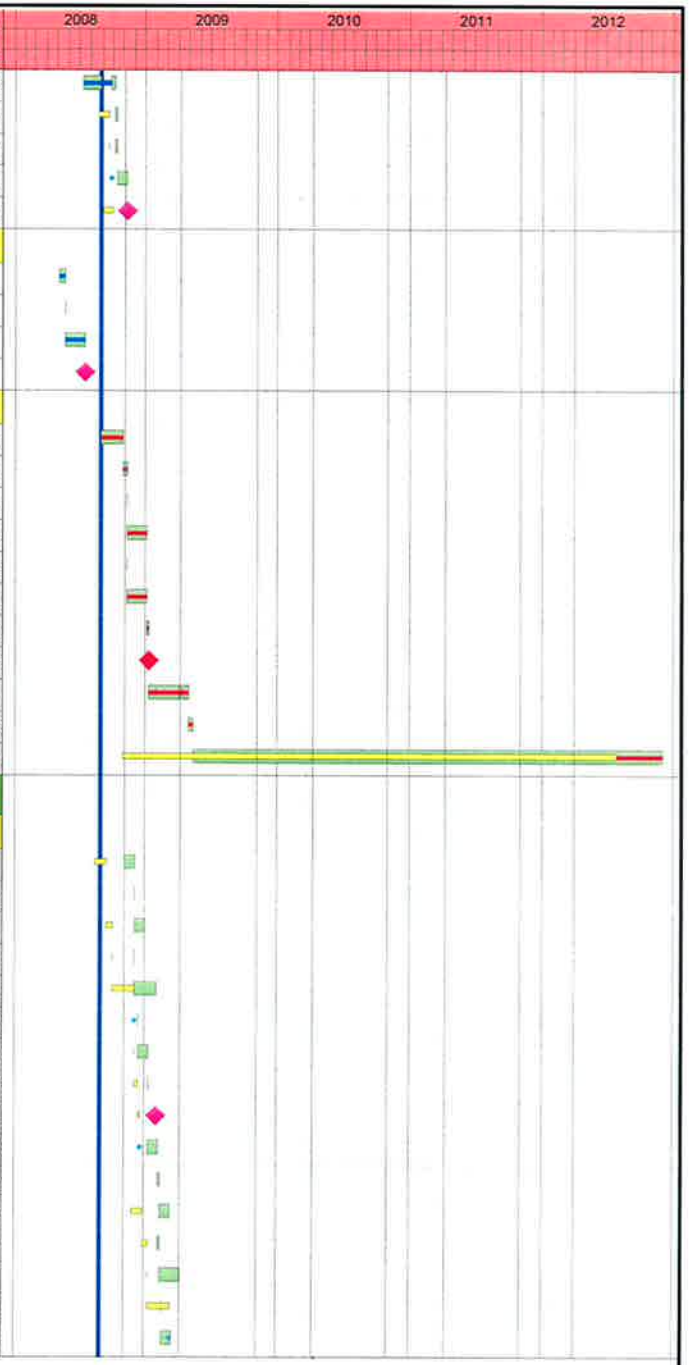
ID	Activity Description	Cal ID	Target Dur	Orig Dur	Target Start	Target Finish	Early Start	Early Finish	% Comp	Total Float
3DL1DDG106	Design submission for the SO's approval	1	0	1			25APR08A	16JUN08A	100	
3DL1DDG108	Design review by the SO	2	0	14			26APR08A	14JUL08A	100	
3DL1DDG110	Obtain design approval from the SO	2	0	0				14JUL08A	100	
3DL1DDG112	Install Geotechnical Instruments	1	0	10			04JUN08A	05JUL08A	100	
3DL1DDG114	Initial reading	2	0	14			18JUN08A	09JUL08A	100	
Geotechnical Instrumentation Stg 2 for Deep Exc.										
3DL1DDG202	Design preparation by the Designer	2	0	14			17NOV08*	30NOV08	0	-88
3DL1DDG204	Design certification by the Design Checker	2	0	14			01DEC08	14DEC08	0	-88
3DL1DDG206	Design submission for the SO's approval	1	0	1			01DEC08	01DEC08	0	-72
3DL1DDG208	Design review by the SO	2	0	28			02DEC08	29DEC08	0	-88
3DL1DDG210	Obtain design approval from the SO	2	0	0				29DEC08	0	-88
3DL1DDG212	Install Geotechnical Instruments	1	0	18			30DEC08	20JAN09	0	-72
3DL1DDG214	Baseline Monitoring	2	0	14			21JAN09	03FEB09	0	-88
3DL1DDG216	Monitor/report Geotechnical Insturmentatation	2	0	1,605			10JUL08A	30NOV12	3	0
Design Packages for Works in Portion F										
Main Tunnel Design										
02L1FF0102	Design preparation for the AIP submission	2	30	30	08FEB08	08MAR08	08FEB08A	30APR08A	100	
02L1FF0103	Design (AIP) submission for the DC's approval	1	0	1			02MAY08A	02MAY08A	100	
02L1FF0104	Design (AIP) certification by the Design Checker	2	15	28	09MAR08	23MAR08	03MAY08A	21JUL08A	100	
02L1FF0106	Design (AIP) submission for the SO's approval	1	1	1	25MAR08	25MAR08	10JUL08A	10JUL08A	100	
02L1FF0108	Design (AIP) review by the SO	2	60	66	26MAR08	24MAY08	11JUL08A	15OCT08	26	-85
02L1FF0110	AIP submission for rel. authorities' approval	1	0	1		24MAY08	08JUL08A	08JUL08A	100	
02L1FF0112	Design (AIP) review by the rel. authorities	2	1	28	26MAY08	26MAY08	09JUL08A	05SEP08	68	-46
02L1FF0114	Obtain rel. authorities's approval for AIP	1	28	1	27MAY08	23JUN08	06SEP08	06SEP08	0	-40
02L1FF0116	SO submit design (AIP) for approval of GEO	1	1	1	24JUN08	24JUN08	28AUG08	28AUG08	0	-55
02L1FF0118	Design (AIP) review/approval by the GEO	2	0	28		25JUN08	29AUG08	25SEP08	0	-65
02L1FF0120	Obtain SO's consent for design (AIP)	2	30	0	03JUN08	02JUL08		16OCT08	0	-85
02L1FF0122	Design preparation for the DDA submission	2	15	30	03JUL08	17JUL08	24SEP08	23OCT08	0	-25
02L1FF0123	Design (DDA) submission for the DC's approval	1	0	1			24OCT08	24OCT08	0	-19
02L1FF0124	Design (DDA) certification by the Design Checker	2	1	28	18JUL08	18JUL08	25OCT08	21NOV08	0	-23
02L1FF0126	Design (DDA) submission for the SO's approval	1	60	1	19JUL08	16SEP08	24OCT08	24OCT08	0	-20
02L1FF0128	Design (DDA) review by the SO	2	0	66		16SEP08	25OCT08	29DEC08	0	-25
02L1FF0130	DDA submission for rel. authorities' approval	1	1	1	17SEP08	17SEP08	31OCT08	31OCT08	0	5
02L1FF0132	Design (DDA) review by the rel. authorities	2	28	28	18SEP08	15OCT08	01NOV08	28NOV08	0	6
02L1FF0134	Obtain rel. authorities's approval for DDA	1	1	1	16OCT08	16OCT08	29NOV08	29NOV08	0	5
02L1FF0136	SO submit design (DDA) for approval of GEO	1	0	1		17OCT08	29NOV08	29NOV08	0	-20
02L1FF0138	Design (DDA) review/approval by the GEO	2	0	28			30NOV08	27DEC08	0	-23
02L1FF0140	Obtain SO's consent for design (DDA)	2	0	0				30DEC08	0	-25
Impact Assessment on WSD Yau Kam Tau WTW										
02L1FF0202	Design preparation for the DDA submission	2	30	60	09MAR08	07APR08	29APR08A	30JUN08A	100	



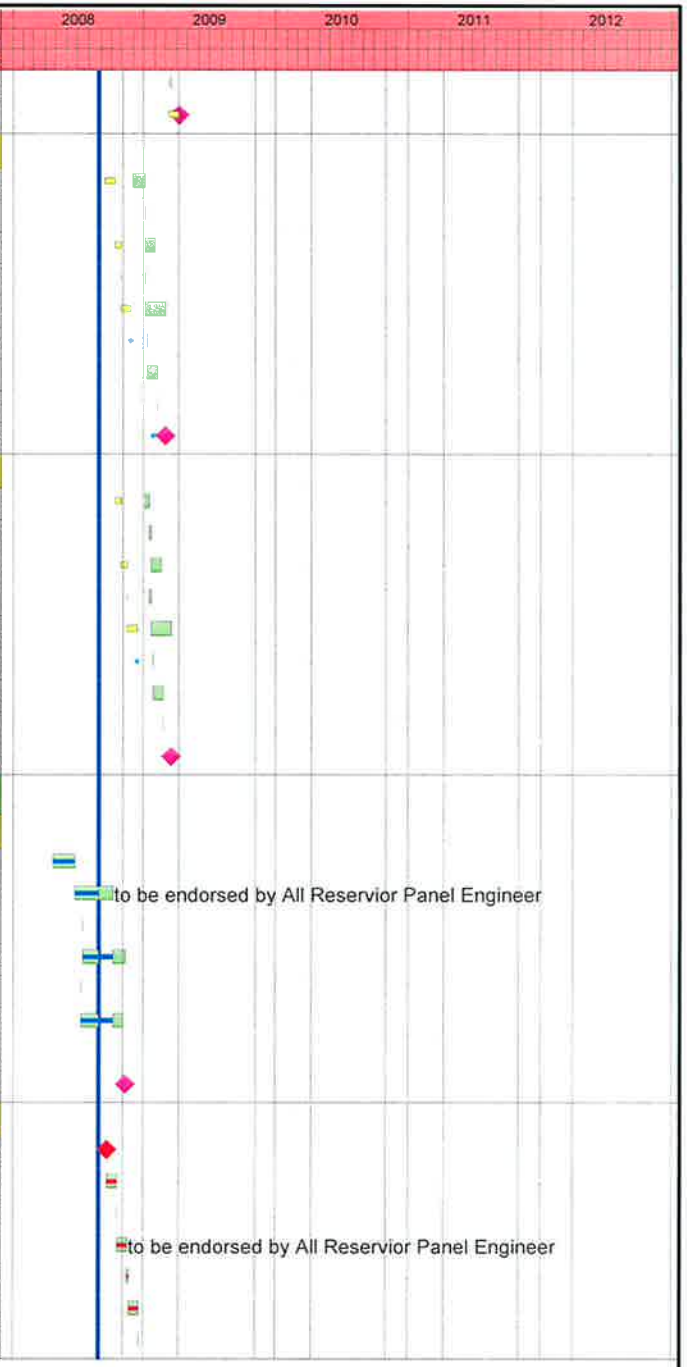
ID	Activity Description	Cal ID	Target Dur	Orig Dur	Target Start	Target Finish	Early Start	Early Finish	% Comp	Total Float
02L1FF0203	Design (DDA) submission for the DC's approval	1	0	1			03JUL08A	03JUL08A	100	
02L1FF0204	Design (DDA) certification by the Design Checker	2	15	30	08APR08	22APR08	04JUL08A	07SEP08	63	236
02L1FF0206	Design (DDA) submission for the SO's approval	1	1	1	23APR08	23APR08	15JUL08A	15JUL08A	100	
02L1FF0208	Design (DDA) review by the SO	2	45	66	24APR08	07JUN08	16JUL08A	14OCT08	55	236
02L1FF0210	DDA submission for rel. authorities' approval	1	0	1		07JUN08	10JUL08A	10JUL08A	100	
02L1FF0212	Design (DDA) review by the rel. authorities	2	1	28	10JUN08	10JUN08	11JUL08A	14SEP08	50	266
02L1FF0214	Obtain rel. authorities's approval for DDA	1	28	1	11JUN08	08JUL08	16SEP08	16SEP08	0	212
02L1FF0216	SO submit design (DDA) for approval of GEO	1	1	1	09JUL08	09JUL08	16SEP08	16SEP08	0	188
02L1FF0218	Design (DDA) review/approval by the GEO	2	0	28		10JUL08	17SEP08	14OCT08	0	236
02L1FF0220	Obtain SO's consent for design (DDA)	2	30	0	18JUN08	17JUL08		15OCT08	0	236
Impact Assessment on WSD Tai Lam Chung WT No. 3										
02L1FF0302	Design preparation for the DDA submission	2	30	32	08FEB08	08MAR08	14APR08A	27JUN08A	100	
02L1FF0303	Design submission for the DC's approval	1	0	1			27JUN08A	27JUN08A	100	
02L1FF0304	Design (DDA) certification by the Design Checker	2	15	90	09MAR08	23MAR08	28JUN08A	25SEP08	68	32
02L1FF0306	Design (DDA) submission for the SO's approval	1	1	1	25MAR08	25MAR08	15JUL08A	15JUL08A	100	
02L1FF0308	Design (DDA) review by the SO	2	50	66	26MAR08	14MAY08	16JUL08A	31OCT08	55	32
02L1FF0310	DDA submission for rel. authorities' approval	1	0	1		14MAY08	10JUL08A	10JUL08A	100	
02L1FF0312	Design (DDA) review by the rel. authorities	2	1	28	15MAY08	15MAY08	11JUL08A	02OCT08	61	61
02L1FF0314	Obtain rel. authorities's approval for DDA	1	28	1	16MAY08	12JUN08	03OCT08	03OCT08	0	51
02L1FF0316	SO submit design (DDA) for approval of GEO	1	1	1	13JUN08	13JUN08	03OCT08	03OCT08	0	26
02L1FF0318	Design (DDA) review/approval by the GEO	2	0	28		14JUN08	04OCT08	31OCT08	0	32
02L1FF0320	Obtain SO's consent for design (DDA)	2	30	0	23MAY08	21JUN08		01NOV08	0	32
Impact Assessment on KCRC West Rail Tunnel										
02L1FF0402	Design preparation for the DDA submission	2	30	30	08APR08	07MAY08	28APR08A	26JUN08A	100	
02L1FF0403	Design submission for the DC's approval	1	0	1			26JUN08A	26JUN08A	100	
02L1FF0404	Design (DDA) certification by the Design Checker	2	15	90	08MAY08	22MAY08	27JUN08A	24SEP08	69	352
02L1FF0406	Design (DDA) submission for the SO's approval	1	1	1	23MAY08	23MAY08	15JUL08A	15JUL08A	100	
02L1FF0408	Design (DDA) review by the SO	2	60	66	24MAY08	22JUL08	16JUL08A	29OCT08	50	353
02L1FF0410	DDA submission for rel. authorities' approval	1	0	1		22JUL08	14JUL08A	14JUL08A	100	
02L1FF0412	Design (DDA) review by the rel. authorities	2	1	28	23JUL08	23JUL08	15JUL08A	31JUL08A	100	
02L1FF0414	Obtain rel. authorities's approval for DDA	1	28	1	24JUL08	20AUG08	01AUG08A	01AUG08A	100	
02L1FF0416	SO submit design (DDA) for approval of GEO	1	1	1	21AUG08	21AUG08	02OCT08	02OCT08	0	287
02L1FF0418	Design (DDA) review/approval by the GEO	2	0	28		22AUG08	03OCT08	30OCT08	0	352
02L1FF0420	Obtain SO's consent for design (DDA)	2	30	0	31JUL08	29AUG08		31OCT08	0	352
Impact Assessment on WSD Tsuen Wan Reservoir G.										
02L1FF0502	Design preparation for the DDA submission	2	30	30	08MAY08	06JUN08	05MAY08A	02JUL08A	100	
02L1FF0503	Design submission for the DC's approval	1	0	1			03JUL08A	03JUL08A	100	
02L1FF0504	Design (DDA) certification by the Design Checker	2	15	90	07JUN08	21JUN08	04JUL08A	01OCT08	61	440
02L1FF0506	Design (DDA) submission for the SO's approval	1	1	1	23JUN08	23JUN08	15JUL08A	15JUL08A	100	
02L1FF0508	Design (DDA) review by the SO	2	60	60	24JUN08	22AUG08	16JUL08A	06NOV08	10	440
02L1FF0510	DDA submission for rel. authorities' approval	1	0	1		22AUG08	10JUL08A	10JUL08A	100	



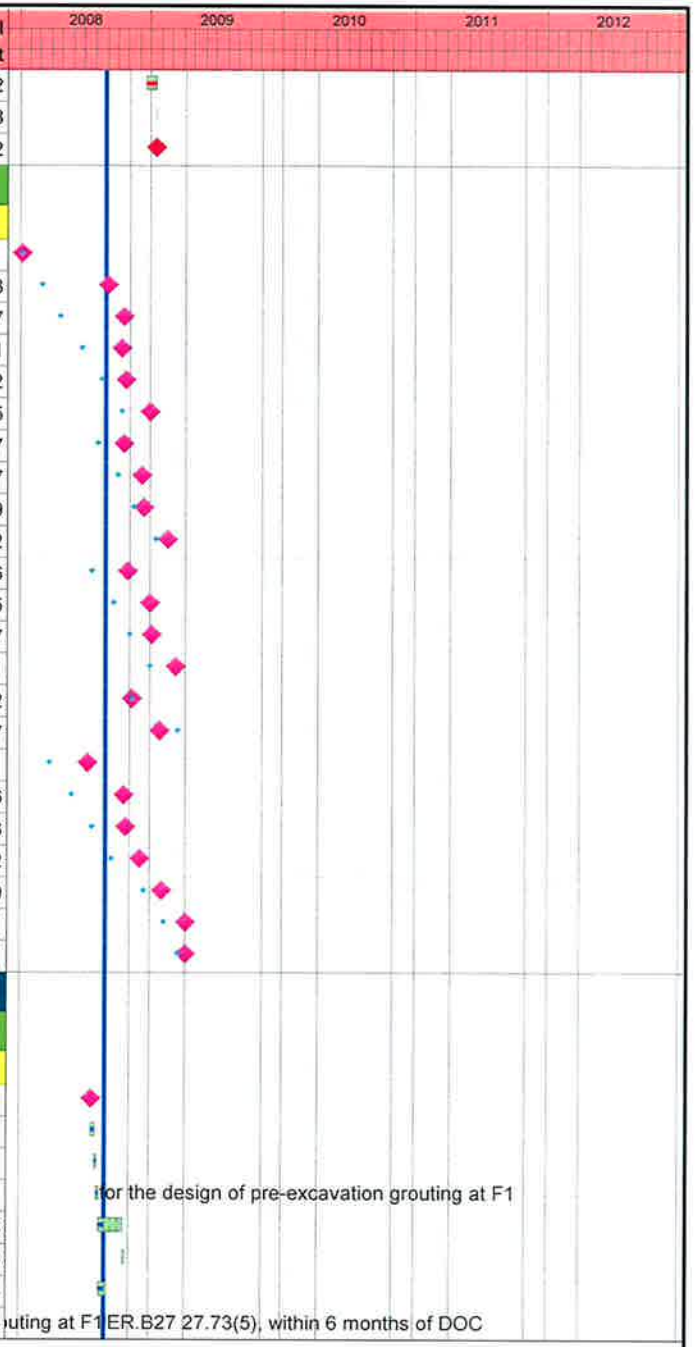
ID	Activity Description	Cal ID	Target Dur	Orig Dur	Target Start	Target Finish	Early Start	Early Finish	% Comp	Total Float
02L1FF0512	Design (DDA) review by the rel. authorities	2	1	28	23AUG08	23AUG08	11JUL08A	08OCT08	50	1,542
02L1FF0514	Obtain rel. authorities's approval for DDA	1	28	1	24AUG08	20SEP08	09OCT08	09OCT08	0	1,252
02L1FF0516	SO submit design (DDA) for approval of GEO	1	1	1	22SEP08	22SEP08	09OCT08	09OCT08	0	360
02L1FF0518	Design (DDA) review/approval by the GEO	2	0	28		23SEP08	10OCT08	06NOV08	0	440
02L1FF0520	Obtain SO's consent for design (DDA)	2	30	0	01SEP08	30SEP08		07NOV08	0	440
Grout Trial at Foult Zone F1										
02L1FF0602	MS preparation for the DDA submission	2	0	12			02MAY08A	20MAY08A	100	
02L1FF0606	Ms (DDA) submission for the SO's approval	1	0	1			21MAY08A	21MAY08A	100	
02L1FF0608	MS (DDA) review by the SO	2	0	24			22MAY08A	17JUL08A	100	
02L1FF0620	Obtain SO's consent for MS (DDA)	2	0	0				17JUL08A	100	
Geotechniucal Instrumentation										
3DL1FFGI02	Design preparation by the Designer	2	0	60			28AUG08	26OCT08	0	-19
3DL1FFGI04	Design certification by the Design Checker	2	0	14			27OCT08	09NOV08	0	-19
3DL1FFGI06	Design submission for the SO's approval	1	0	1			10NOV08	10NOV08	0	-15
3DL1FFGI08	Design review by the SO	2	0	56			11NOV08	05JAN09	0	-18
3DL1FFGI10	DDA submission for rel. authorities' approval	1	0	1			10NOV08	10NOV08	0	-16
3DL1FFGI12	Design (DDA) review by the rel. authorities	2	0	56			11NOV08	05JAN09	0	-19
3DL1FFGI14	Obtain rel. authorities's approval for DDA	1	0	1			06JAN09	06JAN09	0	-13
3DL1FFGI16	Obtain design approval from the SO	2	0	0				06JAN09	0	-19
3DL1FFGI18	Install geotechnical instrumentsation	1	0	90			07JAN09	29APR09	0	-13
3DL1FFGI20	Baseline Monitoring	2	0	14			30APR09	13MAY09	0	-15
3DL1FT0208	Maintain/monitor geotechnical instrumentation	2	1,104	1,297	01NOV08	26JUL12	14MAY09	30NOV12	0	0
Design Packages for Works in Portion G										
Drainage Impact Assessment										
02L1GG0102	Design preparation for the AIP submission	2	30	30	15AUG08	13SEP08	03NOV08*	02DEC08	0	381
02L1GG0103	Design (AIP) submission for the DC's approval	1	0	1			03DEC08	03DEC08	0	312
02L1GG0104	Design (AIP) certification by the Design Checker	2	15	28	14SEP08	28SEP08	04DEC08	31DEC08	0	384
02L1GG0106	Design (AIP) submission for the SO's approval	1	1	1	29SEP08	29SEP08	03DEC08	03DEC08	0	310
02L1GG0108	Design (AIP) review by the SO	2	60	58	30SEP08	28NOV08	04DEC08	30JAN09	0	382
02L1GG0110	AIP submission for rel. authorities' approval	1	0	1		28NOV08	10DEC08	10DEC08	0	323
02L1GG0112	Design (AIP) review by the rel. authorities	2	1	28	29NOV08	29NOV08	11DEC08	07JAN09	0	400
02L1GG0114	Obtain rel. authorities's approval for AIP	1	15	1	30NOV08	14DEC08	08JAN09	08JAN09	0	326
02L1GG0116	Obtain SO's consent for design (AIP)	2	1	0	15DEC08	15DEC08		31JAN09	0	382
02L1GG0118	Design preparation for the DDA submission	2	0	30		16DEC08	09JAN09	07FEB09	0	382
02L1GG0119	Design (DDA) submission for the DC's approval	1	0	1			09FEB09	09FEB09	0	312
02L1GG0120	Design (DDA) certification by the Design Checker	2	30	28	24NOV08	23DEC08	10FEB09	09MAR09	0	383
02L1GG0122	Design (DDA) submission for the SO's approval	1	15	1	24DEC08	07JAN09	09FEB09	09FEB09	0	310
02L1GG0124	Design (DDA) review by the SO	2	1	58	08JAN09	08JAN09	10FEB09	08APR09	0	381
02L1GG0126	DDA submission for rel. authorities' approval	1	60	1	09JAN09	09MAR09	16FEB09	16FEB09	0	1,124
02L1GG0128	Design (DDA) review by the rel. authorities	2	0	28		09MAR09	17FEB09	16MAR09	0	1,383



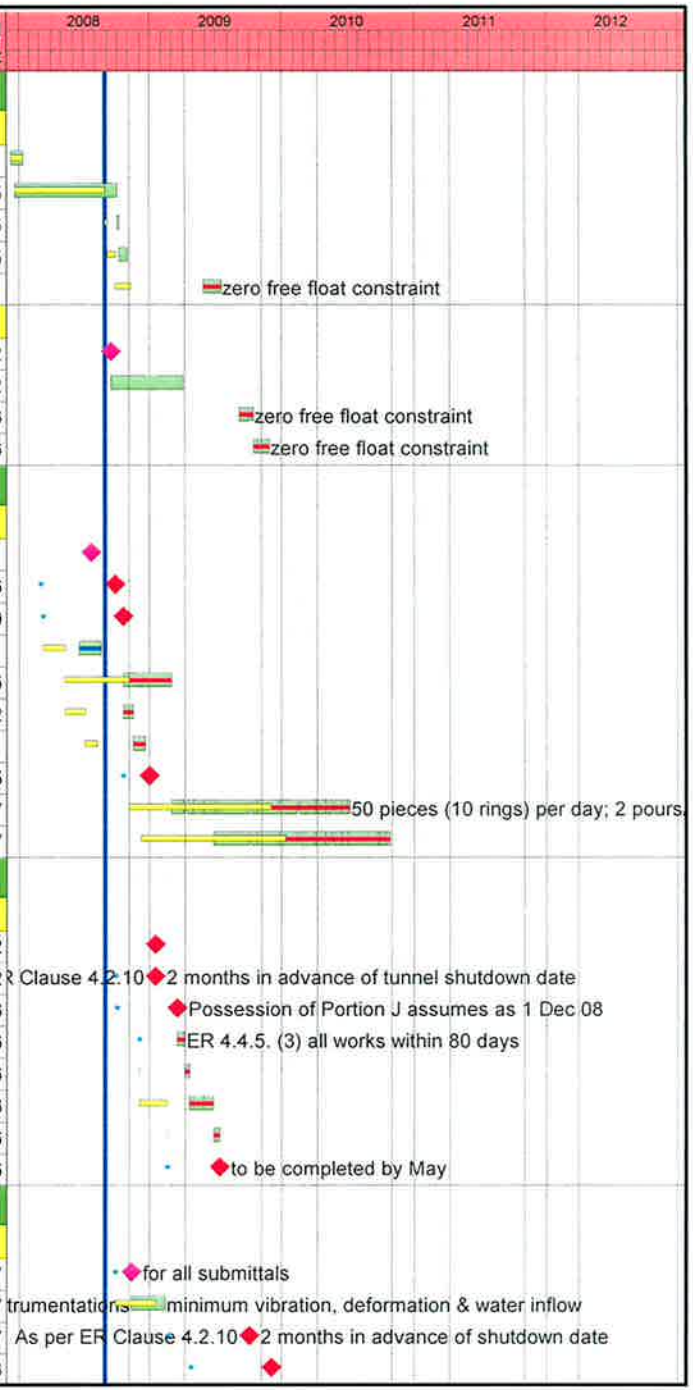
ID	Activity Description	Cal ID	Target Dur	Orig Dur	Target Start	Target Finish	Early Start	Early Finish	% Comp	Total Float
02L1GG0130	Obtain rel. authorities's approval for DDA	1	1	1	10MAR09	10MAR09	17MAR09	17MAR09	0	1,122
02L1GG0132	Obtain SO's consent for design (DDA)	2	28	0	11MAR09	07APR09		09APR09	0	381
Temp. Platform Design for H-Piling at Portion G										
02L1GG0202	Design preparation for the DDA submission	2	30	30	14SEP08	13OCT08	03DEC08	01JAN09	0	454
02L1GG0203	Design (DDA) submission for the DC's approval	1	0	1			02JAN09	02JAN09	0	369
02L1GG0204	Design (DDA) certification by the Design Checker	2	15	28	14OCT08	28OCT08	03JAN09	30JAN09	0	458
02L1GG0206	Design (DDA) submission for the SO's approval	1	1	1	29OCT08	29OCT08	02JAN09	02JAN09	0	369
02L1GG0208	Design (DDA) review by the SO	2	28	58	30OCT08	26NOV08	03JAN09	01MAR09	0	456
02L1GG0210	DDA submission for rel. authorities' approval	1	0	1		26NOV08	09JAN09	09JAN09	0	1,153
02L1GG0212	Design (DDA) review by the rel. authorities	2	0	28			10JAN09	06FEB09	0	1,421
02L1GG0214	Obtain rel. authorities's approval for DDA	1	0	1			07FEB09	07FEB09	0	1,154
02L1GG0228	Obtain design (DDA) approval from the SO	2	0	0		24JAN09		02MAR09	0	456
ELS Design for Pipe Jacking at Portion G										
02L1GG0302	Design preparation for the DDA submission	2	15	15	14OCT08	28OCT08	02JAN09	16JAN09	0	644
02L1GG0303	Design (DDA) submission for the DC's approval	1	0	1			17JAN09	17JAN09	0	523
02L1GG0304	Design (DDA) certification by the Design Checker	2	15	28	29OCT08	12NOV08	18JAN09	14FEB09	0	647
02L1GG0306	Design (DDA) submission for the SO's approval	1	1	1	13NOV08	13NOV08	17JAN09	17JAN09	0	521
02L1GG0308	Design (DDA) review by the SO	2	28	58	14NOV08	11DEC08	18JAN09	16MAR09	0	645
02L1GG0310	DDA submission for rel. authorities' approval	1	0	1		11DEC08	24JAN09	24JAN09	0	1,140
02L1GG0314	Design (DDA) review by the rel. authorities	2	0	28			25JAN09	21FEB09	0	1,406
02L1GG0316	Obtain rel. authorities's approval for DDA	1	0	1			23FEB09	23FEB09	0	1,141
02L1GG0318	Obtain design (DDA) approval from the SO	2	0	0				17MAR09	0	645
Design Packages for Works in Portion J										
Geotechniucal Instrumentation										
3DL1JJGI02	Design preparation by the Designer	2	0	25			21APR08A	25JUN08A	100	
3DL1JJGI04	Design (DDA) certification by the Design Checker	2	0	103			26JUN08A	06OCT08	33	22
3DL1JJGI06	Design (DDA) submission for the SO's approval	1	0	1			15JUL08A	15JUL08A	100	
3DL1JJGI08	Design (DDA) review by the SO	2	0	70			16JUL08A	10NOV08	50	22
3DL1JJGI10	DDA submission for rel. authorities' approval	1	0	1			10JUL08A	10JUL08A	100	
3DL1JJGI12	Design (DDA) review by the rel. authorities	2	0	28			11JUL08A	03NOV08	0	29
3DL1JJGI14	Obtain rel. authorities's approval for DDA	1	0	1			04NOV08	04NOV08	0	25
3DL1JJGI16	Obtain design approval from the SO	2	0	0				11NOV08	0	22
WSD Tunnel No. 3- Method for Strengtheing Works										
02L1JJMS01	Receive VO-031 for revised construction details	1	0	0				19SEP08*	0	-35
02L1JJMS02	Method statement submission	2	0	28			20SEP08	17OCT08	0	-42
02L1JJMS03	M. S. submission for the DC's approval	1	0	1			18OCT08	18OCT08	0	-33
02L1JJMS04	M. S. certification by the Design Checker	2	0	28			19OCT08	15NOV08	0	-41
02L1JJMS06	M.S. submission for the SO's approval	1	0	1			17NOV08	17NOV08	0	-35
02L1JJMS08	M. S. review by the SO	2	0	28			18NOV08	15DEC08	0	-42
02L1JJMS10	M.S. submission for rel. authorities' approval	1	0	1			16DEC08	16DEC08	0	-36



ID	Activity Description	Cal ID	Target Dur	Orig Dur	Target Start	Target Finish	Early Start	Early Finish	% Comp	Total Float
02L1JJMS12	M.S. review by the rel. authorities	2	0	28			17DEC08	13JAN09	0	-42
02L1JJMS14	Rel. authorities's approval for M.S.	1	0	1			14JAN09	14JAN09	0	-33
02L1JJMS16	Obtain M.S. approval from the SO	2	0	0				14JAN09	0	-42
Schedule of Milestones for Cost Centre No. 2L										
02L10D1002	2L 1; On submission of PDP to the SO	2	0	0		10JAN08		10JAN08A	100	
02L10D1004	2L 2; On acception of PDP by the SO	2	0	0		06MAR08		04SEP08	0	1,578
02L10D1006	2L 3; On submission of AIP to the SO; Portion A	2	0	0		22APR08		15OCT08	0	1,537
02L10D1008	2L 4; On acceptance of AIP by the SO; Portion A	2	0	0		21JUN08		11OCT08	0	1,541
02L10D1010	2L 5; On subumission of DDA to the SO; Portion A	2	0	0		15AUG08		20OCT08	0	1,532
02L10D1012	2L 6; On acceptance of DDA by the SO; Portion A	2	0	0		14OCT08		26DEC08	0	1,465
02L10D1014	2L 7; On submission of AIP to the SO; Portion B	2	0	0		04AUG08		15OCT08	0	1,537
02L10D1016	2L 8; On acceptance of AIP by the SO; Portion B	2	0	0		03OCT08		04DEC08	0	1,487
02L10D1018	2L 9; On submission of DDA to the SO; Portion B	2	0	0		13NOV08		12DEC08	0	1,479
02L10D1020	2L 10; On acceptance of DDA by the SO; Portion B	2	0	0		12JAN09		17FEB09	0	1,412
02L10D1022	2L 11; On submission of AIP to the SO; Portion C	2	0	0		22JUL08		26OCT08	0	1,526
02L10D1024	2L 12; On acceptance of AIP by the SO; Portion C	2	0	0		20SEP08		26DEC08	0	1,465
02L10D1026	2L 13; On submission of DDA to the SO; Portion C	2	0	0		01NOV08		03JAN09	0	1,457
02L10D1028	2L 14; On acceptance of DDA by the SO; Portion C	2	0	0		31DEC08		10MAR09	0	1,391
02L10D1030	2L 15; On acceptance of AIP by the SO; Portion D	2	0	0		09NOV08		09NOV08	0	1,512
02L10D1032	2L 16; On acceptance of DDA by the SO; Portion D	2	0	0		18MAR09		23JAN09	0	1,437
02L10D1034	2L 17; On submission of AIP to the SO; Portion F	2	0	0		25MAR08		10JUL08A	100	
02L10D1036	2L 18; On acceptance of AIP by the SO; Portion F	2	0	0		24MAY08		16OCT08	0	1,536
02L10D1038	2L 19; On submission of DDA to the SO; Portion F	2	0	0		18JUL08		24OCT08	0	1,528
02L10D1040	2L 20; On acceptance of DDA by the SO; Portion F	2	0	0		16SEP08		29NOV08	0	1,492
02L10D1042	2L 21; On acceptance of AIP by the SO; Portion G	2	0	0		11DEC08		31JAN09	0	1,429
02L10D1044	2L 22; On acceptance of DDA by the SO; Portion G	2	0	0		07FEB09		09APR09	0	1,361
02L10D1046	2L 23; On completion of all works under this CC	2	0	0		18MAR09		09APR09	0	1,361
Construction of Main Tunnel										
Trial Grout at Fault Zone F1										
3AL1FT0002	HyD issue XP	2	0	0				23JUL08A	100	
3AL1FT0004	Adavance notice to HyD/Road advice	1	0	6			24JUL08A	30JUL08A	100	
3AL1FT0006	Trial pit excavation	1	0	4			31JUL08A	04AUG08A	100	
3AL1FT0010	Scaffolding, mobilize & set up	1	0	7			05AUG08A	13AUG08A	100	
3AL1FT0012	Drill & test for 2m Arrangement Test	1	0	45			14AUG08A	16OCT08	11	116
3AL1FT0014	Backfill drilled holes, demobilization & Tidy up	1	0	6			17OCT08	23OCT08	0	116
3AL1FT0016	Drill & test for single hole arrangement test	1	0	17			11AUG08A	04SEP08	59	154
3AL1FT0018	Backfill drilled hole, demobilization & tidy up	1	0	1			05SEP08	05SEP08	0	154



ID	Activity Description	Cal ID	Target Dur	Orig Dur	Target Start	Target Finish	Early Start	Early Finish	% Comp	Total Float
TBM Manufacture/Testing/Delivery										
TBM & Back-ups										
3AL1FT0302	TBM & Excavation Sys Procurement	2	30	30	14DEC07	12JAN08	14DEC07A	12JAN08A	100	
3AL1FT0304	TBM design & manufacturing	2	252	252	21DEC07	28AUG08	21DEC07A	28SEP08	87	95
3AL1FT0306	TBM workshop tests	2	7	7	29AUG08	04SEP08	29SEP08	05OCT08	0	95
3AL1FT0308	TBM dismounting & packing	2	21	21	05SEP08	25SEP08	06OCT08	26OCT08	0	95
3AL1FT0310	TBM shipment to Hong Kong	2	45	45	26SEP08	09NOV08	31MAY09	14JUL09	0	-121
Conveyor Belt System										
3AL1FTCB02	Procure sub-contract for conveyor belt sys.	2	0	0				13SEP08*	0	42
3AL1FTCB06	Design/procurement/manufacture of CBS	2	0	200			14SEP08	01APR09	0	42
3AL1FTCB16	CBS delivey to Hong Kong	1	0	30			05SEP09	12OCT09	0	-96
3AL1FTCB26	Assembly & commissioning of CBS	1	0	40			13OCT09	28NOV09	0	-96
Manufacture Pre-cast Lining/Delivery										
3AL1FT0401	Procure sub-contract for segment mould	1	0	0				21JUL08A	100	
3AL1FT0402	Procure sub-contract for segment lining	1	0	0		03MAR08		26SEP08	0	6
3AL1FT0403	Approval of Segmental Lining Design (AIP)	1	0	0		08MAR08		16OCT08	0	-70
3AL1FT0404	Design of segment mould	2	60	60	09MAR08	07MAY08	16JUN08A	16AUG08A	100	
3AL1FT0406	Manufacture & delivery of segment moulds	2	180	135	08MAY08	03NOV08	17OCT08	28FEB09	0	-85
3AL1FT0408	Prepare/submit QA Sys & Fabrication MS	2	60	30	08MAY08	06JUL08	17OCT08	15NOV08	0	-12
3AL1FT0410	SO approve QA system & Fabrication MS	1	28	28	07JUL08	07AUG08	17NOV08	18DEC08	0	-11
3AL1FT0412	Approval of Tunnel Linig Design	2	0	0		17OCT08		30DEC08	0	-25
3AL1FT0416	Manufactur of segments	1	320	400	04NOV08	01DEC09	02MAR09	09JUL10	0	-67
3AL1FT0418	Delivery of Segments	1	320	400	09DEC08	08JAN10	23JUN09	26OCT10	0	-67
Strengthening Works at Exist. WSD Tai Lam Tunnel										
10AR1JT051	Approval of Method of Construction by SO/WSD	2	0	0				14JAN09	0	-42
10AR1JT052	Obtain WSD's agreement for Tunnel Shutdown Date	2	0	0		26SEP08		14JAN09	0	-42
10AR1JT053	Tunnel Shutdown Commences	1	0	0		01OCT08	16MAR09		0	-36
10AR1JT054	Preparatory works; temp. ventilation & lighting	1	0	18	01DEC08*		16MAR09	06APR09	0	-36
10AR1JT055	Verify method statement	1	3	6	01DEC08	03DEC08	07APR09	16APR09	0	-36
10AR1JT056	Carry out strengthening works	1	58	58	04DEC08	16FEB09	17APR09	26JUN09	0	-36
10AR1JT057	Site clearance & demobilization	1	2	12	17FEB09	18FEB09	27JUN09	11JUL09	0	-36
10AR1JT058	WSD Tunnel starts operation	1	0	0	19FEB09		13JUL09		0	-36
Geotechnical Instrumetation at WSD Tunnel										
3AL1FT0602	Approval of Geotechnical Instrumentation Design	2	0	0		26SEP08		11NOV08	0	107
3AL1FT0604	Procure/delivery/caliber of instrumentations	2	90	90	27SEP08	15JAN09	12NOV08	09FEB09	0	107
3AL1FT0612	Obtain WSD's agreement for Tunnel Shutdown date	2	0	0		22FEB09		01OCT09*	0	-127
3AL1FT0614	WSD Tunnel shutdown for instrumentation works	1	0	0	24APR09		01DEC09		0	-106



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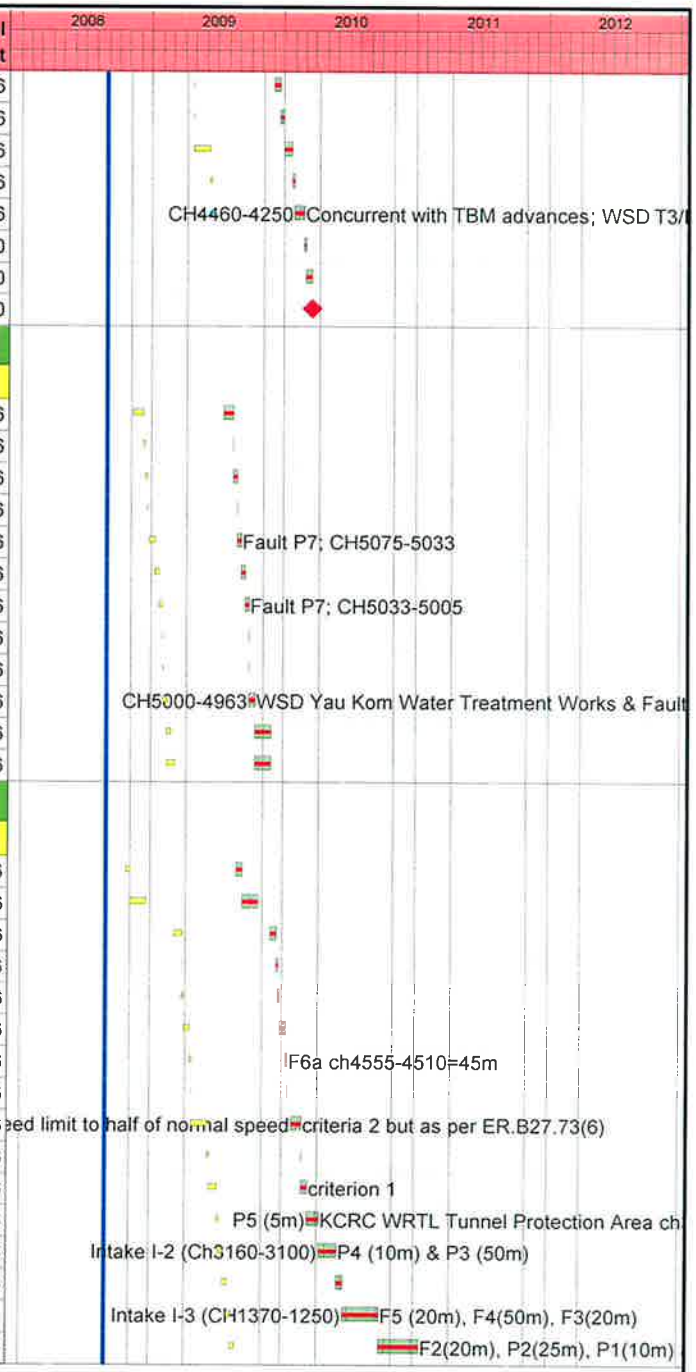
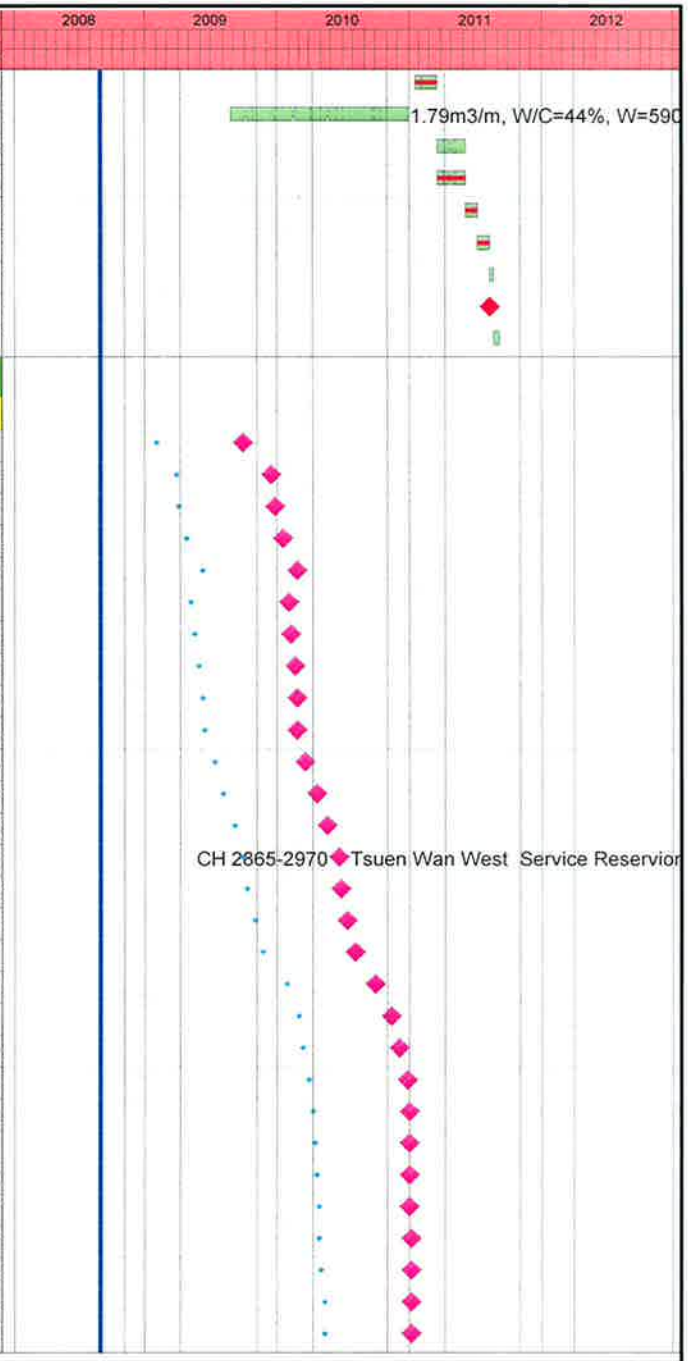
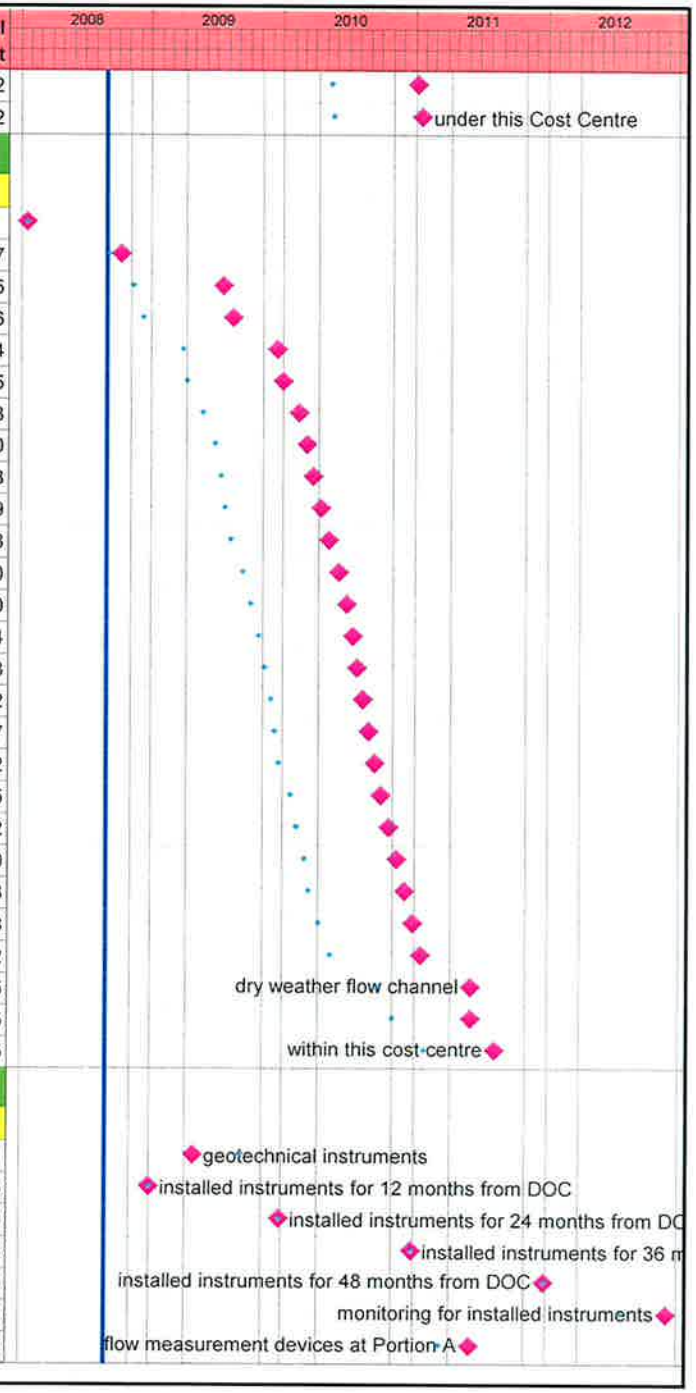
3AL1FT0616	Preparatory works; temp. ventilation & lighting	1	3	18	24APR09	26APR09	01DEC09	21DEC09	0	-106
3AL1FT0618	Verify method statement	1	3	6	24APR09	26APR09	22DEC09	30DEC09	0	-106
3AL1FT0620	Joint survey & install geo. instrumentations	1	45*	18	27APR09	10JUN09	31DEC09	21JAN10	0	-106
3AL1FT0622	Baseline monitoring	1	2	6	11JUN09	12JUN09	22JAN10	28JAN10	0	-106
3AL1FT0624	Monitoring of geotechnical insturmentation	1	0	20	13JUN09		29JAN10	24FEB10	0	-106
3AL1FT0626	Subsequent Inspection/ repair damages (if any)	1	0	6			25FEB10	03MAR10	0	0
3AL1FT0628	Site clearance & demobilization	1	0	12			04MAR10	17MAR10	0	0
3AL1FT0630	WSD Tunnel starts operation	1	0	0			18MAR10		0	0
TBM Assembly & Initial Driving; Day Time Work										
3AL1FT0702	TBM initial assembly & start-up test	1	25	25	10NOV08	08DEC08	15JUL09	12AUG09	0	-96
3AL1FT0704	TBM mobilization to tunnel face (CH5085)	1	2	2	09DEC08	10DEC08	13AUG09	14AUG09	0	-96
3AL1FT0706	Install back-up system (3 decks + 3 platforms)	1	7	7	11DEC08	18DEC08	15AUG09	22AUG09	0	-96
3AL1FT0708	TBM advances; CH5084-5075	1	2	2	19DEC08	20DEC08	24AUG09	25AUG09	0	-96
3AL1FT0710	TBM advances; P7 CH5075-5033	1	11	11	22DEC08	06JAN09	26AUG09	07SEP09	0	-96
3AL1FT0712	Install back-up system (6 decks)	1	10	10	07JAN09	17JAN09	08SEP09	18SEP09	0	-96
3AL1FT0714	TBM advances; P7 CH5033-5005	1	7	7	19JAN09	29JAN09	19SEP09	26SEP09	0	-96
3AL1FT0716	Install back-up system (1 decks)	1	1	1	30JAN09	30JAN09	28SEP09	28SEP09	0	-96
3AL1FT0718	TBM advances; CH 5005-5000	1	1	1	31JAN09	31JAN09	29SEP09	29SEP09	0	-96
3AL1FT0719	TBM advances; WSDYKWTW/F6c CH5000-4963	1	9	9	02FEB09	11FEB09	30SEP09	12OCT09	0	-96
3AL1FT0720	Install conveyor belt system	1	10	40	12FEB09	23FEB09	13OCT09	28NOV09	0	-96
3AL1FT0722	Install noise enclosure	1	20	40	12FEB09	06MAR09	13OCT09	28NOV09	0	-96
Main Tunnel Works; Day & Night Work										
3AL1FT0802	Apply to EPD for CNP for 24 hrs. tunnel work	1	14	12	23OCT08	05NOV08	27AUG09	09SEP09	0	-96
3AL1FT0804	EPD process/approve CNP application	1	45	36	06NOV08	20DEC08	10SEP09	23OCT09	0	-96
3AL1FT0806	TBM advances; WSD YKTWTW/F6c CH4963-4830	1	16	12	07MAR09	25MAR09	30NOV09	12DEC09	0	-96
3AL1FT0808	TBM advances; CH4830-4760	1	3	6	26MAR09	28MAR09	14DEC09	19DEC09	0	-96
3AL1FT0810	TBM advances; F6b CH4760-4740	1	3	2	30MAR09	01APR09	21DEC09	22DEC09	0	-96
3AL1FT0812	TBM advances; CH4740-4560	1	9	12	02APR09	16APR09	23DEC09	08JAN10	0	-96
3AL1FT0814	TBM advances; F6a CH4560-4510	1	6	4	17APR09	23APR09	09JAN10	13JAN10	0	-96
3AL1FT0816	TBM advances; CH4510-4460	1	2	3	24APR09	25APR09	14JAN10	16JAN10	0	-96
3AL1FT0818	TBM advances; WSD T3/P6 CH4460-4250	1	36	20	27APR09	10JUN09	29JAN10	24FEB10	0	-106
3AL1FT0820	TBM advances; P6 CH4250-4220	1	4	2	11JUN09	15JUN09	25FEB10	26FEB10	0	-106
3AL1FT0822	TBM advances; CH4220-3940	1	18	14	16JUN09	07JUL09	27FEB10	15MAR10	0	-106
3AL1FT0824	TBM advances; CH3940-3560	1	3	24	08JUL09	10JUL09	16MAR10	16APR10	0	-106
3AL1FT0826	TBM advances CH3560-2970	1	12	40	11JUL09	24JUL09	17APR10	04JUN10	0	-106
3AL1FT0828	TBM advances; WSD WS Reservior CH2970-2860	1	6	13	25JUL09	31JUL09	05JUN10	21JUN10	0	-106
3AL1FT0830	TBM advances; CH2860-1250	1	10	83	01AUG09	12AUG09	22JUN10	28SEP10	0	-106
3AL1FT0832	TBM advances; CH1250-0	1	13	91	13AUG09	27AUG09	29SEP10	18JAN11	0	-106



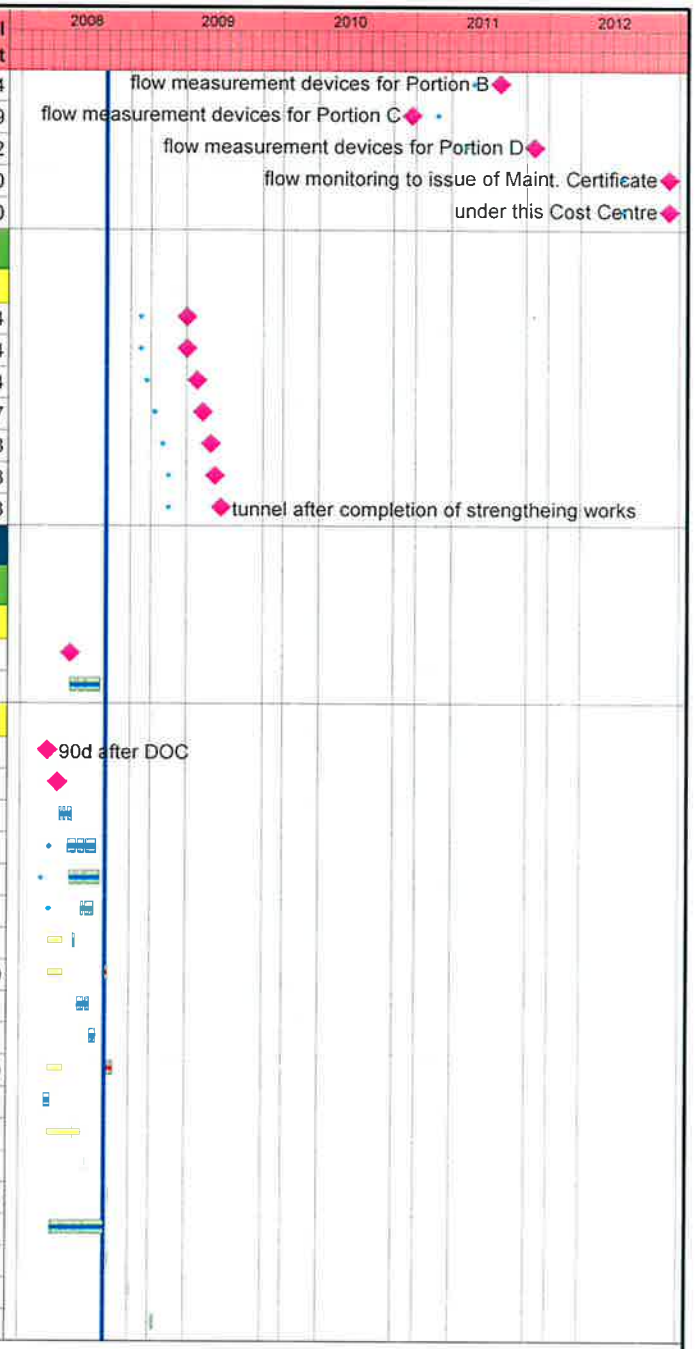
ID	Activity Description	Cal ID	Target Dur	Orig Dur	Target Start	Target Finish	Early Start	Early Finish	% Comp	Total Float
3AL1FT0890	Desembly & demobilization of TBM	1	0	50			19JAN11	21MAR11	0	-15
3AL1FT0892	Back grouting (daytime); CH5100-00	1	0	400			26AUG09	30DEC10	0	50
3AL1FT0894	Complete maintennce access & dry weather channel	1	0	60			22MAR11	04JUN11	0	13
3AL1FT0896	Installation of communication system (Daytime)	1	0	60			22MAR11	04JUN11	0	-15
3AL1FT0898	Testing & Commissioning; daytime	1	0	28			07JUN11	09JUL11	0	-15
3AL1FT0900	Authorities' inspection/remedial works; daytime	1	0	30			11JUL11	13AUG11	0	-15
3AL1FT0902	Contractor serve notice for Works completion	2	0	7			14AUG11	20AUG11	0	477
3AL1FT0904	Handover of Portion F	1	0	0				13AUG11	0	-15
3AL1FT0906	SO issues completion certificate	2	0	21			21AUG11	10SEP11	0	477
Schedule of Milestones for Cost Centre No. 6aR										
6AR1FT0902	6aR 1; On completion of grouting at P7	2	0	0		29JAN09		26SEP09	0	1,191
6AR1FT0904	6aR 2; On completion of grouting at F6c	2	0	0		25MAR09		12DEC09	0	1,114
6AR1FT0906	6aR 3; On completion of grouting at F6b	2	0	0		01APR09		22DEC09	0	1,104
6AR1FT0908	6aR 4; On completion of grouting at F6a	2	0	0		23APR09		13JAN10	0	1,082
6AR1FT0910	6aR 5; On completion of grouting at WSD T. 3	2	0	0		10JUN09		24FEB10	0	1,040
6AR1FT0912	6aR 6; On completion of 20% grout by Ith at P6	2	0	0		07MAY09		03FEB10	0	1,061
6AR1FT0914	6aR 7; On completion of 40% grout by Ith at P6	2	0	0		16MAY09		09FEB10	0	1,055
6AR1FT0916	6aR 8; On completion of 60% grout by Ith at P6	2	0	0		26MAY09		18FEB10	0	1,046
6AR1FT0918	6aR 9; On completion of 80% grout by Ith at P6	2	0	0		05JUN09		24FEB10	0	1,040
6AR1FT0920	6aR 10; On completion of grouting works at P6	2	0	0		15JUN09		26FEB10	0	1,038
6AR1FT0922	6aR 11; On completion of grouting wks at P5	2	0	0		10JUL09		16MAR10	0	1,020
6AR1FT0924	6aR 12; On completion of grouting wks at P4	2	0	0		31JUL09		19APR10	0	986
6AR1FT0926	6aR 13; On completion of grouting wks at P3	2	0	0		05SEP09		20MAY10	0	955
6AR1FT0928	6aR 14; On completion of grouting wks at WSD's	2	0	0		29SEP09		21JUN10	0	923
6AR1FT0930	6aR 15; On completion of grouting wks at F5	2	0	0		10OCT09		28JUN10	0	916
6AR1FT0932	6aR 16; On completion of grouting wks at F4	2	0	0		28OCT09		12JUL10	0	902
6AR1FT0934	6aR 17; On completion of grouting wks at F3	2	0	0		19NOV09		06AUG10	0	877
6AR1FT0936	6aR 18; On completion of grouting wks at F2	2	0	0		27JAN10		30SEP10	0	822
6AR1FT0938	6aR 19; On completion of grouting wks at P2	2	0	0		27FEB10		10NOV10	0	781
6AR1FT0940	6aR 20; On completion of grouting wks at P1	2	0	0		13MAR10		02DEC10	0	759
6AR1FT0942	6aR 21; On completion of 10% grout by Ith at F1	2	0	0		31MAR10		28DEC10	0	733
6AR1FT0944	6aR 22; On completion of 20% grout by Ith at F1	2	0	0		09APR10		29DEC10	0	732
6AR1FT0946	6aR 23; On completion of 30% grout by Ith at F1	2	0	0		14APR10		30DEC10	0	731
6AR1FT0948	6aR 24; On completion of 40% grout by Ith at F1	2	0	0		19APR10		31DEC10	0	730
6AR1FT0950	6aR 25; On completion of 50% grout by Ith at F1	2	0	0		23APR10		03JAN11	0	727
6AR1FT0952	6aR 26; On completion of 60% grout by Ith at F1	2	0	0		28APR10		04JAN11	0	726
6AR1FT0954	6aR 27; On completion of 70% grout by Ith at F1	2	0	0		04MAY10		05JAN11	0	725
6AR1FT0956	6aR 28; On completion of 80% grout by Ith at F1	2	0	0		10MAY10		06JAN11	0	724
6AR1FT0958	6aR 29; On completion of 90% grout by Ith at F1	2	0	0		11MAY10		07JAN11	0	723



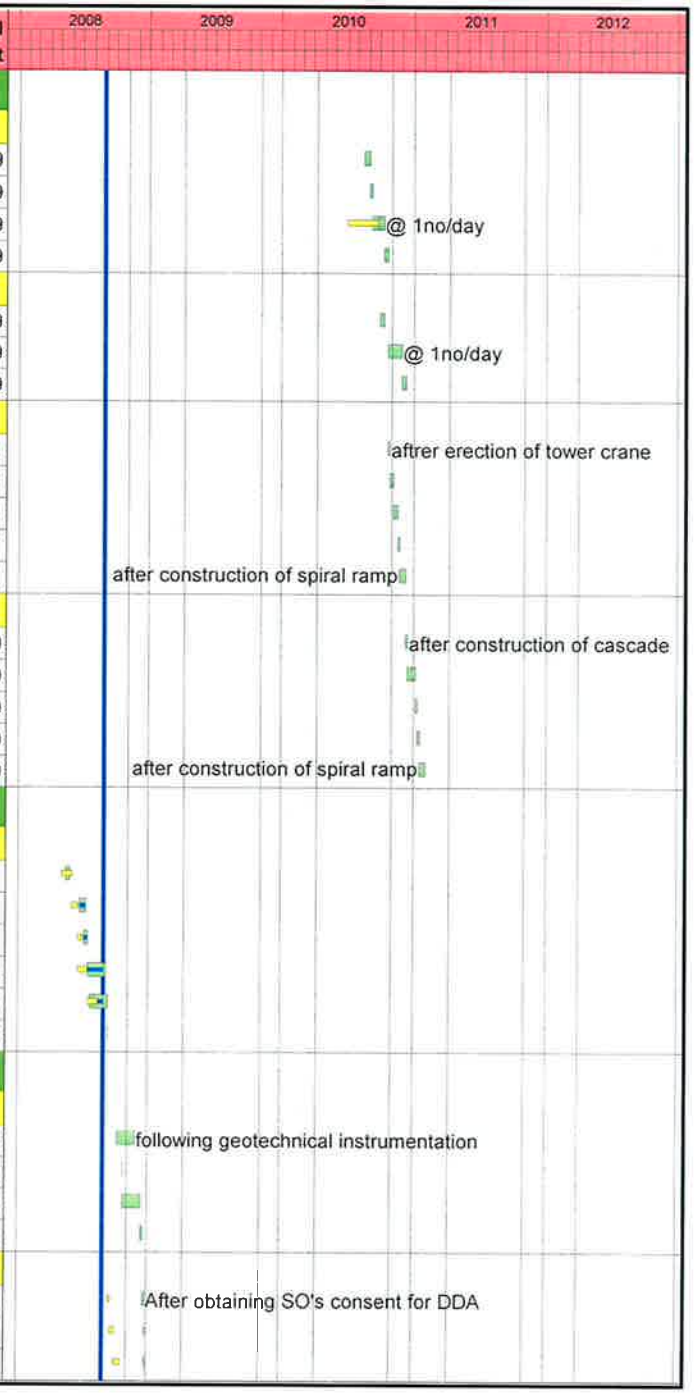
ID	Activity Description	Cal ID	Target Dur	Orig Dur	Target Start	Target Finish	Early Start	Early Finish	% Comp	Total Float
6AR1FT0960	6aR 30; On completion of grouting works at F1	2	0	0		14MAY10		08JAN11	0	722
6AR1FT0970	6aR 31; On completion of all works under this CC	2	0	0		20MAY10		18JAN11	0	712
Schedule of Milestones for Cost Centre No. 3aL										
3AL1FT1002	3aL 1; On providing evidence of procuring TBM	2	0	0		19JAN08		19JAN08A	100	
3AL1FT1004	3aL 2; On providing evidence of TBM Factory Test	2	0	0		04SEP08		05OCT08	0	1,547
3AL1FT1006	3aL 3; On delivery of all parts of TBM to the Si	2	0	0		09NOV08		14JUL09	0	1,265
3AL1FT1008	3aL 4; On completion of site comm. & test. of TB	2	0	0		08DEC08		12AUG09	0	1,236
3AL1FT1010	3aL 5; On completion of 5% perm. tunnel lining	2	0	0		25MAR09		12DEC09	0	1,114
3AL1FT1012	3aL 6; On completion of 10% perm. tunnel lining	2	0	0		09APR09		31DEC09	0	1,095
3AL1FT1014	3aL 7; On completion of 15% perm. tunnel lining	2	0	0		22MAY09		11FEB10	0	1,053
3AL1FT1016	3aL 8; On completion of 20% perm. tunnel lining	2	0	0		22JUN09		06MAR10	0	1,030
3AL1FT1018	3aL 9; On completion of 25% perm. tunnel lining	2	0	0		10JUL09		23MAR10	0	1,013
3AL1FT1020	3aL 10; On completion of 30% perm. tunnel lining	2	0	0		24JUL09		16APR10	0	989
3AL1FT1022	3aL 11; On completion of 35% perm. tunnel lining	2	0	0		10AUG09		07MAY10	0	968
3AL1FT1024	3aL 12; On completion of 40% perm. tunnel lining	2	0	0		09SEP09		04JUN10	0	940
3AL1FT1026	3aL 13; On completion of 45% perm. tunnel lining	2	0	0		03OCT09		24JUN10	0	920
3AL1FT1028	3aL 14; On completion of 50% perm. tunnel lining	2	0	0		24OCT09		10JUL10	0	904
3AL1FT1030	3aL 15; On completion of 55% perm. tunnel lining	2	0	0		09NOV09		26JUL10	0	888
3AL1FT1032	3aL 16; On completion of 60% perm. tunnel lining	2	0	0		27NOV09		11AUG10	0	872
3AL1FT1034	3aL 17; On completion of 65% perm. tunnel lining	2	0	0		09DEC09		26AUG10	0	857
3AL1FT1036	3aL 18; On completion of 70% perm. tunnel lining	2	0	0		21DEC09		10SEP10	0	842
3AL1FT1038	3aL 19; On completion of 75% perm. tunnel lining	2	0	0		22JAN10		27SEP10	0	825
3AL1FT1040	3aL 20; On completion of 80% perm. tunnel lining	2	0	0		05FEB10		20OCT10	0	802
3AL1FT1042	3aL 21; On completion of 85% perm. tunnel lining	2	0	0		01MAR10		11NOV10	0	780
3AL1FT1044	3aL 22; On completion of 90% perm. tunnel lining	2	0	0		15MAR10		03DEC10	0	758
3AL1FT1046	3aL 23; On completion of 95% perm. tunnel lining	2	0	0		07APR10		28DEC10	0	733
3AL1FT1048	3aL 24; On completion of perm. tunnel lining	2	0	0		14MAY10		18JAN11	0	712
3AL1FT1050	3aL 25; On completion of maint. access/flow chan	2	0	0		24SEP10		04JUN11	0	575
3AL1FT1052	3aL 26; On completion of provision of communic.	2	0	0		01NOV10		04JUN11	0	575
3AL1FT1054	3aL 27; On completion of all works under this CC	2	0	0		28JAN11		13AUG11	0	505
Schedule of Milestones for Cost Centre No. 3dL										
3DL10T1202	3dL 1; On complet. of install geo instrrument.	2	0	0		02SEP09		29APR09	0	1,341
3DL10T1204	3dL 2; Maint./monit. geo. inst. for 12 mth	2	0	0		26DEC08		26DEC08	0	1,465
3DL10T1206	3dL 3; Maint./monitor geo. inst. for 24	2	0	0		26DEC09		26DEC09	0	1,100
3DL10T1208	3dL 4; Maint./monitor geo. inst. for 36	2	0	0		26DEC10		26DEC10	0	735
3DL10T1210	3dL 5; Maint./monitor geo. inst. for 48	2	0	0		26DEC11		26DEC11	0	370
3DL10T1212	3dL 6; On completion of maint. & monit. of geo.	2	0	0		26JUL12		30NOV12	0	30
3DL10T1214	3dL 7; On installation of FMD at Portion A	2	0	0		12MAR11		04JUN11	0	575



ID	Activity Description	Cal ID	Target Dur	Orig Dur	Target Start	Target Finish	Early Start	Early Finish	% Comp	Total Float
3DL10T1216	3dL 8; On installation of FMD at Portion B	2	0	0		10JUN11		24AUG11	0	494
3DL10T1218	3dL 9; On installation of FMD at Portion C	2	0	0		05MAR11		22DEC10	0	739
3DL10T1220	3dL 10; On installation of FMD at Portion D	2	0	0		19MAY11		24NOV11	0	402
3DL10T1222	3dL 11; On completion of maint. & monit. of FMD	2	0	0		26JUL12		30NOV12	0	30
3DL10T1224	3dL 12; On completion of all works under this CC	2	0	0		26JUL12		30NOV12	0	30
Schedule of Milestones for Cost Centre No. 10aR										
10AR1JT131	10aR 1; On installation of temp. ventilation	2	0	0		03DEC08		06APR09	0	1,364
10AR1JT132	10aR 2; On installation temp. lighting	2	0	0		03DEC08		06APR09	0	1,364
10AR1JT133	10aR 3; On completion of 25% strengthening wks	2	0	0		20DEC08		06MAY09	0	1,334
10AR1JT134	10aR 4; On completion of 50% strengthening wks	2	0	0		10JAN09		23MAY09	0	1,317
10AR1JT135	10aR 5; On completion of 75% strengthening wks	2	0	0		31JAN09		11JUN09	0	1,298
10AR1JT136	10aR 6; On completion of strengthening works	2	0	0		16FEB09		26JUN09	0	1,283
10AR1JT137	10aR 7; On recharge of the water after wrk comp	2	0	0		18FEB09		11JUL09	0	1,268
Construction of Intake I-1										
Preliminary Works										
VO-07; Transperant Hoarding at I-1										
VO007-02	Receive VO7 for transparent hoarding	1	0	0				19MAY08A	100	
VO007-04	Procure/prepare/install transparent hoarding	1	0	70			20MAY08A	11AUG08A	100	
01R1AI1102	Possession of site	1	0	0			19MAR08A		100	
01R1AI1104	Obtain TTA (ingress & egress) approval	2	0	0			19APR08A		100	
01R1AI1106	Site clearance	1	0	30			21APR08A	26MAY08A	100	
01R1AI1108	Obtain tree	1	0	6		26MAR08	13MAY08A	31JUL08A	100	
01R1AI1110	Hoarding erection enclosing the Site	1	0	18	07MAR08		23MAY08A	11AUG08A	100	
01R1AI1112	Site entrance construction	1	0	6	26MAR08		23JUN08A	25JUL08A	100	
01R1AI1114	Install wheel wahing facilities	1	30	7	27MAR08	02MAY08	03JUN08A	07JUN08A	100	
01R1AI1116	Erect SOR's secondary site office	1	30	6	27MAR08	02MAY08	28AUG08	03SEP08	0	0
01R1AI1118	Footing for temp. bridge span over Shing M. Nul.	1	0	26			10JUN08A	16JUL08A	100	
01R1AI1120	Decking for temp. bridge span over Shing M. Nul.	1	0	13			17JUL08A	01AUG08A	100	
01R1AI1122	Install remote control CCTV as per ER 4.4.10	1	30	12	27MAR08	02MAY08	04SEP08	18SEP08	0	0
16R1AI1101	Tree Identification & Report	2	0	14			14MAR08A	01APR08A	100	
16R7AI1102	1st tree pruning for small 3 nos. trees	1	72	1	27MAR08	23JUN08	03JUN08A	03JUN08A	100	
16R7AI1104	2nd tree pruning for small 3 nos. trees	1	0	1			04JUL08A	04JUL08A	100	
16R7AI1106	Final pruning & uplifting of 3 nos. small trees	1	0	2			08SEP08	09SEP08	0	183
16R7AI1108	Confirm location for trees to be transplanted	1	0	51			02APR08A	27AUG08A	100	
16R7AI1110	1st pruning for big 4 nos. trees along S. Mun Rd	1	0	2			08SEP08	09SEP08	0	601
16R7AI1112	2nd pruning for big 4 nos. trees along S. Mun Rd	1	0	2			08NOV08	10NOV08	0	601
16R7AI1114	Final pruning/uplifting for big 4 nos. big trees	1	0	6			09JAN09	15JAN09	0	601



ID	Activity Description	Cal ID	Target Dur	Orig Dur	Target Start	Target Finish	Early Start	Early Finish	% Comp	Total Float
Piling Works										
Piling Works Above Inclined Access Ramp										
11R2AI1202	Erect piling platform for lower piles	1	0	12			17AUG10	30AUG10	0	99
11R2AI1204	Mobilize piling rig & set up	1	0	6			31AUG10	06SEP10	0	99
11R2AI1208	350mm dia. pre-bored H-piles (lower); 29 nos.	1	72	29	02JUL10	24SEP10	07SEP10	12OCT10	0	99
11R2AI1210	Relocate piling rig & set up for upper piling	1	0	6			13OCT10	20OCT10	0	99
Piing Works Along Crest Plarform										
11R2AI1212	Erect piling platform for lower piles	1	0	12			28SEP10	12OCT10	0	99
11R2AI1216	350mm dia. pre-bored H-piles (upper); 36 nos.	1	0	36			21OCT10	01DEC10	0	99
11R2AI1218	Demobilize piling rig	1	0	6			02DEC10	08DEC10	0	99
Skin Wall & Crest Platform										
11R2AI1220	Excavate & hack off grout	1	0	6			21OCT10	27OCT10	0	131
11R2AI1222	Fix rebar/erect fwk/concrete skin wall	1	0	10			28OCT10	08NOV10	0	131
11R2AI1224	Fix rebar/erect fwk/concrete capping beam	1	0	10			09NOV10	19NOV10	0	131
11R2AI1226	Backfill & construct U-channel	1	0	4			20NOV10	24NOV10	0	131
11R2AI1228	Fix rebar/erect fwk/concrete crest platform	1	0	12			25NOV10	08DEC10	0	131
Skin Wall & Inclined Access Ramp										
11R2AI1230	Excavate & hack off grout	1	0	8			09DEC10	17DEC10	0	99
11R2AI1232	Fix rebar/erect fwk/concrete skin wall	1	0	12			18DEC10	04JAN11	0	99
11R2AI1234	Fix rebar/erect fwk/concrete capping beam	1	0	8			05JAN11	13JAN11	0	99
11R2AI1236	Backfill & construct U-channel	1	0	4			14JAN11	18JAN11	0	99
11R2AI1238	Fix rebar/erect fwk/concrete inclined ramp	1	0	12			19JAN11	01FEB11	0	99
Permanent Soil Nailing Works										
11R2AI1302	Erect working platform & mobilization	1	24	8	03MAY08	31MAY08	17MAY08A	24MAY08A	100	
11R2AI1304	Install test nails & proof loading test; 2 nos.	1	12	8	02JUN08	16JUN08	24JUN08A	08JUL08A	100	
11R2AI1306	Soil nailing for A to C rows; 69 nos.	1	12	16	17JUN08	30JUN08	02JUL08A	14JUL08A	100	
11R2AI1308	Soil nailing for D to F rows; 71 nos.	1	24	29	17JUN08	15JUL08	15JUL08A	05SEP08	72	102
11R2AI1310	Constrcut soil nail heads; 140 nos.	1	24	22	16JUL08	12AUG08	19JUL08A	06SEP08	68	102
11R2AI1312	Demobilization	1	0	3			08SEP08	10SEP08	0	102
Construction of Spiral Ramp & Cascade										
Temp. Pipe-pile cofferdam										
04L1AI1202	Erect piling platform	1	0	43			08OCT08	26NOV08	0	102
04L1AI1203	Mobilization & set up piling rig	1	0	3			21OCT08	23OCT08	0	102
04L1AI1204	Install 273 mm dia. temp. pipe piles; 144 nos.	1	0	43			24OCT08	12DEC08	0	102
04L1AI1208	Demobilization & tidy up	1	0	3			13DEC08	16DEC08	0	102
Excavation from Existing GL to +103.5mPD										
04L1AI1402	Bulk excavation; soil (80m3)	1	4	2	16SEP08	19SEP08	20DEC08	22DEC08	0	99
04L1AI1404	Install test tie-back & proof load test; 1 no.	1	10	6	20SEP08	02OCT08	23DEC08	31DEC08	0	99
04L1AI1406	Install working tie-backs; 10 nos.	1	10	6	03OCT08	15OCT08	23DEC08	31DEC08	0	99



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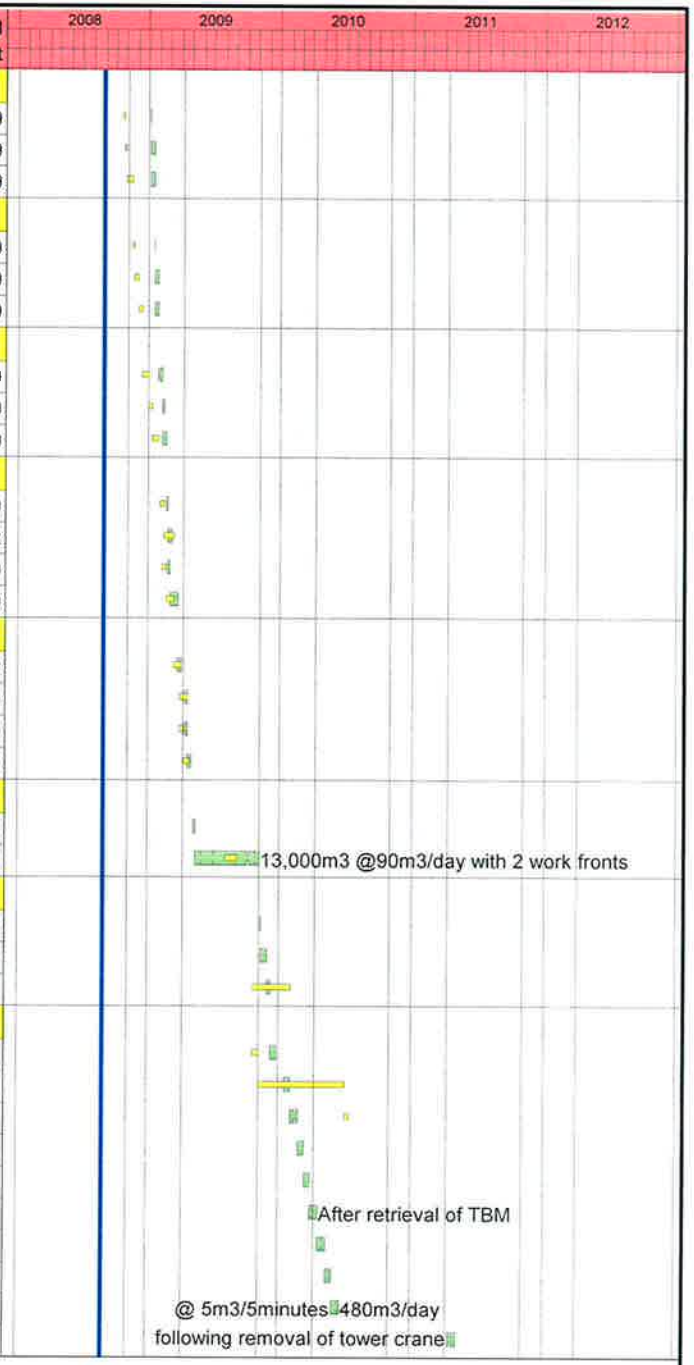
Excavation from +103.5mPD to +100.5mPD										
04L1AI1408	Bulk excavation; soil (240m3)	1	4	3	16OCT08	20OCT08	02JAN09	05JAN09	0	99
04L1AI1410	Install test tie-back & proof load test; 1 no.	1	10	6	21OCT08	31OCT08	06JAN09	12JAN09	0	99
04L1AI1412	Install working tie-backs; 10 nos.	1	10	6	01NOV08	12NOV08	06JAN09	12JAN09	0	99
Excavation from +100.5mPD to +97.5mPD										
04L1AI1414	Bulk excavation; soil (510m3)	1	6	4	13NOV08	19NOV08	13JAN09	16JAN09	0	99
04L1AI1416	Install test tie-back & proof load test; 1 no.	1	10	6	20NOV08	01DEC08	17JAN09	23JAN09	0	99
04L1AI1418	Install working tie-backs; 22 nos.	1	10	6	02DEC08	12DEC08	17JAN09	23JAN09	0	99
Excavation from +97.5mPD to +94.5mPD										
04L1AI1420	Bulk excavation; soil (950m3)	1	12	6	13DEC08	29DEC08	24JAN09	03FEB09	0	99
04L1AI1422	Install test tie-back & proof load test; 1 no.	1	10	6	30DEC08	10JAN09	04FEB09	10FEB09	0	99
04L1AI1424	Install working tie-backs; 37 nos.	1	12	10	12JAN09	24JAN09	04FEB09	14FEB09	0	99
Excavation from +94.5mPD to +91.5 mPD										
04L1AI1426	Bulk excavation; soil (1130m3)	1	12	8	29JAN09	11FEB09	16FEB09	24FEB09	0	99
04L1AI1428	Bulk excavation; rock (650m3)	1	24	9	12FEB09	11MAR09	25FEB09	06MAR09	0	112
04L1AI1430	Install test tie-back & proof load test; 1 no.	1	10	6	05FEB09	16FEB09	23FEB09	28FEB09	0	99
04L1AI1432	Install working tie-backs; 43 nos.	1	18	18	17FEB09	09MAR09	02MAR09	21MAR09	0	99
Excavation from +91.5mPD to + 88.5mPD										
04L1AI1434	Bulk excavation; soil (1860m3)	1	18	10	12MAR09	01APR09	23MAR09	02APR09	0	99
04L1AI1436	Bulk excavation; rock (420m3)	1	18	6	26MAR09	20APR09	07APR09	16APR09	0	99
04L1AI1438	Install test tie-back & proof load test; 1 no.	1	10	6	26MAR09	07APR09	07APR09	16APR09	0	99
04L1AI1440	Install working tie-backs; 27 nos.	1	12	12	08APR09	24APR09	17APR09	30APR09	0	99
Excavation from +88.5mPD to +72.5mPD										
07R1AI1442	Set up for dewatering	1	0	8			04MAY09	12MAY09	0	99
07R1AI1444	Rock excavation/mucking out/temp. support	1	30	145	01AUG09	04SEP09	13MAY09	03NOV09	0	99
Construction of Vehicular Access										
04L1AI1444	Cast base slab	1	0	6			04NOV09	10NOV09	0	99
04L1AI1446	Cast walls	1	0	12			11NOV09	24NOV09	0	99
04L1AI1448	Cast roof slab	1	88	12	20OCT09	03FEB10	25NOV09	08DEC09	0	99
Construction of Spiral Ramp Structure										
07R1AI1402	Cast base slab	1	12	12	20OCT09	03NOV09	09DEC09	22DEC09	0	99
07R1AI1404	Cast ramp up to +76.51mPD	1	192	15	04NOV09	30JUN10	16JAN10	02FEB10	0	99
07R1AI1406	Cast ramp up to +80.81mPD	1	12	15	02JUL10	15JUL10	03FEB10	23FEB10	0	99
07R1AI1408	Cast ramp up to +85.1mPD	1	0	15			24FEB10	12MAR10	0	99
07R1AI1410	Cast ramp up to +89.41mPD	1	0	15			13MAR10	30MAR10	0	99
07R1AI1412	Cast ramp up to +93.71mPD	1	0	15			31MAR10	21APR10	0	99
07R1AI1414	Cast ramp up to +98.01mPD	1	0	15			22APR10	10MAY10	0	99
07R1AI1416	Cast ramp up to +102.31mPD	1	0	15			11MAY10	28MAY10	0	99
07R1AI1418	Backfill spiral ramp; 9840m3	1	0	21			29MAY10	23JUN10	0	270
07R1AI1420	Construct RC spiral ramp top	1	0	15			20APR11	11MAY11	0	24



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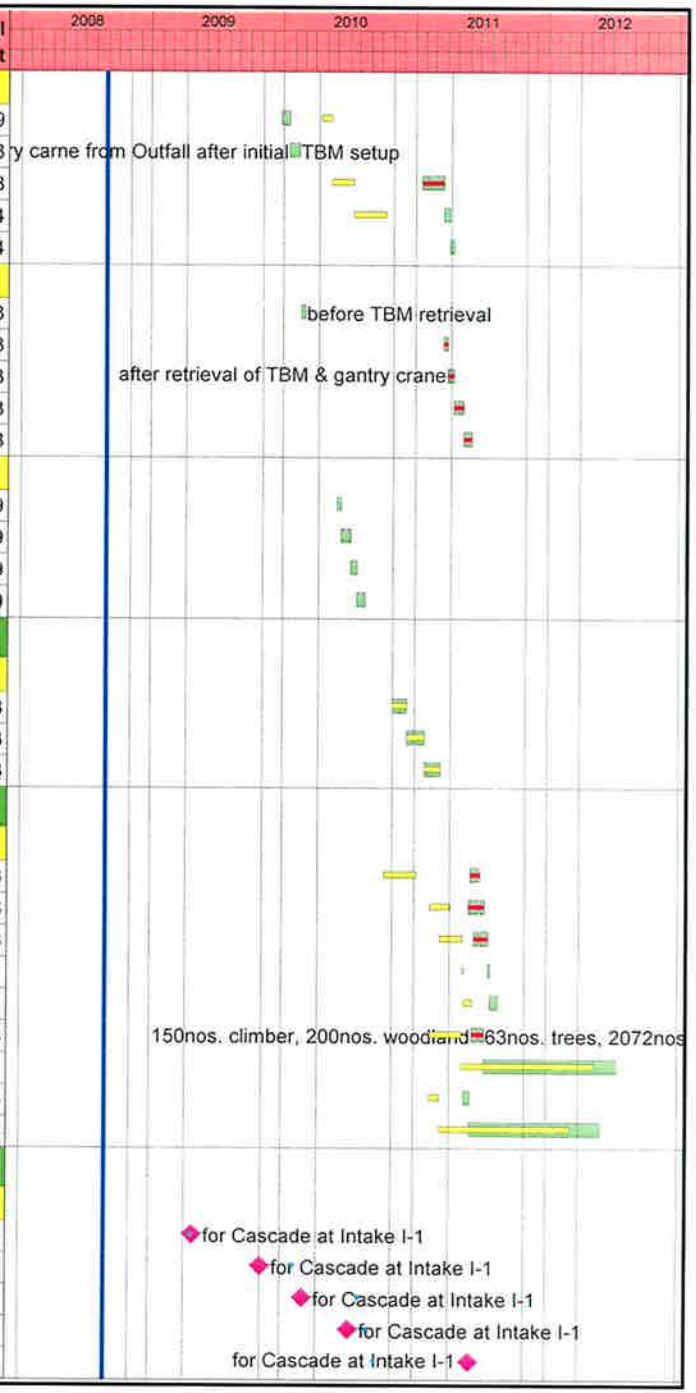
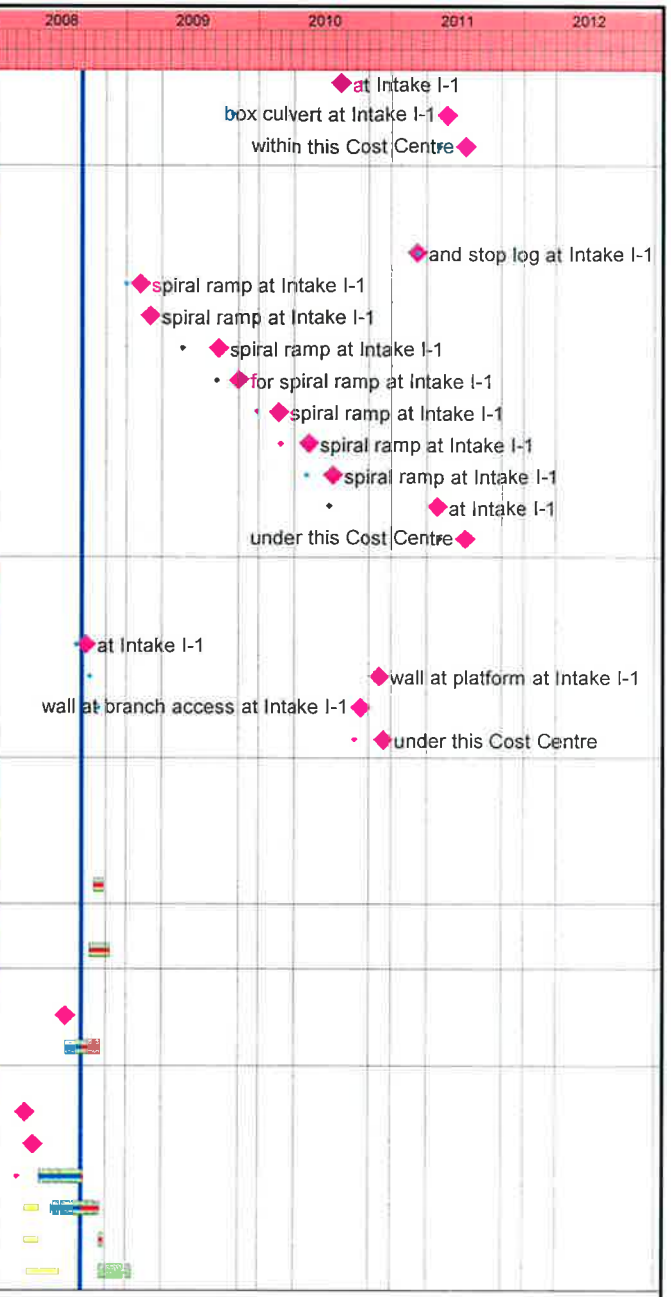
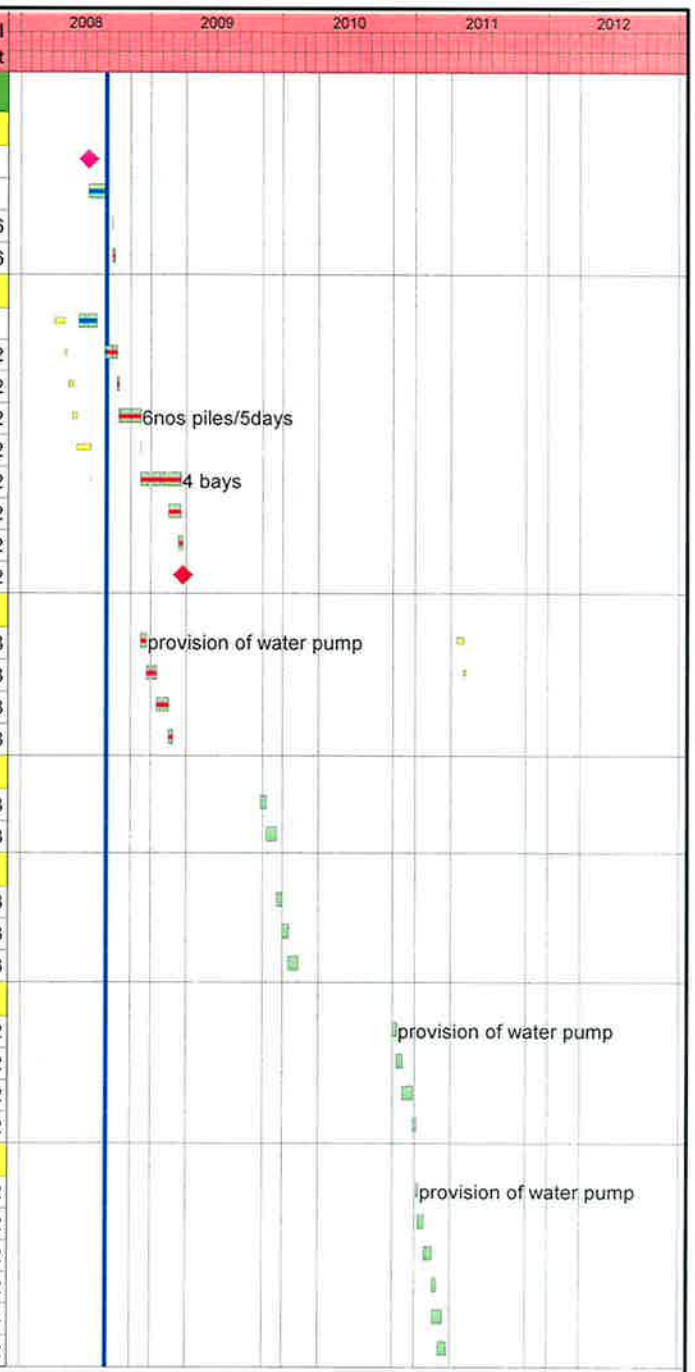
Dismantle & removal of TBM										
04L1AI1450	Erect tower crane/testing	1	24	18	16APR10	14MAY10	23DEC09	15JAN10	0	99
04L1AI1451	Erect gantry crane & testing	1	0	24			16JAN10	12FEB10	0	168
04L1AI1452	Dissembly & demobilization of TBM	1	50	50	15MAY10	15JUL10	19JAN11	21MAR11	0	3
04L1AI1454	Dismante/remove gantry crane	1	72	12	16JUL10	09OCT10	22MAR11	04APR11	0	24
04L1AI1456	Dismantle/remove tower crane	1	0	12			06APR11	19APR11	0	24
Construction of Box Culvert Structure										
04L1AI1462	Cast lower base slab	1	0	12			17FEB10	02MAR10	0	168
04L1AI1463	Cast upper base	1	0	6			22MAR11	28MAR11	0	3
04L1AI1464	Cast walls 1st lift	1	0	18			29MAR11	19APR11	0	3
04L1AI1466	Cast walls 2nd lift, 200mm down from soffit	1	0	18			20APR11	14MAY11	0	3
04L1AI1468	Cast roof slabs	1	0	18			16MAY11	04JUN11	0	3
Construction of Cascade Structure										
04L1AI1472	Cast base slabs	1	0	12			29MAY10	11JUN10	0	99
04L1AI1474	Cast walls 1st lift	1	0	18			12JUN10	05JUL10	0	99
04L1AI1476	Cast walls 2nd lift, 200mm down from soffit	1	0	18			06JUL10	26JUL10	0	99
04L1AI1478	Cast roof slabs	1	0	18			27JUL10	16AUG10	0	99
Modification of Existing Channel in Dry Season										
07R1AI1502	Modify half channel bed at tunnel entrance; Ph 1	1	36	36	01NOV10*	11DEC10	01NOV10*	11DEC10	0	68
07R1AI1504	Modify rem. half channel bed; Phase 2	1	36	36	13DEC10	26JAN11	13DEC10	26JAN11	0	68
07R1AI1506	Install steelworks; Phase 3	1	36	36	27JAN11	12MAR11	27JAN11	12MAR11	0	68
Remaining Works Prior to Handover										
07R1AI1602	Backfill & compaction above box culvert; ~13m	1	72	22	11OCT10	06JAN11	07JUN11	02JUL11	0	3
07R1AI1606	Finishing & reinstatement works; Portion A	1	48	36	14FEB11	11APR11	03JUN11	16JUL11	0	3
07R1AI1608	Pre-handover inspections and remedial works	1	48	30	14MAR11	13MAY11	18JUN11	23JUL11	0	3
07R1AI1610	Contractor serve notice for Works completion	2	7	7	14MAY11	20MAY11	24JUL11	30JUL11	0	341
07R1AI1612	SO issues completion certificate	2	21	21	21MAY11	10JUN11	31JUL11	20AUG11	0	341
16R7AI1602	Landscaping works at Portion A	1	72	30	14FEB11	13MAY11	11JUN11	16JUL11	0	3
16R7AI1604	Establishment Works at Portion A	2	365	365	14MAY11	12MAY12	17JUL11	15JUL12	0	11
3DL1AI1602	Install flow measurement devices at Intake I-1	1	24	12	14FEB11	12MAR11	23MAY11	04JUN11	0	15
3DL1AI1604	Maintain & monitor flow monitoring	2	365	365	13MAR11	11MAR12	05JUN11	03JUN12	0	53
Schedule of Milestones for Cost Center No. 4L										
04L1AI1802	4L 1; On completion of 50% excavation	2	0	0		24APR09		30APR09	0	1,340
04L1AI1804	4L 2; On completion of excavation	2	0	0		03FEB10		03NOV09	0	1,153
04L1AI1806	4L 3; On completion of 25% concreting	2	0	0		05AUG10		02MAR10	0	1,034
04L1AI1808	4L 4; On completion of 50% concreting	2	0	0		26AUG10		05JUL10	0	909
04L1AI1810	4L 5; On completion of 75% concreting	2	0	0		16SEP10		04JUN11	0	575



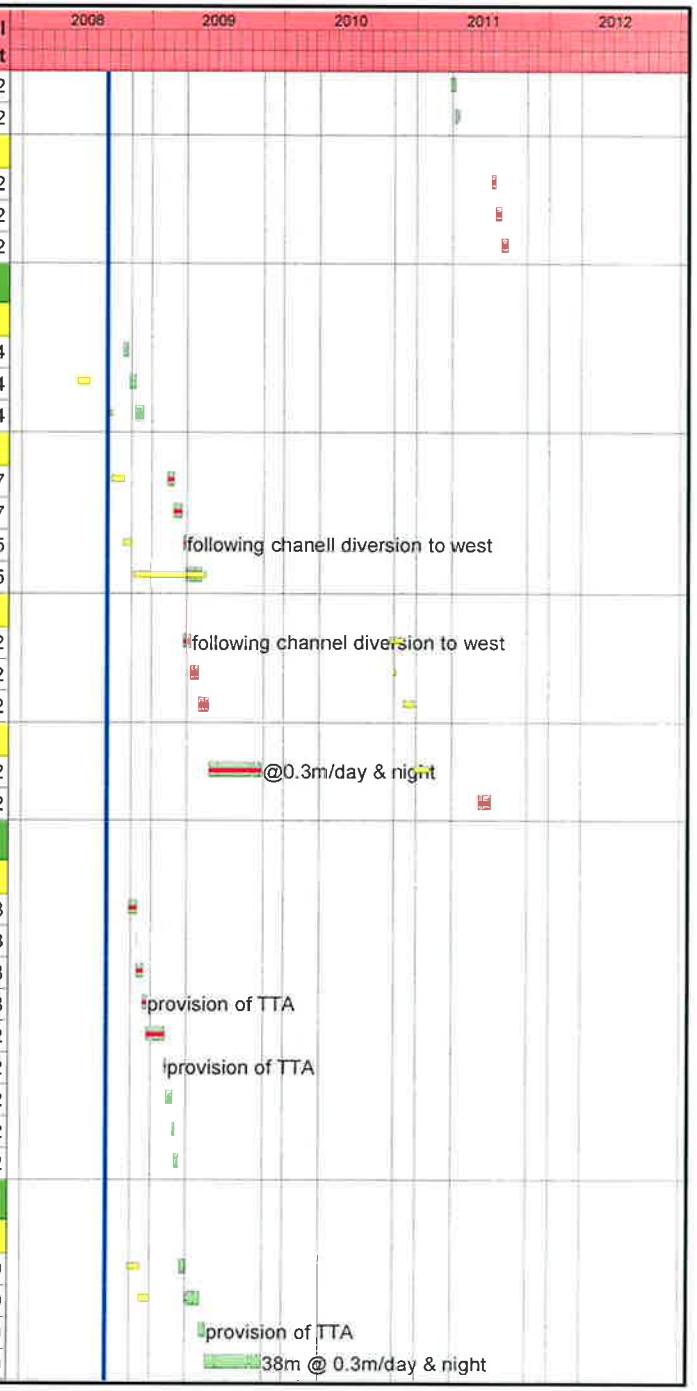
ID	Activity Description	Cal ID	Target Dur	Orig Dur	Target Start	Target Finish	Early Start	Early Finish	% Comp	Total Float
04L1AI1812	4L 6; On completion of Cascade	2	0	0		09OCT10		16AUG10	0	867
04L1AI1814	4L 7; On completion of connecting BC	2	0	0		19OCT09		04JUN11	0	575
04L1AI1816	4L 8; On completion of all works under this CC	2	0	0		13MAY11		23JUL11	0	526
Schedule of Milestones for Cost Centre No. 7R										
07R1AI1902	7R 1; On completion of trash grills	2	0	0		12MAR11		12MAR11	0	659
07R1AI1904	7R 2; On completion of 25% excavation	2	0	0		29DEC08		03FEB09	0	1,426
07R1AI1906	7R 3; On completion of 50% excavation	2	0	0		11MAR09		06MAR09	0	1,395
07R1AI1908	7R 4; On completion of 75% excavation	2	0	0		02JUN09		08SEP09	0	1,209
07R1AI1910	7R 5; On completion of all excavation	2	0	0		04SEP09		03NOV09	0	1,153
07R1AI1912	7R 6; On completion of spiral ramp to +80mPD	2	0	0		22DEC09		23FEB10	0	1,041
07R1AI1914	7R 7; On completion of spiral ramp to +90mPD	2	0	0		02MAR10		17MAY10	0	958
07R1AI1916	7R 8; On completion of spiral ramp to +100mPD	2	0	0		10MAY10		22JUL10	0	892
07R1AI1918	7R 9; On completion of spiral access ramp	2	0	0		15JUL10		11MAY11	0	599
07R1AI1920	7R 10; On completion of all works under this CC	2	0	0		13MAY11		23JUL11	0	526
Schedule of Milestones for Cost Centre No. 11R										
11R2AI1R02	11R 1; On completion of soil nailing works	2	0	0		12AUG08		06SEP08	0	1,576
11R2AI1R04	11R 2; On completion of piling at platform	2	0	0		19SEP08		01DEC10	0	760
11R2AI1R06	11R 3; On completion of piling at branch access	2	0	0		13OCT08		12OCT10	0	810
11R2AI1R08	11R 4; On completion of all works under this CC	2	0	0		24SEP10		08DEC10	0	753
Construction of Intake I-2										
Preliminary Works										
Diversion of CLP Overhead Cable										
01R1BU0102	Diversion of CLP overhead cable	2	0	30			02OCT08*	31OCT08	0	-44
Dievrsion of 100mm Watermain										
01R1BU0202	Diversion of 100mm dia. watermain	2	0	54			22SEP08*	14NOV08	0	-58
VO 11; Transperant Hoarding at I-2										
VO011-02	Receive VO11 for transparent hoarding	1	0	0				14JUL08A	100	
VO011-04	Procure/prepare/install transparent hoarding	1	0	51			15JUL08A	16OCT08	22	-52
01R1BI2102	Possession of Portion B -90d of DOC	2	0	0			26MAR08A		100	
01R1BI2104	Obtain TTA (ingress & egress) approval	2	0	0				19APR08A	100	
01R1BI2108	Site clearance	1	0	30		06MAR08	02MAY08A	05SEP08	75	-52
01R1BI2112	Erect hoarding	1	30	30	27MAR08	02MAY08	05JUN08A	16OCT08	0	-52
01R1BI2116	Install remote contorl CCTV as per ER 4.4.10	1	30	12	27MAR08	02MAY08	17OCT08	30OCT08	0	0
16R7BI2002	Tree transplanting; 1 no.	1	72	72	03APR08	30JUN08	17OCT08	12JAN09	0	516



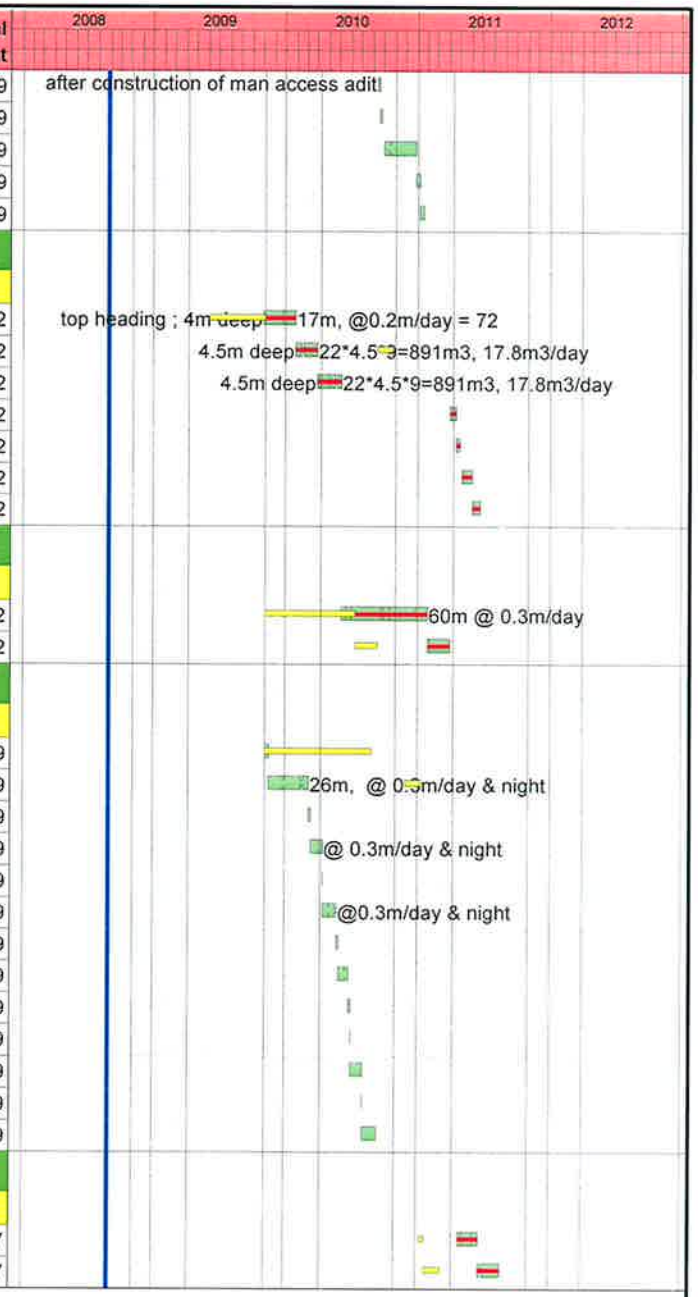
ID	Activity Description	Cal ID	Target Dur	Orig Dur	Target Start	Target Finish	Early Start	Early Finish	% Comp	Total Float
Stream Diversion/Approach Channel/H-Pile Wall										
Revised Layout of Pile Wall at I-2										
VO022-02	Received VO22 for revised layout of pile wall	1	0	0				10JUL08A	100	
VO022-04	SOR confirmed to demolish exit. ret. wall	1	0	38			11JUL08A	21AUG08A	100	
VO022-06	Demolish existing retaining wall	1	0	1			13SEP08	13SEP08	0	-46
VO022-16	Reinstate piling platform	1	0	2			16SEP08	17SEP08	0	-46
Phase 1, Stg 1- Construct 550 dia. H-pile Wall										
12R3BI2202	Form temp. access ramp along west side of stream	1	24	44	05APR08	03MAY08	10JUN08A	31JUL08A	100	
12R3BI2204	Additional SI & engineering works	1	6	26	05MAY08	10MAY08	25AUG08A	24SEP08	15	-52
12R3BI2206	Mobilize piling rig & set up	1	10	5	13MAY08	23MAY08	25SEP08	30SEP08	0	-52
12R3BI2208	Construct 59 nos. pre-bored H-piles	1	12	50	24MAY08	06JUN08	02OCT08	29NOV08	0	-52
12R3BI2210	Demobilize piling rig	1	30	1	07JUN08	14JUL08	01DEC08	01DEC08	0	-52
12R3BI2212	Construct skin wall/caping beam/u-channel	1	1	90	15JUL08	15JUL08	02DEC08	23MAR09	0	-52
12R3BI2230	Excavate/construct modified river channel	1	0	30			17FEB09	23MAR09	0	-52
12R3BI2232	Construct PC block bund	1	0	12			17MAR09	30MAR09	0	-52
12R3BI2234	Divert channel to West	1	0	0				30MAR09	0	-52
Phase 1, Stg 2- Construct D.W.F.C at West										
08R1BI2236	Construct temp. concrete block bund	1	12	12	28APR11	12MAY11	02DEC08	15DEC08	0	-28
08R1BI2238	Excavate for new low flow channel	1	6	24	13MAY11	19MAY11	16DEC08	15JAN09	0	-28
08R1BI2240	Construct new low flow channel	1	0	24			16JAN09	16FEB09	0	-28
08R1BI2242	Remove temp. concrete block bund	1	0	12			17FEB09	02MAR09	0	-28
Phase 2, Stg 5 - Construct Vortex Shaft										
08R1BI2244	Excavate for Vortex	1	0	12			02NOV09*	14NOV09	0	243
08R1BI2246	Construct Vortex	1	0	24			16NOV09	12DEC09	0	243
Phase 3, Stg 1 - Construct A. C. (South & East)										
08R1BI2248	Remove steel deck stg 2	1	0	12			14DEC09	29DEC09	0	243
08R1BI2250	Excavate for South & East part of A.C.	1	0	12			30DEC09	13JAN10	0	243
08R1BI2252	Construct South & East part of A. C.	1	0	24			14JAN10	10FEB10	0	243
Phase 3, Stg 2-Construct A. C. (West)										
08R1BI2254	Construct temp. concrete block bund	1	0	12			01NOV10*	13NOV10	0	32
08R1BI2256	Excavate for western portion guide wall & slab	1	0	12			15NOV10	27NOV10	0	32
08R1BI2258	Construct western portion of guide wall & slab	1	0	24			29NOV10	28DEC10	0	32
08R1BI2260	Remove concrete block bund	1	0	6			29DEC10	05JAN11	0	32
Phase 3, Stg 3 - Construct A. C. (North & East)										
08R1BI2262	Construct temp. concrete block bund	1	0	6			06JAN11	12JAN11	0	32
08R1BI2264	Excavate for L-shaped retaining wall	1	0	12			13JAN11	26JAN11	0	32
08R1BI2266	Construct L-shaped retaining wall	1	0	18			27JAN11	19FEB11	0	32
08R1BI2268	Excavate eastern portion of guide wall & slab	1	0	12			21FEB11	05MAR11	0	32
08R1BI2270	Construction of boulder traps; 7nos.	1	0	24			21FEB11	19MAR11	0	64
08R1BI2272	Construct eastern portion of guide wall & slab	1	0	24			07MAR11	02APR11	0	32



ID	Activity Description	Cal ID	Target Dur	Orig Dur	Target Start	Target Finish	Early Start	Early Finish	% Comp	Total Float
08R1BI2274	Construct trash grill	1	0	12			04APR11	18APR11	0	32
08R1BI2276	Remove temp. concrete blcok bund	1	0	6			19APR11	28APR11	0	32
Phase 4- Construct Remaining Approach Channel										
08R1BI2278	Remove gantry crane	1	0	12			26JUL11	08AUG11	0	-52
08R1BI2280	Close out last section of guide wall	1	0	12			09AUG11	22AUG11	0	-52
08R1BI2282	Remove steel deck stg 1	1	0	12			23AUG11	05SEP11	0	-52
Excavate & Construct Vortex/Drop Shaft										
Phase 2, Stg 1- Temporary Steel Deck Stage 1										
05L1BI2301	Excavate for foundation	1	0	12			13OCT08	25OCT08	0	24
05L1BI2302	Construct foundation for steel deck	1	24	18	07JUN08	07JUL08	27OCT08	15NOV08	0	24
05L1BI2304	Install steel deck	1	6	18	05SEP08	11SEP08	17NOV08	06DEC08	0	24
Phase 2, Stg 3- Ground Treatment Works for D. S.										
05L1BI2306	Rock excavation from GL (+99mPD to +93mPD	1	24	12	12SEP08	13OCT08	12FEB09	25FEB09	0	-27
05L1BI2308	Construct temp. RC ring wall; +93mPD to +102mPD	1	0	20			26FEB09	20MAR09	0	-27
05L1BI2310	Setting up	1	18	2	14OCT08	03NOV08	31MAR09	01APR09	0	-35
05L1BI2312	Probing & curtain grouting around shaft	1	160	35	11NOV08	30MAY09	02APR09	19MAY09	0	-35
Phase 2, Stg 4 - Temporary Steel Deck Stage 2										
05L1BI2314	Excavate for foundation	1	32	12	21OCT10	26NOV10	31MAR09	17APR09	0	-52
05L1BI2316	Construct foundation for steel deck/gantry	1	6	18	01NOV10*	06NOV10	18APR09	11MAY09	0	-52
05L1BI2318	Install steel deck/gantry/Noise enclosure	1	24	24	27NOV10	24DEC10	12MAY09	09JUN09	0	-52
05L1BI2320	Excavate shaft; +93mPD to +65mPD (28m)	1	36	118	28DEC10	11FEB11	10JUN09	29OCT09	0	-52
05L1BI2322	Construct permanent lining; 28m @ 3m/ 3days	1	0	28			22JUN11	25JUL11	0	-52
Excavate & Construct Air Vent Shaft										
Phase 2, Stg 2 - Construct Air Vent Shaft										
05L1BI2418	Foundation of shaft collar/install pipe for RCD	1	0	14			01NOV08*	17NOV08	0	-48
05L1BI2420	Mobilize & set up probing	1	0	2			18NOV08	19NOV08	0	-48
05L1BI2422	Probing & curtain grouting around shaft	1	0	16			20NOV08	08DEC08	0	-48
05L1BI2426	Mobilize & set up RCD for excavation	1	0	6			09DEC08	15DEC08	0	-48
05L1BI2428	Bore shaft with RCD; 34m @1m/day	1	0	34			20DEC08	04FEB09	0	-52
05L1BI2430	Demobilize RCD rig	1	0	6			05FEB09	11FEB09	0	-52
05L1BI2432	Install permanent liner	1	0	12			12FEB09	25FEB09	0	12
05L1BI2434	Concrete liner	1	0	6			26FEB09	04MAR09	0	12
05L1BI2436	Construct upstand wall	1	0	12			05MAR09	18MAR09	0	12
Excavate & Construct Man Access Shaft										
05L1BI2502	Sheet piling cofferdam	1	24	12	01NOV08*	28NOV08	24MAR09	07APR09	0	109
05L1BI2504	Probing & curtain grouting around shaft	1	24	31	29NOV08	29DEC08	08APR09	19MAY09	0	109
05L1BI2506	Set up for excavation incl. noise enclosure	1	0	12			20MAY09	03JUN09	0	109
05L1BI2508	Excavation/muck out/temporoary support	1	0	127			04JUN09	03NOV09	0	109



ID	Activity Description	Cal ID	Target Dur	Orig Dur	Target Start	Target Finish	Early Start	Early Finish	% Comp	Total Float
05L1BI2522	Construct base	1	0	4			14SEP10	17SEP10	0	109
05L1BI2524	Set up for 37m shaft construction (wall only)	1	0	6			18SEP10	25SEP10	0	109
05L1BI2526	Construct wall/stair; 25 landings @ 3 days/land	1	0	75			27SEP10	24DEC10	0	109
05L1BI2530	Construct wall above ground level	1	0	8			28DEC10	06JAN11	0	109
05L1BI2532	Construct shaft roof	1	0	12			07JAN11	20JAN11	0	109
Excavate & Construct Deaeration Chamber										
05L1BI2602	Probing/grout/excavate/muckout/temp.support	1	132	72	01JUN09	05NOV09	30OCT09	25JAN10	0	-52
05L1BI2604	Drill/excavate/muckout/temp. support for bench	1	32	50	10SEP10	20OCT10	26JAN10	27MAR10	0	-52
05L1BI2607	Drill/excavate/muckout/temp. support for bottom	1	0	50			29MAR10	01JUN10	0	-52
05L1BI2608	Set up for lining construction	1	0	12			02APR11	16APR11	0	-52
05L1BI2610	Construct base; 3 bays	1	0	9			18APR11	30APR11	0	-52
05L1BI2612	Construct walls 2 lifts; 3 bays	1	0	24			02MAY11	30MAY11	0	-52
05L1BI2614	Const. crown/underpin. of air vent & drop shafts	1	0	18			31MAY11	21JUN11	0	-52
Excavate & Construct Main Adit Tunnel										
3BL1BI2102	Probing/grout/temp. support/excavation/muck out	1	200	200	06NOV09	13JUL10	02JUN10	29JAN11	0	-52
3BL1BI2104	Construct permanent lining	1	50	50	14JUL10	09SEP10	31JAN11	01APR11	0	-52
Excavate & Construct Man Access Adit										
05L1BI2802	Remove working platform & install temp. ladder	1	240	12	06NOV09	28AUG10	04NOV09	17NOV09	0	109
05L1BI2806	Probing/gorut/excavate/muckout/temporary support	1	36	90	27NOV10	11JAN11	18NOV09	09MAR10	0	109
05L1BI2808	Set up for 7.2m raise (shaft) excavation	1	0	2			10MAR10	11MAR10	0	109
05L1BI2810	Excavate/removal of rock/temporary support	1	0	24			12MAR10	13APR10	0	109
05L1BI2812	Set up for 9.3m lower adit excavation	1	0	2			14APR10	15APR10	0	109
05L1BI2814	Excavate/removal of rock/temporary support	1	0	31			16APR10	24MAY10	0	109
05L1BI2816	Set up for 7m lower adit construction	1	0	6			25MAY10	31MAY10	0	109
05L1BI2818	Construction of permanent lining	1	0	20			01JUN10	24JUN10	0	109
05L1BI2822	Construct base of raise shaft	1	0	4			25JUN10	29JUN10	0	109
05L1BI2824	Set up for 9m raise stairway const. (wall only)	1	0	2			30JUN10	02JUL10	0	109
05L1BI2826	Construct wall & stair; 7 landings @4days/landin	1	0	28			03JUL10	04AUG10	0	109
05L1BI2830	Set up for 23m upper adit construction	1	0	2			05AUG10	06AUG10	0	109
05L1BI2834	Construction of permanent lining	1	0	32			07AUG10	13SEP10	0	109
Junction Between Main Tunnel & Adit Tunnel										
3BL1BI2106	Temp. support & excavation breakthrough	1	12	48	12JAN11	25JAN11	28APR11	24JUN11	0	-27
3BL1BI2108	Construct collar between MT & AT	1	36	48	26JAN11	11MAR11	25JUN11	20AUG11	0	-27



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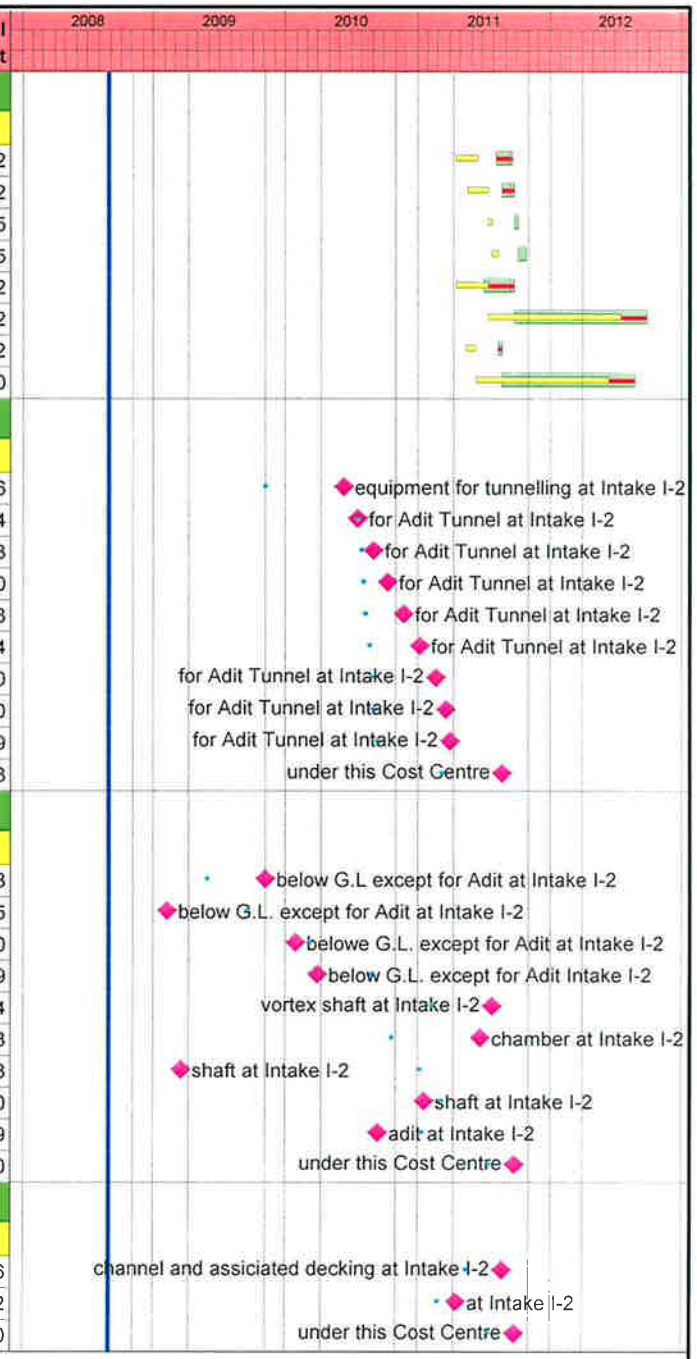
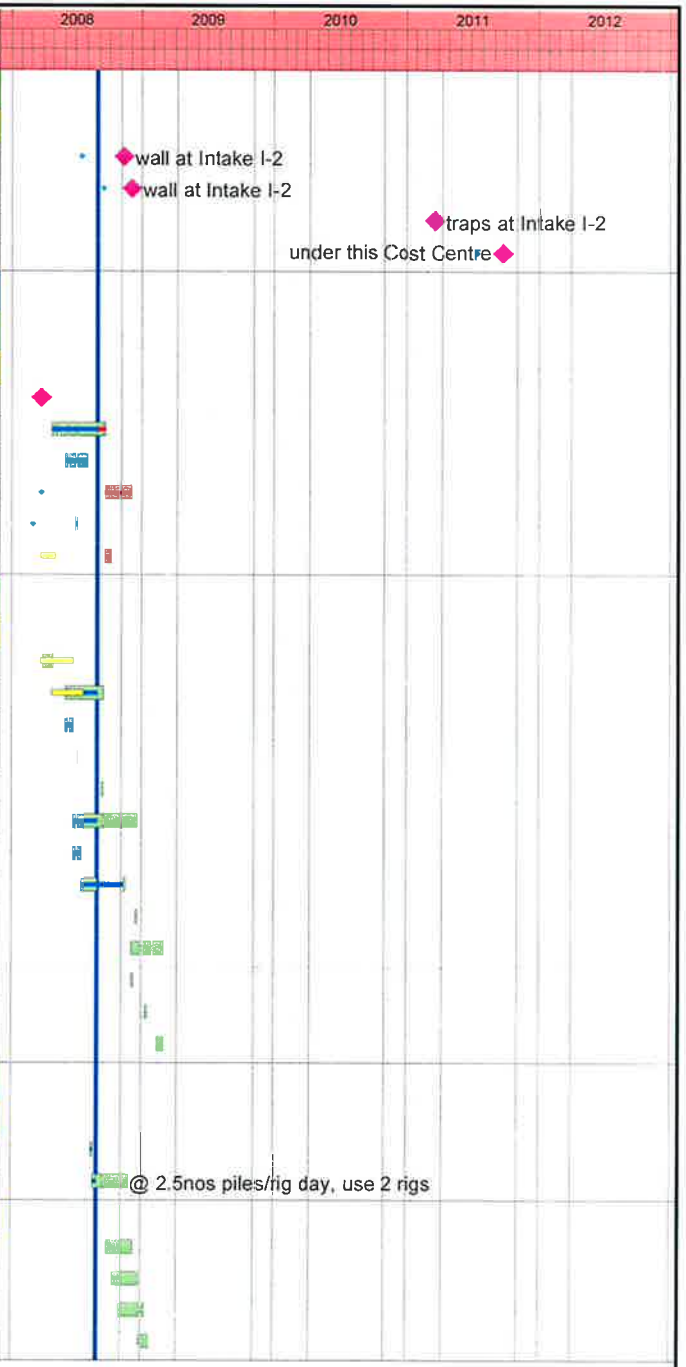
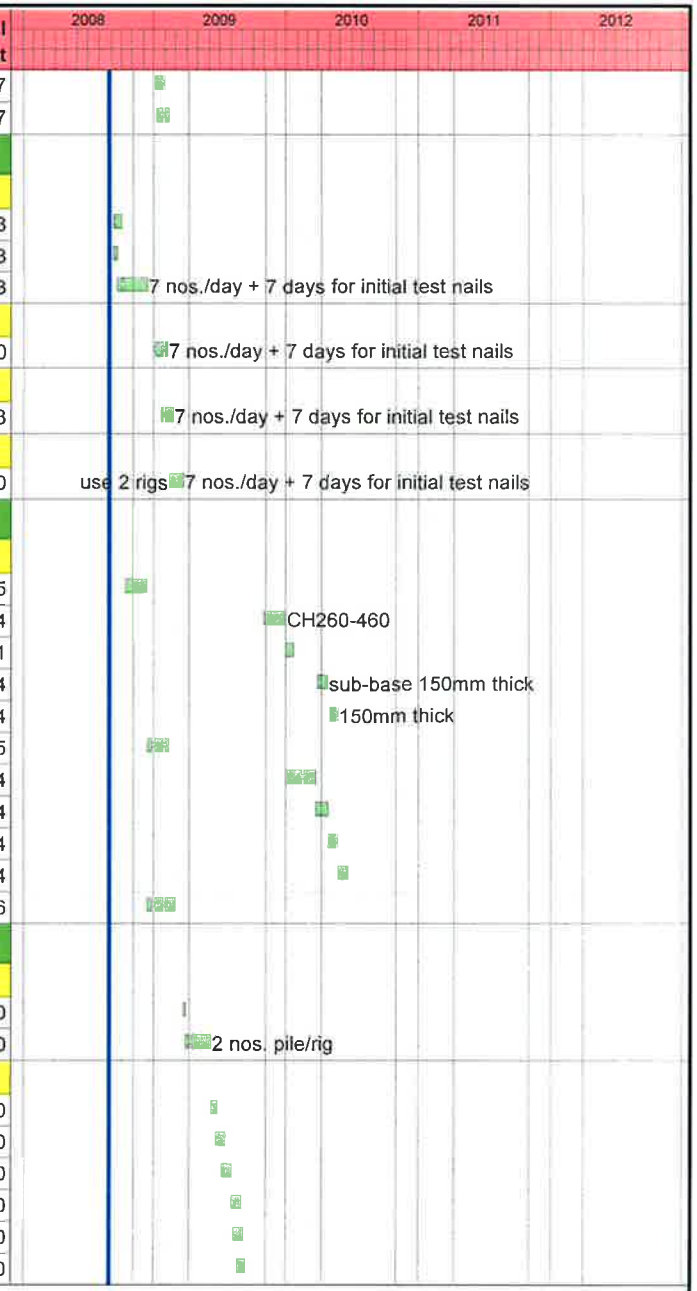
Remaining Works Prior to Handover										
08R1BI2102	Finishing & reinstatement works; Portion B	1	48	36	18APR11	17JUN11	09AUG11	20SEP11	0	-52
08R1BI2103	Pre-handover inspections and remedial works	1	48	30	20MAY11	16JUL11	23AUG11	27SEP11	0	-52
08R1BI2104	Contractor serve notice for Works completion	2	7	7	17JUL11	23JUL11	28SEP11	04OCT11	0	275
08R1BI2105	SO issues completion certificate	2	21	21	24JUL11	13AUG11	05OCT11	25OCT11	0	275
16R7BI2102	Landscaping works at Portion B	1	72	72	18APR11	16JUL11	05JUL11	27SEP11	0	-52
16R7BI2104	Establishment Works at Portion B	2	365	365	17JUL11	15JUL12	28SEP11	26SEP12	0	-62
3DL1BI2101	Install flow measurement devices at Intake I-2	1	24	12	13MAY11	10JUN11	11AUG11	24AUG11	0	-52
3DL1BI2105	Maintain & monitor flow monitoring	2	365	365	11JUN11	09JUN12	25AUG11	23AUG12	0	0
Schedule of Milestones for Cost Centre No. 3bL										
3BL1BI2A02	3bL 1; On establishing tunnelling equipments	2	0	0		05NOV09		08JUN10	0	936
3BL1BI2A04	3bL 2; On completion of 12.5% perm. tunnel linin	2	0	0		20JUL10		20JUL10	0	894
3BL1BI2A06	3bL 3; On completion of 25% perm. tunnel lining	2	0	0		27JUL10		30AUG10	0	853
3BL1BI2A08	3bL 4; On completion of 37.5% perm. tunnel linin	2	0	0		04AUG10		12OCT10	0	810
3BL1BI2A10	3bL 5; On completion of 50% perm. tunnel lining	2	0	0		11AUG10		23NOV10	0	768
3BL1BI2A12	3bL 6; On completion of 62.5% perm. tunnel linin	2	0	0		19AUG10		06JAN11	0	724
3BL1BI2A14	3bL 7; On completion of 75% perm. tunnel lining	2	0	0		26AUG10		19FEB11	0	680
3BL1BI2A16	3bL 8; On completion of 87.5% perm. tunnel linin	2	0	0		02SEP10		21MAR11	0	650
3BL1BI2A18	3bL 9; On completion of perm. tunnel lining	2	0	0		09SEP10		01APR11	0	639
3BL1BI2A20	3bL 10; On completion of all works under this CC	2	0	0		11MAR11		20AUG11	0	498
Schedule of Milestones for Cost Centre No. 5L										
05L1BI2M02	5L 1; On completion of 25% of excavation	2	0	0		30MAY09		03NOV09	0	1,153
05L1BI2M04	5L 2; On completion of 50% of excavation	2	0	0		14SEP09		04FEB09	0	1,425
05L1BI2M06	5L 3; On completion of 75% of excavation	2	0	0		09MAR10		25JAN10	0	1,070
05L1BI2M08	5L 4; On completion of all excavation	2	0	0		28AUG10		27MAR10	0	1,009
05L1BI2M10	5L 5; On completion of drop shaft & vortex shaft	2	0	0		11FEB11		25JUL11	0	524
05L1BI2M12	5L 6; On completion of de-aeration chamber	2	0	0		20OCT10		21JUN11	0	558
05L1BI2M14	5L 7; On completion of air vent shaft	2	0	0		08JAN11		18MAR09	0	1,383
05L1BI2M16	5L 8; On completion of man access shaft	2	0	0		02MAR11		20JAN11	0	710
05L1BI2M18	5L 9; On completion of man access adit	2	0	0		11JAN11		13SEP10	0	839
05L1BI2M20	5L 10; On completion of all works under this CC	2	0	0		16JUL11		27SEP11	0	460
Schedule of Milestones for Cost Centre No. 8R										
08R1BI2R02	8R 1; On completion of approach channel	2	0	0		12MAY11		22AUG11	0	496
08R1BI2R04	8R 2; On completion of trash grill	2	0	0		25FEB11		18APR11	0	622
08R1BI2R06	8R 3; On completion of all works under this CC	2	0	0		16JUL11		27SEP11	0	460



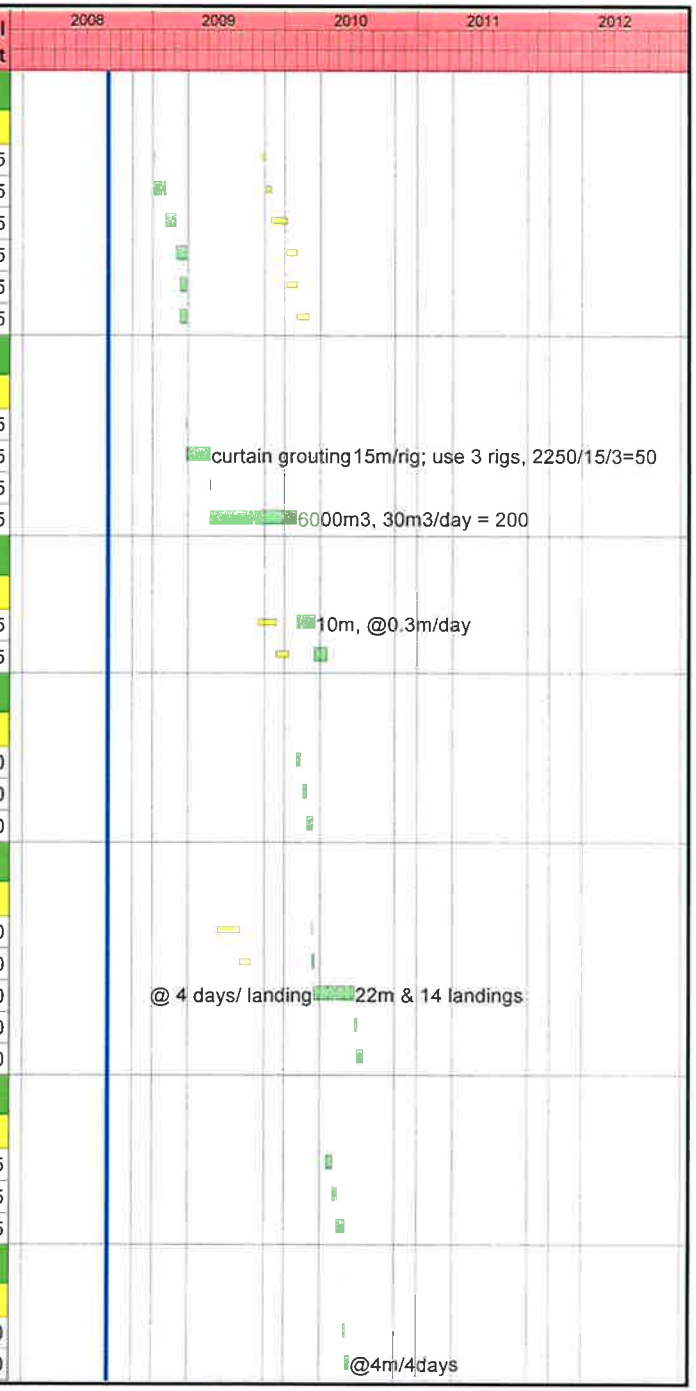
ID	Activity Description	Cal ID	Target Dur	Orig Dur	Target Start	Target Finish	Early Start	Early Finish	% Comp	Total Float
Schedule of Milestones for Cost Centre No. 12R										
12R3BI2S02	12R 1; On completion of 50% pile retain. wall	2	0	0		14JUL08		06NOV08	0	1,515
12R3BI2S04	12R 2; On completion of pile retain. wall	2	0	0		13SEP08		29NOV08	0	1,492
12R3BI2S06	12R 3; On completion of boulder traps	2	0	0		11MAR11		19MAR11	0	652
12R3BI2S08	12R 4; On completion of all works under this CC	2	0	0		16JUL11		27SEP11	0	460
Construction of Intake I-3										
Preliminary Works										
01R1CI3102	Possession of Portion C -90d of DOC	2	0	0			26MAR08A		100	
01R1CI3104	Site clearance	1	0	40			22APR08A	20SEP08	50	0
01R1CI3106	Haording at slope crest	1	0	48			03JUN08A	30JUL08A	100	
01R1CI3108	Erect chain link fence enclosing the Site	1	0	60		26MAR08	22SEP08	02DEC08	0	0
01R1CI3110	Set-up wheel washing facilities	1	0	6		06MAR08	30JUN08A	03JUL08A	100	
01R1CI3118	Install remote contorl CCTV as per ER 4.4.10	1	30	12	27MAR08	02MAY08	22SEP08	06OCT08	0	0
Tree Transplanting Works										
16R7CI3202	Tree inspection & report	2	72	7	27MAR08	23JUN08	01APR08A	26APR08A	100	
16R7CI3204	Tree transplant for upper parts; 8 nos.	1	72	86*	22APR08	18JUL08	04JUN08A	13SEP08	83	147
16R7CI3206	1st stg tree pruning	1	0	2			04JUN08A	21JUN08A	100	
16R7CI3208	2nd stg tree pruning	1	0	2			04JUL08A	04JUL08A	100	
16R7CI3210	Final stg. tree pruning & tree uplifting	1	0	6			08SEP08	13SEP08	0	147
16R7CI3212	Tree transplanting at Ch250-Ch200); 20 nos.	1	0	152*			21JUN08A	19DEC08	38	145
16R7CI3214	1st stg tree pruning	1	0	3			21JUN08A	15JUL08A	100	
16R7CI3216	2nd stg tree pruning	1	0	3			15JUL08A	12NOV08	50	145
16R7CI3218	Final stg tree pruning & tree uplifting	1	0	8			11DEC08	19DEC08	0	145
16R7CI3220	Tree transplanting at Ch100-Ch0; 33 nos.	1	0	66*			04DEC08	25FEB09	0	536
16R7CI3222	1st stg tree pruning	1	0	4			04DEC08	08DEC08	0	536
16R7CI3224	2nd stg tree pruning	1	0	4			09JAN09	13JAN09	0	536
16R7CI3226	Final stg tree pruning & tree uplifting	1	0	10			14FEB09	25FEB09	0	536
H-Pile Retaining Wall for Wall A										
Piling Works										
13R4CI3402	Mobilize & set up piling rig	1	0	6			11AUG08A	16AUG08A	100	
13R4CI3404	350mm dia. pre-bored H-piles, Wall A; 347nos.	1	0	80			18AUG08A	26NOV08	6	145
Skin Wall										
13R4CI3406	Excavate for skin wall construction; 2130m3	1	0	60			27SEP08	08DEC08	0	145
13R4CI3408	Hack off piles; piles 1 to 347	1	0	60			14OCT08	22DEC08	0	597
13R4CI3410	Construct skin wall;	1	0	60			28OCT08	08JAN09	0	597
13R4CI3412	Excavate for capping beams;	1	0	24			23DEC08	22JAN09	0	597



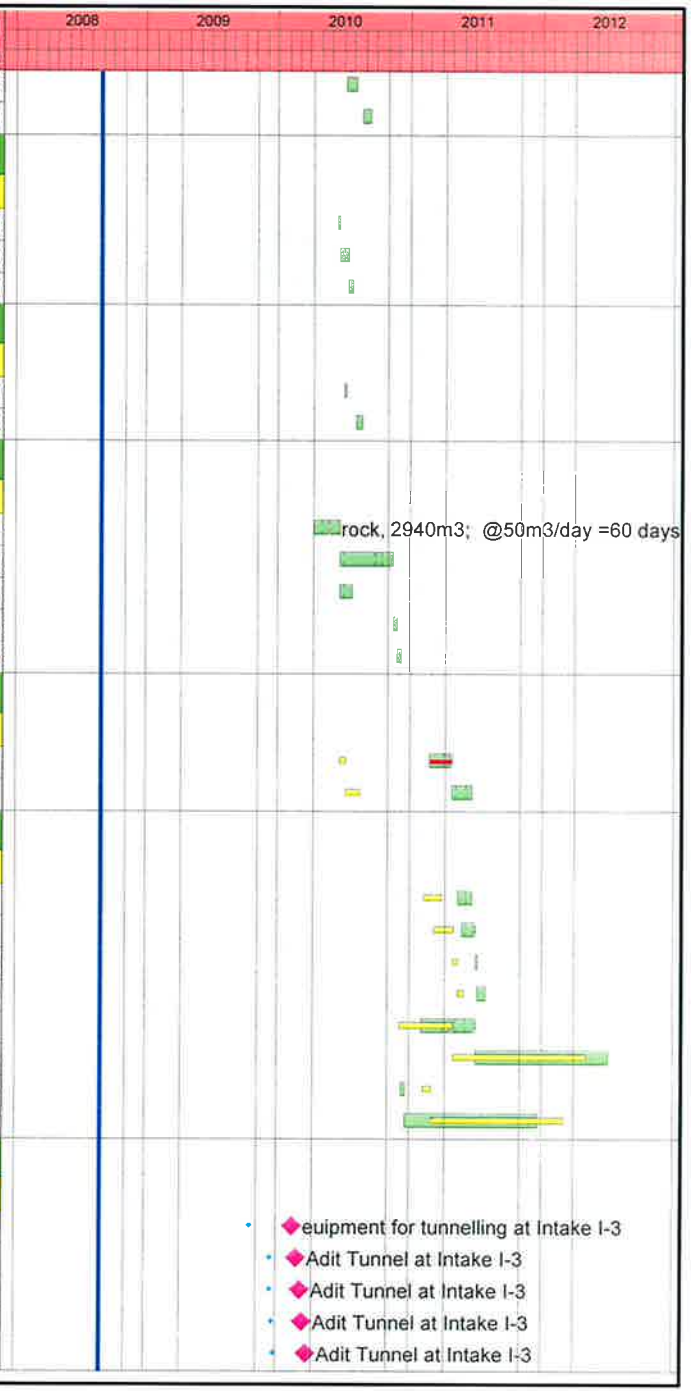
ID	Activity Description	Cal ID	Target Dur	Orig Dur	Target Start	Target Finish	Early Start	Early Finish	% Comp	Total Float
13R4CI3414	Construct for capping beams;	1	0	24			02JAN09	02FEB09	0	597
13R4CI3416	Construct U-channels	1	0	24			09JAN09	09FEB09	0	597
Soil Nailing Works										
Soil Nailing Without Earthwork										
13R1CI3502	Scaffolding platform for soil nailing	1	0	18			08SEP08	29SEP08	0	633
13R1CI3504	Mobilize & set up drilling & grouting plants	1	0	4			12SEP08	17SEP08	0	633
13R1CI3506	Install & grout soil nails; 431 nos. + 9 Test N.	1	0	69			18SEP08	09DEC08	0	633
Soil Nailing After Earthwork at ARCH 210-270										
13R1CI3508	Install & grout soil nails; 153 nos. + 3 Test N.	1	0	29			27DEC08*	03FEB09	0	620
Soil Nailing After Earthwork at Turning Area										
13R1CI3510	Install & grout soil nails; 149 nos. + 4 Test N.	1	0	28			19JAN09*	23FEB09	0	603
Soil Nailing After Earthwork at ARCH 90-0										
13R1CI3512	Install & grout soil nails; 304 nos. + 11 Test N	1	0	30			14FEB09*	20MAR09	0	510
Access Road Construction										
Phase 1										
09R1CI3602	Excavate/backfill access road; Ch 460 to 260	1	0	50			14OCT08	10DEC08	0	145
09R1CI3604	Drainage work from Ch460 to 260; 200m	1	0	50			02NOV09*	31DEC09	0	284
09R1CI3606	Backfill & prepare road formation; CH460-260	1	0	18			02JAN10	22JAN10	0	331
09R1CI3608	Laying of Sub-base/Road Kerbs; CH460-260	1	0	16			01APR10	23APR10	0	284
09R1CI3610	Concrete paving; CH460-260	1	0	16			05MAY10	24MAY10	0	284
09R1CI3614	Excavate/backfill access road; Ch 260 to 0	1	0	50			11DEC08	13FEB09	0	145
09R1CI3616	Construction of Drainage System; CH0-260	1	0	65			02JAN10	22MAR10	0	284
09R1CI3618	Backfill & prepare road formation; CH0-260	1	0	24			23MAR10	23APR10	0	284
09R1CI3620	Laying of Sub-base/Road Kerbs; CH0-260	1	0	24			24APR10	24MAY10	0	284
09R1CI3622	Concrete paving; CH0-260	1	0	24			25MAY10	22JUN10	0	284
13R1CI3612	Boulder Treatment; 5050m3	1	0	60			11DEC08	25FEB09	0	536
H-Pile Retaining Wall for Wall B										
Piling Works										
13R4CI3702	Mobilize & set up piling rig	1	0	6			21MAR09	27MAR09	0	510
13R4CI3704	350mm dia. pre-bored H-piles, Wall B; 98 nos.	1	0	53			28MAR09	05JUN09	0	510
Skin Wall										
13R4CI3706	Excavate for skin wall; 48m3	1	0	18			06JUN09	26JUN09	0	510
13R4CI3708	Hack off piles; piles 1 to 106	1	0	24			20JUN09	18JUL09	0	510
13R4CI3710	Construct skin wall;	1	0	24			06JUL09	01AUG09	0	510
13R4CI3712	Excavate for capping beams;	1	0	24			03AUG09	29AUG09	0	510
13R4CI3714	Construct for capping beams;	1	0	24			10AUG09	05SEP09	0	510
13R4CI3716	Construct U-channels	1	0	24			17AUG09	12SEP09	0	510



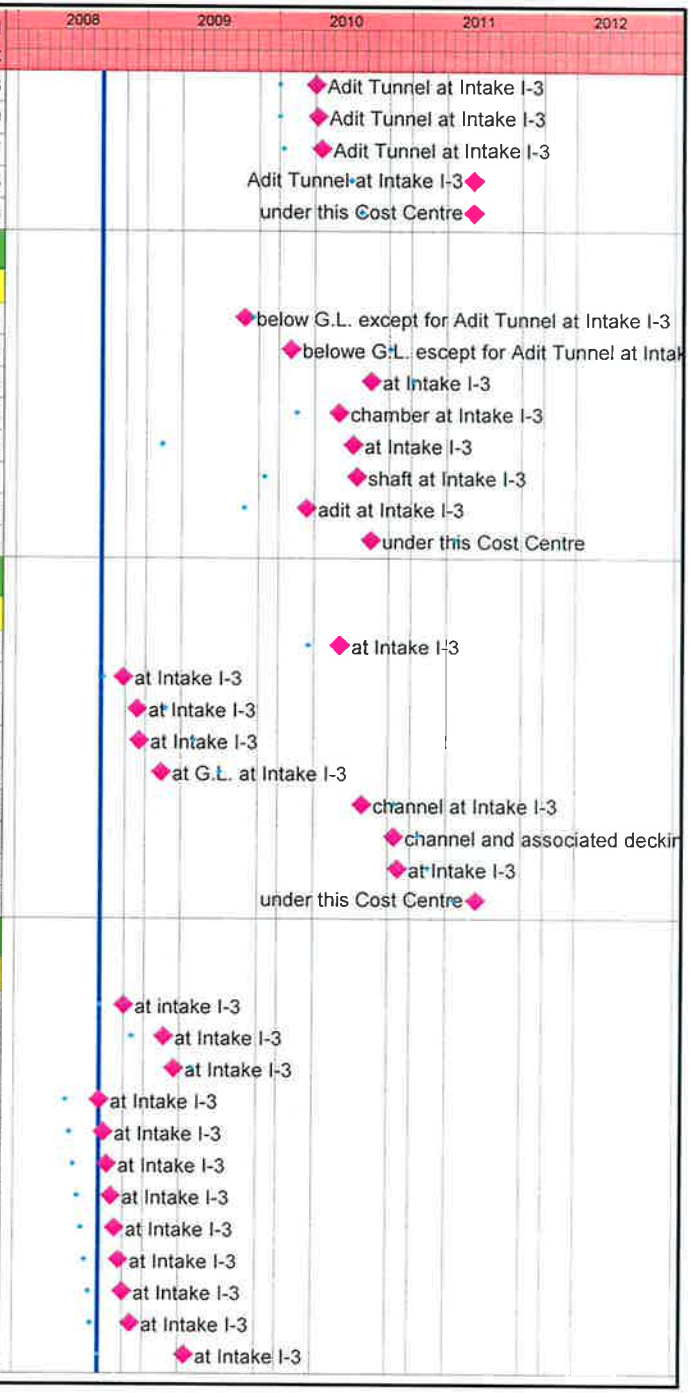
ID	Activity Description	Cal ID	Target Dur	Orig Dur	Target Start	Target Finish	Early Start	Early Finish	% Comp	Total Float
Channel Modification Works (Dry Season)										
Phase 2										
09R1CI3802	Mobilize drilling rig & backhoe	1	6	1	02NOV09*	07NOV09	02JAN09	02JAN09	0	145
09R1CI3804	Breaking of large boulders	1	10	24	09NOV09	19NOV09	03JAN09	03FEB09	0	145
09R1CI3806	Excavation of the stream bed & make good	1	36	24	20NOV09	04JAN10	04FEB09	03MAR09	0	145
09R1CI3808	Laying of rock armour	1	24	24	05JAN10	01FEB10	04MAR09	31MAR09	0	145
09R1CI3810	Construct working platform	1	24	12	05JAN10	01FEB10	18MAR09	31MAR09	0	145
09R1CI3812	Divert channel to south west	1	24	12	02FEB10	04MAR10	18MAR09	31MAR09	0	145
Excavation for AVS/VS/DC/MAS/MAA										
Phase 2										
06L1CI3902	Mobilize drilling rig & grouting plant	1	0	1			01APR09	01APR09	0	145
06L1CI3904	Drill & grout 25m deep, 90 nos. grout holes	1	0	50			02APR09	06JUN09	0	145
06L1CI3906	Mobilize drilling rig, backhoe & crane	1	0	1			08JUN09	08JUN09	0	145
06L1CI3908	Excavate/mucking out/temporary support	1	0	200			09JUN09	04FEB10	0	145
Excavation & Construction of Main Adit										
Phase 3										
3CL1CI3102	Excavation/mucking out/temporary support	1	40	40	22OCT09	08DEC09	05FEB10	26MAR10	0	145
3CL1CI3104	Construction of permanent lining	1	24	24	09DEC09	08JAN10	27MAR10	28APR10	0	145
Construction of Man Access Adit (MAA)										
Phase 3										
06L1CI3112	Cast invert; 1 bay	1	0	7			05FEB10	12FEB10	0	250
06L1CI3114	Cast walls	1	0	12			17FEB10	02MAR10	0	250
06L1CI3116	Cast crown	1	0	12			03MAR10	16MAR10	0	250
Construction of Man Access Shaft (MAS)										
Phase 3										
06L1CI3122	Cast base	1	53	3	02JUL09	01SEP09	17MAR10	19MAR10	0	250
06L1CI3124	Set up formworks	1	24	6	02SEP09	29SEP09	20MAR10	26MAR10	0	250
06L1CI3126	Construct wall/stair; 14 landings @ 6 days/land.	1	0	84			27MAR10	12JUL10	0	250
06L1CI3128	Construct wall above ground level	1	0	6			13JUL10	19JUL10	0	250
06L1CI3129	Construct shaft roof	1	0	12			20JUL10	02AUG10	0	250
Construction of Deaerarion Chamber (DC)										
Phase 3										
06L1CI3132	Construct base	1	0	9			29APR10	10MAY10	0	145
06L1CI3134	Construct walls 2 lifts	1	0	12			11MAY10	25MAY10	0	145
06L1CI3136	Const. crown/underpin of air vent & drop shafts	1	0	18			26MAY10	15JUN10	0	145
Construction of Vortex Shaft (VS)										
Phase 3										
06L1CI3142	Set up formworks	1	0	6			17JUN10	23JUN10	0	210
06L1CI3144	Construction of drop shaft; 4m high	1	0	6			24JUN10	30JUN10	0	210



ID	Activity Description	Cal ID	Target Dur	Orig Dur	Target Start	Target Finish	Early Start	Early Finish	% Comp	Total Float
06L1CI3146	Construction of vortex structure	1	0	24			10JUL10	06AUG10	0	210
06L1CI3148	Construct remaining of the vortex	1	0	18			24AUG10	13SEP10	0	210
Construction of Air Vent Shaft Shaft (AVS)										
Phase 3										
06L1CI3152	Set up formworks	1	0	6			17JUN10	23JUN10	0	220
06L1CI3514	Cast 15m high circular wall	1	0	15			24JUN10	12JUL10	0	220
06L1CI3516	Construct upstand wall	1	0	12			13JUL10	26JUL10	0	220
Backfill Around Structure										
Phase 3										
06L1CI3162	Granular fill up to +54mPD; 623m3	1	0	7			02JUL10	09JUL10	0	210
06L1CI3164	Granular fill above +54mPD; 1400m3	1	0	14			07AUG10	23AUG10	0	210
Construction of Approach Channel										
Phase 3										
09R1CI3172	Open excavation for Approach Channel	1	0	60			12APR10	23JUN10	0	145
09R1CI3174	Construction of Approach Channel	1	0	122			24JUN10	17NOV10	0	145
09R1CI3176	Construction of boulder trap; 7 nos.	1	0	24			24JUN10	22JUL10	0	243
09R1CI3178	Construction of trash grill	1	0	12			18NOV10	01DEC10	0	145
09R1CI3179	Removal of concrete bolck bund	1	0	6			02DEC10	08DEC10	0	145
Junction Between Main Tunnel & Adit Tunnel										
3CL1CI3106	Temp. support & excavation breakthrough	1	12	48	22JUN10	06JUL10	26FEB11	27APR11	0	-27
3CL1CI3108	Construct collar between MT & AT	1	36	48	07JUL10	17AUG10	28APR11	24JUN11	0	21
Remaining Works Prior to Handover to Client										
09R1CI3142	Finishing & reinstatement works; Portion C	1	48	36	07FEB11	02APR11	13MAY11	24JUN11	0	21
09R1CI3143	Pre-handover inspections and remedial works	1	48	30	07MAR11	05MAY11	27MAY11	02JUL11	0	21
09R1CI3144	Contractor serve notice for Works completion	2	7	7	06MAY11	12MAY11	03JUL11	09JUL11	0	519
09R1CI3146	SO issues completion certificate	2	21	21	13MAY11	02JUN11	10JUL11	30JUL11	0	519
16R7CI3142	Landscaping works at Portion C	1	120	120	06DEC10	05MAY11	02FEB11	02JUL11	0	21
16R7CI3144	Establishment Works at Portion C	2	365	365	06MAY11	04MAY12	03JUL11	01JUL12	0	25
3DL1CI3141	Install flow measurement devices at Intake I-3	1	24	12	07FEB11	05MAR11	09DEC10	22DEC10	0	145
3DL1CI3143	Maintain & monitor flow monitoring	2	365	365	06MAR11	04MAR12	23DEC10	22DEC11	0	217
Schedule of Milestones for Cost Centre No. 3cL										
3CL1CI3A02	3cL 1; On establishing tunnelling equipments	2	0	0		21OCT09		11FEB10	0	1,053
3CL1CI3A04	3cL 2; On completion of 12.5% perm. tunnel linin	2	0	0		11DEC09		24FEB10	0	1,040
3CL1CI3A06	3cL 3; On completion of 25% perm. tunnel lining	2	0	0		15DEC09		05MAR10	0	1,031
3CL1CI3A08	3cL 4; On completion of 37.5 perm. tunnel lining	2	0	0		18DEC09		15MAR10	0	1,021
3CL1CI3A10	3cL 5; On completion of 50% perm. tunnel lining	2	0	0		22DEC09		24MAR10	0	1,012



ID	Activity Description	Cal ID	Target Dur	Orig Dur	Target Start	Target Finish	Early Start	Early Finish	% Comp	Total Float
3CL1CI3A12	3cL 6; On completion of 62.5% perm. tunnel linin	2	0	0		28DEC09		07APR10	0	998
3CL1CI3A14	3cL 7; On completion of 75% perm. tunnel lining	2	0	0		31DEC09		16APR10	0	989
3CL1CI3A16	3cL 8; On completion of 87.5% perm. tunnel linin	2	0	0		08JAN10		28APR10	0	977
3CL1CI3A18	3cL 9; On completion of perm. tunnel lining	2	0	0		20JUL10		24JUN11	0	555
3CL1CI3A20	3cL 10; On completion of all works under this CC	2	0	0		17AUG10		24JUN11	0	555
Schedule of Milestones for Cost Centre No. 6L										
06L1CI3M02	6L 1; On completion of 50% of excavation	2	0	0		21OCT09		29SEP09	0	1,188
06L1CI3M04	6L 2; On completion of excavation works	2	0	0		05NOV10		04FEB10	0	1,060
06L1CI3M08	6L 3; On completion of vortex shaft	2	0	0		08JAN11		13SEP10	0	839
06L1CI3M10	6L 4; On completion of de-aeration chamber	2	0	0		18FEB10		15JUN10	0	929
06L1CI3M12	6L 5; On completion of vent shaft	2	0	0		09FEB09		26JUL10	0	888
06L1CI3M14	6L 6; On completion of man access shaft	2	0	0		23NOV09		02AUG10	0	881
06L1CI3M16	6L 7; On completion of man access adit	2	0	0		29SEP09		16MAR10	0	1,020
06L1CI3M18	6L 8; On completion of all works under this CC	2	0	0		05MAY11		13SEP10	0	839
Schedule of Milestone for Cost Centre No. 9R										
09R1CI3R02	9R 1; On completion of access road	2	0	0		26MAR10		22JUN10	0	922
09R1CI3R04	9R 2; On completion of 25% of excavation at G.L	2	0	0		05SEP08		30OCT08	0	1,522
09R1CI3R06	9R 3; On completion of 50% of excavation at G.L	2	0	0		24FEB09		04DEC08	0	1,487
09R1CI3R08	9R 4; On completion of 75% of excavation at G.L	2	0	0		12MAY09		10DEC08	0	1,481
09R1CI3R10	9R 5; On completion of excavation at G.L.	2	0	0		23JUL09		13FEB09	0	1,416
09R1CI3R12	9R 6; On completion of 50% of approach channel	2	0	0		20NOV10		21AUG10	0	862
09R1CI3R14	9R 7; On completion of approach channel	2	0	0		21JAN11		17NOV10	0	774
09R1CI3R16	9R 8; On completion of trash grill	2	0	0		19FEB11		01DEC10	0	760
09R1CI3R18	9R 9; On completion of all works under this CC	2	0	0		05MAY11		02JUL11	0	547
Schedule of Milestones for Cost Centre No. 13R										
13R4CI3S01	13R 1; On completion of 30% soil nailing	2	0	0		28AUG08		05NOV08	0	1,516
13R4CI3S02	13R 2; On completion of 60% soil nailing	2	0	0		25NOV08		23FEB09	0	1,406
13R4CI3S03	13R 3; On completion of all soil naing works	2	0	0		12MAY09		20MAR09	0	1,381
13R4CI3S04	13R 4; On completion of 10% piles by number	2	0	0		26MAY08		27AUG08	0	1,586
13R4CI3S05	13R 5; On completion of 20% piles by number	2	0	0		05JUN08		06SEP08	0	1,576
13R4CI3S06	13R 6; On completion of 30% piles by number	2	0	0		17JUN08		18SEP08	0	1,564
13R4CI3S07	13R 7; On completion of 40% piles by number	2	0	0		27JUN08		29SEP08	0	1,553
13R4CI3S08	13R 8; On completion of 50% piles by number	2	0	0		09JUL08		11OCT08	0	1,541
13R4CI3S09	13R 9; On completion of 60% piles by number	2	0	0		19JUL08		22OCT08	0	1,530
13R4CI3S10	13R 10; On completion of 70% piles by number	2	0	0		30JUL08		01NOV08	0	1,520
13R4CI3S11	13R 11; On completion of 80% piles by number	2	0	0		07AUG08		26NOV08	0	1,495
13R4CI3S12	13R 12; On completion of 90% piles by number	2	0	0		28AUG08		22APR09	0	1,348



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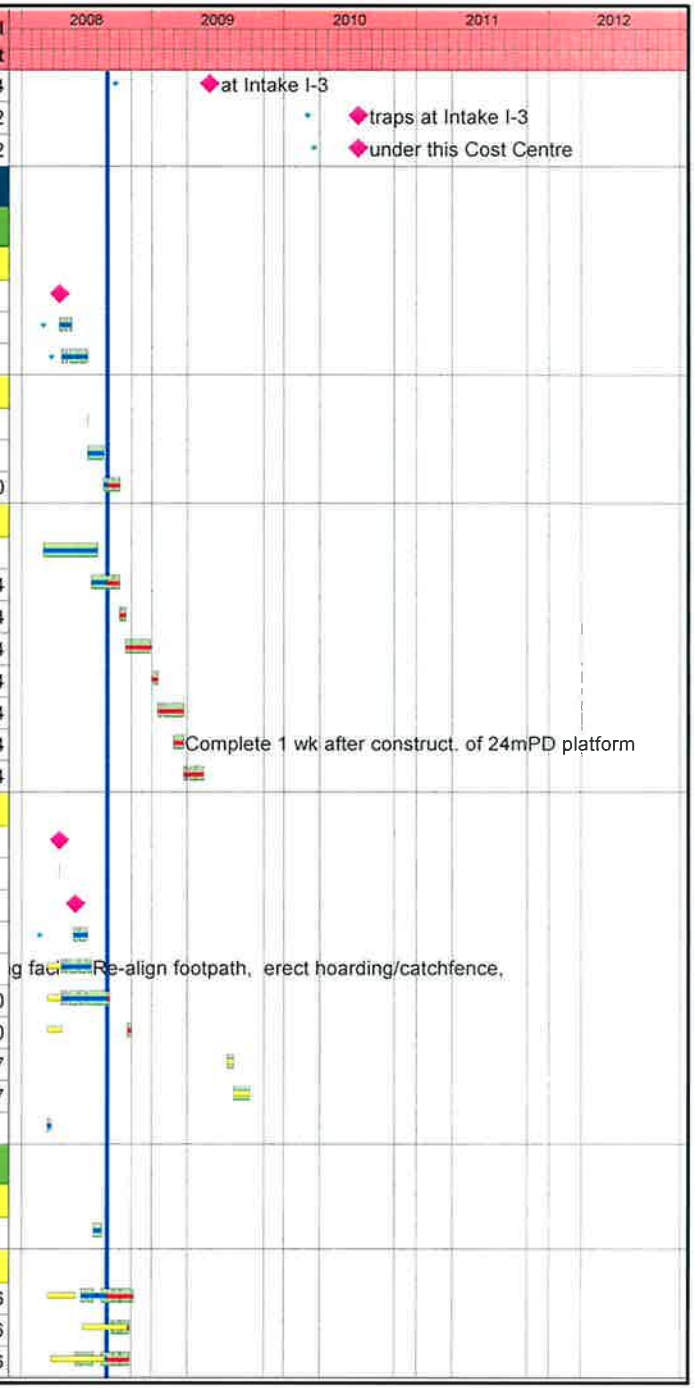
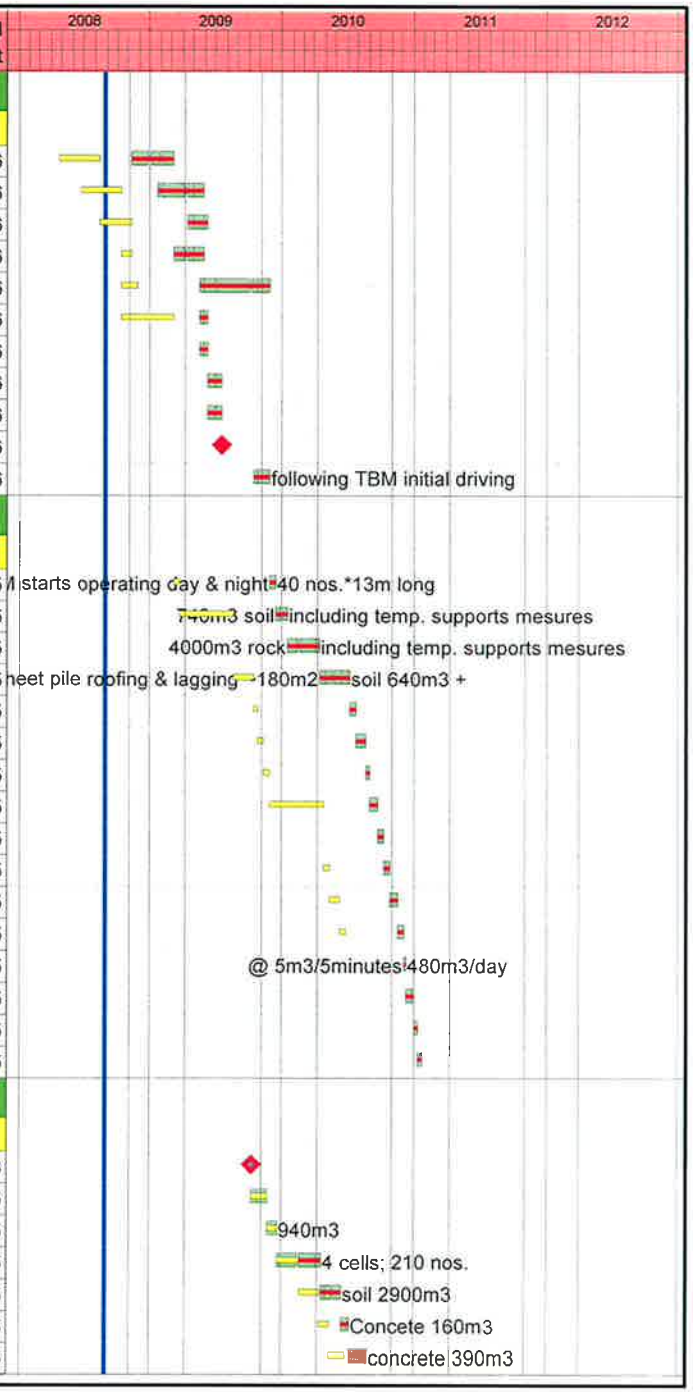
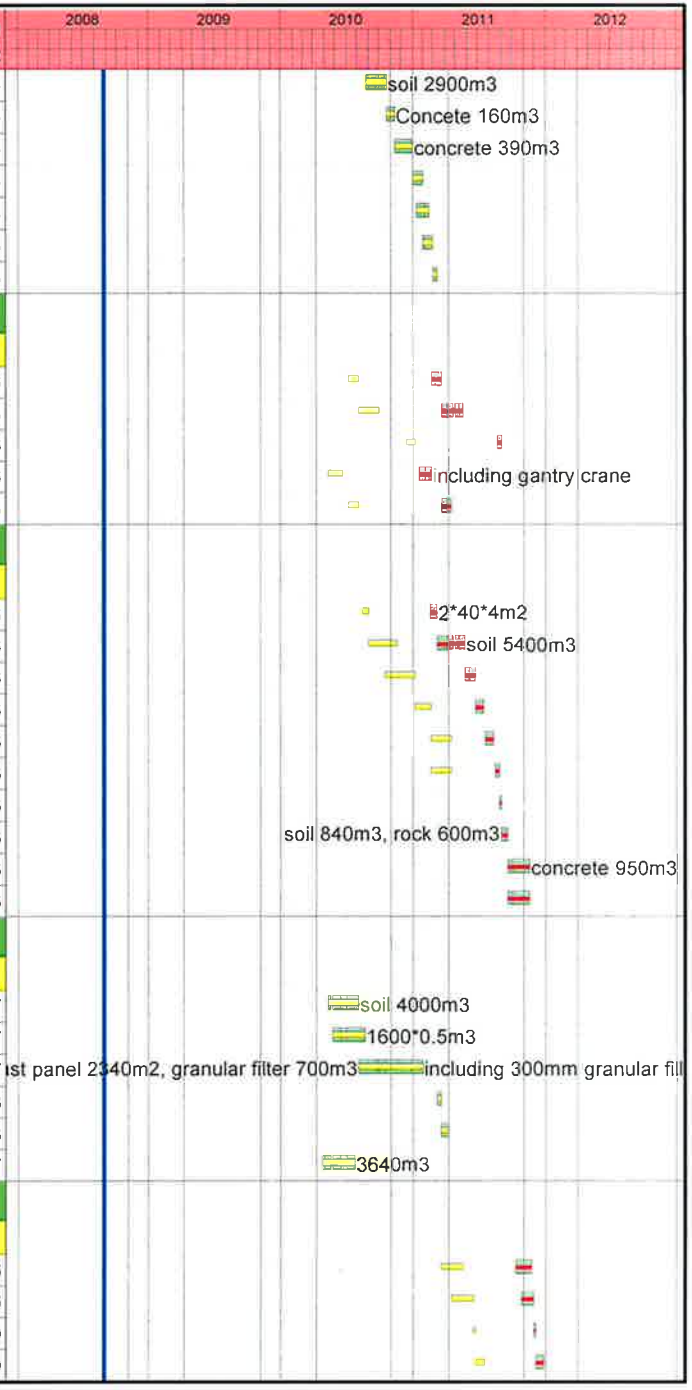
13R4CI3S13	13R 13; On completion of all piling works	2	0	0		19SEP08		05JUN09	0	1,304
13R4CI3S14	13R 14; On completion of boulder traps	2	0	0		04MAR10		22JUL10	0	892
13R4CI3S15	13R 15; On completion of all work under this CC	2	0	0		26MAR10		22JUL10	0	892
Construction of Outfall O-1										
Preliminary Works										
VO 6; Transperant Hoarding at Outfall										
01R1DO0106	Receive VO6 for transperant hoarding	1	0	0				16APR08A	100	
01R1DO0108	Procurement for transperent hoarding	1	0	21		06MAR08	17APR08A	20MAY08A	100	
01R1DO0110	Erect hoarding	1	0	18		26MAR08	21APR08A	02JUL08A	100	
VO 16; Chain Link Fence at O-1										
V01602	Issue VO16 for chain link fence	1	0	0				02JUL08A	100	
V01612	Preparation works for chain link fence	1	0	1			03JUL08A	18AUG08A	100	
V01622	Erect chain link fence; 460m	1	0	38			19AUG08A	03OCT08	21	0
Temporary CLP Power Supply for TBM Operation										
01R1DCLP02	Application/approval for temp. CLP Power Supply	2	0	200			07MAR08A	01AUG08A	100	
01R1DCLP14	Appoint sub-contractor for design & build TX Rm	1	0	67			14JUL08A	30SEP08	59	-54
01R1DCLP24	Design for transformer room	1	0	12			02OCT08	16OCT08	0	-54
01R1DCLP34	Constuct transformer room	1	0	60			17OCT08	27DEC08	0	-54
01R1DCLP44	CLP inspection & defect rectification	1	0	14			29DEC08	14JAN09	0	-54
01R1DCLP54	CLP cabling to TX room & commissioning	1	0	60			15JAN09	28MAR09	0	-54
01R1DCLP64	Trech excavation from TX room to 24mPD platform	1	0	24			02MAR09	28MAR09	0	-54
01R1DCLP74	CLPE cabling from TX room to 24mPD platform	1	0	42			30MAR09	23MAY09	0	-54
01R1DO0102	Obtain TTA (ingress & egress) approval	2	0	0				18APR08A	100	
01R1DO0103	Implment TTA for diverting footpath	1	0	1			19APR08A	19APR08A	100	
01R1DO0104	Obtain excavation permit	2	0	0				29MAY08A	100	
01R1DO0112	Erect catch fencing	1	0	10		20FEB08	26MAY08A	02JUL08A	100	
01R1DO0114	Site establishment	1	30	30	14MAR08	22APR08	21APR08A	15JUL08A	100	
01R1DO0116	Site clearance	1	30	30	14MAR08	22APR08	21APR08A	05SEP08	75	0
01R1DO0118	Install remote contorl CCTV as per ER 4.4.10	1	30	12	14MAR08	22APR08	21OCT08	03NOV08	0	0
01R1DO0130	Apply for Marine Permit for Works at Portion E	2	14	14	30JUL09	12AUG09	30JUL09	12AUG09	0	-67
01R1DO0132	Obtain marine permit from Marine Department	2	45	45	13AUG09	26SEP09	13AUG09	26SEP09	0	-67
16R1DO0110	Tree inspection & report	1	0	7			13MAR08A	28MAR08A	100	
Form Temporary Access/Tree Felling										
Works Suspension Due to Obstruct. from Villagers										
WSO02	Works suspension due to obstruct. frm villagers	2	0	24			19JUL08A	11AUG08A	100	
10R1DO0202	Form temp. access road from +14mPD to +69mPD	1	60	99	18MAR08	02JUN08	19JUN08A	06NOV08	3	-96
14R1DO0202	Existing boulder stabilization works	1	100	40	23JUN08	21OCT08	11SEP08	30OCT08	0	-96
16R7DO0202	Tree transplanting; 82 nos.	1	120	105	28MAR08	20AUG08	02JUN08A	30OCT08	51	-96



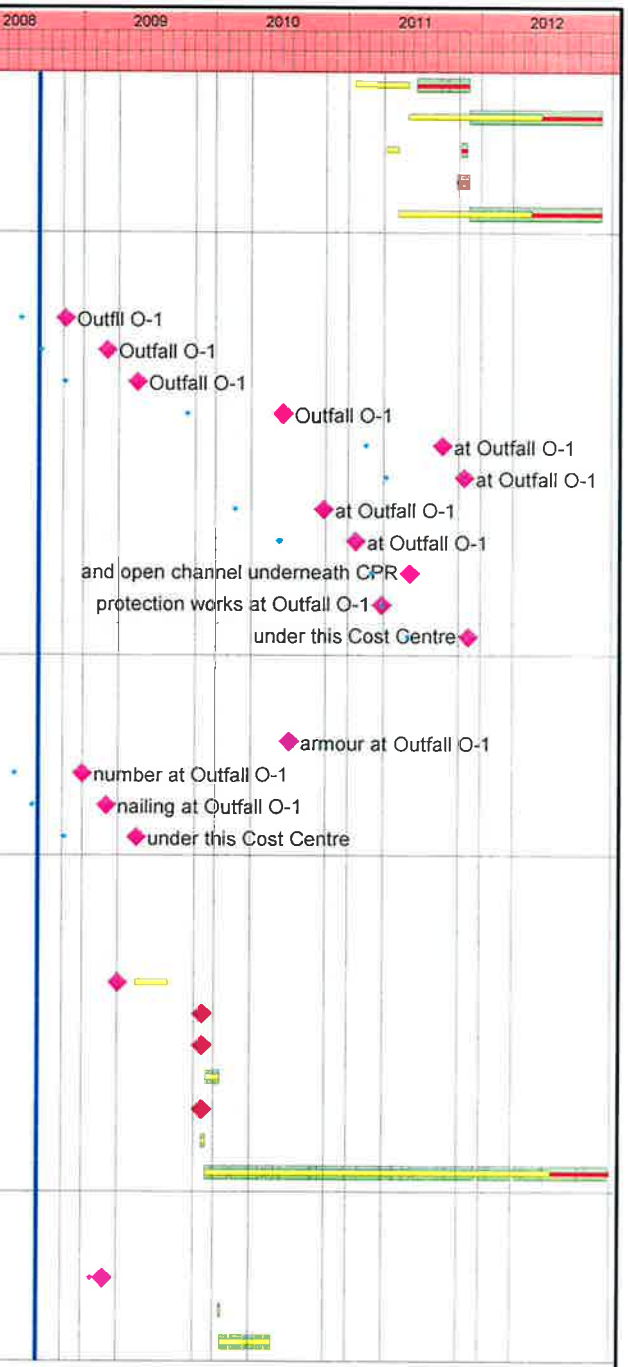
ID	Activity Description	Cal ID	Target Dur	Orig Dur	Target Start	Target Finish	Early Start	Early Finish	% Comp	Total Float
Form Temporary Launching Platform										
10R1DO0302	Cut slope (72 to 40mPD)/install perm. soil nails	1	90	96	26APR08	13AUG08	07NOV08	05MAR09	0	-96
10R1DO0304	Cut slope & form launching platform; 40 to 24mPD	1	90	100	25JUN08	11OCT08	22JAN09	29MAY09	0	-96
10R1DO0306	Cut rock benching & form platform; 14 to 24 mPD	1	72	42	14AUG08	08NOV08	15APR09	05JUN09	0	-96
3AL1DO0302	Excavate/Const. TBM launching chamber; 15m long	1	24	65	13OCT08	08NOV08	07MAR09	29MAY09	0	-96
3AL1DO0304	Install steel platform,hopper & other facilities	1	40	163*	13OCT08	27NOV08	18MAY09	28NOV09	0	-96
3AL1DO0306	Construct foundation for steel platform	1	120	18	13OCT08	07MAR09	18MAY09	08JUN09	0	-96
3AL1DO0308	Construct foundation for hopper	1	0	18			18MAY09	08JUN09	0	-96
3AL1DO0310	Install cranage/gantry/ rail system	1	0	30			09JUN09	14JUL09	0	-96
3AL1DO0312	Install steel platform	1	0	30			09JUN09	14JUL09	0	-96
3AL1DO0314	Commence TBM initial assembly	1	0	0			15JUL09		0	-96
3AL1DO0316	Install hopper	1	0	40			13OCT09	28NOV09	0	-96
Construct Spiral Ramp & Associ. Vehicular Access										
10R1DO0402	Install 273mm dia. temp. pipe piles; 40 nos.	1	12	12	07MAR09	20MAR09	30NOV09	12DEC09	0	-85
10R1DO0404	Soil excavation & install wailing & tie backs	1	120	24	21MAR09	17AUG09	14DEC09	13JAN10	0	-85
10R1DO0406	Rock excavation for spiral ramp; 4000m3	1	0	70			14JAN10	13APR10	0	-85
10R1DO0408	Excavation for vehicular access underneath CPR	1	48	70	18AUG09	14OCT09	14APR10	08JUL10	0	-85
10R1DO0410	Construct base for vehicular access	1	8	12	15OCT09	23OCT09	09JUL10	22JUL10	0	-85
10R1DO0412	Construct wall & roof for vehicular access	1	16	24	24OCT09	12NOV09	23JUL10	19AUG10	0	-85
10R1DO0414	Construct base of spiral ramp; Outfall O-1	1	12	12	13NOV09	26NOV09	20AUG10	02SEP10	0	-85
10R1DO0416	Cast sprial ramp up to +6.73mPD	1	120	15	27NOV09	27APR10	03SEP10	20SEP10	0	-85
10R1DO0418	Cast sprial ramp up to +11.58mPD	1	0	15			21SEP10	09OCT10	0	-85
10R1DO0420	Cast sprial ramp up to +16.00mPD	1	12	15	28APR10	12MAY10	11OCT10	28OCT10	0	-85
10R1DO0422	Cast sprial ramp up to +20.00mPD	1	24	15	13MAY10	10JUN10	29OCT10	15NOV10	0	-85
10R1DO0424	Cast sprial ramp up to +24.23mPD	1	12	15	11JUN10	25JUN10	16NOV10	02DEC10	0	-85
10R1DO0425	Backfill spiral ramp; 1700m3	1	0	4			03DEC10	07DEC10	0	-85
10R1DO0426	Construct spiral ramp top; Outfall O-1	1	0	20			08DEC10	03JAN11	0	-85
10R1DO0428	Construct vehicular access bet. tunnel & s. ramp	1	0	10			04JAN11	14JAN11	0	-85
10R1DO0430	Commission of Spiral Ramp	1	0	6			15JAN11	21JAN11	0	-85
Construct Lower Part Box Culvert & Open Channel										
10R1DO0502	Site possession of Portion E-650d of DOC	2	0	0	08OCT09		08OCT09		0	-78
10R1DO0504	Divert exist. outfall "W" under CPR arch bridge	1	36	36	08OCT09	19NOV09	08OCT09	19NOV09	0	-65
10R1DO0506	Excavate & form pipe roofing platform @+2.3mPD	1	24	24	20NOV09	17DEC09	20NOV09	17DEC09	0	-65
10R1DO0508	Install temp. pile for pipe roofing	1	48	96	18DEC09	18FEB10	18DEC09	20APR10	0	-65
10R1DO0510	Excavate for box-culvert; 2 cells	1	44	44	19FEB10	15APR10	21APR10	12JUN10	0	-65
10R1DO0512	Construct base slabs of box culvert; 2 cells	1	20	20	16APR10	10MAY10	14JUN10	08JUL10	0	-65
10R1DO0514	Construt wall & roof of box culvert; 2 cells	1	40	40	11MAY10	28JUN10	09JUL10	24AUG10	0	-65



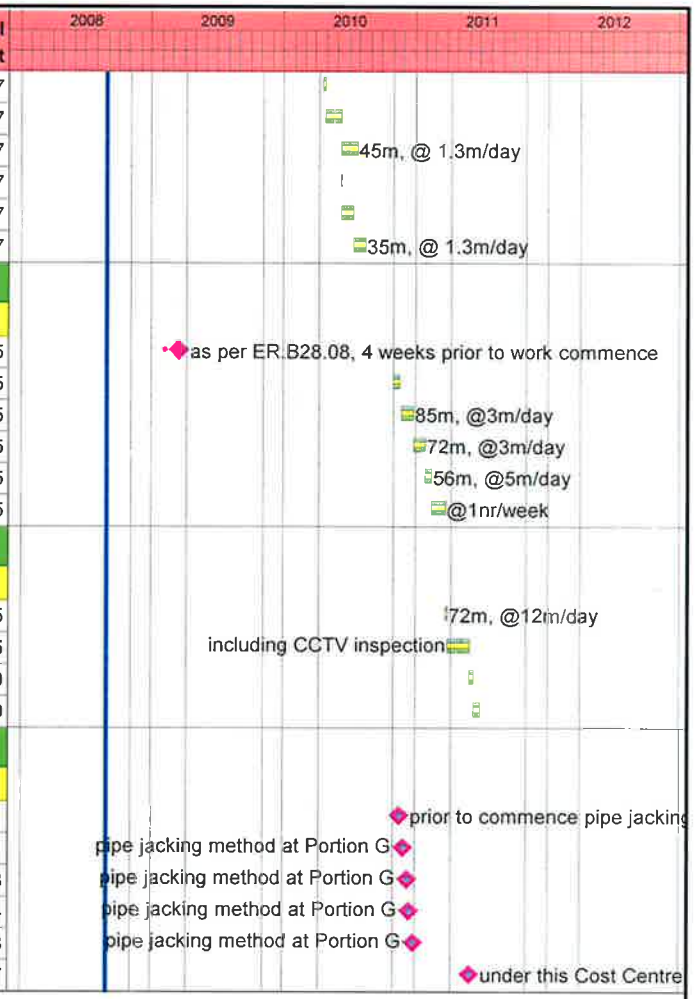
ID	Activity Description	Cal ID	Target Dur	Orig Dur	Target Start	Target Finish	Early Start	Early Finish	% Comp	Total Float
10R1DO0516	Excavate for box-culvert; 2 cells	1	44	44	25AUG10	18OCT10	25AUG10	18OCT10	0	-65
10R1DO0518	Construct base slabs of box culvert; 2 cells	1	20	20	19OCT10	10NOV10	19OCT10	10NOV10	0	-65
10R1DO0520	Construt wall & roof of box culvert; 2 cells	1	40	40	11NOV10	29DEC10	11NOV10	29DEC10	0	-65
10R1DO0522	Excavate for open channel	1	24	24	30DEC10	27JAN11	30DEC10	27JAN11	0	73
10R1DO0524	Construct channel toe below 2.3mPD	1	24	24	14JAN11	14FEB11	14JAN11	14FEB11	0	73
10R1DO0526	Construct open channel at 2.3 mPD	1	24	24	28JAN11	28FEB11	28JAN11	28FEB11	0	73
10R1DO0528	Reinstate existing outfall "W"	1	6	6	01MAR11	07MAR11	01MAR11	07MAR11	0	73
Construct Portal Head & Associated Strutures										
10R1DO0602	Excavate tapered open channel/ upper cascade	1	24	24	07JUL10	03AUG10	19FEB11	18MAR11	0	-106
10R1DO0604	Construct tapered open channel & upper cascade	1	48	48	04AUG10	29SEP10	19MAR11	19MAY11	0	-28
10R1DO0606	Dismantle & removal of tower crane	1	12	12	18DEC10	04JAN11	22AUG11	03SEP11	0	-106
3AL1DO0602	Dismantle/remove TBM backup system	1	30	24	15MAY10	21JUN10	19JAN11	18FEB11	0	-106
3AL1DO0606	Construct portal head wall	1	24	24	07JUL10	03AUG10	19MAR11	16APR11	0	-28
Construct Cascade & Upper Part Box Culvert										
10R1DO0704	Drive temp. sheet piles along footpath	1	12	18	18AUG10	31AUG10	19FEB11	11MAR11	0	-106
10R1DO0706	Excavate/install support for BC (upper part)	1	66	60	01SEP10	19NOV10	12MAR11	26MAY11	0	-106
10R1DO0708	Construct base slab	1	66	24	15OCT10	04JAN11	27MAY11	24JUN11	0	-106
10R1DO0710	Construct side walls	1	36	18	05JAN11	18FEB11	25JUN11	16JUL11	0	-106
10R1DO0712	Construct roof	1	48	24	19FEB11	16APR11	18JUL11	13AUG11	0	-106
10R1DO0714	Construct upstand	1	48	12	19FEB11	16APR11	15AUG11	27AUG11	0	-106
10R1DO0716	Backfill	1	0	6			29AUG11	03SEP11	0	-106
10R1DO0730	Excavate for lower cascade construction	1	0	13			05SEP11	20SEP11	0	-106
10R1DO0732	Construct lower cascade	1	0	48			21SEP11	17NOV11	0	-106
10R1DO0734	Construct retaining wall, baffle, railing etc.	1	0	48			21SEP11	17NOV11	0	-106
Seabed Protection Works										
10R1DO0804	Excavate & formation for 100m*16m slab	1	72	72	11MAY10	05AUG10	11MAY10	05AUG10	0	127
10R1DO0806	Construct concrete apron with pre-cast RC slabs	1	72	72	26MAY10	19AUG10	26MAY10	19AUG10	0	127
10R1DO0808	Installtion of precast stepped blocks	1	144	144	06AUG10	27JAN11	06AUG10	27JAN11	0	127
10R1DO0810	Removal of platform & formation	1	12	12	08MAR11	21MAR11	08MAR11	21MAR11	0	73
10R1DO0812	Install remain. Concrete apron for rem. Area	1	12	12	22MAR11	04APR11	22MAR11	04APR11	0	73
14R5DO0802	Removal of sea wall armour	1	72	72	26APR10	22JUL10	26APR10	22JUL10	0	127
Remaining Works Prior to Handover										
10R1DO0904	Finishing & reinstatement works; Portion D	1	48	36	19MAR11	19MAY11	14OCT11	24NOV11	0	-106
10R1DO0906	Pre-handover inspections and remedial works	1	48	30	18APR11	17JUN11	28OCT11	01DEC11	0	-106
10R1DO0908	Contractor serve notice for Works completion	2	7	7	18JUN11	24JUN11	02DEC11	08DEC11	0	0
10R1DO0910	SO issues completion certificate	2	21	21	25JUN11	15JUL11	09DEC11	29DEC11	0	0



ID	Activity Description	Cal ID	Target Dur	Orig Dur	Target Start	Target Finish	Early Start	Early Finish	% Comp	Total Float
16R7DO0902	Landscaping works at Portion D	1	120	120	19JAN11	17JUN11	12JUL11	01DEC11	0	-106
16R7DO0904	Establishment Works at Portion D	2	365	365	18JUN11	16JUN12	02DEC11	30NOV12	0	-127
3DL1DO0902	Install flow measurement devices at Outfall O-1	1	24	12	18APR11	19MAY11	11NOV11	24NOV11	0	-106
3DL1DO0903	T & C for flow measurement system	1	0	28			31OCT11	01DEC11	0	-106
3DL1DO0904	Maintain & monitor flow monitoring	2	365	365	20MAY11	18MAY12	02DEC11	30NOV12	0	0
Schedule of Mllestones for Cost Centre No. 10R										
10R1DO1002	10R 1; On completion of 20% excavation works	2	0	0		09JUL08		06NOV08	0	1,515
10R1DO1004	10R 2; On completion of 40% excavation works	2	0	0		03SEP08		05MAR09	0	1,396
10R1DO1006	10R 3; On completion of 60% excavation works	2	0	0		08NOV08		29MAY09	0	1,311
10R1DO1008	10R 4; On completion of 80% excavation works	2	0	0		14OCT09		08JUL10	0	906
10R1DO1010	10R 5; On completion all excavation works	2	0	0		18FEB11		20SEP11	0	467
10R1DO1012	10R 6; On completion of cascade structure	2	0	0		16APR11		17NOV11	0	409
10R1DO1014	10R 7; On completion of spiral ramp to +16mPD	2	0	0		23FEB10		28OCT10	0	794
10R1DO1016	10R 8; On completion of spiral access ramp	2	0	0		25JUN10		21JAN11	0	709
10R1DO1018	10R 9; On completion box-culvert & open channel	2	0	0		07MAR11		24JUN11	0	555
10R1DO1020	10R 10; On completion of seabed protection wks	2	0	0		04APR11		04APR11	0	636
10R1DO1022	10R 11; On completion of all works under this CC	2	0	0		17JUN11		01DEC11	0	395
Schedule of Milestones for Cost Centre No. 14R										
14R5DO1102	14R 1; On complet. of remove exist. rock armour	2	0	0		22JUL10		22JUL10	0	892
14R5DO1104	14R 2; On complet. of 50% soil nailing by number	2	0	0		20JUN08		31DEC08	0	1,460
14R5DO1106	14R 3; On completion all soiling works	2	0	0		13AUG08		05MAR09	0	1,396
14R5DO1108	14R 4; On completion of all works under this CC	2	0	0		08NOV08		29MAY09	0	1,311
Drainage Improvement Works at Portion G										
Preliminary Works										
01R6GG0102	SO consent Drainage Impact Assessment Report.	1	90	0	30MAY09	27AUG09		09APR09	0	306
01R6GG0112	Obtain TTA (ingress & egress) approval	2	0	0		25NOV09		25NOV09	0	0
01R6GG0114	Possession of Portion G -700d of DOC	2	0	0	26NOV09		26NOV09		0	0
01R6GG0116	Site clearance/Site Establishment	1	30	30	10DEC09	16JAN10	10DEC09	16JAN10	0	107
3DL6GG0104	Obtain approval for Geotechnical Instrumentation	2	0	0		25NOV09		25NOV09	0	0
3DL6GG0106	Installation of Geotechnical Instrumentation	1	12	12	26NOV09	09DEC09	26NOV09	09DEC09	0	0
3DL6GG0108	Monitor/report Geotechnical Instrumentation	1	770	904	10DEC09	20JUL12	10DEC09	29DEC12	0	0
Piling Works										
15R6GG0200	Obtain SO's consent for temp. works design	1	0	0		24JAN09		02MAR09	0	368
15R6GG0202	Mibilization & set up for temp. platform	1	3	3	18JAN10	20JAN10	18JAN10	20JAN10	0	107
15R6GG0204	Construct steel working platform for H-piling	1	110	110	21JAN10	08JUN10	21JAN10	08JUN10	0	107



ID	Activity Description	Cal ID	Target Dur	Orig Dur	Target Start	Target Finish	Early Start	Early Finish	% Comp	Total Float
15R6GG0206	Mibilization & set up for H-piling; Wall 1	1	3	3	23APR10	26APR10	23APR10	26APR10	0	107
15R6GG0208	52 nos. 600mm dia. H-piles; Wall 1 @1.5 nr/day	1	35	35	27APR10	08JUN10	27APR10	08JUN10	0	107
15R6GG0210	Excavate & construct skin wall 1 at Portion G	1	35	35	09JUN10	21JUL10	09JUN10	21JUL10	0	107
15R6GG0212	Mibilization & set up for H-piling; Wall 2	1	3	3	09JUN10	11JUN10	09JUN10	11JUN10	0	107
15R6GG0214	40 nos. 600mm dia. H-piles; Wall 2 @1.5 nr/day	1	27	27	12JUN10	15JUL10	12JUN10	15JUL10	0	107
15R6GG0216	Excavate & construct skin wall 2 at Portion G	1	27	27	16JUL10	16AUG10	16JUL10	16AUG10	0	107
Drainage Improvement Works										
15R6GG0301	Obtain approval of ELS design package incl MS	2	0	0		07FEB09		17MAR09	0	645
15R6GG0302	Install ELS & excavate shaft for pipe jacking	1	18	18	01NOV10*	20NOV10	01NOV10*	20NOV10	0	45
15R6GG0304	Construct 1.5m dia. drainage by pipe jacking	1	30	30	22NOV10	28DEC10	22NOV10	28DEC10	0	45
15R6GG0306	Construct 1.5m dia. drainage by open trenching	1	24	24	29DEC10	26JAN11	29DEC10	26JAN11	0	45
15R6GG0308	Construct .75m & 1.5m U and Stepped Channel	1	12	12	27JAN11	12FEB11	27JAN11	12FEB11	0	45
15R6GG0310	Construct 3 nos. manhole & 2 nos. catchpit	1	35	35	14FEB11	25MAR11	14FEB11	25MAR11	0	45
Remaining Works Prior to Handover to Client										
15R6GG0312	Reinstate carriageway & footway	1	6	6	26MAR11	01APR11	26MAR11	01APR11	0	45
15R6GG0402	Pre-handover inspections and remedial works	1	48	48	02APR11	02JUN11	02APR11	02JUN11	0	45
15R6GG0404	Contractor serve notice for Works completion	2	7	7	03JUN11	09JUN11	03JUN11	09JUN11	0	549
15R6GG0408	SO issues completion certificate	2	21	21	10JUN11	30JUN11	10JUN11	30JUN11	0	549
Schedule of Milestones for Cost Centre No. 15R										
15R6GG0502	15R 1; On completion of all temp. works	2	0	0		20NOV10		20NOV10	0	771
15R6GG0504	15R 2; On completion of 25% of pipejacking	2	0	0		30NOV10		30NOV10	0	761
15R6GG0506	15R 3; On completion of 50% of pipejacking	2	0	0		08DEC10		08DEC10	0	753
15R6GG0508	15R 4; On completion of 75% of pipejacking	2	0	0		17DEC10		17DEC10	0	744
15R6GG0510	15R 5; On completion of all pipejacking	2	0	0		28DEC10		28DEC10	0	733
15R6GG0512	15R 6; On completion of all wks under this CC	2	0	0		02JUN11		02JUN11	0	577



Appendix D

Implementation Status of Environmental Mitigation Measures

IMPLEMENTATION SCHEDULE September 2009

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	✓
	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%.				✓
	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	✓
	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	PN 2/93 Noise from Construction Activities & EIAO	✓
	• 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.				✓
	• 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	✓
	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	✓
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	Environmental Permit / Licence	Issued Date	Ref No.	Account No.	Permit / Licence No.	Permit / Licence Validity Date	Remarks
2 Jan 2008	Registration as a Waste Producer	3 Jan 2008	001026707	----	----	----	Contractor had received the acknowledge receipt on 3 Jan 2008.
2 Jan 2008	Waste Disposal (Chemical Waste) (General) - Chemical Waste Producer	26 Feb 2008	----	5111-324-M2703-01	----	----	----
2 Jan 2008	Waste Disposal (Charges for Disposal of Construction Waste) Regulation - Billing Account	17 Jan 2008	----	7006574	----	----	----
10 Jan 2008	Notification Pursuant to Section 3(1) of the Air Pollution Control (Construction Dust) Regulation	10 Jan 2008	001026901	----	----	----	Contractor had received the acknowledge receipt on 10 Jan 2008.
25 Feb 2008	Water Pollution Control Ordinance – Outfall O-1	7 Aug 2008	001028154	----	EP760/323/012997I	7 Aug 2008 - 31 Aug 2013	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	Notification of Change in the Registration of Chemical Waste Producer	29 Apr 2008	----	5111-324-M2703-01	----	----	MCSJV's Managing Director had been changed from Mr. Richard Myrans to Mr. Christopher Shaw.
10 Apr 2008	Further Environmental Permit	6 May 2008	FEP-088/2008	----	FEP-01/275/2007	----	Contractor had received the acknowledge receipt on 17 April 2008. FEP had been issued on 6 May 2008.
18 Apr 2008	Water Pollution Control Ordinance – Intake I-1	19 Jun 2008	001029978	----	EP760/327/013315I	19 Jun 2008 - 30 Jun 2013	Contractor had received the acknowledge receipt on 8 May 2008. Application fees had been paid on 13 June 2008. Licence had been issued on 19 June 2008.
18 Apr 2008	Water Pollution Control Ordinance – Intake I-2	2 Jul 2008	001029959	----	EP760/321/013020I	2 Jul 2008 - 31 Jul 2013	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	Water Pollution Control Ordinance – Intake I-3	5 Aug 2008	001029960	----	EP760/323/013324I	5 Aug 2008 - 31 Aug 2013	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	Water Pollution Control Ordinance – Portion I	26 Jun 2008	001029974	----	EP760/350/013334I	26 Jun 2008 - 30 Jun 2013	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.
3 Jun 2008	Variation of Environmental Permit	27 Jun 2008	VEP-264/2008	----	EP-275/2007/A	----	Application was submitted by DSD on 3 June 2008. Licence had been issued on 27 June 2008.

18 Jun 2008	Variation of Environmental Permit	27 Jun 2008	VEP-266/2008	----	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	Water Pollution Control Ordinance – Intake I-1 (Intersection of Wo Yi Hop Lane and Ho Fung College)	27 Aug 2008	001031974	----	EP760/325/013536I	27 Aug 2008 - 31 Aug 2013	Contractor had received the acknowledge receipt on 25 July 2008. Application fees had been paid on 19 Aug 2008. Licence had been issued on 27 Aug 2008.
2 Sep 2008	Variation of Environmental Permit	25 Sep 2008	VEP-271/2008	----	EP-275/2007/B	----	Application was submitted by DSD on 2 Sept 2008. Licence had been issued on 25 Sept 2008.
21 Nov 2008	Construction Noise Permit 1) Chai Wan Kok Valve House (Near Summit Terrace - Tusen Wan) 2) Valve House (Near The Wonderland - Castle Peak Road- Ting Kau)	----	001034930	----	----	----	Contractor had applied the permit on 21 Nov 2008. Contractor had received the acknowledge receipt on 2 Dec 2008. Notice of Refusal had been received on 6 Dec 2008.
13 Jan 2009	Construction Noise Permit - Outfall O-1	----	301201	----	----	----	Contractor had applied the permit on 13 Jan 2009. Contractor had received the acknowledge receipt on 13 Jan 2009. Notice of Refusal had been received on 20 Jan 2009.
19 Jan 2009	Construction Noise Permit - Intake I-1	3 Feb 2009	301401	----	GW-RW0052-09	23 Feb 2009 - 22 Aug 2009	Contractor had applied the permit on 19 Jan 2009. Contractor had received the acknowledge receipt on 20 Jan 2009. CNP had been issued on 3 Feb 2009.
22 Jan 2009	Construction Noise Permit - Intake I-3	----	301474	----	----	----	Contractor had applied the permit on 22 Jan 2009. Contractor had received the acknowledge receipt on 22 Jan 2009. Notice of Refusal had been received on 2 Feb 2009.
3 Feb 2009	Construction Noise Permit - Outfall O-1	----	301841	----	----	----	Contractor had applied the permit on 3 Feb 2009. Contractor had received the acknowledge receipt on 6 Feb 2009. Notice of Refusal had been received on 12 Feb 2009.
25 Feb 2009	Construction Noise Permit - Intake I-3	10 Mar 2009	302429	----	GW-RW0079-09	16 March 2009 - 15 Sept 2009	Contractor had applied the permit on 25 Feb 2009. Contractor had received the acknowledge receipt on 26 Feb 2009. CNP had been issued on 10 March 2009.
2 Mar 2009	Construction Noise Permit - Outfall O-1	12 Mar 2009	302525	----	GW-RW0080-09	16 March 2009 - 15 May 2009	Contractor had applied the permit on 2 March 2009. Contractor had received the acknowledge receipt on 2 March 2009. CNP had been issued on 12 March 2009.
23 Mar 2009	Construction Noise Permit - Intake I-1	3 Apr 2009	303326	----	GW-RW0108-09	6 April 2009 - 5 Oct 2009	Contractor had applied the permit on 23 March 2009. Contractor had received the acknowledge receipt on 24 March 2009. CNP had been issued on 3 April 2009.
29 Apr 2009	Water Pollution Control Ordinance – Intake I-3 (Additional Discharge Point)	----	305058	----	----	----	Contractor had applied the Licence on 29 April 2009. Contractor had received the acknowledge receipt on 11 May 2009.Waiting for EPD further notification.
12 May 2009	Construction Noise Permit - Outfall O-1	29 May 2009	305266	----	GW-RW0198-09	29 May 2009 - 24 Nov 2009	Contractor had applied the permit on 12 May 2009. Contractor had received the acknowledge receipt on 15 May 2009. CNP had been issued on 29 May 2009.

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: 05-Aug-09
Calibration Due Date 05-Oct-09
Time: 12:15

Sampler Model:	BM2000HX
Serial No.:	4994
Calibrator Orifice no.:	1559
Slope (m):	1.97702
Intercept (b):	-0.00070
Correction coeff. (r)	0.99992

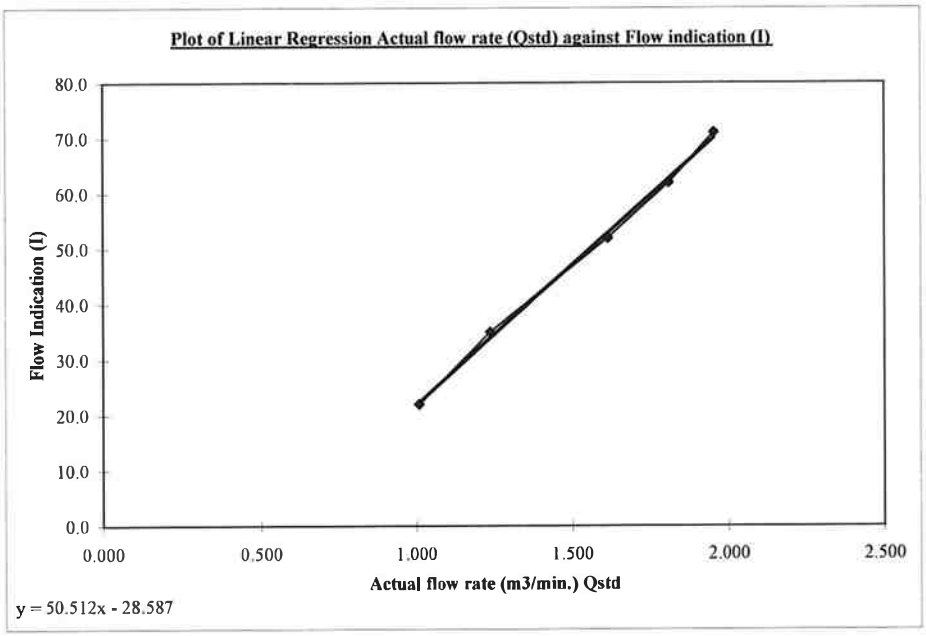
Standard pressure (mmHg) Pstd:	765.8
Standard temp. (K) Tstd:	293.00
Calibration pressure (mmHg) Pa:	748.0
Calibration temp. (K) Ta:	300.8

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

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

Sample no.	Pressure Drop (H), inch	Flow (corrcted), m^3/min	Actual flow rate (Qstd), m^3/min	Flow indication (I), arbitrary
1	15.4	3.860	1.953	71.0
2	13.2	3.574	1.808	62.0
3	10.5	3.187	1.613	52.0
4	6.2	2.449	1.239	35.0
5	4.1	1.992	1.008	22.0

Correlation Coefficient : 0.9990



Remark
1HPa = 0.750062 mmHg

Calibrated by: **Mak Kei Ho** **Date:** 5-8-09
(Ho)

Checked by: **Tang Hiu Yeung** **Date:** 5-8-09
( )

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: 05-Aug-09
Calibration Due Date 05-Oct-09
Time: 12:35

Sampler Model:	BM2000HX
Serial No.:	5875
Calibrator Orifice no.:	1559
Slope (m):	1.97702
Intercept (b):	-0.00070
Correction coeff. (r)	0.99992

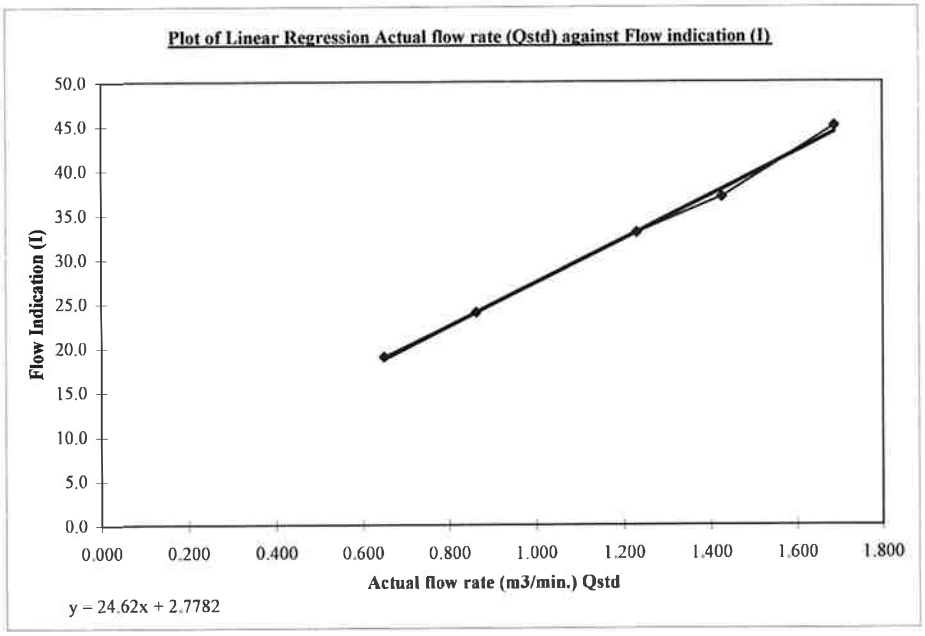
$$Flow(corrected) = \sqrt{H \times \frac{Pa}{Pstd} \times \frac{Tstd}{Ta}}$$

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

Standard pressure (mmHg) Pstd:	765.8
Standard temp. (K) Tstd:	293.00
Calibration pressure (mmHg) Pa:	748.0
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	11.5	3.336	1.688	45.0
2	8.2	2.817	1.425	37.0
3	6.1	2.429	1.229	33.0
4	3.0	1.704	0.862	24.0
5	1.7	1.283	0.649	19.0

Correlation Coefficient : 0.9985



Remark
1HPa = 0.750062 mmHg

Calibrated by: **Mak Kei Ho** **Date:** 5-8-09
(Ho)

Checked by: **Tang Hiu Yeung** **Date:** 5-8-09
( )

High Volume Air Sampler Calibration Worksheet

Project Title: Design and Construction of Tsuen Wan Drainage Tunnel
Monitoring Location: Long Beach Gardan
Calibration Date: 05-Aug-09
Calibration Due Date 05-Oct-09
Time: 13:44

Sampler Model:	TE5005X
Serial No.:	0390
Calibrator Orifice no.:	1559
Slope (m):	1.97702
Intercept (b):	-0.00070
Correction coeff. (r)	0.99992

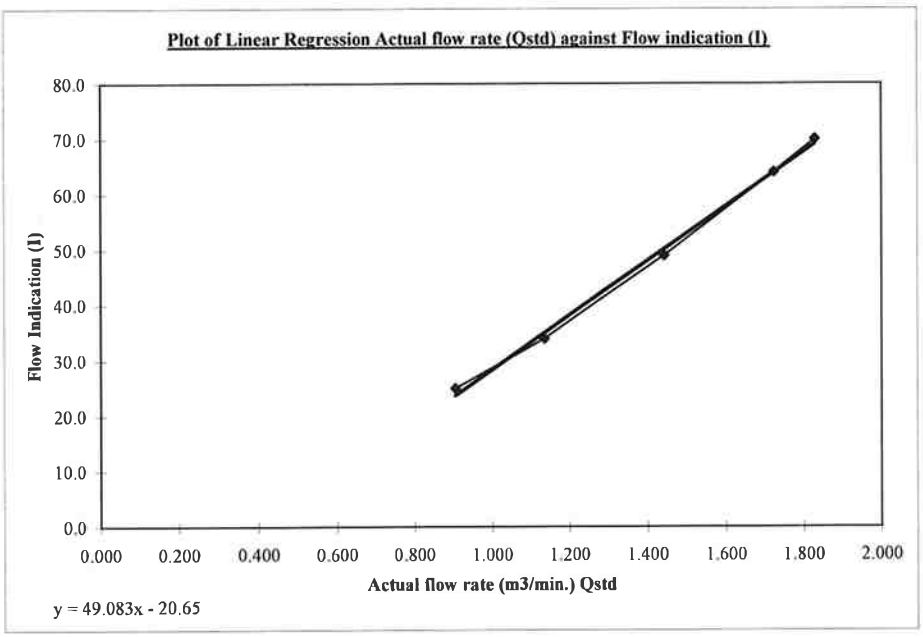
$$Flow(corrected) = \sqrt{H \times \frac{Pa}{Pstd} \times \frac{Tstd}{Ta}}$$

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

Standard pressure (mmHg) Pstd:	765.8
Standard temp. (K) Tstd:	293.00
Calibration pressure (mmHg) Pa:	748.0
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	13.5	3.614	1.828	70.0
2	12.0	3.408	1.724	64.0
3	8.4	2.851	1.442	49.0
4	5.2	2.243	1.135	34.0
5	3.3	1.787	0.904	25.0

Correlation Coefficient : 0.9983



Remark
1HPa = 0.750062 mmHg

Calibrated by: **Mak Kei Ho** **Date:** 5-8-09
(Ho)

Checked by: **Tang Hiu Yeung** **Date:** 5-8-09
( )

High Volume Air Sampler Calibration Worksheet

Project Title: Design and Construction of Tsuen Wan Drainage Tunnel
Monitoring Location: Greenview Terrance
Calibration Date: 05-Aug-09
Calibration Due Date 05-Oct-09
Time: 13:20

Sampler Model:	TE5005X
Serial No.:	0646
Calibrator Orifice no.:	1559
Slope (m):	1.97702
Intercept (b):	-0.00070
Correction coeff. (r)	0.99992

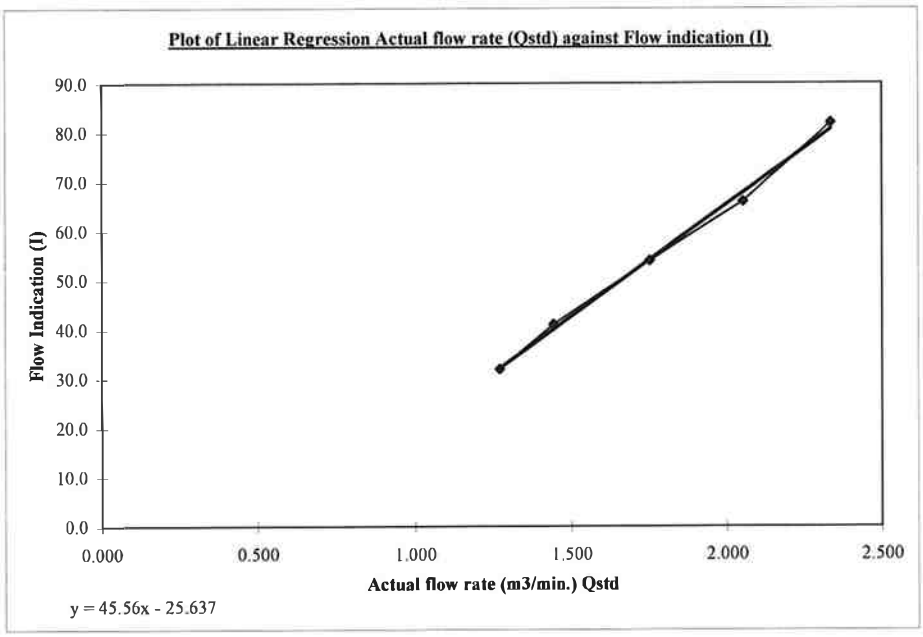
$$Flow(corrected) = \sqrt{H \times \frac{Pa}{Pstd} \times \frac{Tstd}{Ta}}$$

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

Standard pressure (mmHg) Pstd:	765.8
Standard temp. (K) Tstd:	293.00
Calibration pressure (mmHg) Pa:	748.0
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	22.0	4.614	2.334	82.0
2	17.0	4.056	2.052	66.0
3	12.4	3.464	1.752	54.0
4	8.4	2.851	1.442	41.0
5	6.5	2.508	1.269	32.0

Correlation Coefficient : 0.9981



Remark
1HPa = 0.750062 mmHg

Calibrated by: **Mak Kei Ho** **Date:** 5-8-09
(HO)

Checked by: **Tang Hiu Yeung** **Date:** 5-8-09
( )

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 - May 18, 2009 Rootsmeter S/N 9833620 Ta (K) - 293
Operator Tisch Orifice I.D. - 1559 Pa (mm) - 765.81

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	1.4130	3.2	2.00
2	NA	NA	1.00	0.9900	6.4	4.00
3	NA	NA	1.00	0.8850	7.9	5.00
4	NA	NA	1.00	0.8420	8.7	5.50
5	NA	NA	1.00	0.6970	12.7	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)		Va	(x axis) Qa	(y axis)
1.0205	0.7222	1.4317		0.9958	0.7047	0.8748
1.0163	1.0266	2.0247		0.9917	1.0017	1.2371
1.0142	1.1460	2.2637		0.9896	1.1182	1.3831
1.0132	1.2033	2.3742		0.9886	1.1741	1.4506
1.0078	1.4459	2.8633		0.9834	1.4109	1.7495

Qstd slope (m) = 1.97702
intercept (b) = -0.00070
coefficient (r) = 0.99992

Qa slope (m) = 1.23797
intercept (b) = -0.00043
coefficient (r) = 0.99992

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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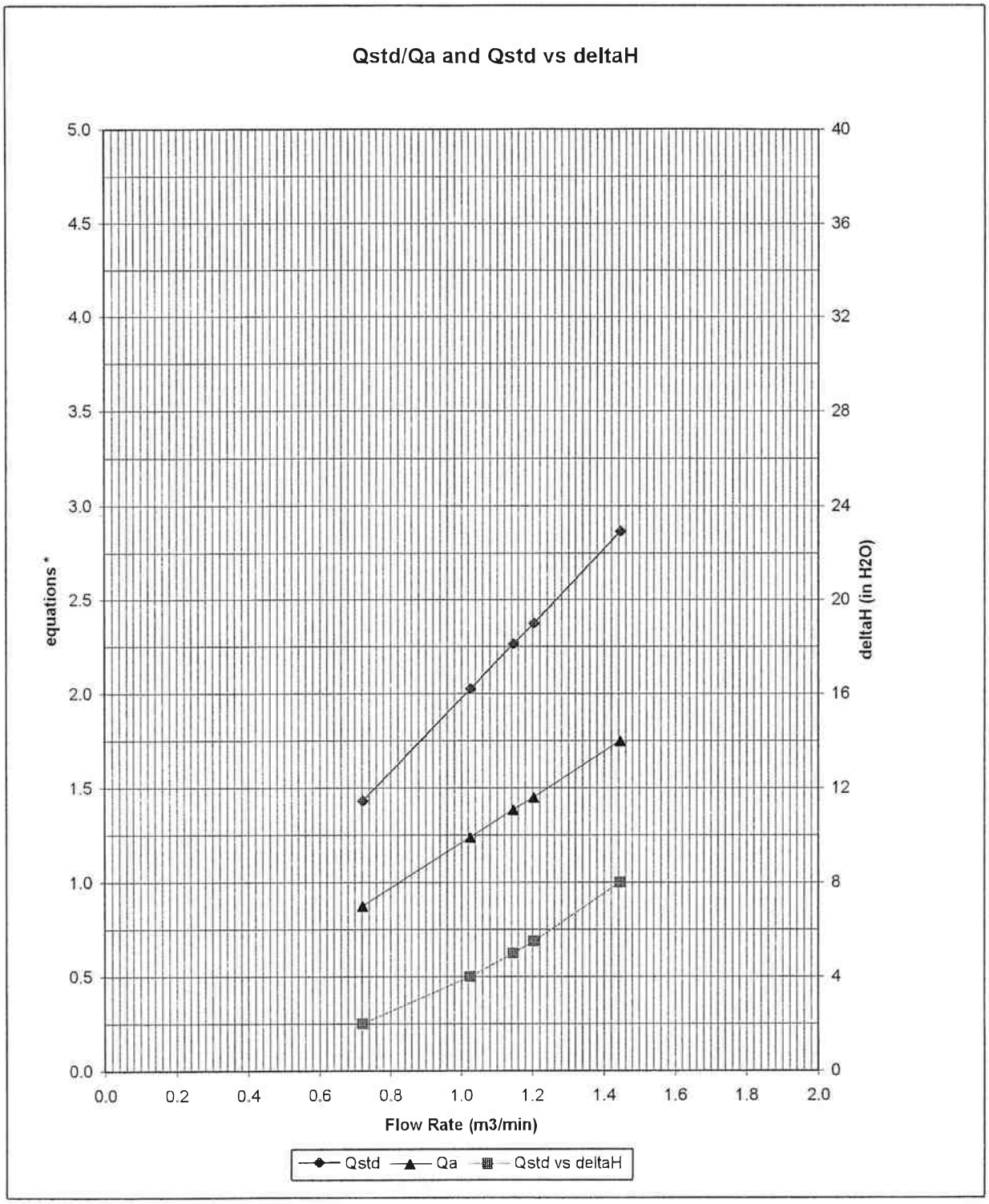
WWW.TISCH-ENV.COM

AIR POLLUTION MONITORING EQUIPMENT



* y-axis equations:

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

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

#1559

輝創工程有限公司
Sun Creation Engineering Limited Calibration and Testing Laboratory

Certificate No. : C093599

Certificate of Calibration

This is to certify that the equipment

Description : Precision Sound Level Meter

Manufacturer : Rion

Model No. : NA-27

Serial No. : 00201194

has been calibrated for the specific items and ranges.
The results are shown in the Calibration Report No. C093599.

The equipment is supplied by

Co. Name : Envirotech Services Co.

Address : Shop 6, G/F., Casio Mansion, 209 Shaukeiwan Road, Hong Kong

Date of Issue : 10 July 2009

Certified by : H C Chan

The test equipment used for calibration are traceable to the National Standards as specified in this report.
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Calibration and Testing Laboratory of Sun Creation Engineering Limited
c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
Tel: 2927 2606 Fax: 2744 8986 E-mail: callab@suncreation.com Website: www.suncreation.com

輝創工程有限公司
Sun Creation Engineering Limited Calibration and Testing Laboratory

Certificate No. : C093598

Certificate of Calibration

This is to certify that the equipment

Description : Sound Level Calibrator

Manufacturer : Rion

Model No. : NC-73

Serial No. : 10786708

has been calibrated for the specific items and ranges.
The results are shown in the Calibration Report No. C093598.

The equipment is supplied by

Co. Name : Envirotech Services Co.

Address : Shop 6, G/F., Casio Mansion, 209 Shaukeiwan Road, Hong Kong

Date of Issue : 10 July 2009

Certified by : H C Chan

The test equipment used for calibration are traceable to the National Standards as specified in this report.
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Tel: 2927 2606 Fax: 2744 8986 E-mail: callab@sunecreation.com Website: www.sunecreation.com

輝創工程有限公司
Sun Creation Engineering Limited Calibration and Testing Laboratory

Certificate No. : C093473

Certificate of Calibration

This is to certify that the equipment

Description : Precision Integrating Sound Level Meter

Manufacturer : Rion

Model No. : NL-18

Serial No. : 00360030

has been calibrated for the specific items and ranges.
The results are shown in the Calibration Report No. C093473.

The equipment is supplied by

Co. Name : Envirotech Services Co.

Address : Shop 6, G/F., Casio Mansion, 209 Shaukeiwan Road, Hong Kong

Date of Issue : 6 July 2009

Certified by : H C Chan

The test equipment used for calibration are traceable to the National Standards as specified in this report.
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Tel: 2927 2606 Fax: 2744 8986 E-mail: callab@suncreation.com Website: www.suncreation.com

輝創工程有限公司
Sun Creation Engineering Limited Calibration and Testing Laboratory

Certificate No. : C093472

Certificate of Calibration

This is to certify that the equipment

Description : Sound Level Calibrator

Manufacturer : Rion

Model No. : NC-73

Serial No. : 10997142

has been calibrated for the specific items and ranges.
The results are shown in the Calibration Report No. C093472.

The equipment is supplied by

Co. Name : Envirotech Services Co.

Address : Shop 6, G/F., Casio Mansion, 209 Shaukeiwan Road, Hong Kong

Date of Issue : 6 July 2009

Certified by : H C Chan

The test equipment used for calibration are traceable to the National Standards as specified in this report.
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c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
Tel: 2927 2606 Fax: 2744 8986 E-mail: catlab@suncreation.com Website: www.suncreation.com

CERTIFICATE OF ANALYSIS

Batch: HK0913034
Date of Issue: 30/06/2009
Client: HYDER CONSULTING LTD
Client Reference: TWDT

Calibration of Turbidity System

Item : Turbidimeter

Model No. : Eutech Instruments TN-100

Serial No. : 215619

Equipment No. : 215619

Calibration Method : This meter was calibrated in accordance with standard method APHA (19th Ed.) 2130B

Date of Calibration : 30 June, 2009

Testing Results :

Expected Reading	Recording Reading
0.00 NTU	0.00 NTU
4.00 NTU	3.86 NTU
16.0 NTU	16.3 NTU
40.0 NTU	39.8 NTU
160 NTU	173 NTU
Allowing Deviation	±10%

Ms Wong Wai Man, Alice
Laboratory Manager - Hong Kong

CERTIFICATE OF ANALYSIS

Batch: HK0919972
Date of Issue: 25/09/2009
Client: HYDER CONSULTING LTD
Client Reference: TWDT

Calibration of Turbidity System

Item : Turbidimeter

Model No. : Eutech Instruments TN-100

Serial No. : 215619

Equipment No. : - -

Calibration Method : This meter was calibrated in accordance with standard method APHA (19th Ed.) 2130B

Date of Calibration : 25 September, 2009

Testing Results :

Expected Reading	Recording Reading
0.00 NTU	0.00 NTU
4.00 NTU	3.95 NTU
16.0 NTU	15.7 NTU
40.0 NTU	42.3 NTU
160 NTU	168 NTU
Allowing Deviation	±10%

Mr Chan Kwok Fai, Godfrey
Laboratory Manager - Hong Kong

CERTIFICATE OF ANALYSIS

Batch: HK0913489
Date of Issue: 16/07/2009
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.: 0901264

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

Date of Calibration : 07 July, 2009

Testing Results :

Expected Reading	Recording Reading
5.27 mg/L	5.37 mg/L
6.58 mg/L	6.68 mg/L
7.73 mg/L	7.67 mg/L
Allowing Deviation	±0.2 mg/L

Mr Chan Kwok Fai, Godfrey
Laboratory Manager - Hong Kong

CERTIFICATE OF ANALYSIS

Batch: HK0913489
Date of Issue: 16/07/2009
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 : 07 July, 2009

Testing Results :

Expected Reading	Recording Reading
4.00	4.13
7.00	7.13
10.0	9.97
Allowing Deviation	± 0.2

Mr Chan Kwok Fai, Godfrey
Laboratory Manager - Hong Kong

CERTIFICATE OF ANALYSIS

Batch: HK0913489
Date of Issue: 16/07/2009
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, 2009

Testing Results :

Reference Temperature (^{0}C)	Recorded Temperature (^{0}C)
27.0 ^{0}C	27.4 ^{0}C
33.5 ^{0}C	33.8 ^{0}C
Allowing Deviation	±2.0^{0}C

Mr Chan Kwok Fai, Godfrey
Laboratory Manager - Hong Kong

Appendix G

Monitoring Locations

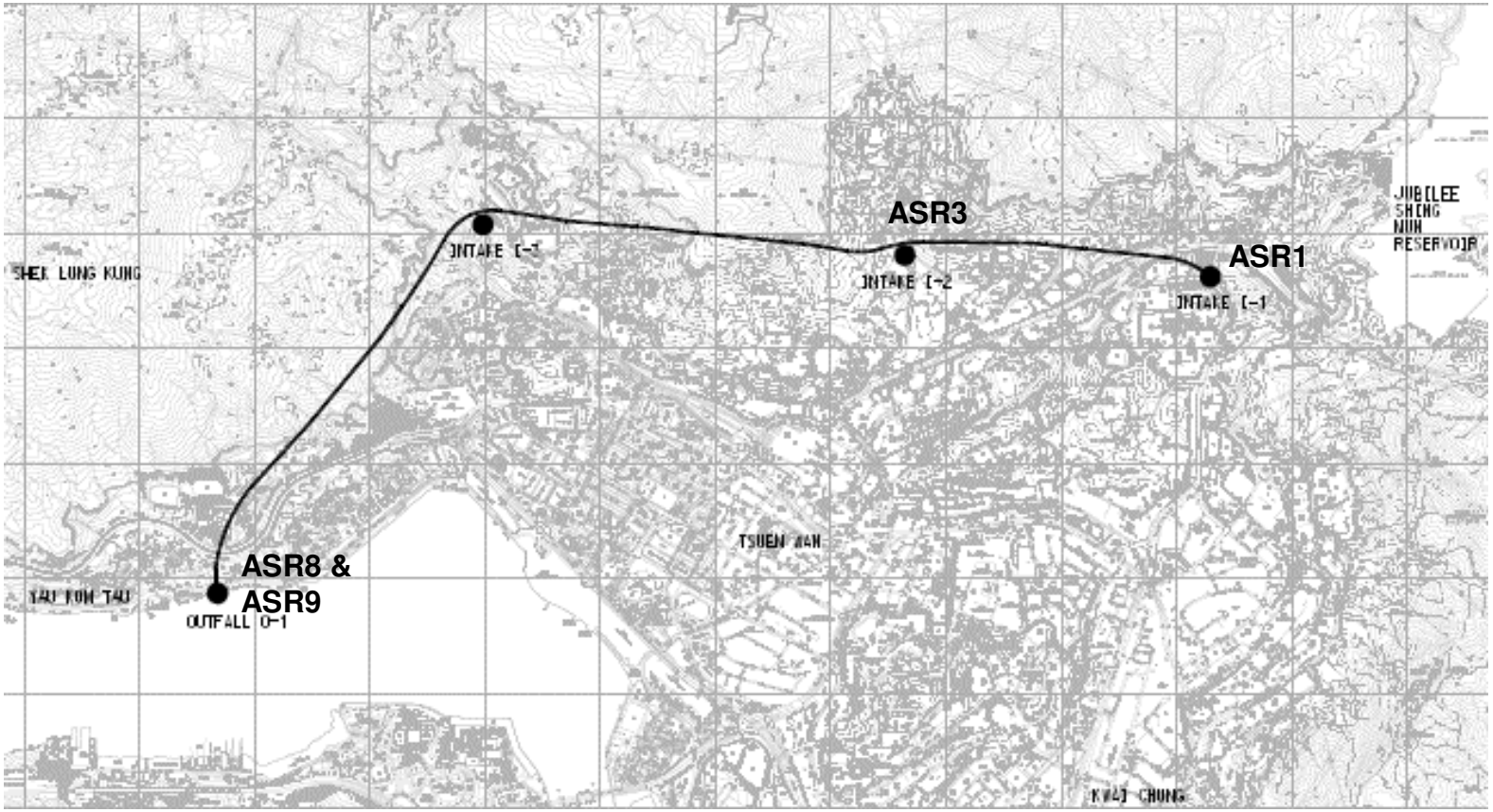

Figure 1 **Air Quality Monitoring Stations**

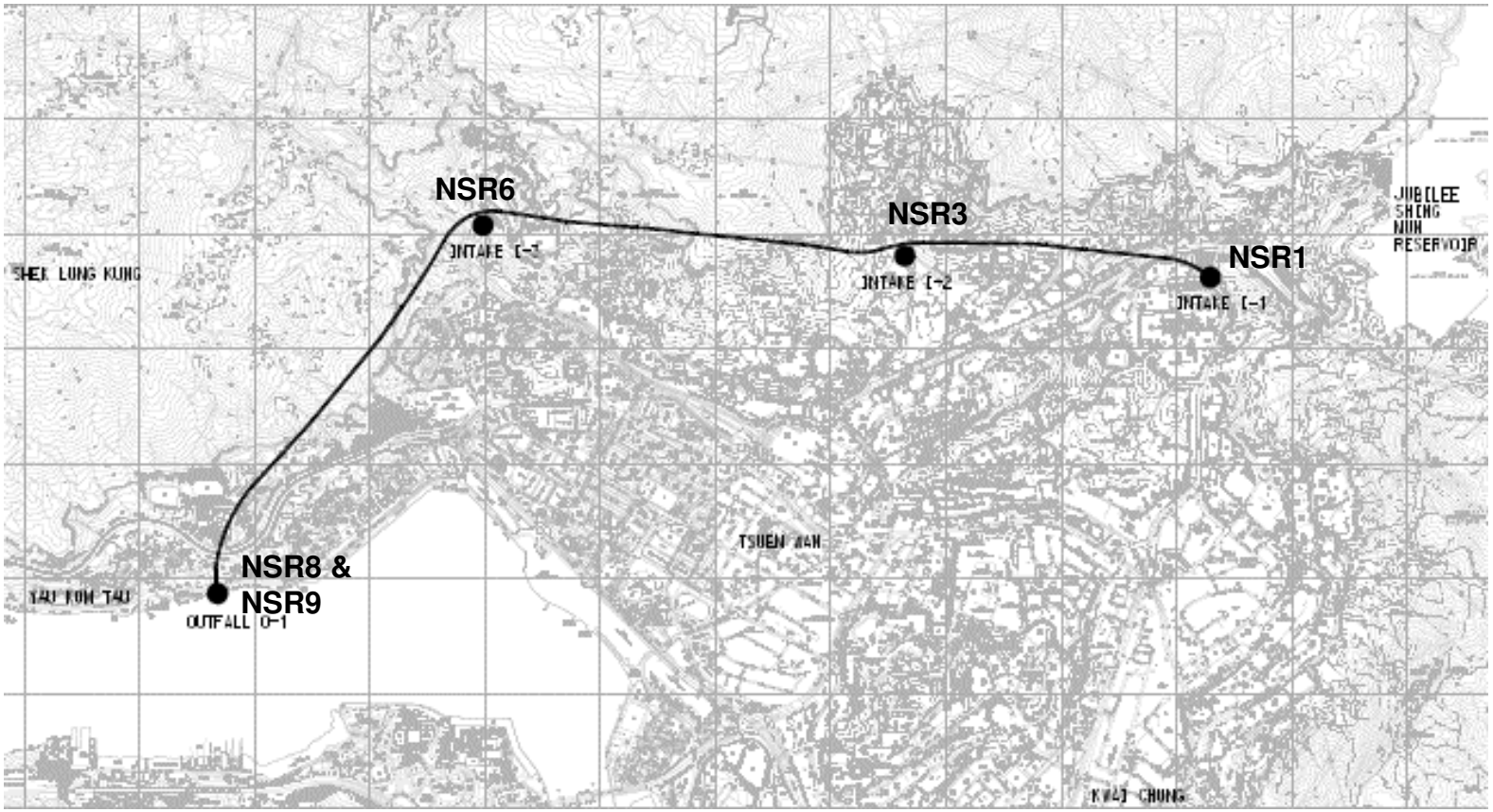

Figure 2 Noise Monitoring Stations

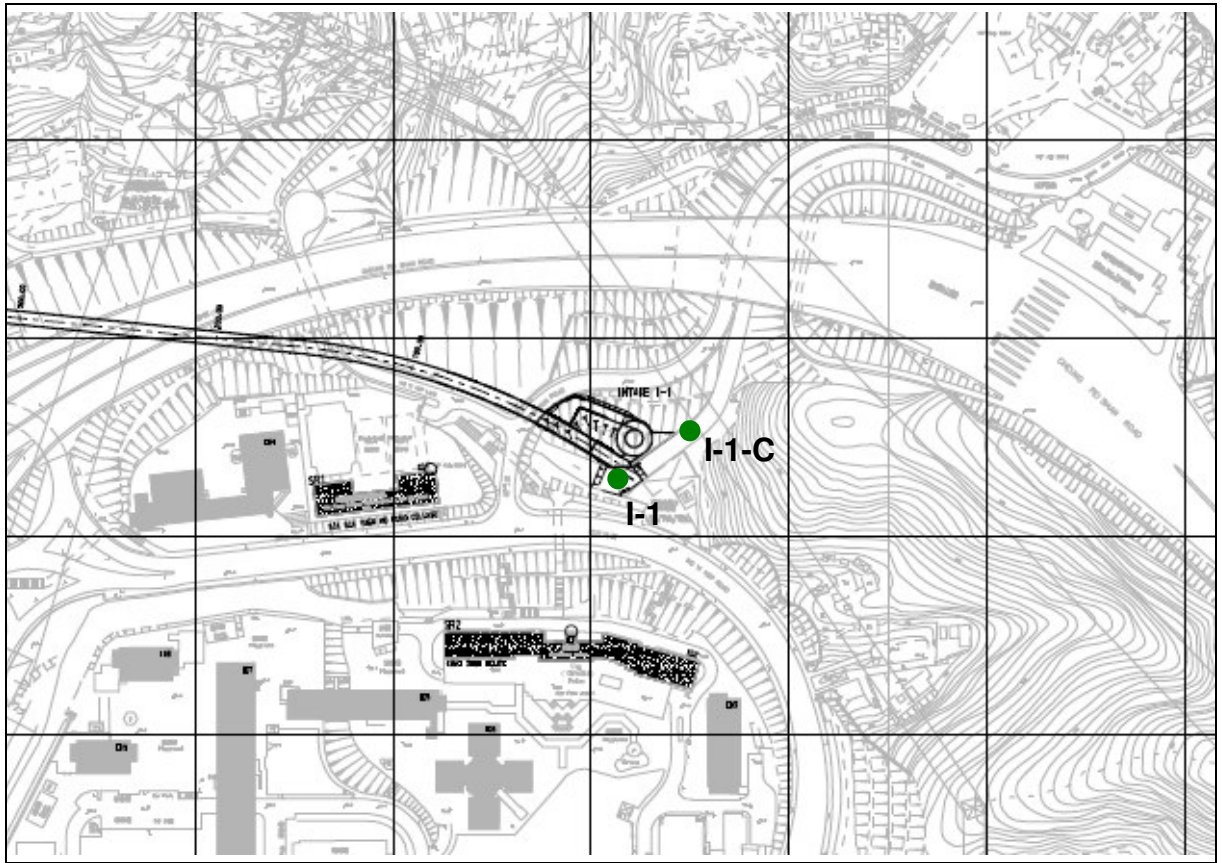

Figure 3 **Water Quality Monitoring Stations: I-1 & I-1-C at Intake I-1**

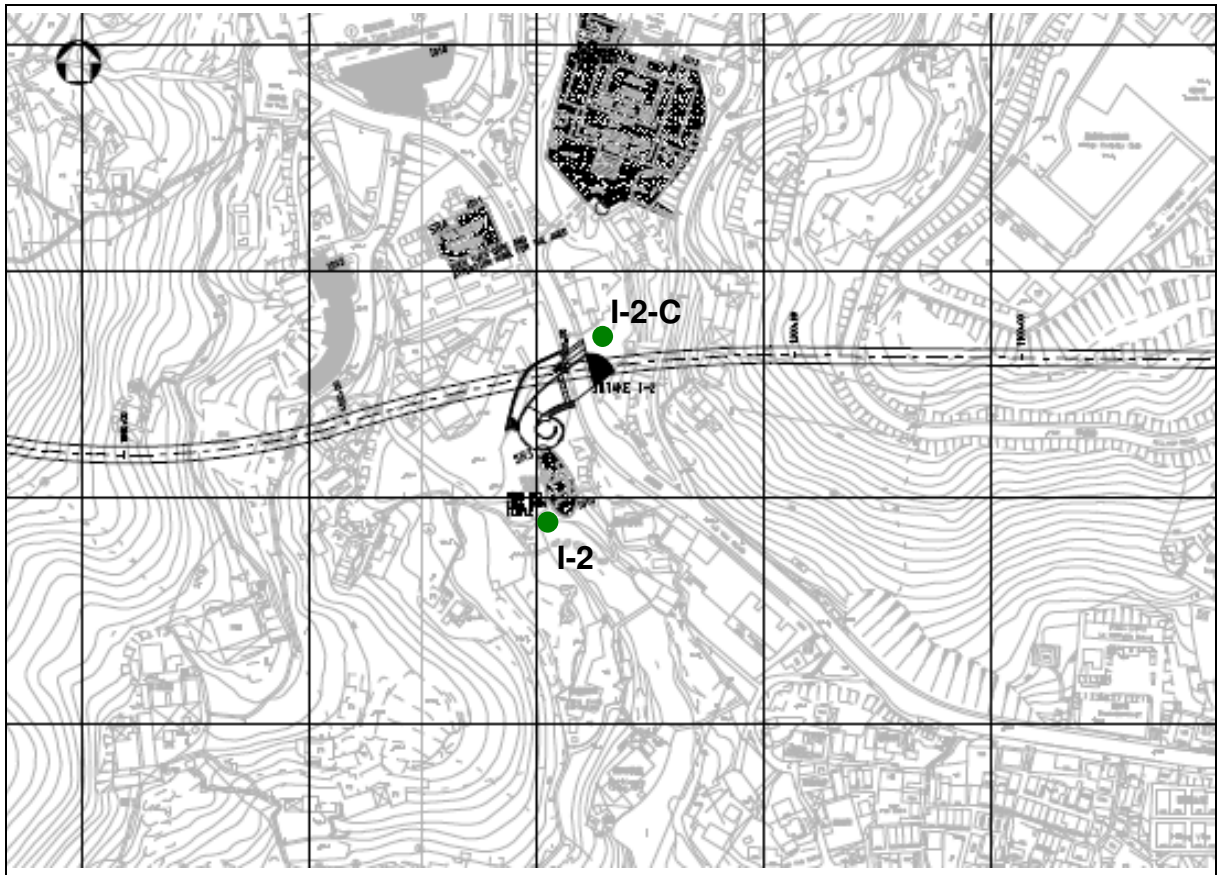

Figure 4 Water Quality Monitoring Stations: I-2 & I-2-C at Intake I-2

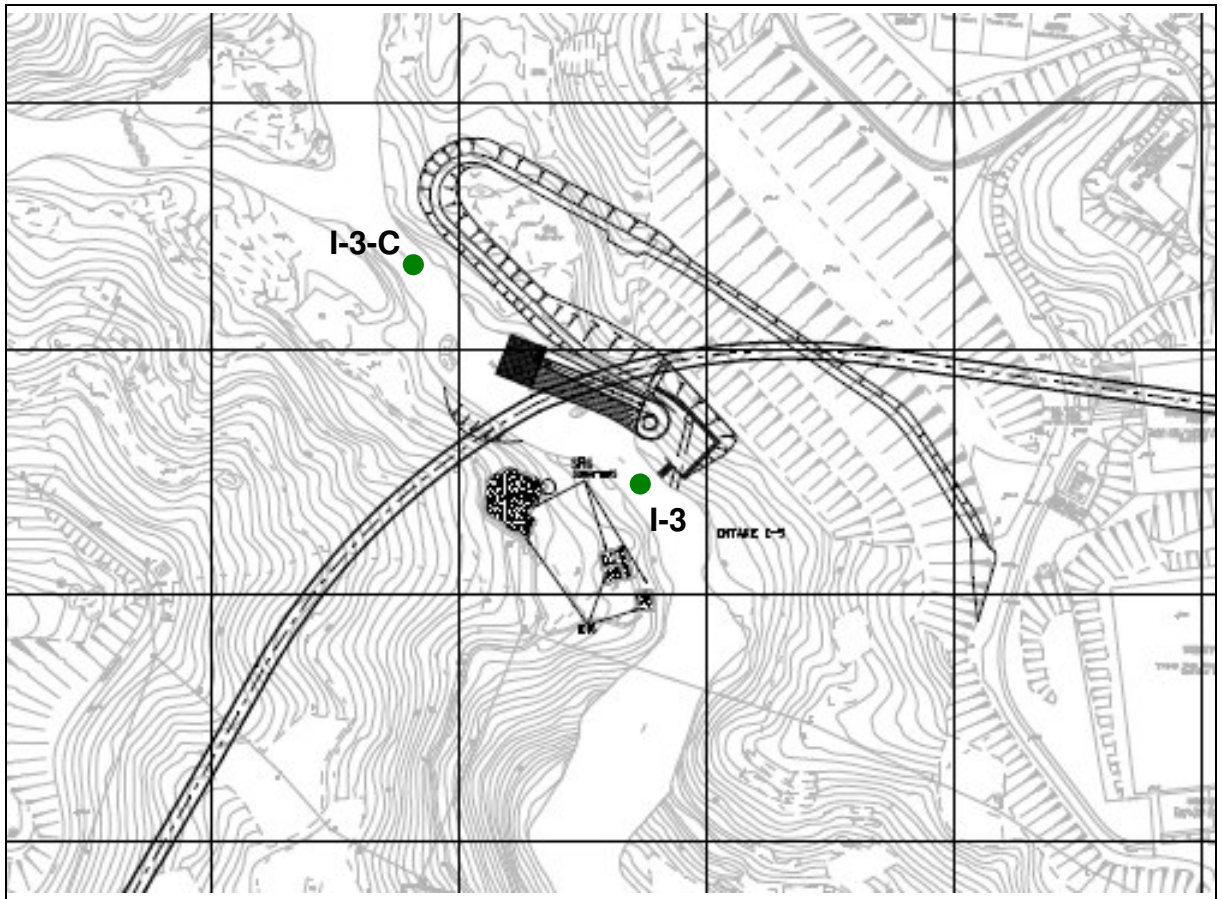

Figure 5 Water Quality Monitoring Stations: I-3 & I-3-C at Intake I-3

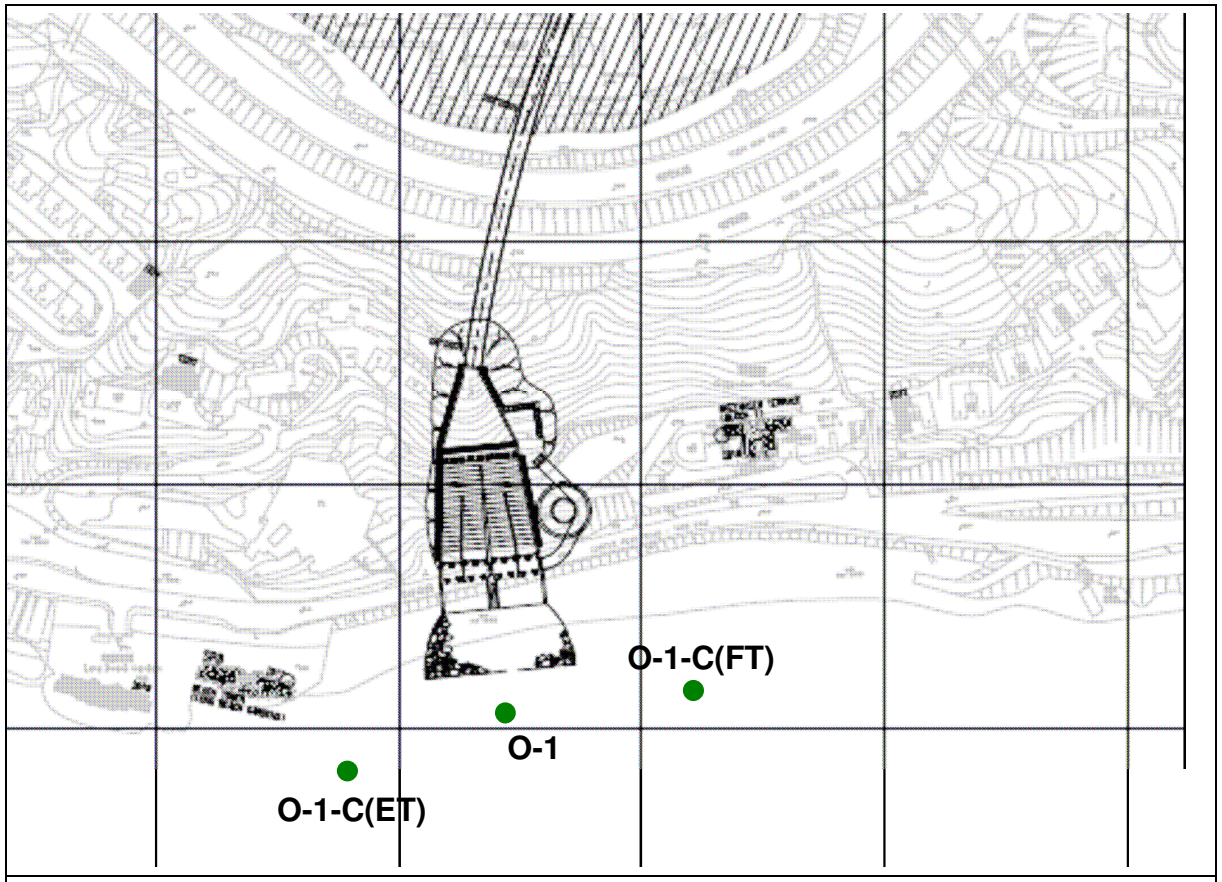

Figure 6 Water Quality Monitoring Stations: O-1, O-1-C(ET) & O-1-C(FT) at Outfall O-1

Appendix H

EM&A Schedule

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

Date		Air	Noise	Water
01-Sept-09	Tue			
02-Sept-09	Wed			✓
03-Sept-09	Thu			
04-Sept-09	Fri	✓		✓
05-Sept-09	Sat			
06-Sept-09	Sun			
07-Sept-09	Mon			✓
08-Sept-09	Tue			
09-Sept-09	Wed			✓
10-Sept-09	Thu	✓	✓	
11-Sept-09	Fri			✓
12-Sept-09	Sat			
13-Sept-09	Sun			
14-Sept-09	Mon			✓
15-Sept-09	Tue			
16-Sept-09	Wed	✓	✓	✓
17-Sept-09	Thu			
18-Sept-09	Fri			✓
19-Sept-09	Sat			
20-Sept-09	Sun			
21-Sept-09	Mon			✓
22-Sept-09	Tue	✓	✓	
23-Sept-09	Wed			✓
24-Sept-09	Thu			
25-Sept-09	Fri			✓
26-Sept-09	Sat			
27-Sept-09	Sun			
28-Sept-09	Mon	✓	✓	✓
29-Sept-09	Tue			
30-Sept-09	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
Additional noise monitoring were carried out on 4, 11, 18 and 25 September 2009 at NSR 8 and NSR 9.

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

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

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

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

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 2009 (Tentative)

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

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 (ºC)	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)	04-Sep-09	Sunny	0.3E	33	580342	580442	60.0	40	40	1.36	1.36	1.36	81.47	2.8326	2.8404	0.0078	95.7	92.5	306.6/500	Breaking by backhoe,excavation work	Traffic
		Sunny	0.3E	33	580442	580542	60.0	40	40	1.36	1.36	1.36	81.47	2.8234	2.8304	0.0070	85.9				
		Sunny	0.3E	33	580542	580642	60.0	40	40	1.36	1.36	1.36	81.47	2.8420	2.8498	0.0078	95.7				
	10-Sep-09	Cloudy	1.2E	31	580642	580742	60.0	40	40	1.36	1.36	1.36	81.47	2.8251	2.8321	0.0070	85.9	92.1		Breaking by backhoe,excavation work	Traffic
		Cloudy	1.2E	31	580742	580842	60.0	40	40	1.36	1.36	1.36	81.47	2.8316	2.8400	0.0084	103.1				
		Cloudy	1.2E	31	580842	580942	60.0	40	40	1.36	1.36	1.36	81.47	2.8167	2.8238	0.0071	87.1				
	16-Sep-09	Cloudy	0.3E	26	580942	581042	60.0	40	40	1.36	1.36	1.358	81.47	2.8274	2.8376	0.0102	125.2	86.7		Breaking by backhoe,excavation work	Traffic
		Cloudy	0.3E	26	581042	581142	60.0	40	40	1.36	1.36	1.36	81.47	2.7970	2.8040	0.0070	85.9				
		Cloudy	0.3E	26	581142	581242	60.0	40	40	1.36	1.36	1.36	81.47	2.8018	2.8058	0.0040	49.1				
	22-Sep-09	Sunny	0.8E	30	581242	581342	60.0	40	40	1.36	1.36	1.36	81.47	2.8422	2.8501	0.0079	97.0	83.1		Breaking by backhoe,excavation work	Traffic
		Sunny	0.8E	30	581342	581442	60.0	40	40	1.36	1.36	1.36	81.47	2.8315	2.8381	0.0066	81.0				
		Sunny	0.8E	30	581442	581542	60.0	40	40	1.36	1.36	1.36	81.47	2.8470	2.8528	0.0058	71.2				
	28-Sep-09	Cloudy	0.8E	27	581542	581642	60.0	40	40	1.36	1.36	1.36	81.47	2.8301	2.8381	0.0080	98.2	107.2		Breaking by backhoe,excavation work	Traffic
		Cloudy	0.8E	27	581642	581742	60.0	40	40	1.36	1.36	1.36	81.47	2.9181	2.9305	0.0124	152.2				
		Cloudy	0.8E	27	581742	581842	60.0	40	40	1.36	1.36	1.36	81.47	2.9062	2.9120	0.0058	71.2				
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Hong Hoi Chee Hong Temple - Intake (ASR3)	04-Sep-09	Sunny	0.2E	33	548890	548990	60.0	40	40	1.51	1.51	1.51	90.71	2.8388	2.8464	0.0076	83.8	72.8	327.4/500	Breaking by backhoe	Traffic
		Sunny	0.2E	33	548990	549090	60.0	40	40	1.51	1.51	1.51	90.71	2.8296	2.8361	0.0065	71.7				
		Sunny	0.2E	33	549090	549190	60.0	40	40	1.51	1.51	1.51	90.71	2.8288	2.8345	0.0057	62.8				
	10-Sep-09	Cloudy	0.5E	31	549190	549290	60.0	40	40	1.51	1.51	1.51	90.71	2.8237	2.8335	0.0098	108.0	94.4		Breaking by backhoe	Traffic
		Cloudy	0.5E	31	549290	549390	60.0	40	40	1.51	1.51	1.51	90.71	2.8290	2.8368	0.0078	86.0				
		Cloudy	0.5E	31	549390	549490	60.0	40	40	1.51	1.51	1.51	90.71	2.8355	2.8436	0.0081	89.3				
	16-Sep-09	Cloudy	0.3E	26	549490	549590	60.0	40	40	1.51	1.51	1.51	90.71	2.8026	2.8079	0.0053	58.4	79.4		Drilling work	Traffic
		Cloudy	0.3E	26	549590	549690	60.0	40	40	1.51	1.51	1.51	90.71	2.8150	2.8250	0.0100	110.2				
		Cloudy	0.3E	26	549690	549790	60.0	40	40	1.51	1.51	1.51	90.71	2.8165	2.8228	0.0063	69.5				
	22-Sep-09	Sunny	0.3E	30	549790	549890	60.0	40	40	1.51	1.51	1.51	90.71	2.8535	2.8639	0.0104	114.6	79.0		Drilling work, breaking by backhoe	Traffic
		Sunny	0.3E	30	549890	549990	60.0	40	40	1.51	1.51	1.51	90.71	2.8331	2.8405	0.0074	81.6				
		Sunny	0.3E	30	549990	550090	60.0	40	40	1.51	1.51	1.51	90.71	2.8348	2.8385	0.0037	40.8				
	28-Sep-09	Cloudy	0.8E	27	550090	550190	60.0	40	40	1.51	1.51	1.51	90.71	2.7682	2.7790	0.0108	119.1	105.8		Breaking by backhoe	Traffic
		Cloudy	0.8E	27	550190	550290	60.0	40	40	1.51	1.51	1.51	90.71	2.8221	2.8328	0.0107	118.0				
		Cloudy	0.8E	27	550290	550390	60.0	40	40	1.51	1.51	1.51	90.71	2.8028	2.8101	0.0073	80.5				
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Long Beach Gardens - Outfall (ASR8)	04-Sep-09	Sunny	0.5E	33	603880	603980	60.0	40	40	1.24	1.24	1.24	74.14	2.8354	2.8506	0.0152	205.0	151.5	336.6/500	Breaking by backhoe,excavation work	Traffic
		Sunny	0.5E	33	603980	604080	60.0	40	40	1.24	1.24	1.24	74.14	2.8127	2.8220	0.0093	125.4				
		Sunny	0.5E	33	604080	604180	60.0	40	40	1.24	1.24	1.24	74.14	2.8148	2.8240	0.0092	124.1				
	10-Sep-09	Cloudy	0.5E	31	604180	604280	60.0	40	40	1.24	1.24	1.24	74.14	2.8653	2.8783	0.0130	175.3	148.8		Breaking by backhoe,excavation work	Traffic
		Cloudy	0.5E	31	604280	604380	60.0	40	40	1.24	1.24	1.24	74.14	2.8144	2.8246	0.0102	137.6				
		Cloudy	0.5E	31	604380	604480	60.0	40	40	1.24	1.24	1.24	74.14	2.8588	2.8687	0.0099	133.5				
	16-Sep-09	Cloudy	0.8E	26	604480	604580	60.0	40	40	1.24	1.24	1.24	74.14	2.7965	2.8066	0.0101	136.2	121.8		Breaking by backhoe,excavation work	Traffic
		Cloudy	0.8E	26	604580	604680	60.0	40	40	1.24	1.24	1.24	74.14	2.8271	2.8354	0.0083	112.0				
		Cloudy	0.8E	26	604680	604780	60.0	40	40	1.24	1.24	1.24	74.14	2.8185	2.8272	0.0087	117.3				
	22-Sep-09	Sunny	0.5E	30	604780	604880	60.0	40	40	1.24	1.24	1.24	74.14	2.8724	2.8801	0.0077	103.9	89.0		Breaking by backhoe,excavation work	Traffic
		Sunny	0.5E	30	604880	604980	60.0	40	40	1.24	1.24	1.24	74.14	2.8574	2.8679	0.0105	141.6				
		Sunny	0.5E	30	604980	605080	60.0	40	40	1.24	1.24	1.24	74.14	2.8024	2.8040	0.0016	21.6				
	28-Sep-09	Cloudy	0.8E	27	605080	605180	60.0	40	40	1.24	1.24	1.24	74.14	2.8046	2.8140	0.0094	126.8	135.3		Breaking by backhoe,excavation work	Traffic
		Cloudy	0.8E	27	605180	605280	60.0	40	40	1.24	1.24	1.24	74.14	2.8081	2.8175	0.0094	126.8				
		Cloudy	0.8E	27	605280	605380	60.0	40	40	1.24	1.24	1.24	74.14	2.8601	2.8714	0.0113	152.4				
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Greenview Terrance - Outfall (ASR9)	04-Sep-09	Sunny	0.3E	33	535780	535880	60.0	40	40	1.44	1.44	1.44	86.44	2.8933	2.9036	0.0103	119.2	123.0	329.2/500	Breaking by backhoe,excavation work	Traffic
		Sunny	0.3E	33	535880	535980	60.0	40	40	1.44	1.44	1.44	86.44	2.8298	2.8402	0.0104	120.3				
		Sunny	0.3E	33	535980	536080	60.0	40	40	1.44	1.44	1.44	86.44	2.8719	2.8831	0.0112	129.6				
	10-Sep-09	Cloudy	1.5E	31	536080	536180	60.0	40	40	1.44	1.44	1.44	86.44	2.8662	2.8800	0.0138	159.6	108.9		Breaking by backhoe,soil nailing	Traffic
		Cloudy	1.5E	31	536180	536281	60.6	40	40	1.44	1.44	1.44	87.30	2.8620	2.8689	0.0069	79.0				
		Cloudy	1.5E	31	536281	536381	60.0	40	40	1.44	1.44	1.44	86.44	2.8279	2.8355	0.0076	87.9				
	16-Sep-09	Cloudy	0.5E	26	536380	536480	60.0	40	40	1.44	1.44	1.44	86.44	2.8430	2.8557	0.0127	146.9	127.6		Drilling work,Breaking by backhoe	Traffic
		Cloudy	0.5E	26	536480	536580	60.0	40	40	1.44	1.44	1.44	86.44	2.7830	2.7955	0.0125	144.6				
		Cloudy	0.5E	26	536580	536680	60.0	40	40	1.44	1.44	1.44	86.44	2.8178	2.8257	0.0079	91.4				
	22-Sep-09	Sunny	0.5E	30	536680	536780	60.0	40	40	1.44	1.44	1.44	86.44	2.828	2.8362	0.0082	94.9	73.3		Excavation work	Traffic
		Sunny	0.5E	30	536780	536880	60.0	40	40	1.44	1.44	1.44	86.44	2.8002	2.8073	0.0071	82.1				
		Sunny	0.5E	30	536880	536980	60.0	40	40	1.44	1.44	1.44	86.44	2.8122	2.8159	0.0037	42.8				
	28-Sep-09	Cloudy	0.8E	27	536980	537080	60.0	40	40	1.44	1.44	1.44	86.44	2.7862	2.8006	0.0144	166.6	119.5		Breaking by backhoe,excavation work	Traffic
		Cloudy	0.8E	27	537080	537180	60.0	40	40	1.44	1.44	1.44	86.44	2.8140	2.8218	0.0078	90.2				
		Cloudy	0.8E	27	537180	537280	60.0	40	40	1.44	1.44	1.44	86.44	2.8172	2.8260	0.0088	101.8				
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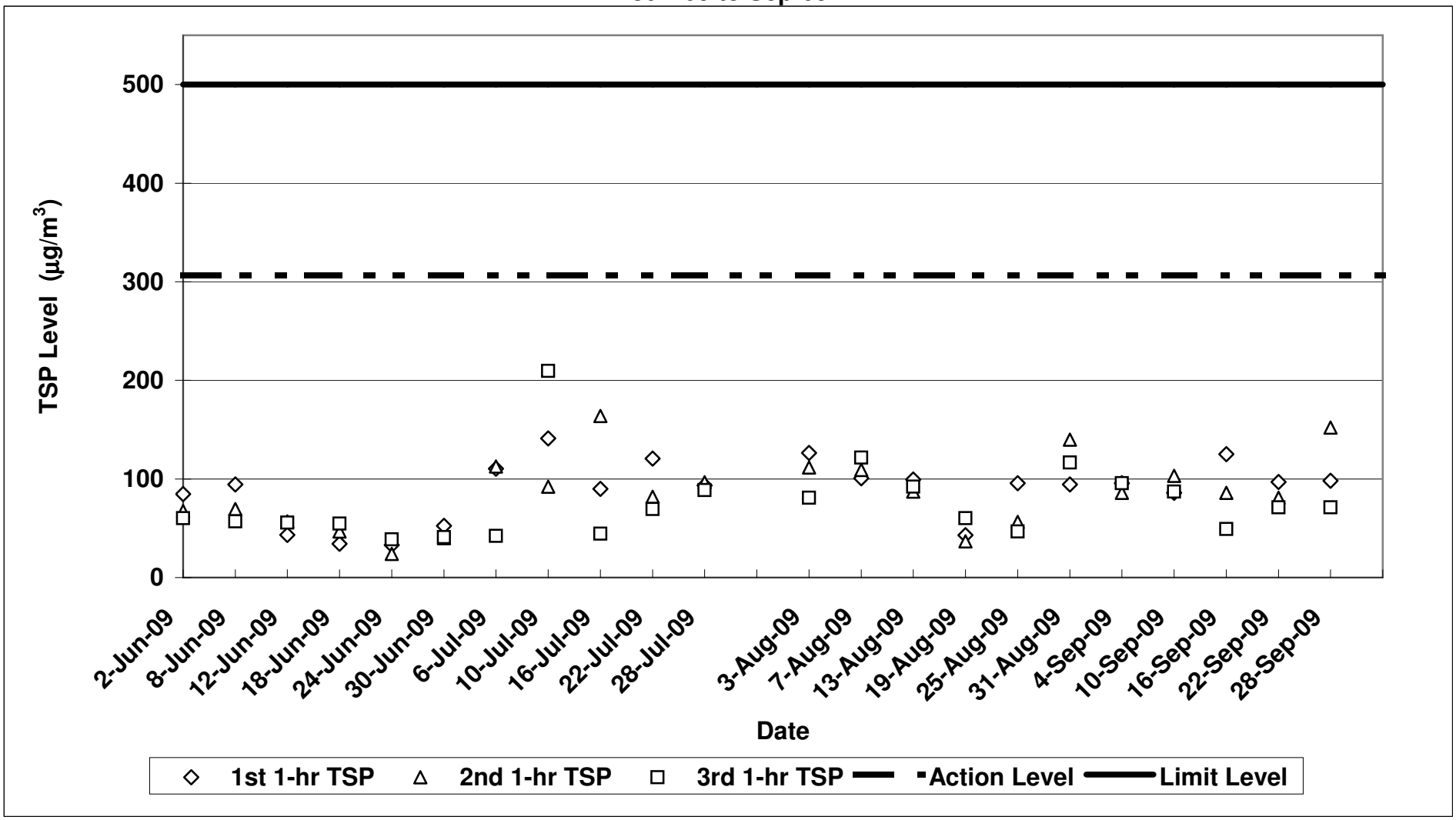
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Air Quality Monitoring (1-hr TSP) Results at Sik Sik Yuen Ho Fung College - Intake (ASR1)
Jun-09 to Sep-09



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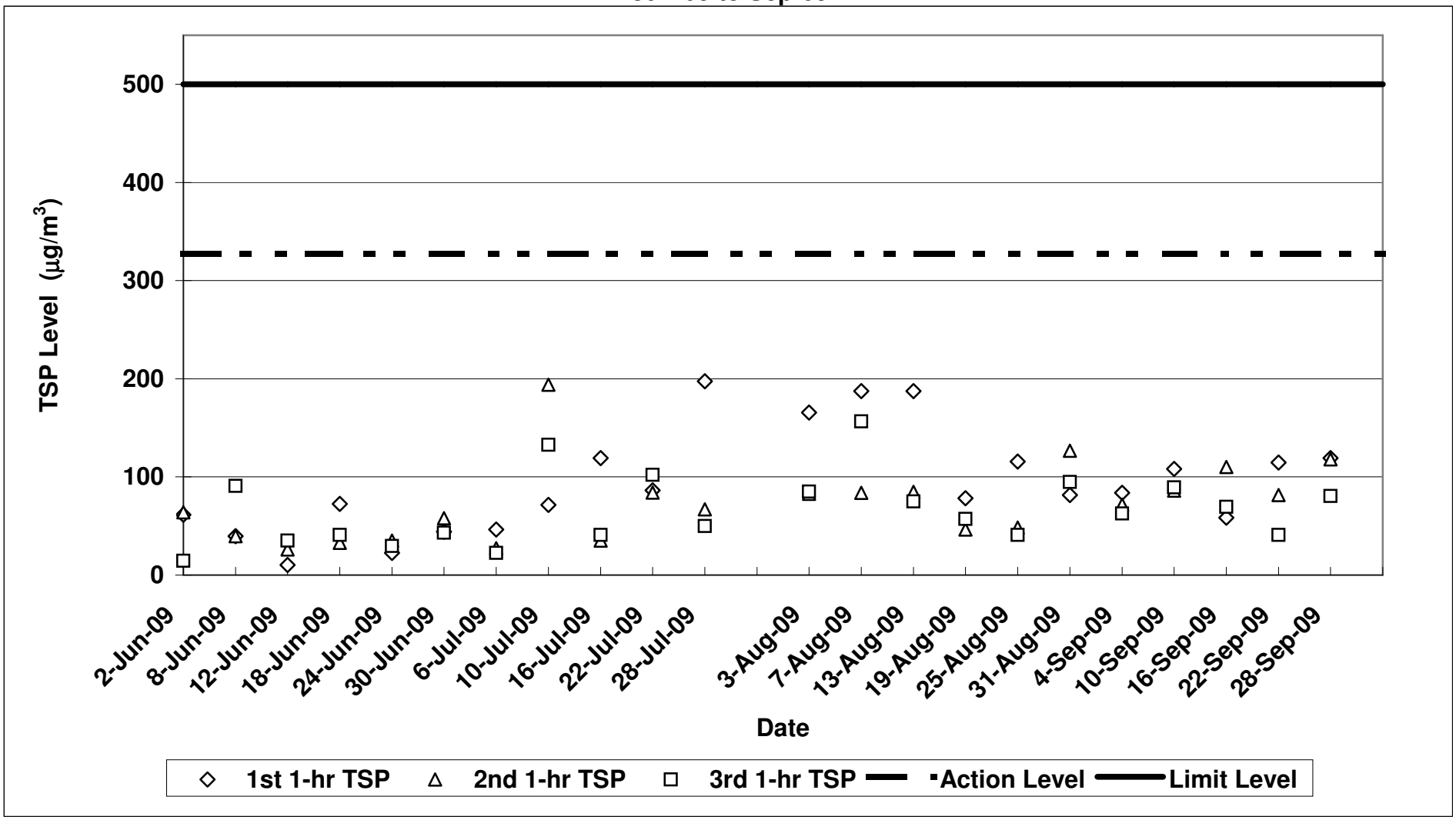
Air Quality Monitoring (1-hr TSP) Results at Hong Hoi Chee Hong Temple - Intake (ASR3)
Jun-09 to Sep-09



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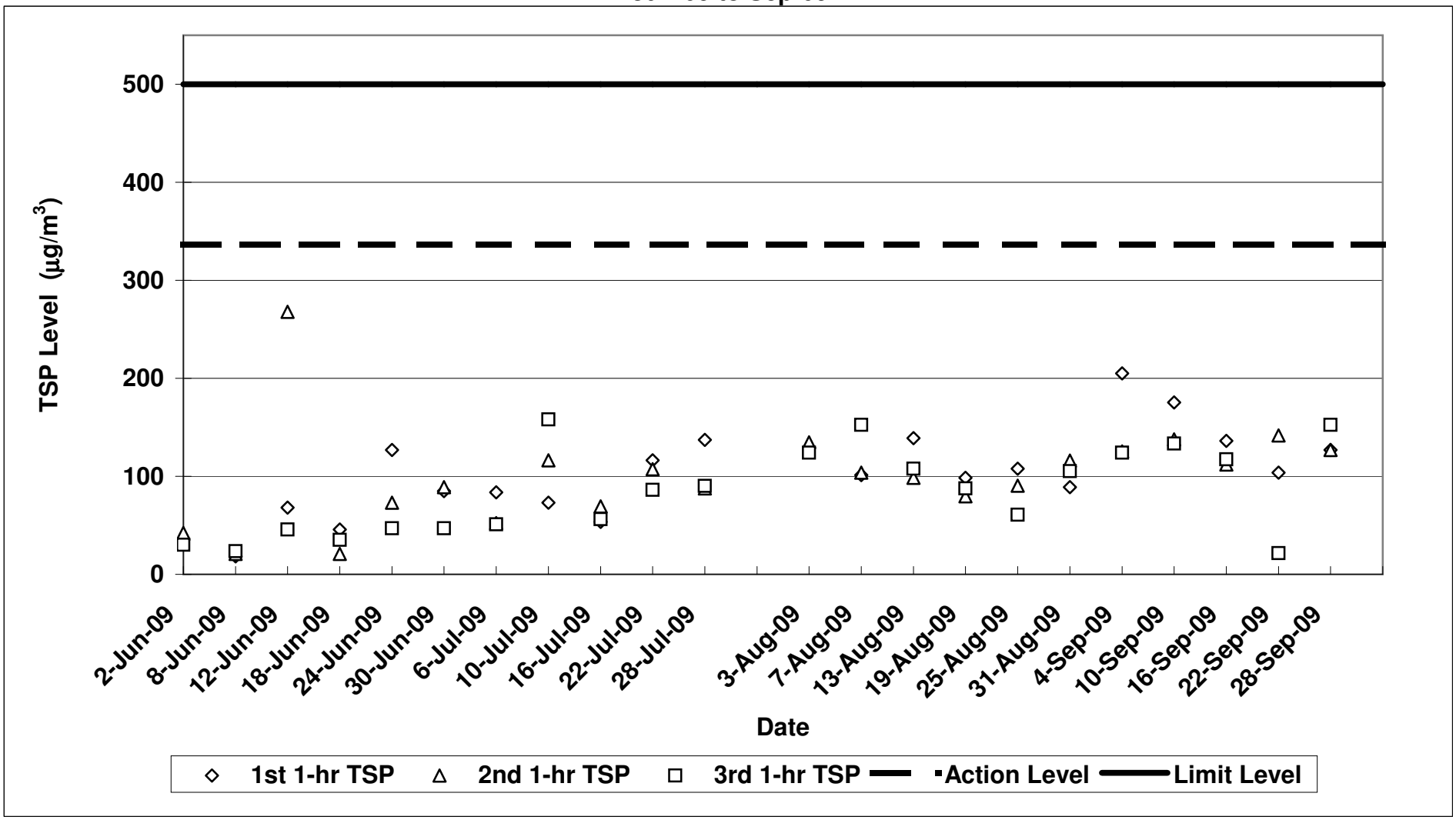
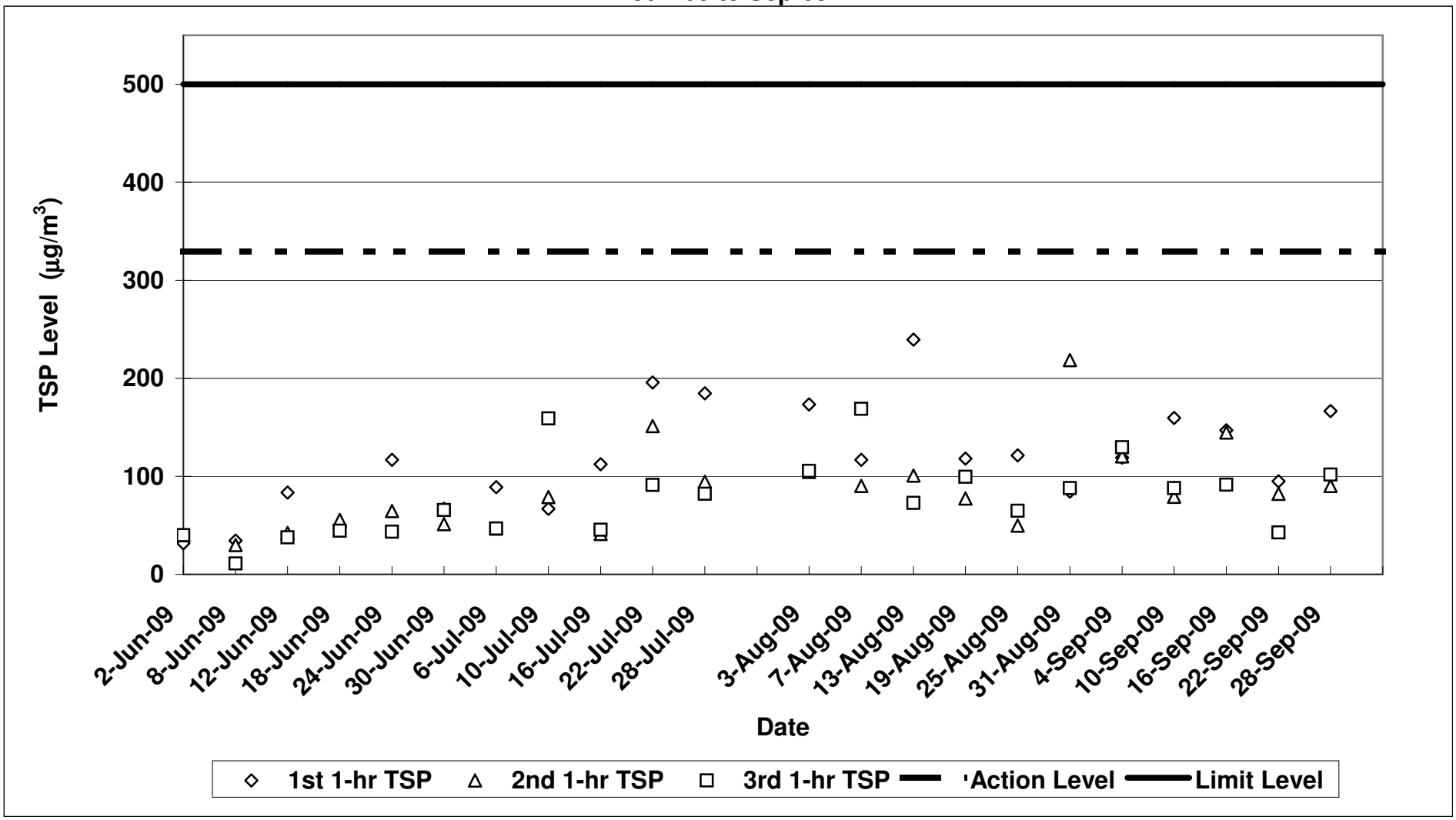
Air Quality Monitoring (1-hr TSP) Results at Long Beach Gardens - Outfall (ASR8)
Jun-09 to Sep-09



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)
Jun-09 to Sep-09



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	10-Sep-09	Sunny	31	1.2	E	14:01	14:31	66.1	70	63.7	66.2	59.8	-	Excavation work	Traffic noise
	16-Sep-09	Cloudy	27	0.3	E	14:50	15:20		70	68.8	70.6	66.0	-	Breaking by backhoe,excavation work	Traffic noise
	22-Sep-09	Sunny	30	0.8	E	16:07	16:37		70	68.5	69.9	65.5	-	Breaking by backhoe,excavation work	Traffic noise
	28-Sep-09	Cloudy	27	0.5	E	11:15	11:45		70	67.6	69.2	65.2	-	Breaking by backhoe,excavation work	Traffic noise
	-	-	-	-	-	-	-		-	-	-	-	-	-	-
Hong Hoi Chee Hong Temple NSR 3	10-Sep-09	Sunny	31	0.5	E	14:40	15:10	57.9	75	68.4	71.8	64.0	-	Breaking by backhoe	Traffic noise, aircraft noise
	16-Sep-09	Cloudy	27	0.3	E	14:10	14:40		75	71.8	74.4	68.5	-	Drilling work	Traffic noise, aircraft noise
	22-Sep-09	Sunny	30	0.5	E	15:28	15:58		75	72.4	73.4	71.2	-	Drilling work, breaking by backhoe	Traffic noise, aircraft noise
	28-Sep-09	Cloudy	27	0.5	E	11:00	11:30		75	67.6	69.0	65.2	-	Breaking by backhoe	Traffic noise
	-	-	-	-	-	-	-		75	-	-	-	-	-	-
Squatters NSR 6	10-Sep-09	Sunny	31	0.3	E	13:05	13:35	61.2	75	55.8	59.0	50.6	-	Excavation work	Aircraft noise
	16-Sep-09	Cloudy	27	0.2	E	13:20	13:50		75	55.7	56.7	54.3	-	Nil	Water fall,aircraft noise
	22-Sep-09	Sunny	30	0.3	E	11:00	11:30		75	56.2	58.0	47.3	-	Excavation work	Birds noise,aircraft noise
	28-Sep-09	Cloudy	27	0.5	E	10:12	10:42		75	55.1	58.6	47.9	-	Excavation work	Birds noise,aircraft noise
	-	-	-	0.2	-	-	-		-	-	-	-	-	-	-
Long Beach Gardens NSR 8	4-Sep-09*	Cloudy	27	0.2	E	11:05	11:35	60.9	75	67.9	71.3	64.5	-	Excavation work, breaking by backhoe	Traffic noise, aircraft noise
	10-Sep-09	Sunny	31	1.8	E	10:50	11:20		75	66.9	69.7	63.8	-	Excavation work	Traffic noise
	11-Sep-09*	Sunny	30	0.5	E	10:30	11:00		75	66.9	69.2	63.2	-	Breaking by backhoe,excavation work	Traffic noise
	16-Sep-09	Cloudy	27	0.8	E	16:12	16:42		75	67.1	69.3	64.0	-	Drilling work,Breaking by backhoe	Traffic noise, aircraft noise
	18-Sep-09*	Sunny	30	0.5	E	10:35	11:05		75	64.0	65.8	62.3	-	Breaking by backhoe,excavation & drilling work	Traffic noise
	22-Sep-09	Sunny	30	0.5	E	14:00	14:30		75	67.6	69.3	63.3	-	Breaking by backhoe,excavation work	Traffic noise, aircraft noise
	25-Sep-09*	Sunny	30	0.8	E	16:20	16:50		75	66.6	68.8	63.5	-	Breaking by backhoe, excavation work	Traffic noise
	28-Sep-09	Cloudy	27	0.8	E	08:45	09:15		75	67.8	71.4	61.5	-	Breaking by backhoe,excavation work	Traffic noise
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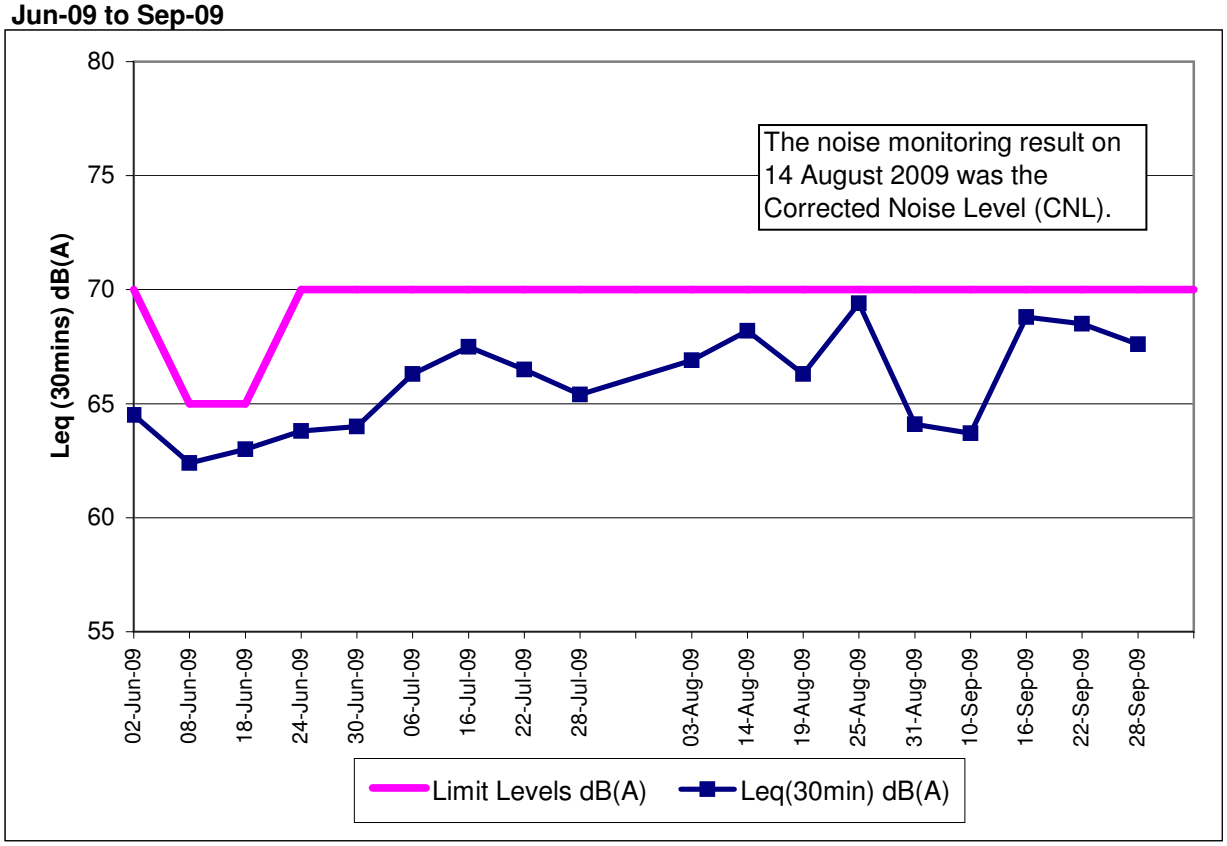
Greenview Terrace NSR 9	4-Sep-09*	Cloudy	27	0.4	E	10:20	10:50	59.7	75	72.8	75.9	66.7	-	Excavation work, breaking by backhoe	Traffic noise
	10-Sep-09	Sunny	31	0.5	E	09:55	10:25		75	69.9	73.0	63.6	-	Excavation work	Traffic noise
	11-Sep-09*	Sunny	30	0.5	E	09:50	10:20		75	71.9	74.8	67.4	-	Breaking by backhoe,excavation work	Traffic noise
	16-Sep-09	Cloudy	27	0.5	E	15:30	16:00		75	71.2	74.0	65.9	-	Drilling work,Breaking by backhoe	Traffic noise, aircraft noise
	18-Sep-09*	Sunny	30	1.3	E	09:40	10:10		75	71.9	75.1	66.1	-	Breaking by backhoe,excavation & drilling work	Traffic noise, aircraft noise
	22-Sep-09	Sunny	30	0.5	E	14:38	15:08		75	73.2	76.0	66.4	-	Breaking by backhoe,excavation work	Traffic noise
	25-Sep-09*	Sunny	30	0.8	E	15:40	16:10		75	74.8	78.3	66.1	-	Breaking by backhoe,decoration at 14/F	Traffic noise
	28-Sep-09	Cloudy	27	0.8	E	09:30	10:00		75	72.4	75.1	65.1	-	Breaking by backhoe,excavation work	Traffic noise
	-	-	-	-	-	-	-		-	-	-	-	-	-	-

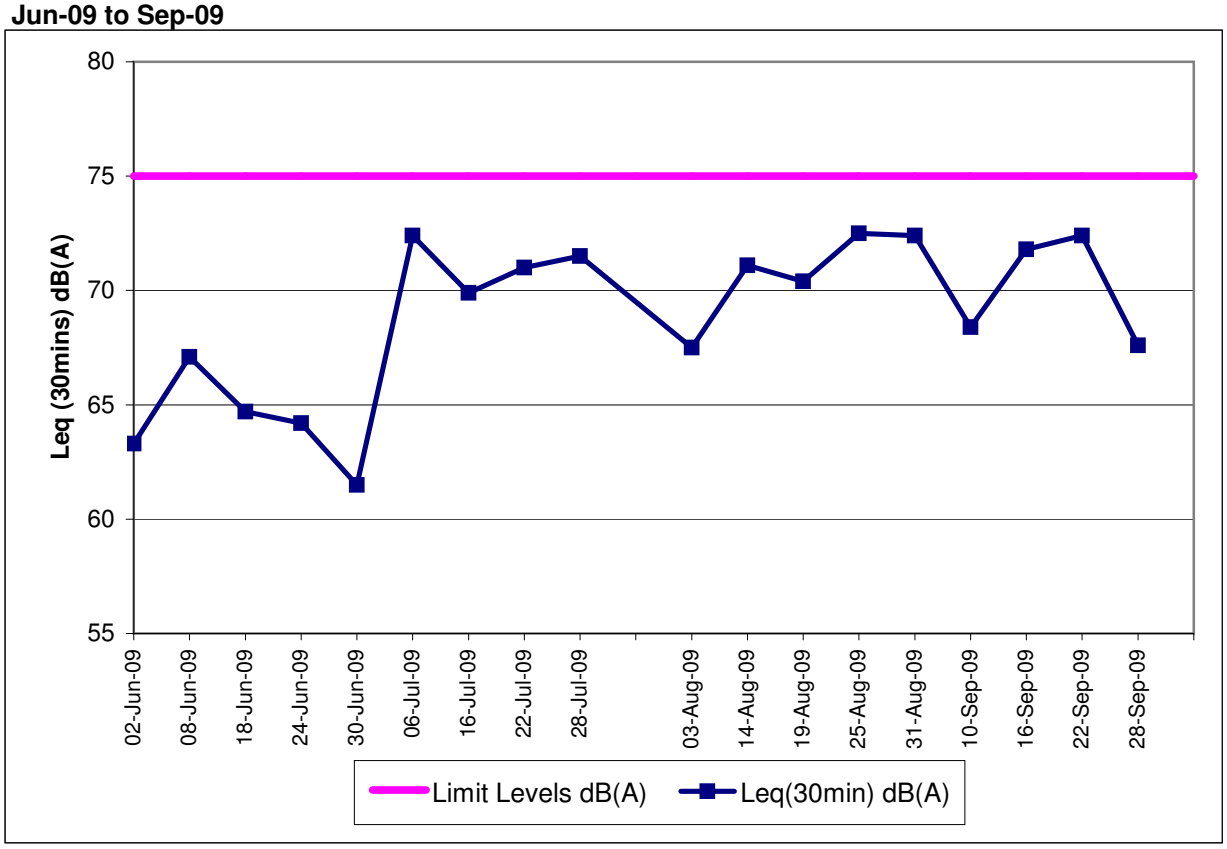
1: Baseline Noise Level
2: Limit Level
3: Corrected Noise Level

Note:
The limit level of NSR1 is 65dB(A) during school examination period.
Red Bold indicates an exceedance of Limit Level
* means additional noise monitoring dut to documented complaints

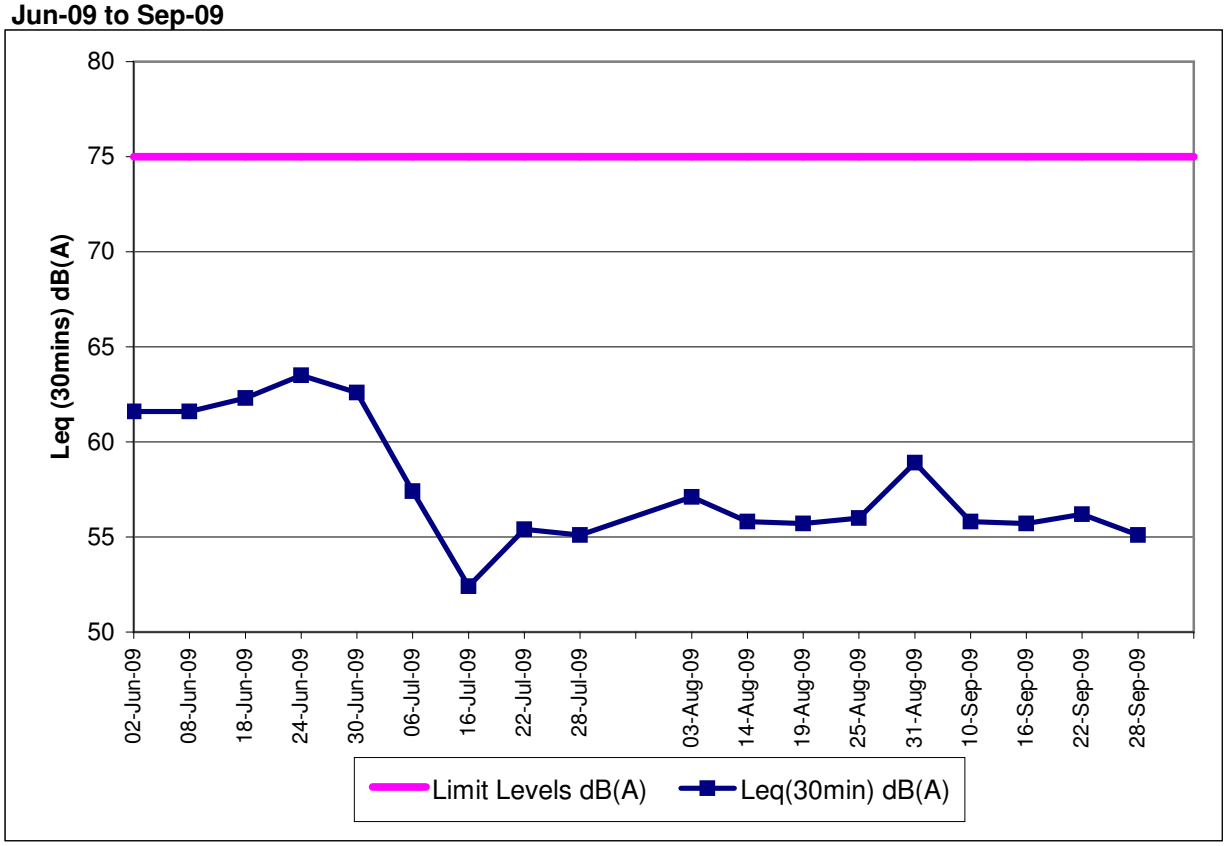
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Noise Monitoring Results at Sik Sik Yuen Ho Fung College (NSR 1)
Jun-09 to Sep-09



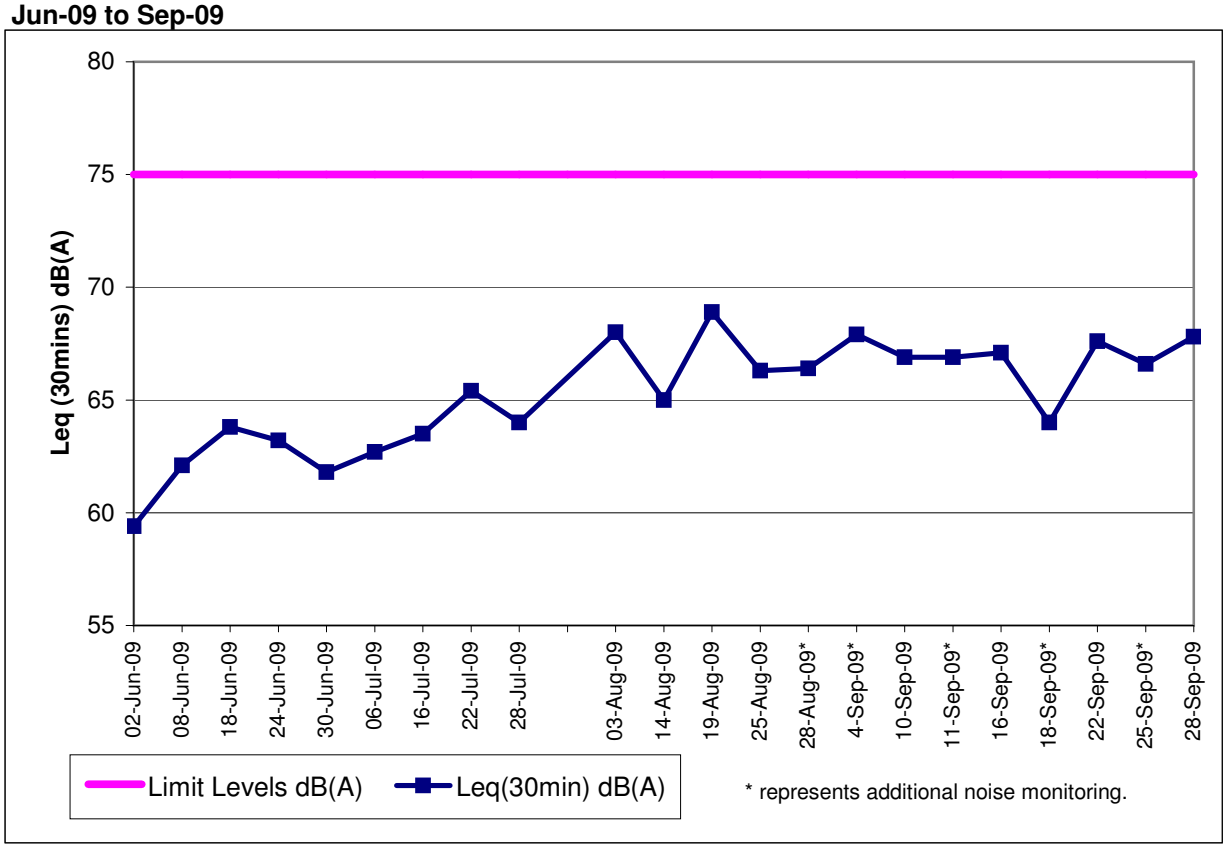
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Noise Monitoring Results at Hong Hoi Chee Hong Temple (NSR 3)
Jun-09 to Sep-09



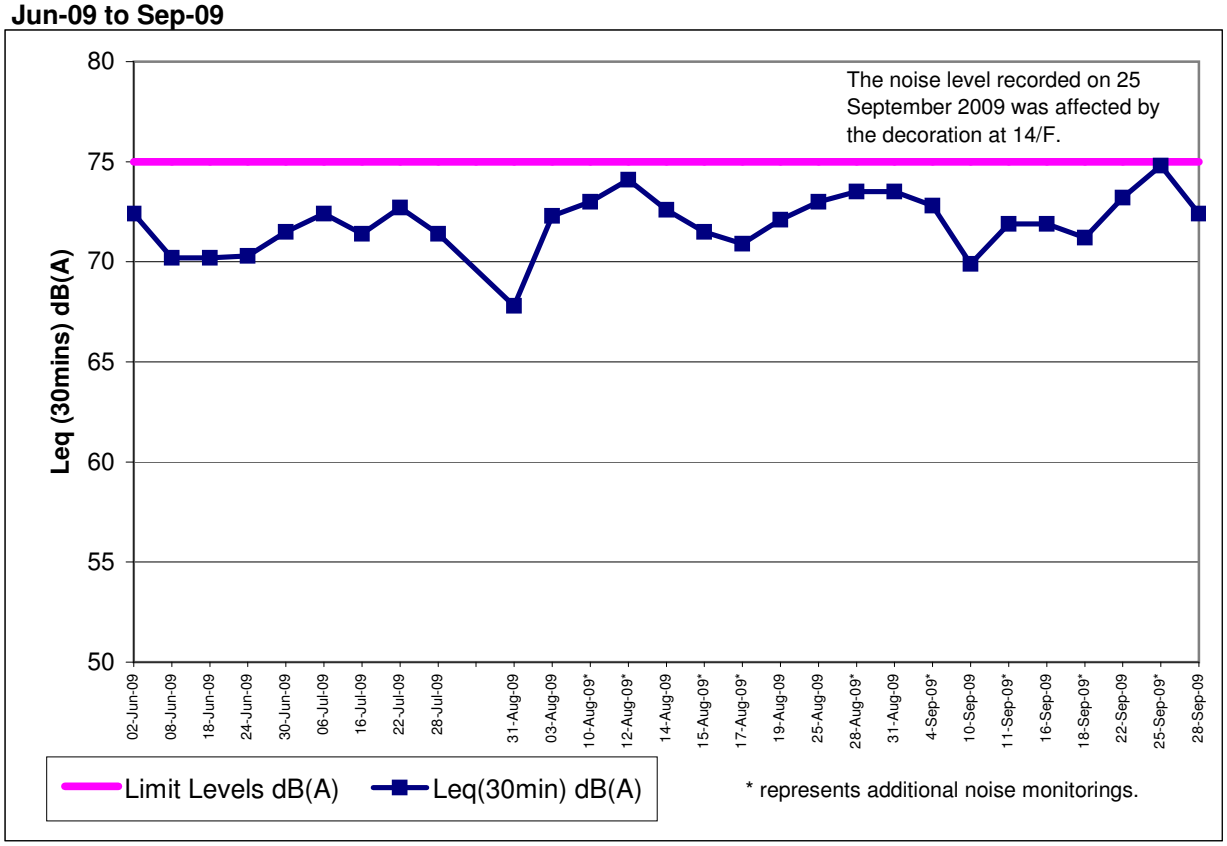
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Noise Monitoring Results at Squatters (NSR 6)
Jun-09 to Sep-09



Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Noise Monitoring Results at Long Beach Gardens (NSR 8)
Jun-09 to Sep-09



Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Noise Monitoring Results at Greenview Terrace (NSR 9)
Jun-09 to Sep-09



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

Water Quality Impact Monitoring Results

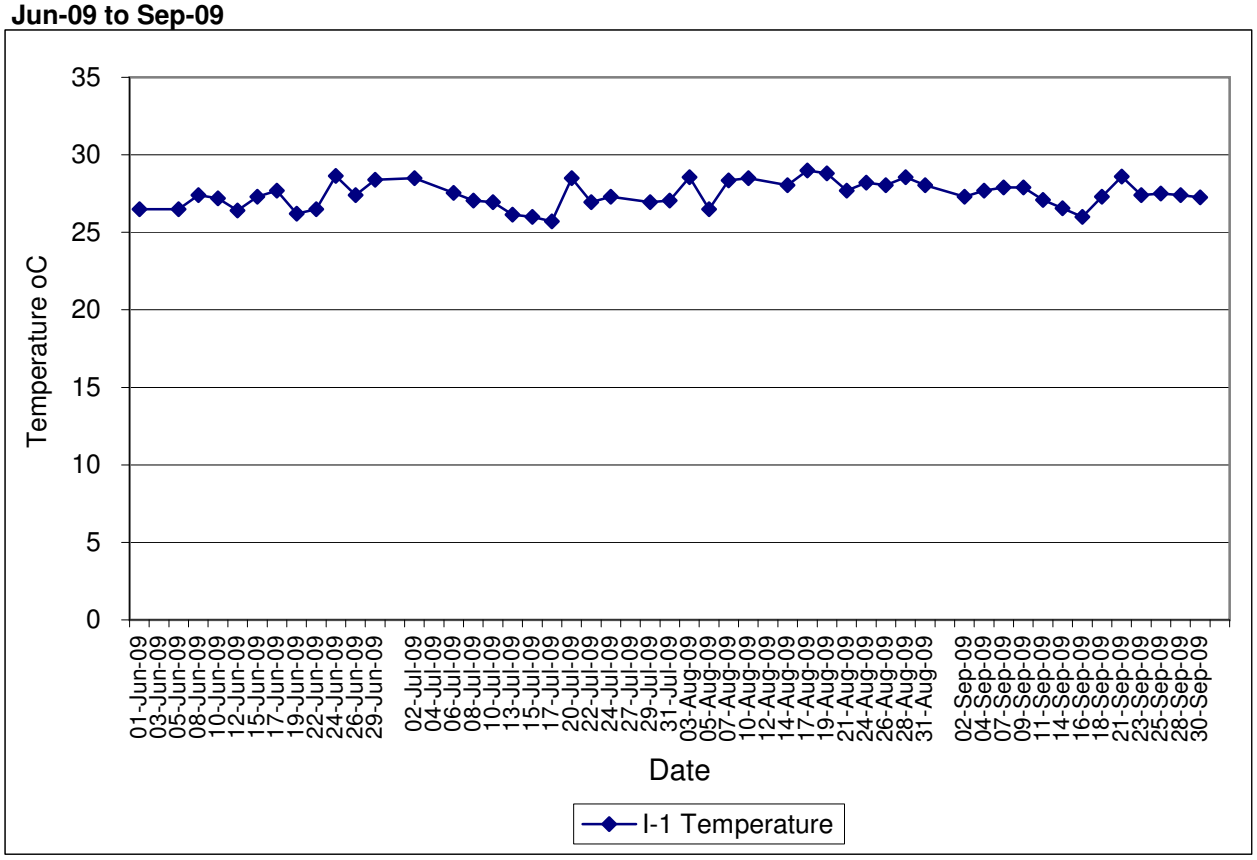
Monitoring Locations	Date	Start Time	Weather	Water Depth(m)	Temp 1	Temp 2	Temp Avg	DO(mg/L) 1	DO(mg/L) 2	DO(mg/L) Avg	Action/Limit Level of DO(mg/L)	pH 1	pH 2	pH Avg	Turbidity(NTU) 1	Turbidity(NTU) 2	Turbidity(NTU) Avg	Action/Limit Level of Tby	SS (mg/L) 1	SS (mg/L) 2	SS (mg/L) Avg	Action/Limit Level of SS(mg/L)	Remarks:	Action to be taken
Sik Sik Yuen Ho Fung College I-1	02-Sep-09	09:38	Sunny	<1	27.30	27.30	27.30	5.59	5.63	5.61	3.42 / 3.34	6.74	6.73	6.74	2.21	2.27	2.24	9.75 / 12.47	2.0	2.0	2.0	8.85 / 10.17	Nil	Nil
	04-Sep-09	10:10	Sunny	<1	27.70	27.70	27.70	5.32	5.38	5.35		6.81	6.80	6.81	2.60	2.52	2.56		2.0	2.0	2.0		Nil	Nil
	07-Sep-09	09:47	Sunny	<1	27.90	27.90	27.90	5.89	5.94	5.92		5.82	5.83	5.83	2.86	2.97	2.92		2.3	2.1	2.2		Nil	Nil
	09-Sep-09	09:35	Sunny	<1	27.90	27.90	27.90	5.33	5.37	5.35		7.30	7.30	7.30	5.38	5.25	5.32		2.4	3.0	2.7		Nil	Nil
	11-Sep-09	09:40	Cloudy	<1	27.10	27.10	27.10	5.23	5.28	5.26		7.00	6.99	7.00	3.92	3.85	3.89		5.2	4.5	**4.9**		Nil	The exceedance was considered not to be project-related.
	14-Sep-09	10:00	Cloudy	<1	26.50	26.60	26.55	5.02	5.09	5.06		7.07	7.05	7.06	3.90	3.85	3.88		8.8	7.8	8.3		Nil	Nil
	16-Sep-09	11:27	Cloudy	<1	26.00	26.00	26.00	4.45	4.49	4.47		7.25	7.26	7.26	6.59	6.63	6.61		3.1	3.4	*3.3*		Breaking by backhoe,excavation work	The exceedance was considered not to be project-related.
	18-Sep-09	10:07	Sunny	<1	27.30	27.30	27.30	3.38	3.48	3.43		7.52	7.52	7.52	2.43	2.55	2.49		2.0	2.0	2.0		Nil	Nil
	21-Sep-09	10:10	Sunny	<1	28.60	28.60	28.60	3.58	3.55	3.57		7.65	7.66	7.66	2.05	2.13	2.09		2.0	2.0	2.0		Nil	Nil
	23-Sep-09	10:00	Sunny	<1	27.40	27.40	27.40	3.81	3.88	3.85		7.65	7.65	7.65	5.37	5.46	5.42		4.0	4.8	4.4		Nil	Nil
	25-Sep-09	09:25	Cloudy	<1	27.50	27.50	27.50	5.30	5.35	5.33		7.70	7.71	7.71	4.20	4.15	4.18		4.6	4.0	4.3		Nil	Nil
	28-Sep-09	09:30	Cloudy	<1	27.40	27.40	27.40	5.42	5.53	5.48		7.22	7.22	7.22	4.20	4.17	4.19		2.0	2.0	2.0		Breaking by backhoe,excavation work	Nil
	30-Sep-09	09:10	Sunny	<1	27.20	27.30	27.25	7.32	7.31	7.32		7.52	7.52	7.52	2.43	2.45	2.44		2.0	2.0	2.0		Nil	Nil
	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-		-	-	-		-	-
Sik Sik Yuen Ho Fung College I-1-C	02-Sep-09	09:25	Sunny	<1	27.40	27.40	27.40	5.32	5.25	5.29	- /-	6.78	6.78	6.78	2.46	2.51	2.49	- /-	2.0	2.0	2.0	- /-	Nil	Nil
	04-Sep-09	10:00	Sunny	<1	28.00	28.10	28.05	4.09	4.20	4.15		6.85	6.85	6.85	2.75	2.86	2.81		2.0	2.0	2.0		Nil	Nil
	07-Sep-09	09:36	Sunny	<1	27.60	27.70	27.65	5.75	5.80	5.78		5.84	5.84	5.84	3.75	3.70	3.73		2.0	2.0	2.0		Nil	Nil
	09-Sep-09	09:25	Sunny	<1	28.10	28.20	28.15	5.60	5.65	5.63		7.40	7.41	7.41	5.60	5.47	5.54		2.9	2.5	2.7		Nil	Nil
	11-Sep-09	09:27	Cloudy	<1	27.20	27.20	27.20	5.04	5.09	5.07		6.86	6.85	6.86	4.10	4.02	4.06		2.0	2.4	2.2		Nil	Nil
	14-Sep-09	09:50	Cloudy	<1	27.00	26.90	26.95	5.12	5.07	5.10		7.10	7.11	7.11	4.07	3.95	4.01		9.1	8.3	8.7		Nil	Nil
	16-Sep-09	11:15	Cloudy	<1	25.70	25.70	25.70	4.57	4.53	4.55		7.30	7.30	7.30	7.07	7.12	7.10		3.0	2.4	2.7		Nil	Nil
	18-Sep-09	09:55	Sunny	<1	27.20	27.20	27.20	3.11	3.18	3.15		7.50	7.50	7.50	2.65	2.68	2.67		2.0	2.0	2.0		Nil	Nil
	21-Sep-09	09:55	Sunny	<1	28.30	28.30	28.30	3.48	3.44	3.46		7.69	7.70	7.70	2.18	2.23	2.21		2.0	2.0	2.0		Nil	Nil
	23-Sep-09	09:50	Sunny	<1	27.20	27.20	27.20	4.01	4.06	4.04		7.67	7.67	7.67	5.93	5.90	5.92		4.1	5.0	4.6		Nil	Nil
	25-Sep-09	09:10	Cloudy	<1	27.40	27.50	27.45	5.36	5.43	5.40		7.76	7.75	7.76	4.39	4.31	4.35		3.3	4.0	3.7		Nil	Nil
	28-Sep-09	09:15	Cloudy	<1	27.20	27.20	27.20	5.58	5.53	5.56		7.22	7.22	7.22	4.44	4.25	4.35		2.0	2.0	2.0		Nil	Nil
	30-Sep-09	09:25	Sunny	<1	27.30	27.40	27.35	7.65	7.52	7.59		7.43	7.44	7.44	2.57	2.63	2.60		2.0	2.0	2.0		Nil	Nil
	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-		-	-	-		-	-
Hong Hoi Chee Hong Temple I-2	02-Sep-09	09:00	Sunny	<1	27.60	27.60	27.60	4.72	4.80	4.76	3.66 / 3.63	6.82	6.81	6.82	1.02	1.07	1.05	6.63 / 6.99	2.0	2.0	2.0	7.68 / 8.34	Nil	Nil
	04-Sep-09	09:45	Sunny	<1	27.90	28.00	27.95	4.48	4.42	4.45		6.90	6.90	6.90	1.00	1.05	1.03		2.0	2.0	2.0		Nil	Nil
	07-Sep-09	09:15	Sunny	<1	27.80	27.80	27.80	5.09	5.21	5.15		5.97	5.98	5.98	2.43	2.38	2.41		2.0	2.0	2.0		Nil	Nil
	09-Sep-09	09:00	Sunny	<1	28.20	28.20	28.20	5.06	5.01	5.04		7.20	7.20	7.20	3.15	3.06	3.11		2.4	2.1	2.3		Nil	Nil
	11-Sep-09	09:05	Cloudy	<1	26.80	26.80	26.80	5.48	5.44	5.46		7.15	7.16	7.16	1.50	1.42	1.46		2.0	2.0	2.0		Nil	Nil
	14-Sep-09	09:30	Cloudy	<1	26.60	26.50	26.55	4.63	4.71	4.67		7.18	7.19	7.19	2.05	2.11	2.08		3.2	3.0	3.1		Nil	Nil
	16-Sep-09	10:48	Cloudy	<1	25.20	25.30	25.25	4.34	4.30	4.32		7.69	7.69	7.69	3.25	3.37	3.31		2.8	2.3	2.6		Drilling work	Nil
	18-Sep-09	09:28	Sunny	<1	27.70	27.70	27.70	3.96	4.08	4.02		7.45	7.44	7.45	2.40	2.50	2.45		2.0	2.0	2.0		Nil	Nil
	21-Sep-09	09:30	Sunny	<1	28.80	28.80	28.80	3.66	3.75	3.71		7.56	7.56	7.56	1.33	1.30	1.32		2.0	2.0	2.0		Nil	Nil
	23-Sep-09	09:20	Sunny	<1	27.20	27.20	27.20	3.97	4.05	4.01		7.64	7.64	7.64	1.38	1.44	1.41		2.0	2.0	2.0		Nil	Nil
	25-Sep-09	10:05	Cloudy	<1	27.70	27.70	27.70	5.35	5.41	5.38		7.60	7.62	7.61	1.09	1.05	1.07		2.2	2.2	2.2		Nil	Nil
	28-Sep-09	10:20	Cloudy	<1	27.40	27.40	27.40	5.35	5.22	5.29		7.61	7.61	7.61	3.45	3.47	3.46		2.0	2.0	2.0		Breaking by backhoe	Nil
	30-Sep-09	09:49	Sunny	<1	27.20	27.50	27.35	7.35	7.44	7.40		7.52	7.52	7.52	2.36	2.41	2.39		2.0	2.0	2.0		Nil	Nil
	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-		-	-	-		-	-
Hong Hoi Chee Hong Temple I-2-C	02-Sep-09	08:50	Sunny	<1	27.80	27.80	27.80	4.61	4.58	4.60	- /-	6.81	6.80	6.81	1.12	1.17	1.15	- /-	2.0	2.0	2.0	- /-	Nil	Nil
	04-Sep-09	09:35	Sunny	<1	27.70	27.70	27.70	4.57	4.63	4.60		6.92	6.92	6.92	1.10	1.07	1.09		2.0	2.0	2.0		Nil	Nil
	07-Sep-09	09:05	Sunny	<1	28.00	28.00	28.00	5.42	5.47	5.45		6.00	6.00	6.00	2.60	2.53	2.57		2.0	2.0	2.0		Nil	Nil
	09-Sep-09	08:50	Sunny	<1	28.10	28.00	28.05	4.97	5.03	5.00		7.25	7.26	7.26	3.23	3.31	3.27		2.8	2.4	2.6		Nil	Nil
	11-Sep-09	08:55	Cloudy	<1	27.00	26.90	26.95	5.20	5.28	5.24		7.11	7.12	7.12	1.58	1.63	1.61		2.0	2.0	2.0		Nil	Nil
	14-Sep-09	09:18	Cloudy	<1	26.70	26.70	26.70	4.93	4.89	4.91		7.15	7.16	7.16	2.15	2.22	2.19		2.7	3.5	3.1		Nil	Nil
	16-Sep-09	10:38	Cloudy	<1	25.50	25.50	25.50	4.40	4.37	4.39		7.65	7.65	7.65	3.50	3.47	3.49		2.2	2.6	2.4		Nil	Nil
	18-Sep-09	09:18	Sunny	<1	27.00	27.00	27.00	3.13	3.18	3.16		7.40	7.41	7.41	2.50	2.58	2.54		2.0	2.0	2.0		Nil	Nil
	21-Sep-09	09:20	Sunny	<1	28.90	28.90	28.90	3.56	3.59	3.58		7.60	7.60	7.60	1.37	1.44	1.41		2.0	2.0	2.0		Nil	Nil
	23-Sep-09	09:10	Sunny	<1	27.00	27.00	27.00	4.16	4.10	4.13		7.65	7.65	7.65	1.57	1.62	1.60		2.0	2.0	2.0		Nil	Nil
	25-Sep-09	09:55	Cloudy	<1	27.40	27.40	27.40	5.31	5.26	5.29		7.60	7.61	7.61	1.11	1.17	1.14		2.0	2.0	2.0		Nil	Nil
	28-Sep-09	09:55	Cloudy	<1	27.40	27.40	27.40	5.45	5.55	5.50		7.66	7.66	7.66	4.22	4.38	4.30		2.0	2.0	2.0		Nil	Nil
	30-Sep-09	09:35	Sunny	<1	27.10	27.10	27.10	7.48	7.62	7.55		7.52	7.52	7.52	2.51	2.58	2.55		2.0	2.0	2.0		Nil	Nil
	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-		-	-	-		-	-
Squatters I-3	02-Sep-09	10:20	Sunny	<1	27.90	27.90	27.90	4.96	5.03	5.00	3.65 / 3.51	6.98	6.97	6.98	1.11	1.22	1.17	3.99 / 4.18	2.0	2.0	2.0	6.13 / 7.23	Nil	Nil
	04-Sep-09	11:33	Sunny	<1	28.00	28.10	28.05	4.58	4.64	4.61		7.40	7.40	7.40	1.30	1.35	1.33		2.0	2.0	2.0		Nil	Nil
	07-Sep-09	10:29	Sunny	<1	27.70	27.70	27.70	5.41	5.47	5.44		6.00	5.99	6.00	2.07	2.18	2.13		2.0	2.0	2.0		Nil	Nil
	09-Sep-09	10:15	Sunny	<1	27.80	27.90	27.85	4.26	4.22	4.24		7.13	7.13	7.13	2.05	2.09	2.07		2.0	2.0	2.0		Nil	Nil
	11-Sep-09	10:20	Cloudy	<1	27.10	27.20	27.15	5.35	5.40	5.38		7.37	7.38	7.38	2.18	2.23	2.21		2.0	2.0	2.0		Nil	Nil
	14-Sep-09	10:47	Cloudy	<1	26.20	26.20	26.20	4.83	4.89	4.86		6.90	6.91	6.91	2.35	2.41	2.38		3.3	2.3	**2.8**		Nil	The exceedance was considered not to be project-related.
	16-Sep-09	13:10	Cloudy	<1	25.30	25.30	25.30	4.58	4.65	4.62		7.48	7.48	7.48	3.88	4.06	3.97		2.0	2.0	2.0		Nil	Nil
	18-Sep-09	10:50	Sunny	<1	27.50	27.50	27.50	3.66	3.82	3.74		7.28	7.27	7.28	2.60	2.65	2.63		2.0	2.0	2.0		Nil	Nil
	21-Sep-09	11:08	Sunny	<1	28.60	28.60	28.60	3.72	3.77	3.75		7.45	7.46	7.46	1.41	1.46	1.44		2.0	2.0	2.0		Nil	Nil
	23-Sep-09	11:00	Sunny	<1	26.30	26.40	26.35	3.88	3.94	3.91		7.69	7.68	7.69	1.39	1.43	1.41		2.0	2.0	2.0		Nil	Nil
	25-Sep-09	11:00	Cloudy	<1	27.20	27.20	27.20	5.57	5.59	5.58		7.58	7.57	7.58	1.65	1.61	1.63		2.0	2.0	2.0		Nil	Nil
	28-Sep-09	11:00	Cloudy	<1	27.50	27.50	27.50	5.33	5.28	5.31		7.70	7.71	7.71	3.22	3.18	3.20		2.0	2.0	2.0		Excavation work	Nil
	30-Sep-09	10:48	Sunny	<1	27.50	27.40	27.45	7.52	7.48	7.50		7.41	7.41	7.41	2.25	2.31	2.28		2.0	2.0	2.0		Nil	Nil
	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-		-	-	-		-	-
Squatters I-3-C	02-Sep-09	10:07	Sunny	<1	27.90	27.90	27.90	5.38	5.35	5.37	- /-	6.98	6.98	6.98	1.44	1.50	1.47	- /-	2.0	2.0	2.0	- /-	Nil	Nil
	04-Sep-09	11:20	Sunny	<1	28.10	28.10	28.10	4.78	4.84	4.81		7.36	7.37	7.37	1.45	1.42	1.44		2.0	2.0	2.0		Nil	Nil
	07-Sep-09	10:18	Sunny	<1	27.60	27.60	27.60	5.64	5.56	5.60		6.01	6.00	6.01	2.47	2.55	2.51		2.0	2.0	2.0		Nil	Nil
	09-Sep-09	10:03	Sunny	<1	28.00	27.90	27.95	4.47	4.41	4.44		7.15	7.16	7.16	2.18	2.11	2.15		2.0	2.0	2.0		Nil	Nil
	11-Sep-09	10:05	Cloudy	<1	27.20	27.20	27.20	5.35	5.41	5.38		7.40	7.39	7.40	2.31	2.27	2.29		2.0	2.0	2.0		Nil	Nil
	14-Sep-09	10:35	Cloudy	<1	26.30	26.20	26.25	4.77	4.84	4.81		6.95	6.95	6.95	2.50	2.45	2.48		2.0	2.1	2.1		Nil	Nil
	16-Sep-09	13:00	Cloudy	<1	25.30	25.40	25.35	4.36	4.28	4.32		7.50	7.49	7.50	4.03	4.12	4.08		2.6	2.1	2.4		Nil	Nil
	18-Sep-09	10:40	Sunny	<1	27.20	27.20	27.20	3.56	3.42	3.49		7.25	7.26	7.26	2.66	2.69	2.68		2.0	2.0	2.0		Nil	Nil
	21-Sep-09	10:55	Sunny	<1	28.50	28.50	28.50	3.79	3.82	3.81		7.43	7.44	7.44	1.52	1.57	1.55		2.0	2.0	2.0		Nil	Nil
	23-Sep-09	10:50	Sunny	<1	26.10	26.00	26.05	3.87	3.92	3.90		7.72	7.72	7.72	1.45	1.50	1.48		2.0	2.3	2.2		Nil	Nil
	25-Sep-09	10:40	Cloudy	<1	27.20	27.20	27.20	5.49	5.45	5.47		7.60	7.61	7.61	1.70	1.77	1.74		2.0	2.0	2.0		Nil	Nil
	28-Sep-09	10:30	Cloudy	<1	27.40	27.40	27.40	5.46	5.42	5.44		7.15	7.15	7.15	3.44	3.36	3.40		2.0	2.0	2.0		Nil	Nil
	30-Sep-09	10:35	Sunny	<1	27.50	27.50	27.50	7.15	7.22	7.19		7.41	7.42	7.42	2.57	2.55	2.56		2.0	2.0	2.0		Nil	Nil
	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-		-	-	-		-	-

Note:

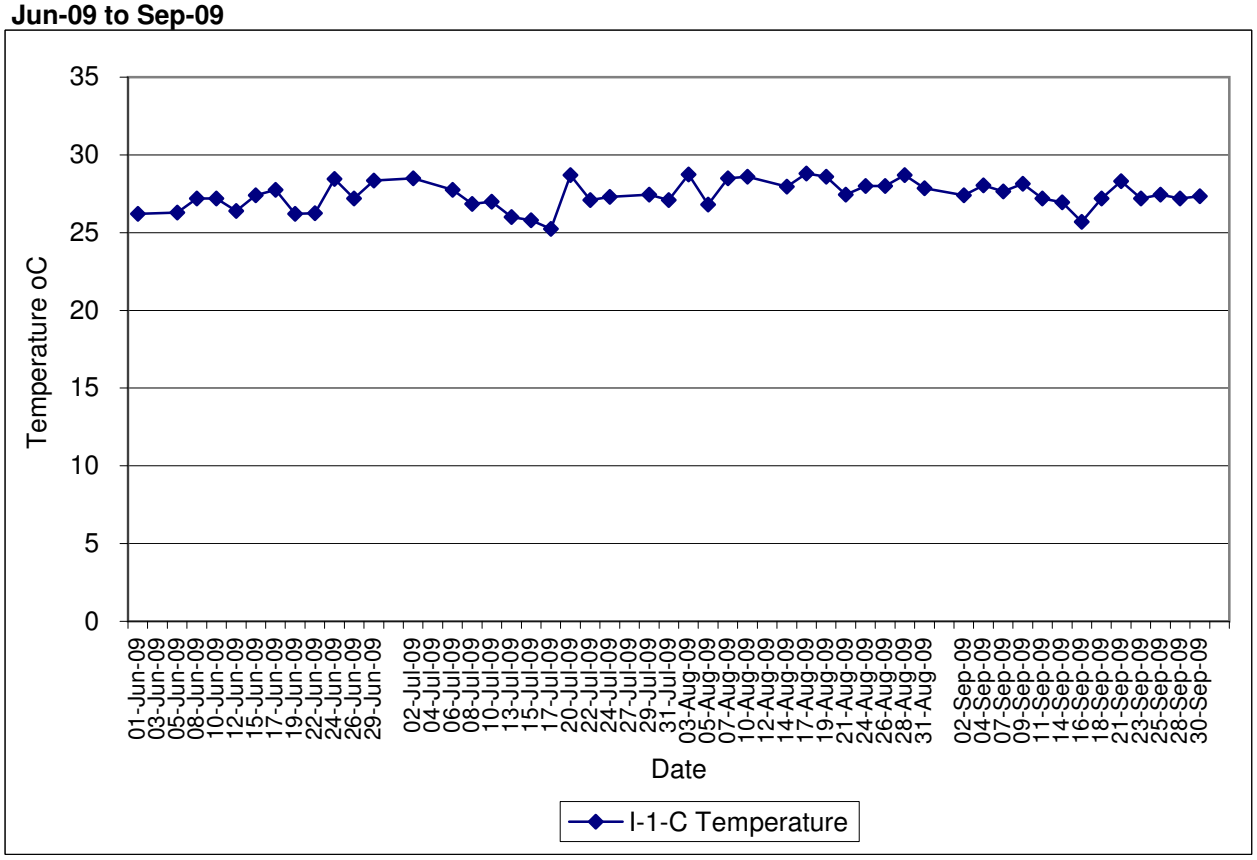
Blue Italic indicates an exceedance of Action Level

Red Bold indicates an exceedance of Limit Level

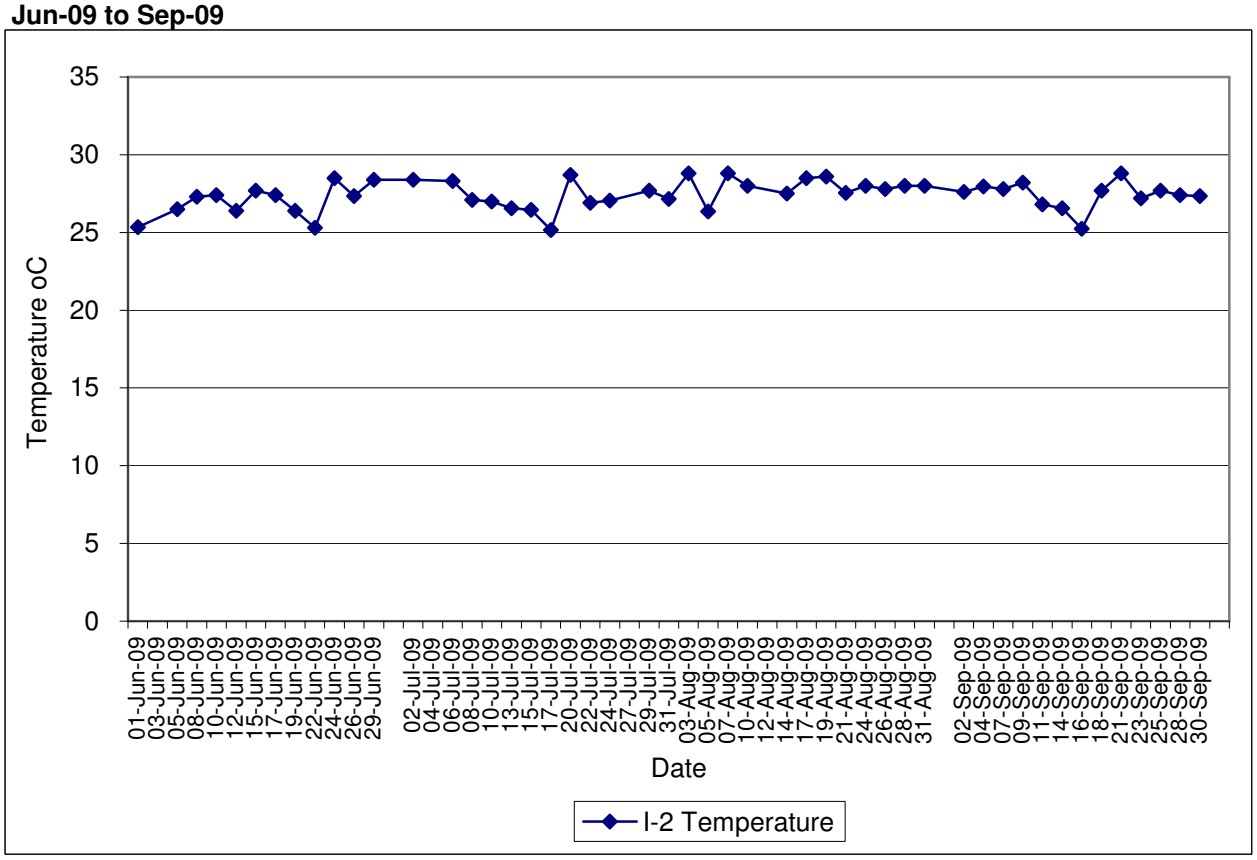
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Water Quality Results at Sik Sik Yuen Ho Fung College (I-1)
Jun-09 to Sep-09



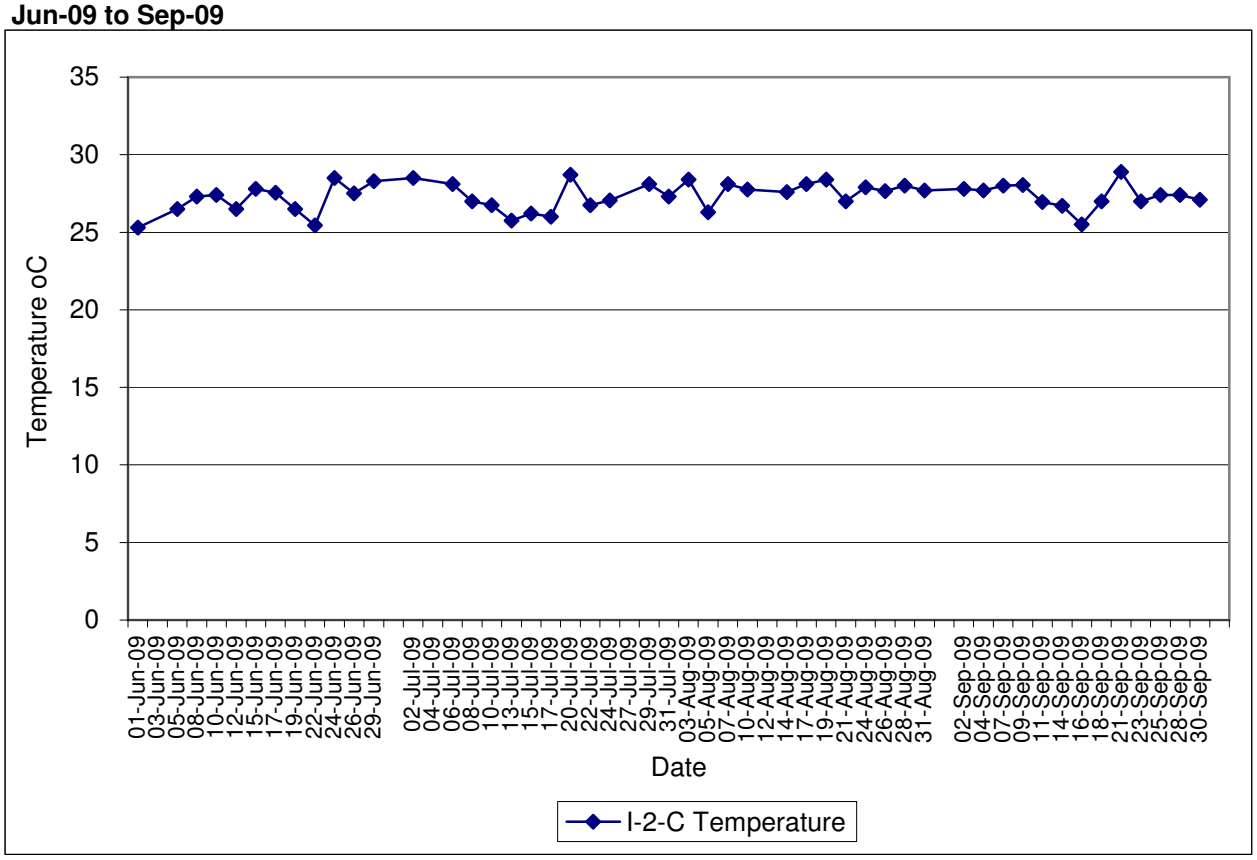
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Water Quality Results at Sik Sik Yuen Ho Fung College (I-1-C)
Jun-09 to Sep-09



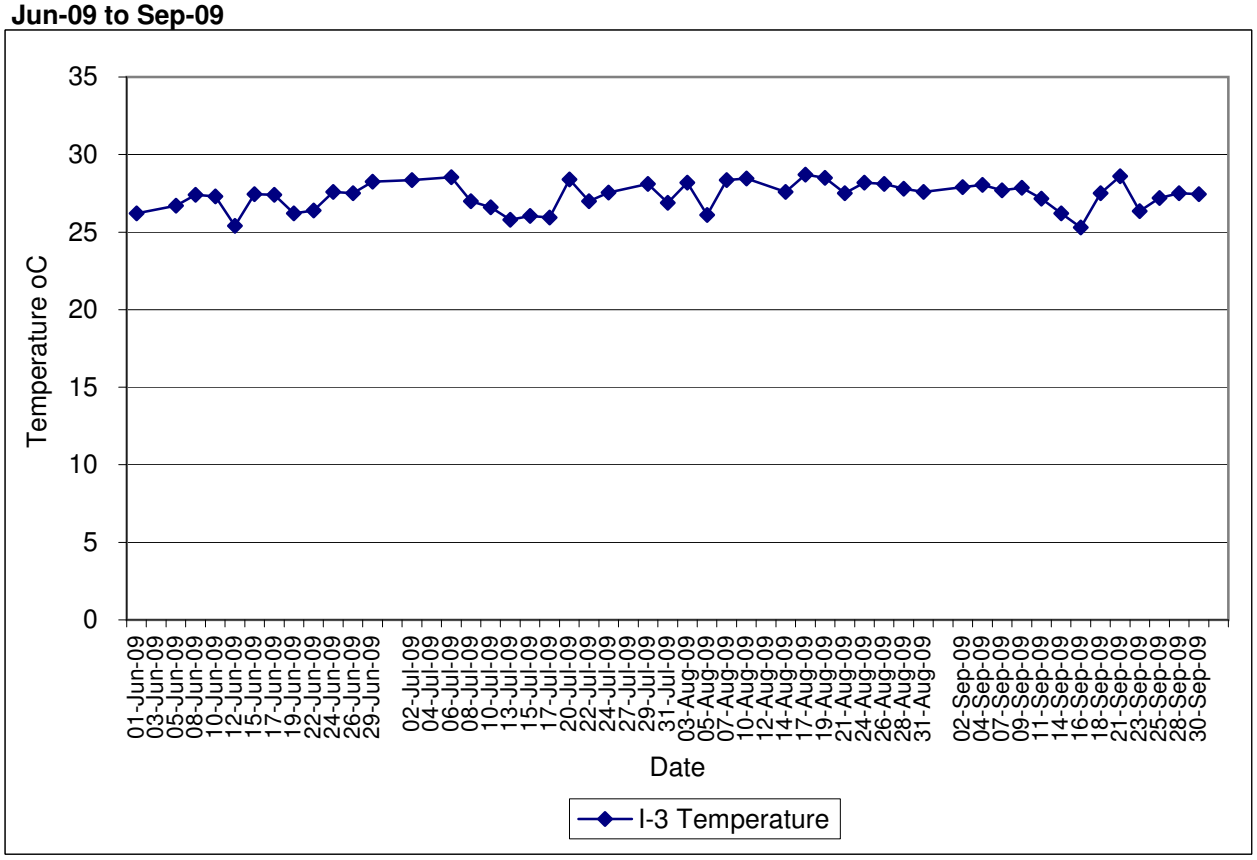
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Water Quality Results at Hong Hoi Chee Hong Temple (I-2)
Jun-09 to Sep-09



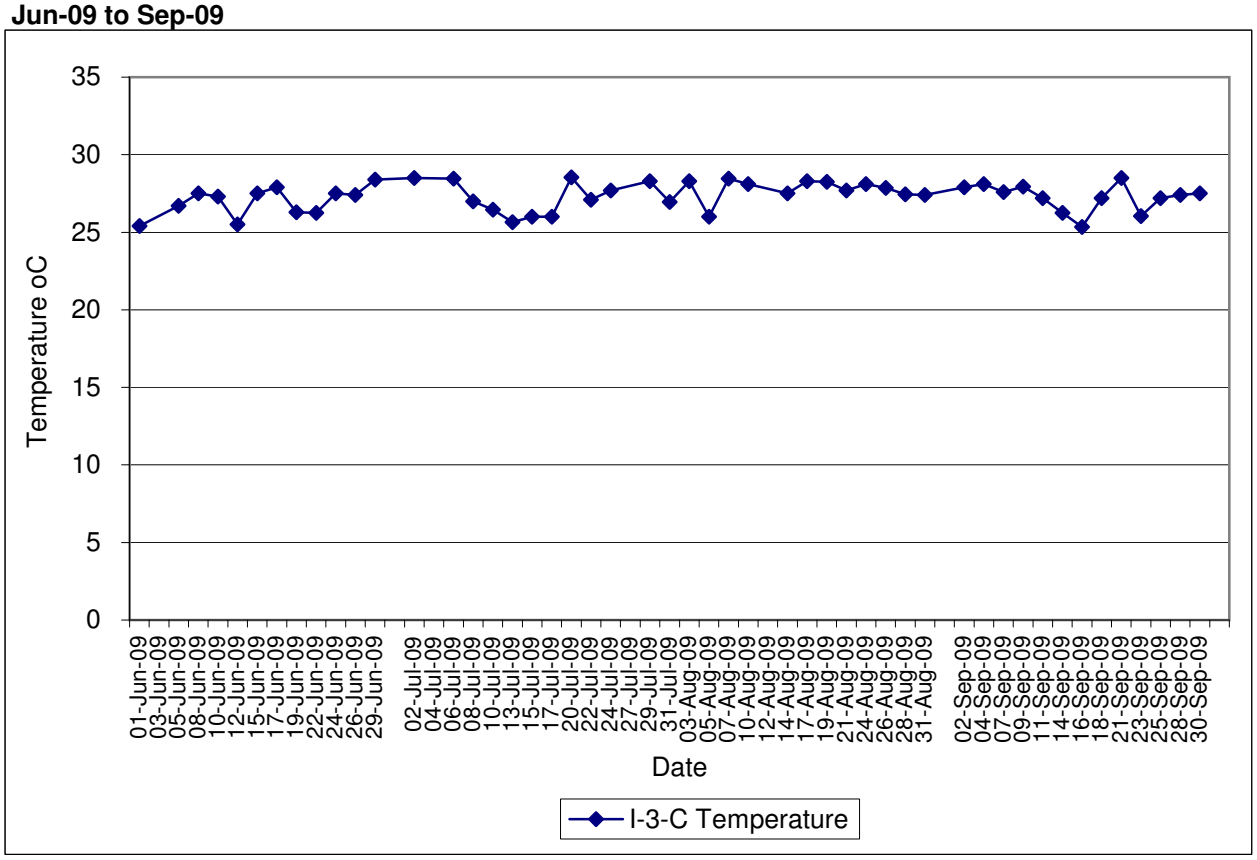
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Water Quality Results at Hong Hoi Chee Hong Temple (I-2-C)
Jun-09 to Sep-09



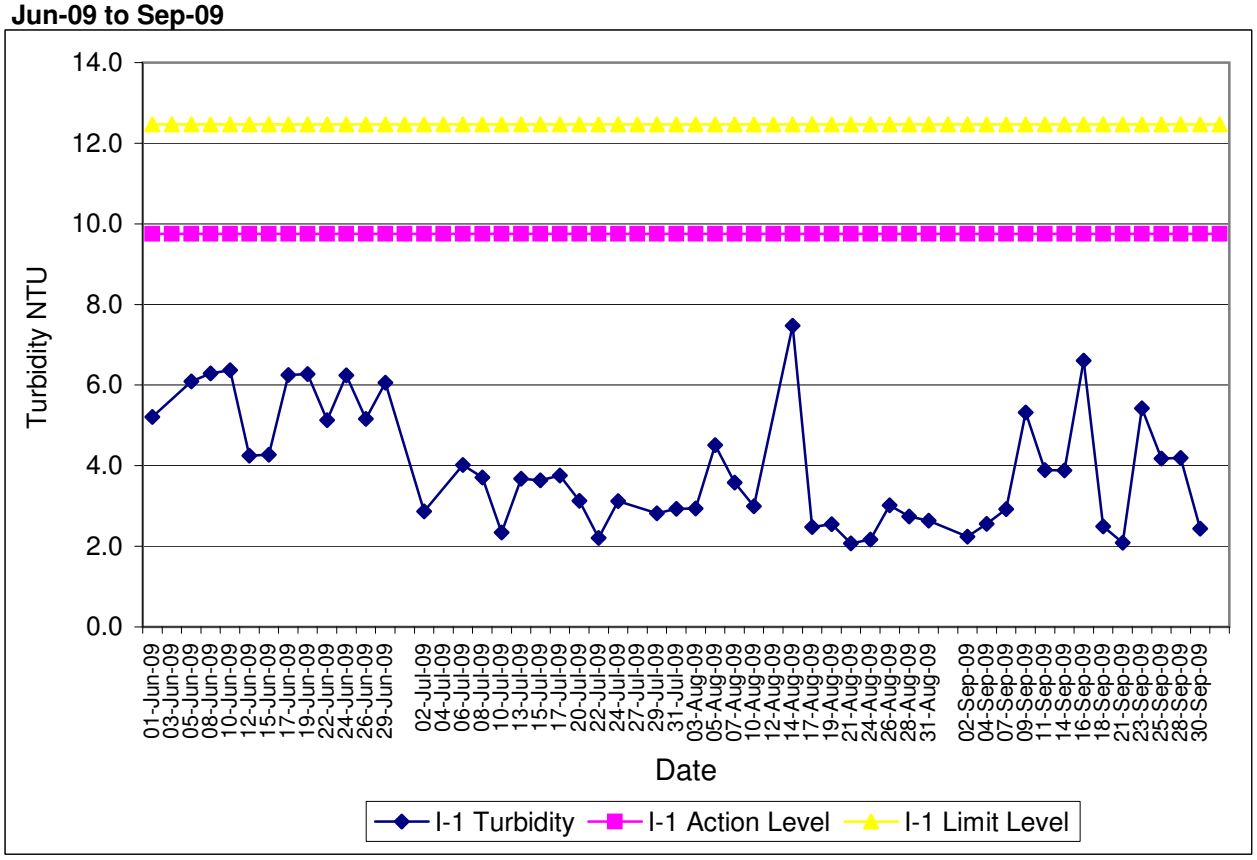
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Water Quality Results at Squatters (I-3)
Jun-09 to Sep-09



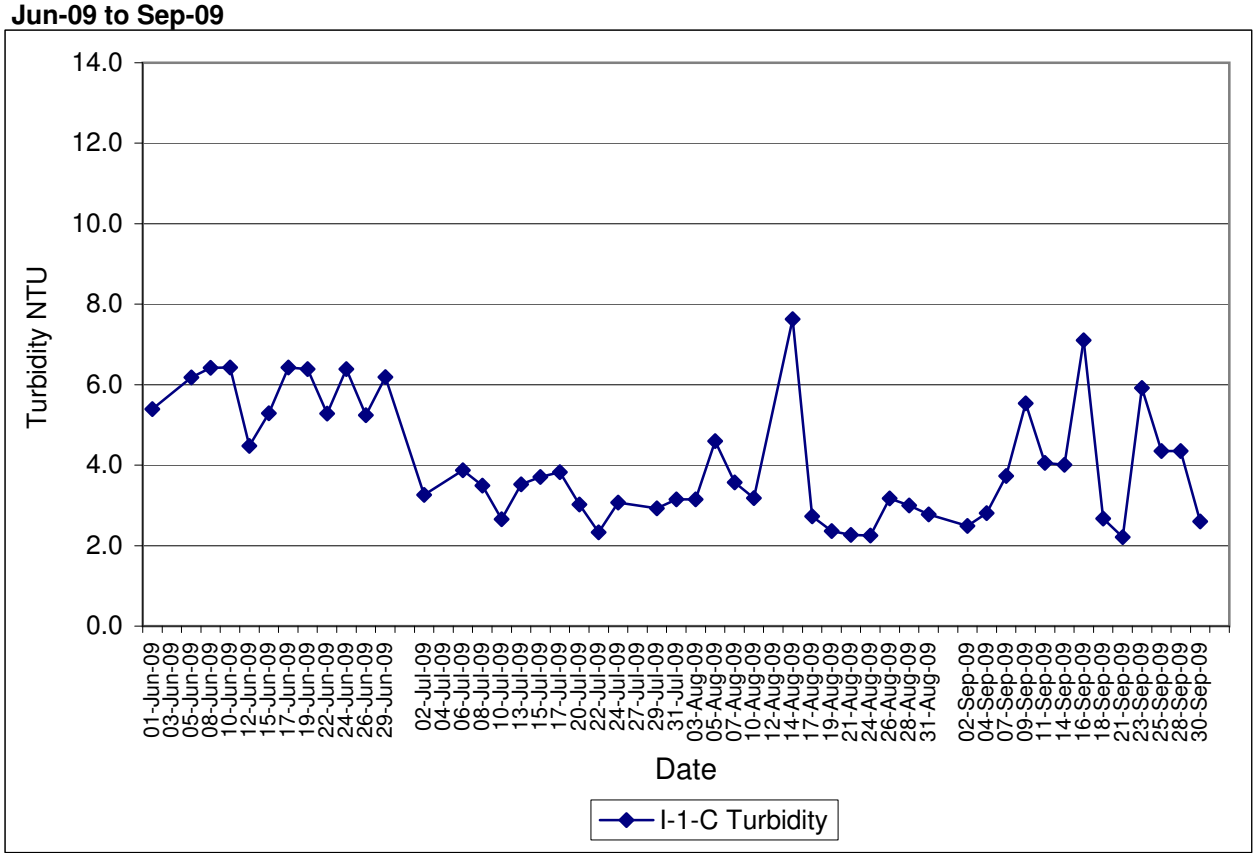
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Water Quality Results at Squatters (I-3-C)
Jun-09 to Sep-09



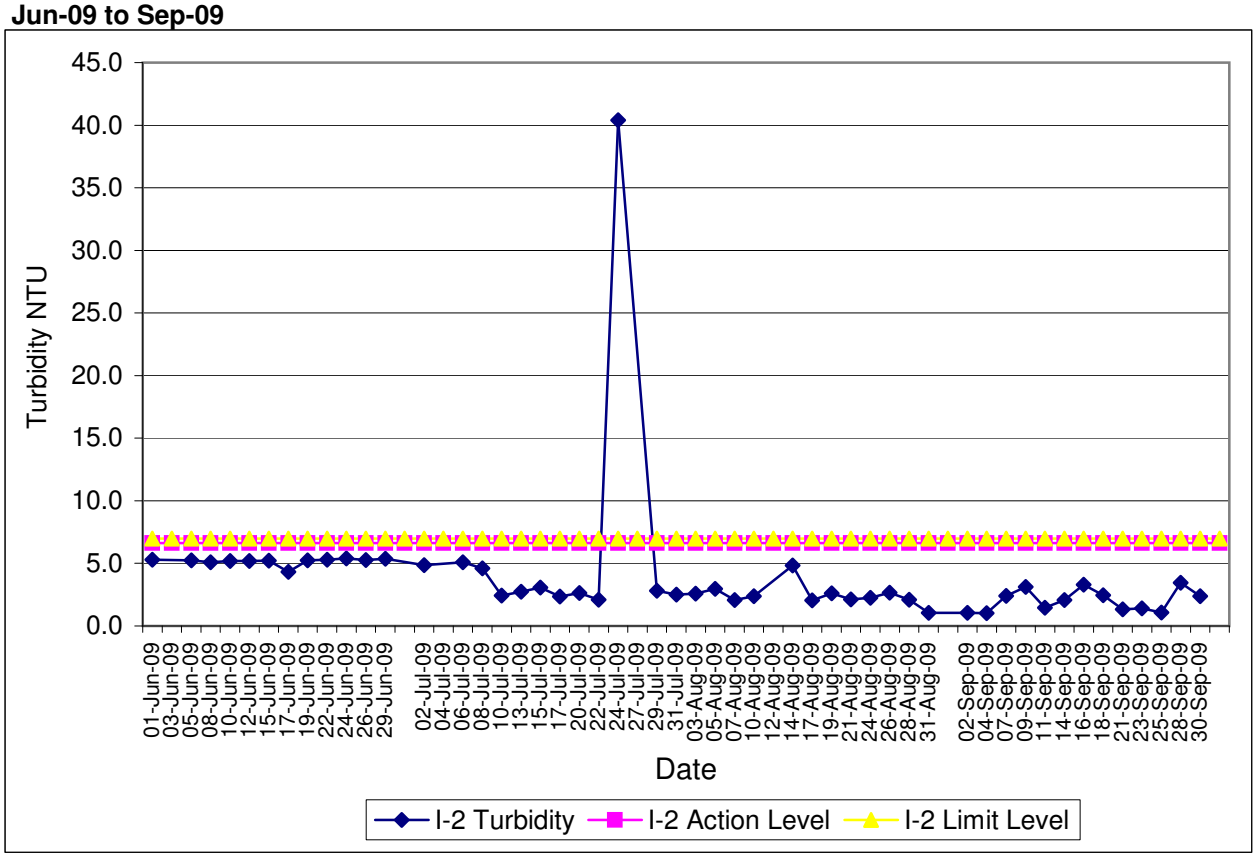
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Water Quality Results at Sik Sik Yuen Ho Fung College (I-1)
Jun-09 to Sep-09



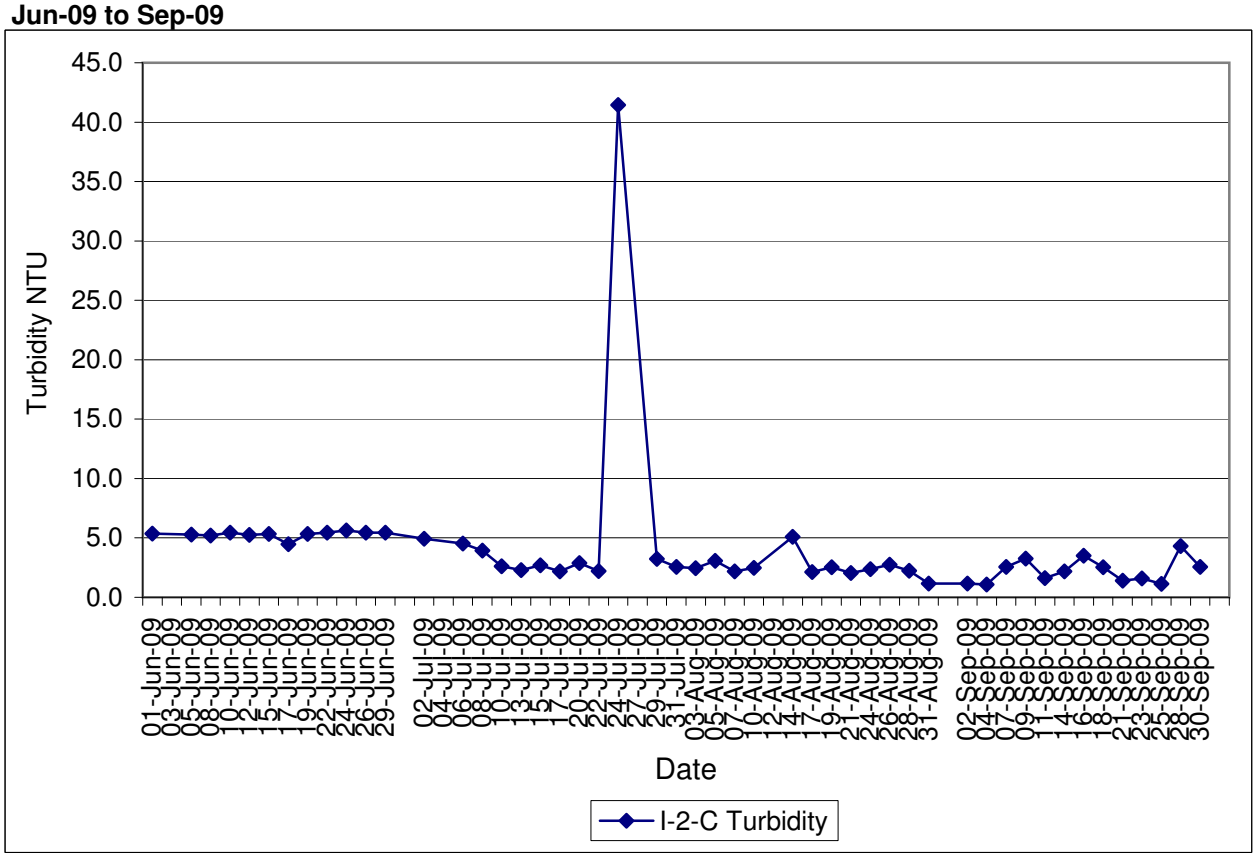
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Water Quality Results at Sik Sik Yuen Ho Fung College (I-1-C)
Jun-09 to Sep-09



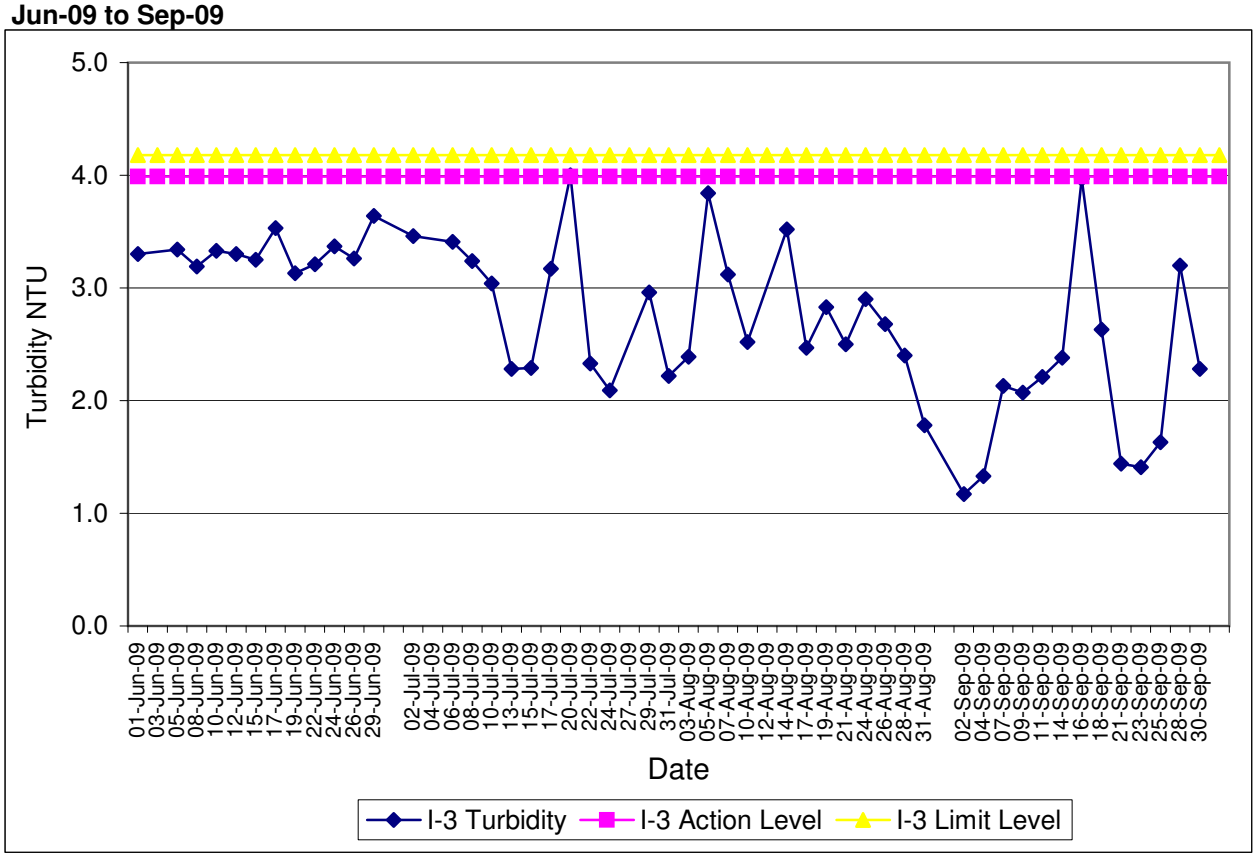
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Water Quality Results at Hong Hoi Chee Hong Temple (I-2)
Jun-09 to Sep-09



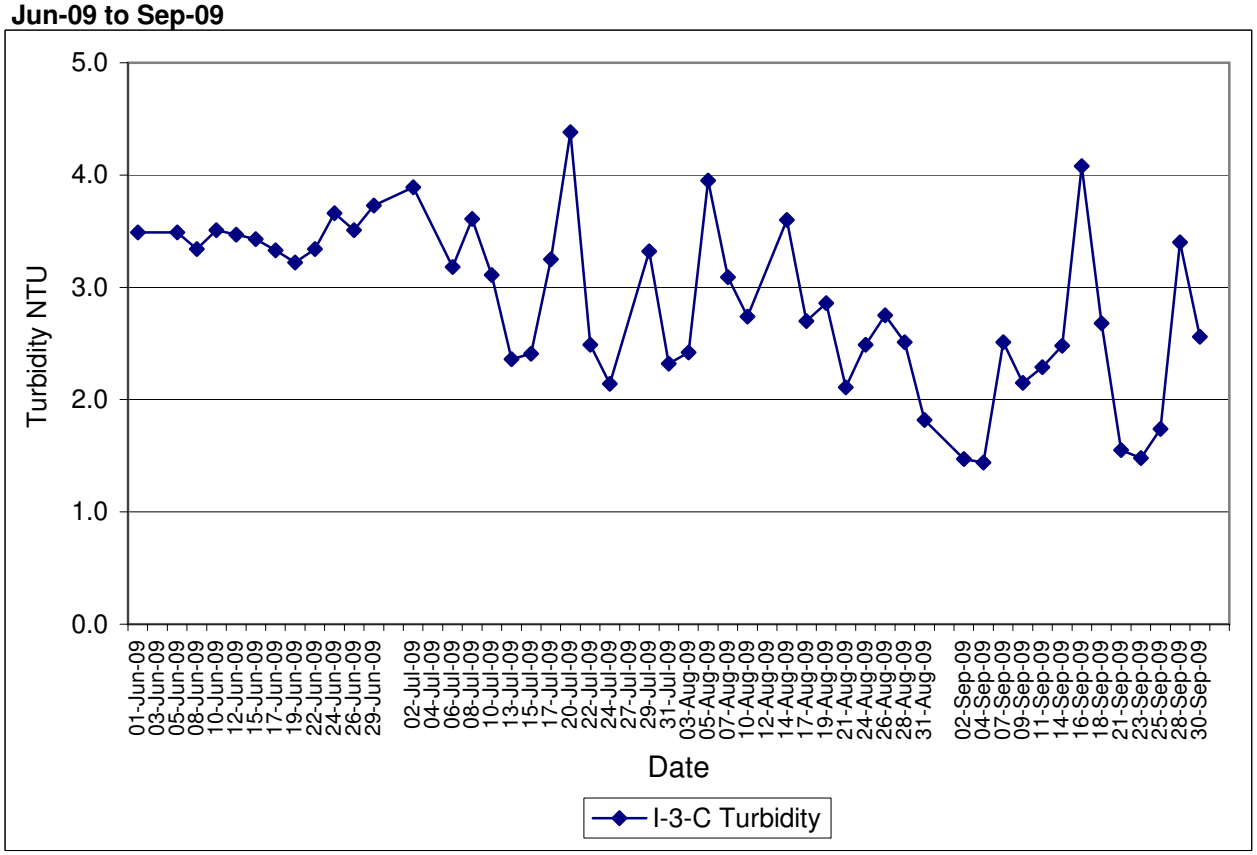
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Water Quality Results at Hong Hoi Chee Hong Temple (I-2-C)
Jun-09 to Sep-09



Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Water Quality Results at Squatters (I-3)
Jun-09 to Sep-09

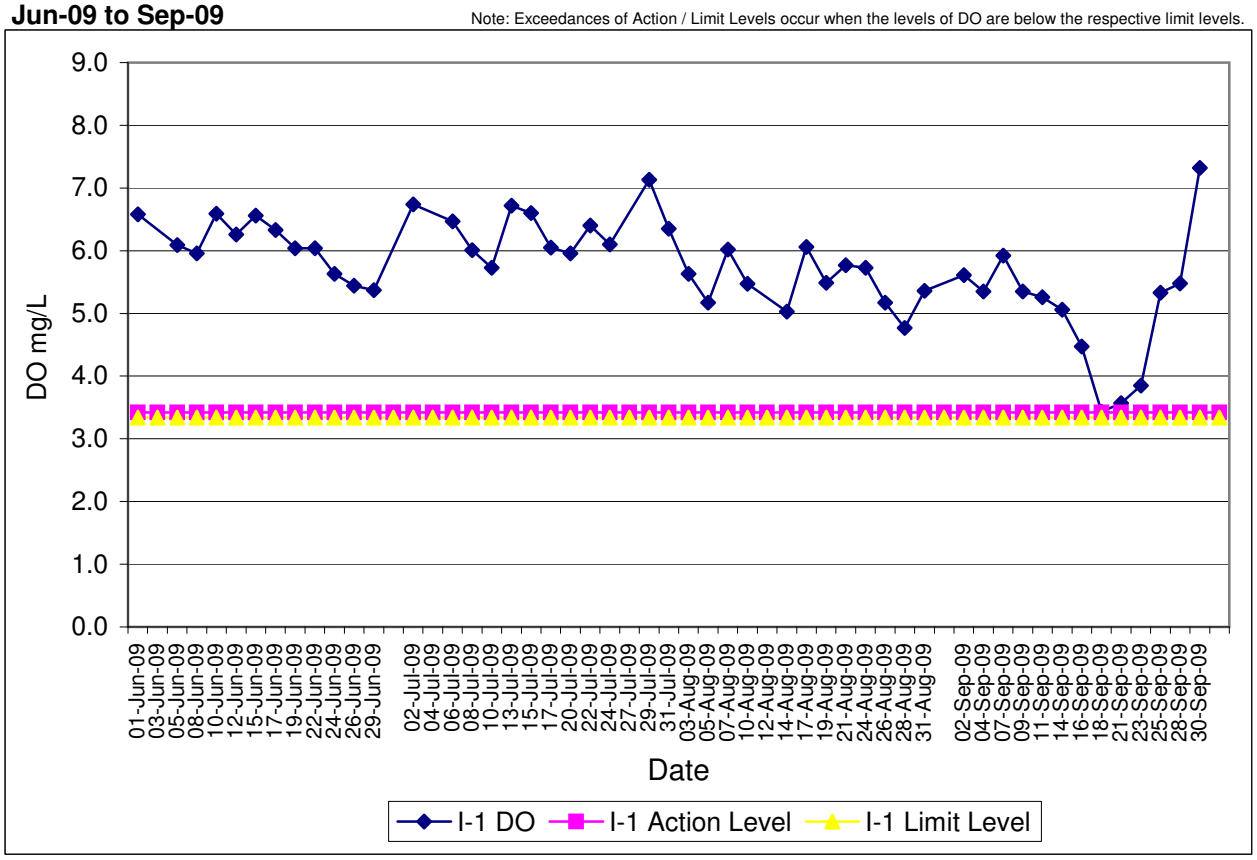


Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Water Quality Results at Squatters (I-3-C)
Jun-09 to Sep-09

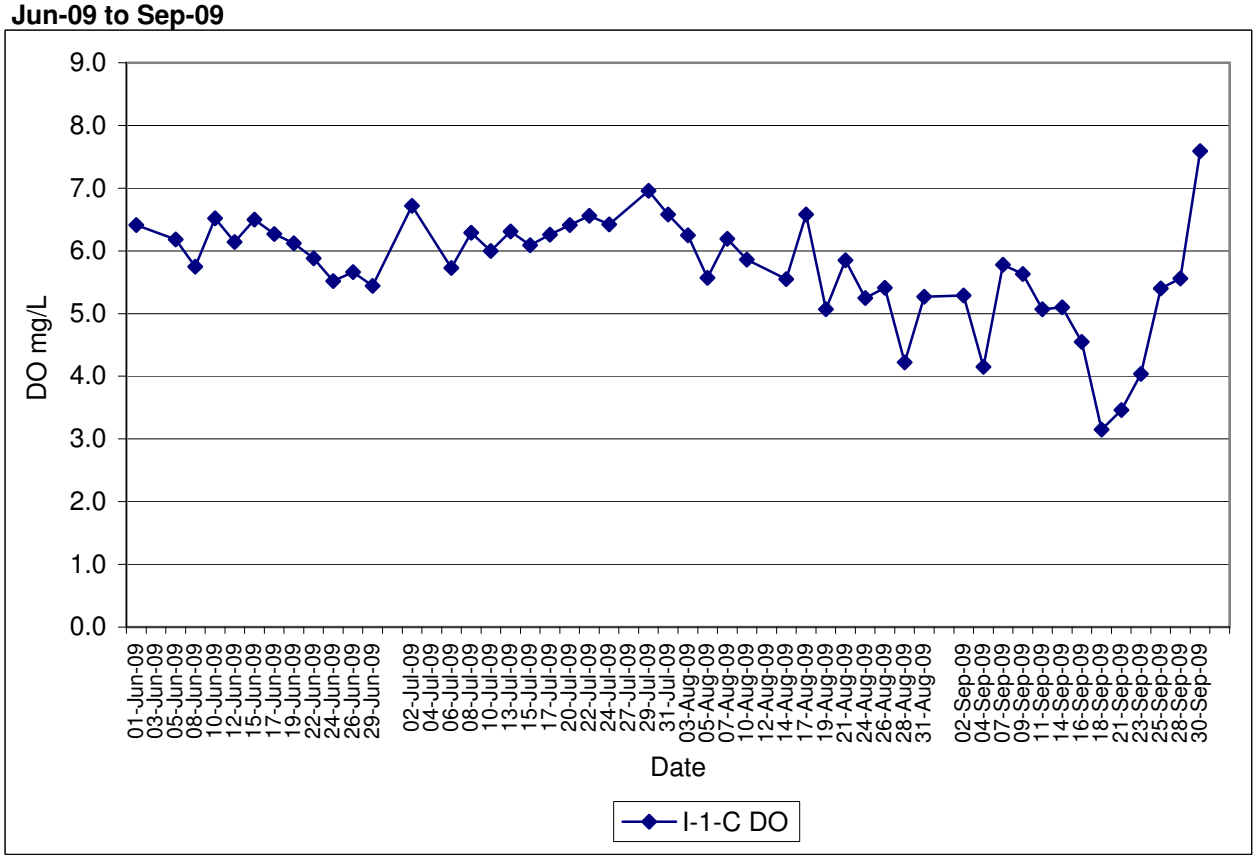


Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Water Quality Results at Sik Sik Yuen Ho Fung College (I-1)
Jun-09 to Sep-09

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

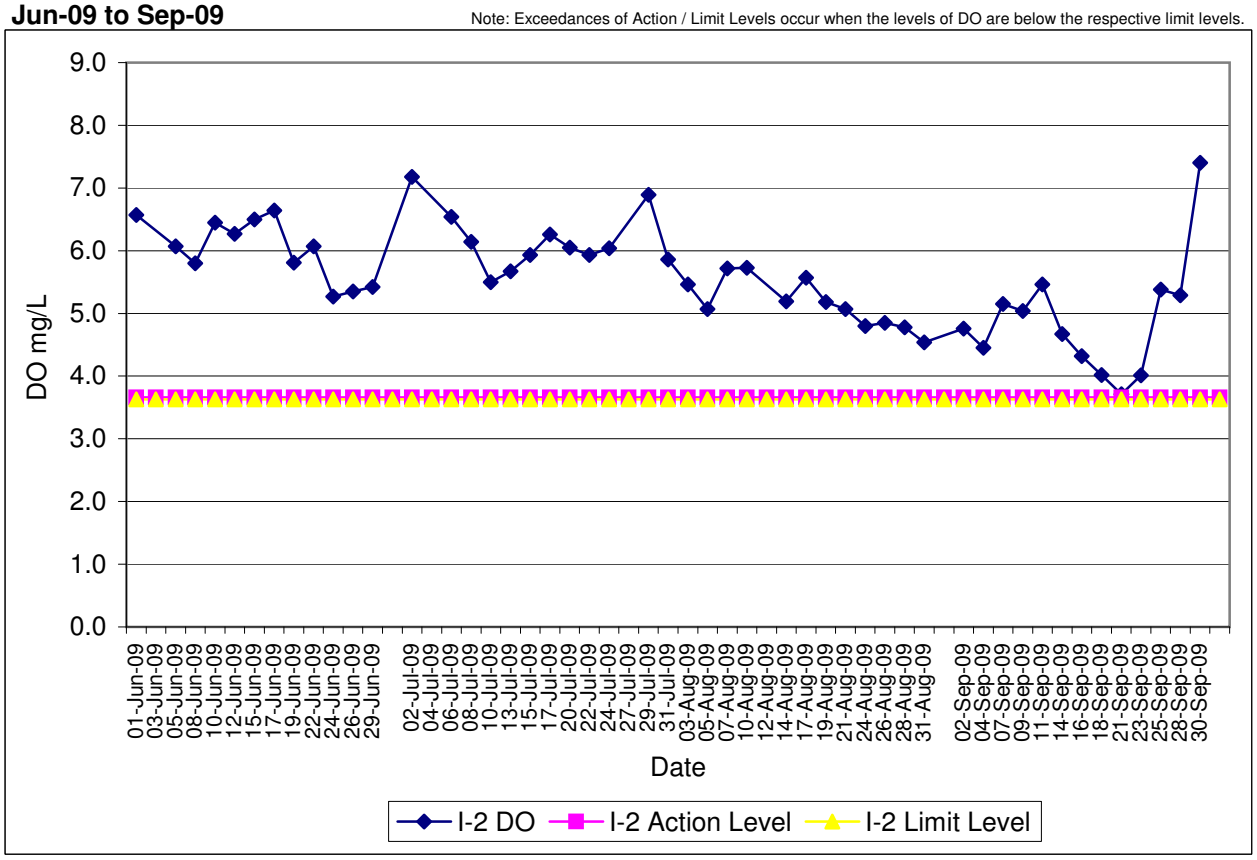


Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Water Quality Results at Sik Sik Yuen Ho Fung College (I-1-C)
Jun-09 to Sep-09

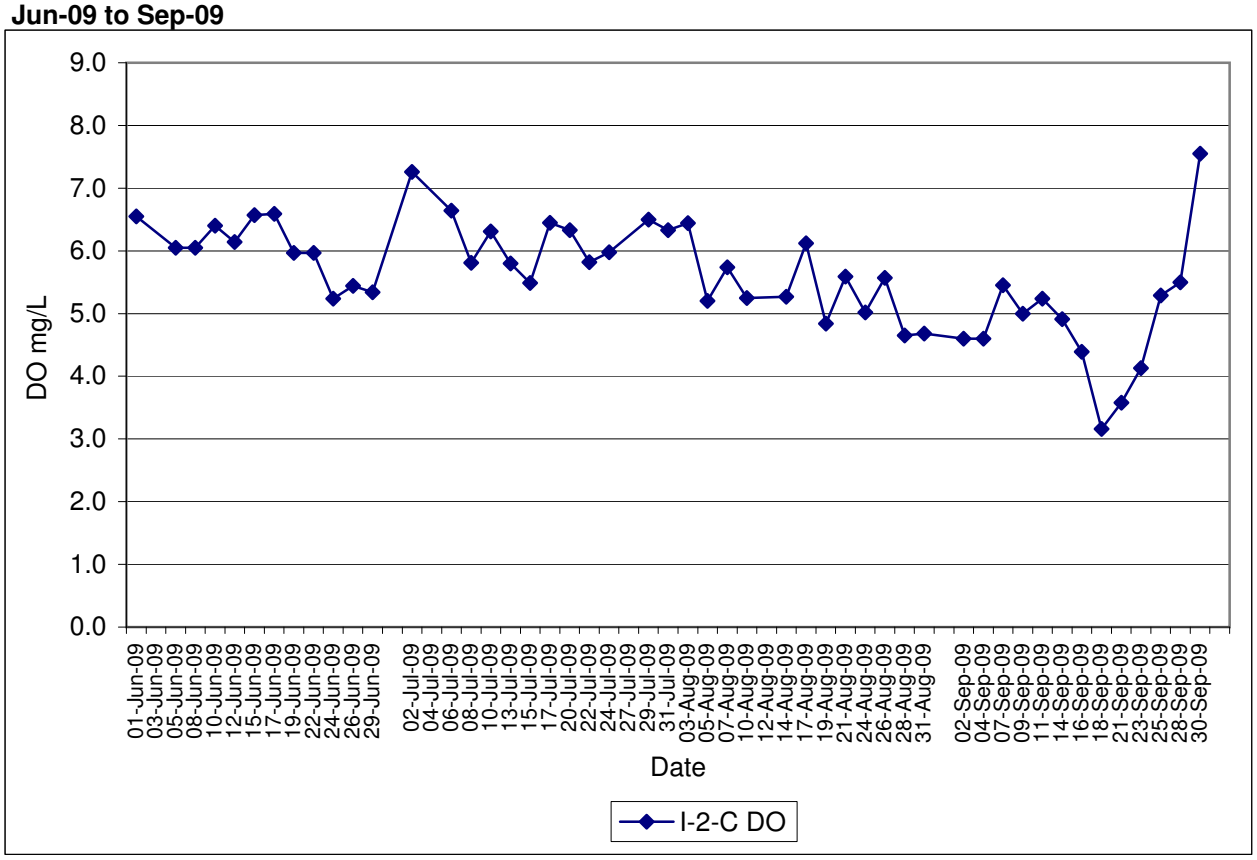


Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Water Quality Results at Hong Hoi Chee Hong Temple (I-2)
Jun-09 to Sep-09

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

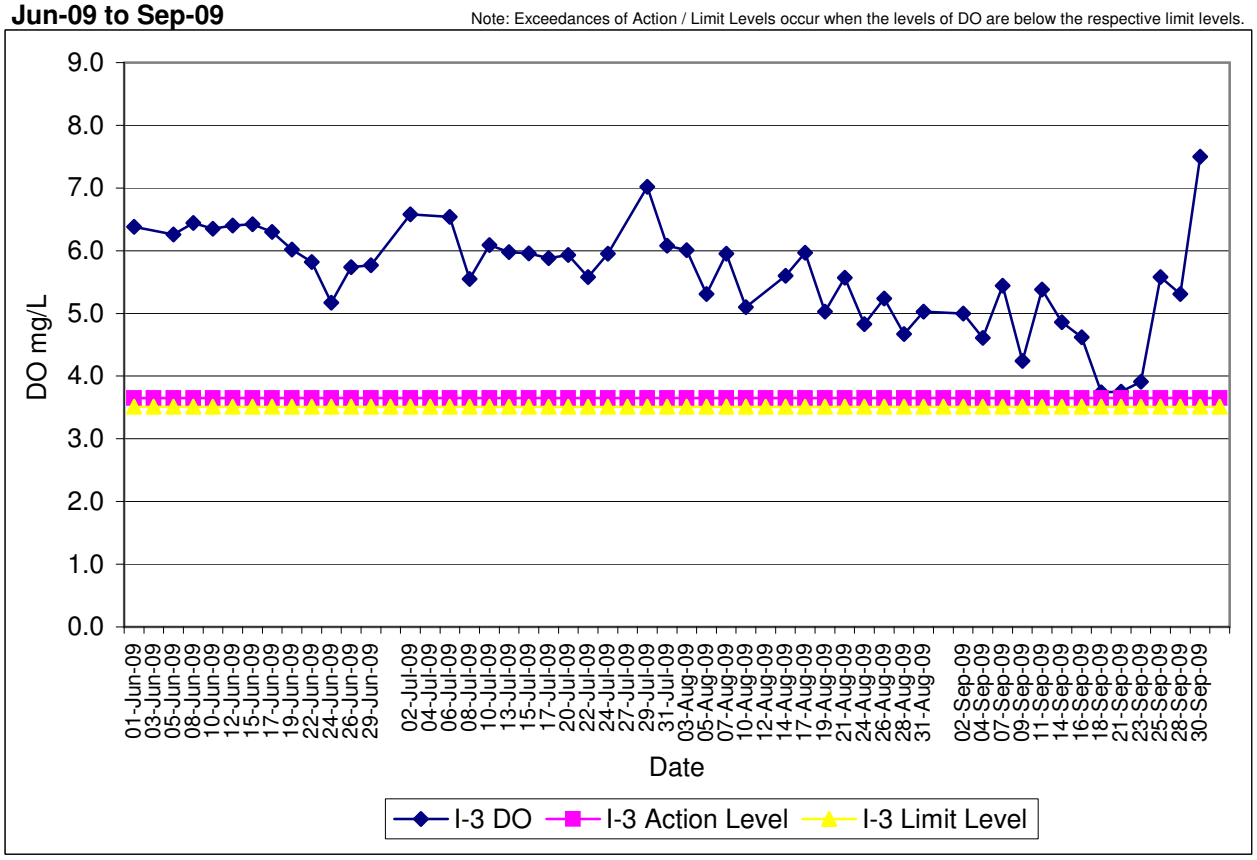


Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Water Quality Results at Hong Hoi Chee Hong Temple (I-2-C)
Jun-09 to Sep-09

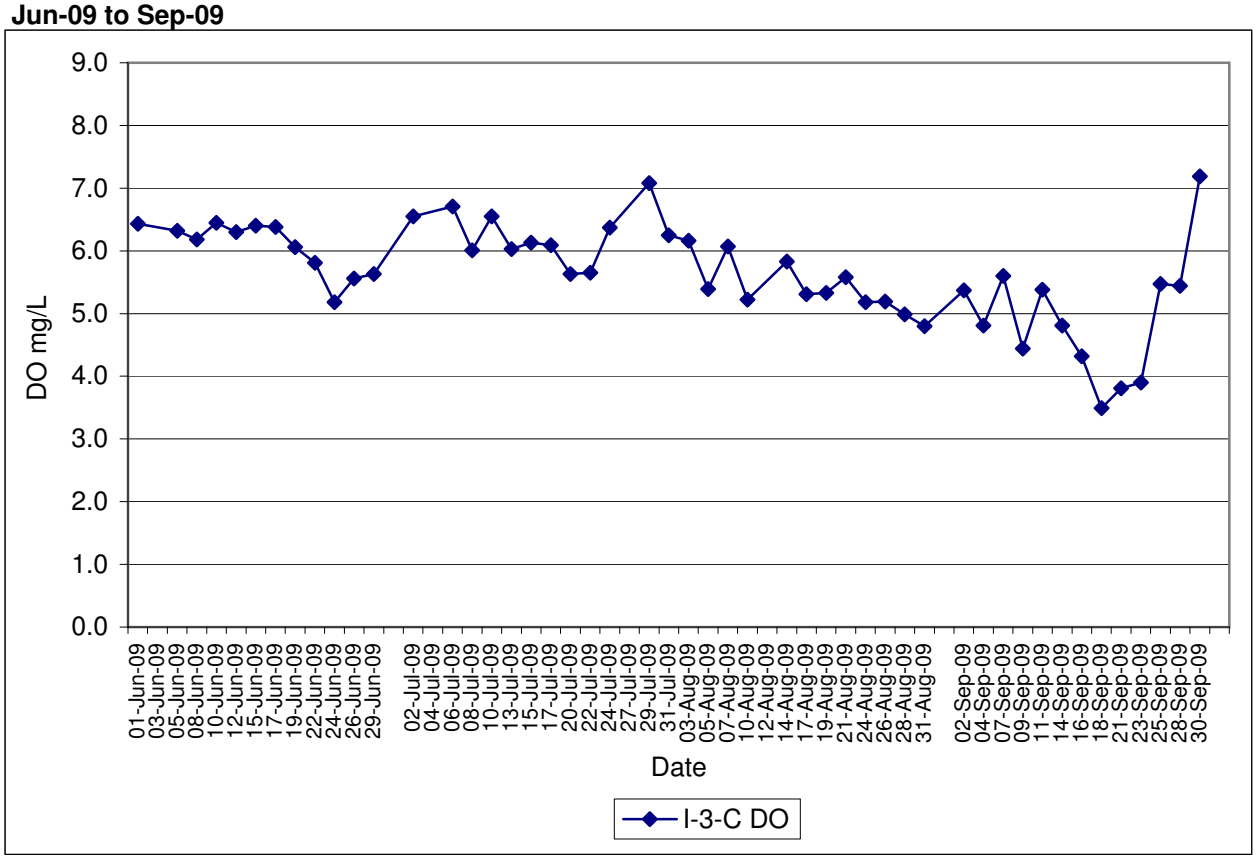


Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Water Quality Results at Squatters (I-3)
Jun-09 to Sep-09

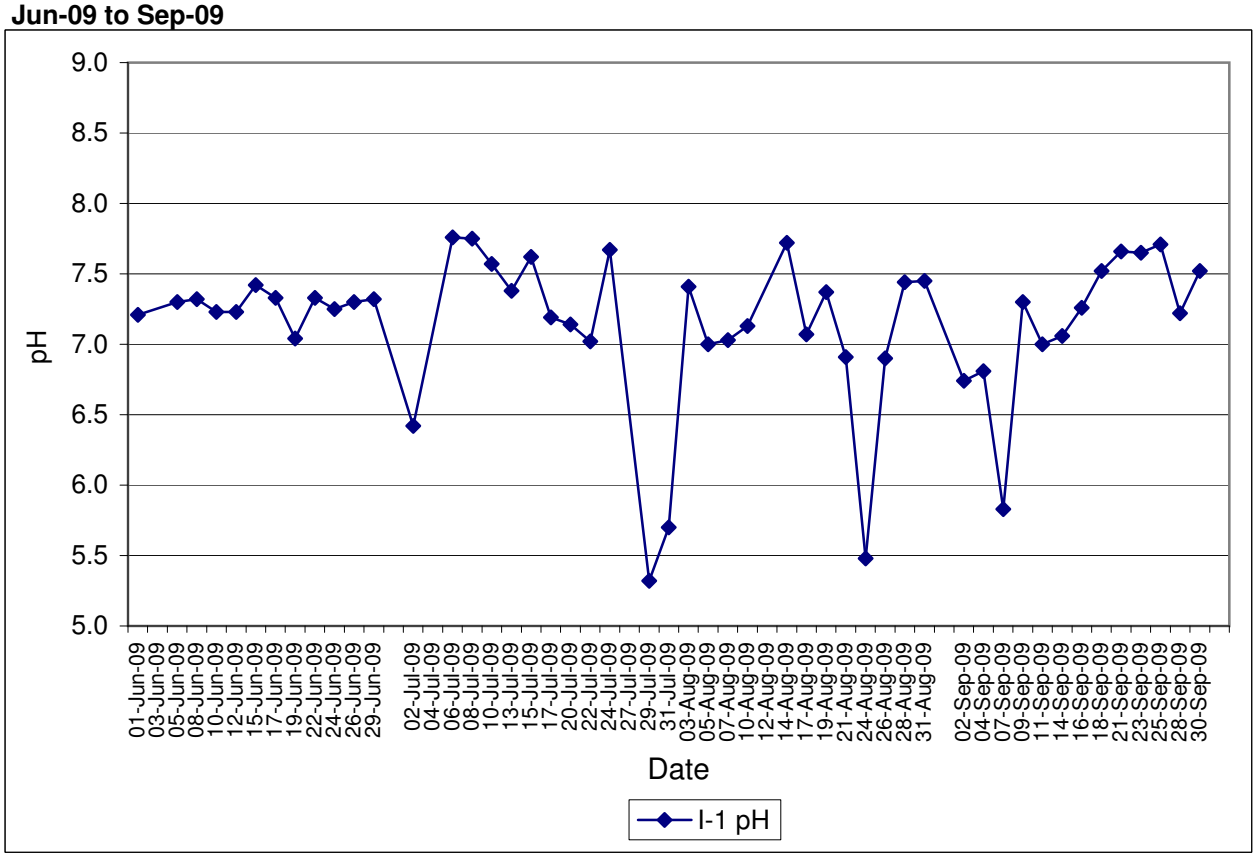
Note: Exceedances of Action / Limit Levels occur when the levels of DO are below the respective limit levels.



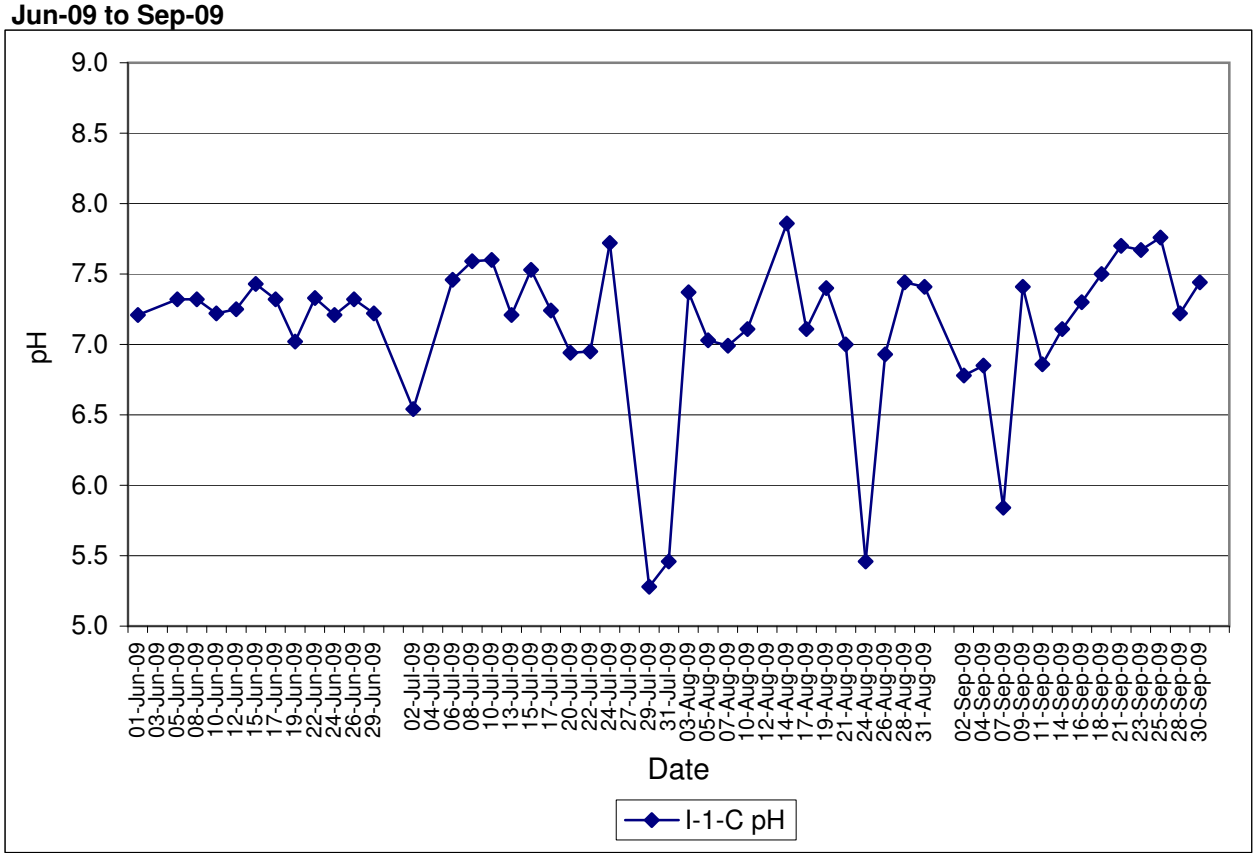
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Water Quality Results at Squatters (I-3-C)
Jun-09 to Sep-09



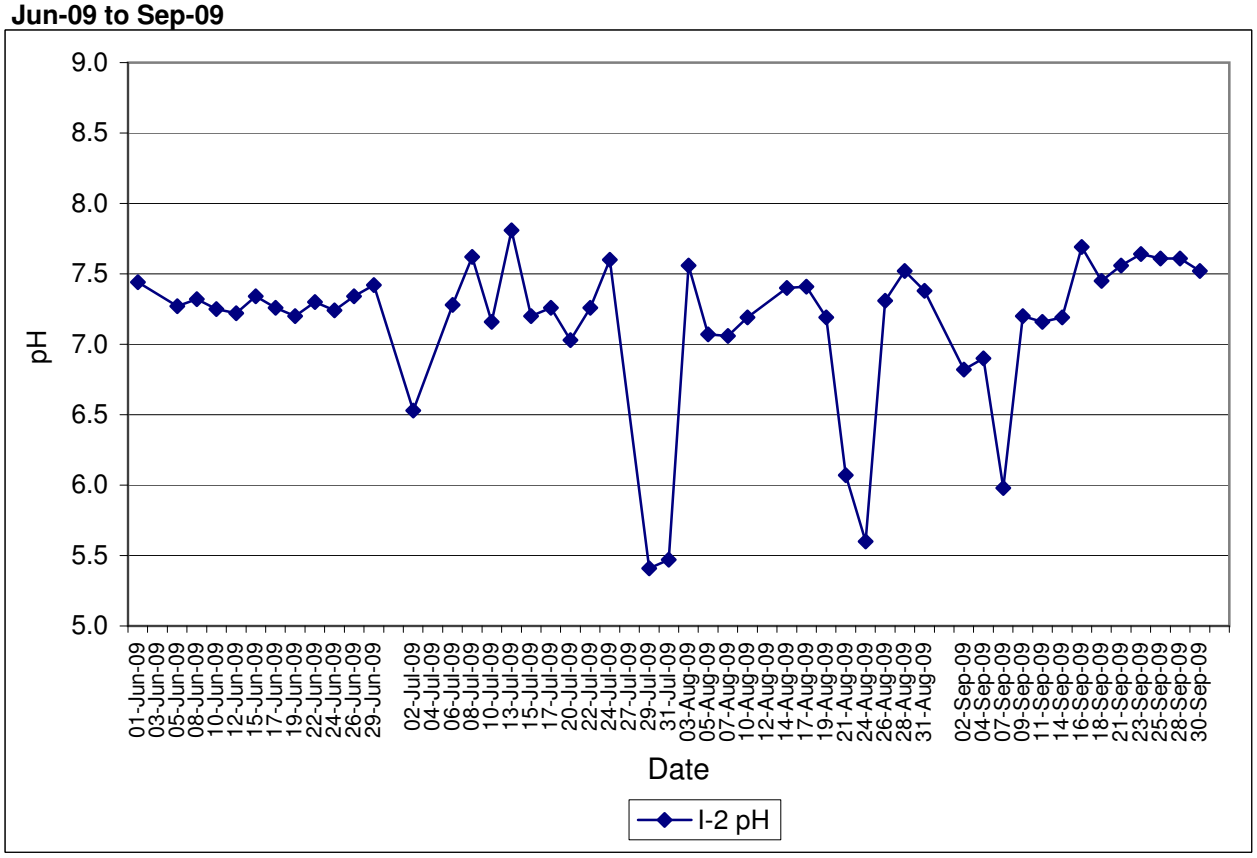
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Water Quality Results at Sik Sik Yuen Ho Fung College (I-1)
Jun-09 to Sep-09



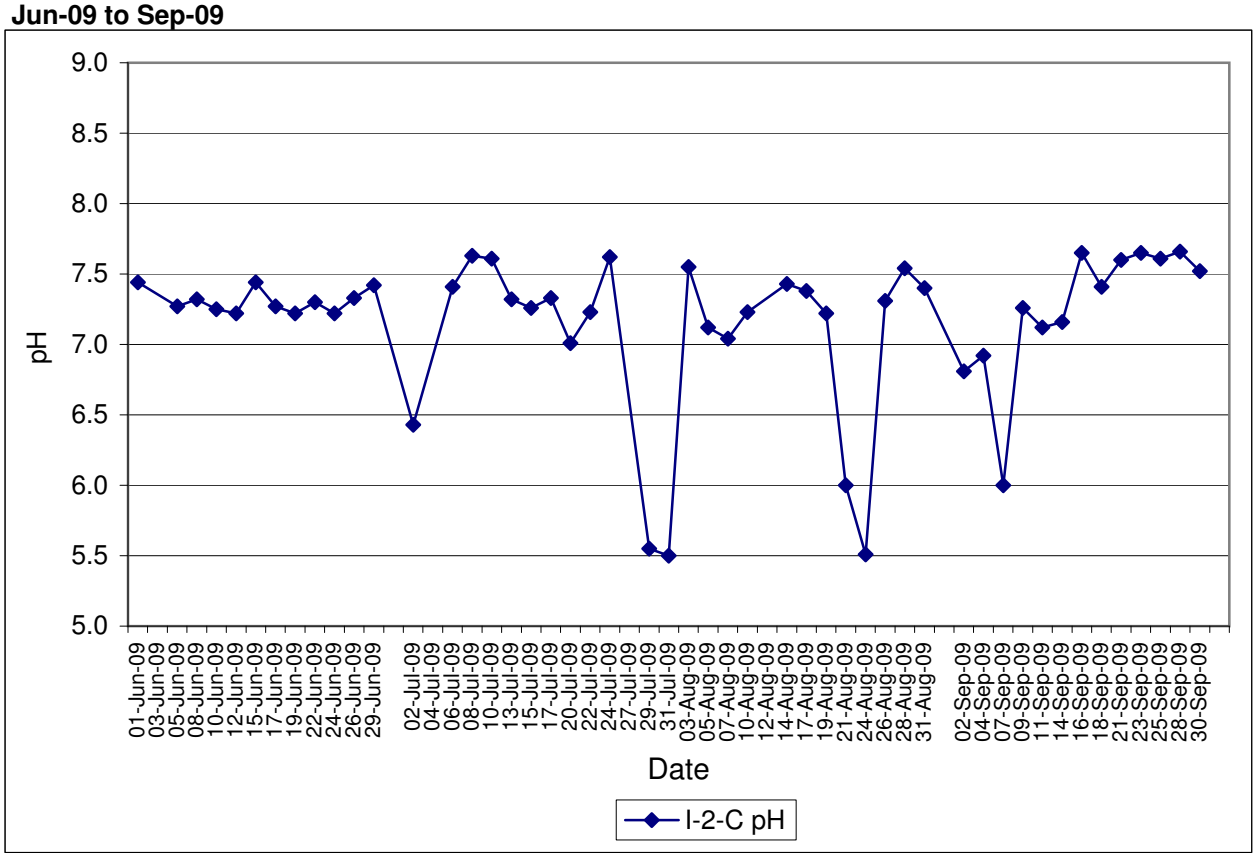
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Water Quality Results at Sik Sik Yuen Ho Fung College (I-1-C)
Jun-09 to Sep-09



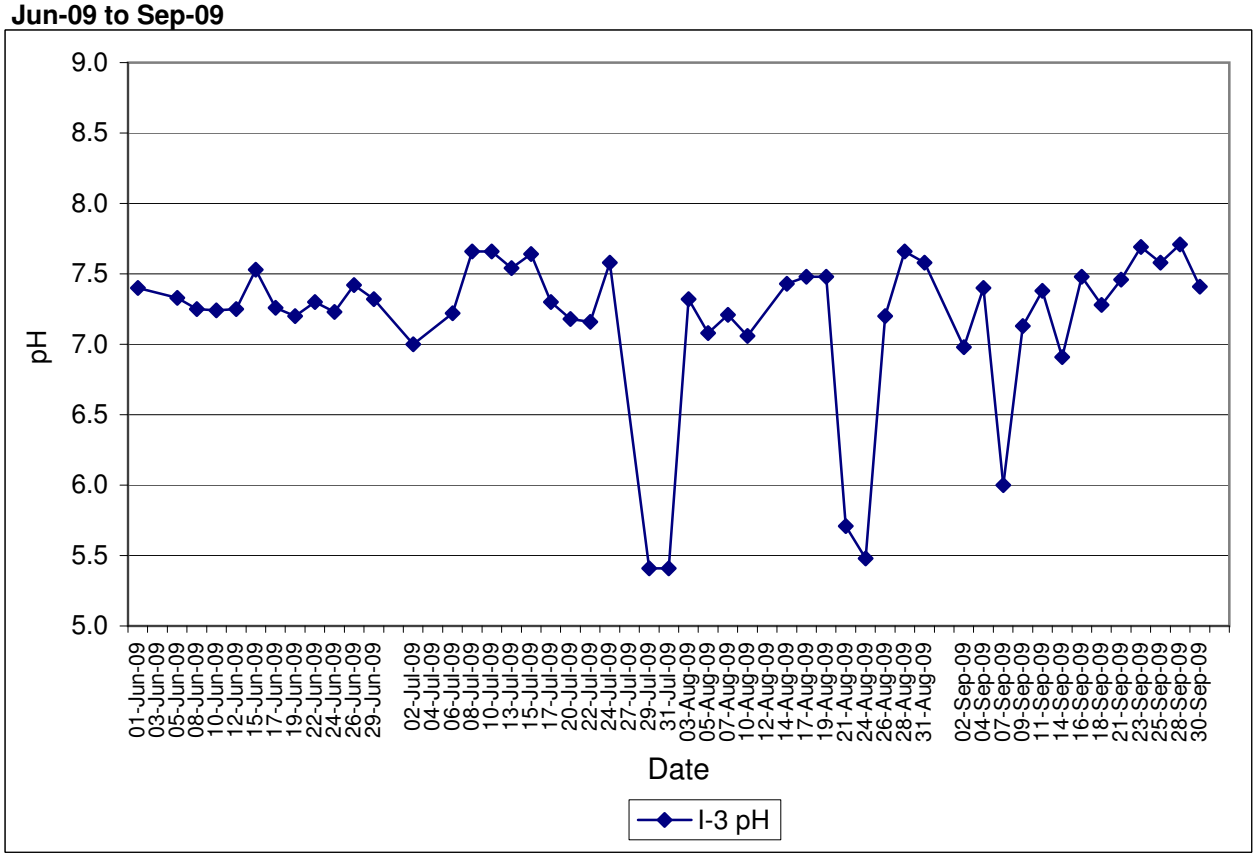
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Water Quality Results at Hong Hoi Chee Hong Temple (I-2)
Jun-09 to Sep-09



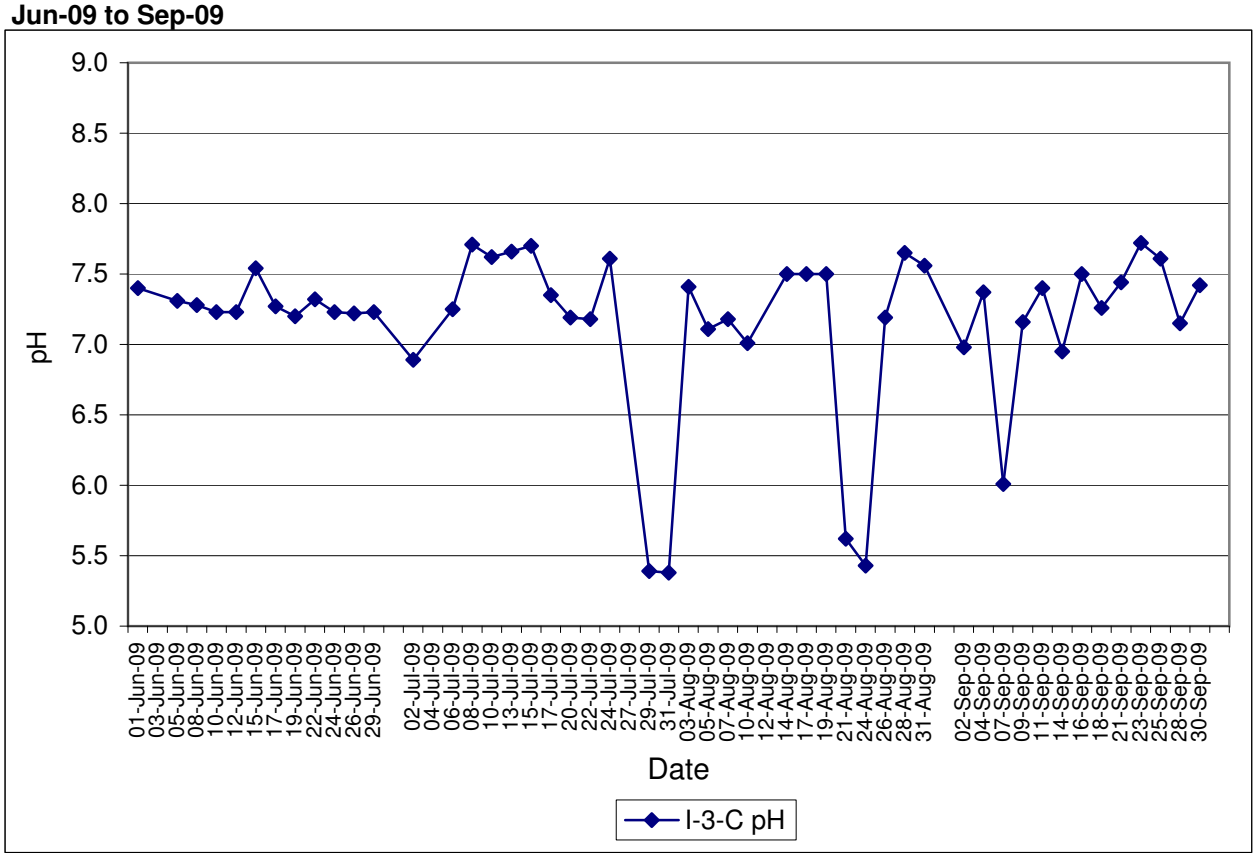
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Water Quality Results at Hong Hoi Chee Hong Temple (I-2-C)
Jun-09 to Sep-09



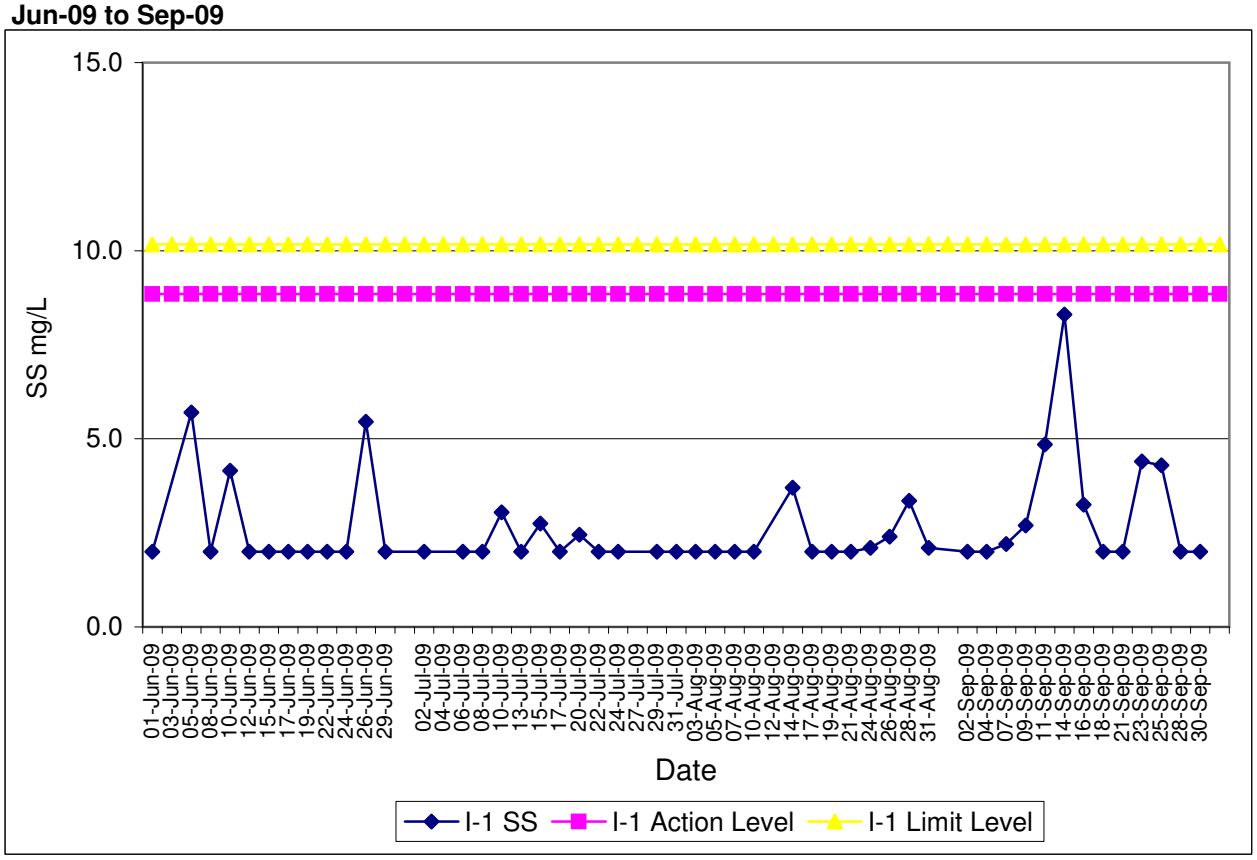
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Water Quality Results at Squatters (I-3)
Jun-09 to Sep-09



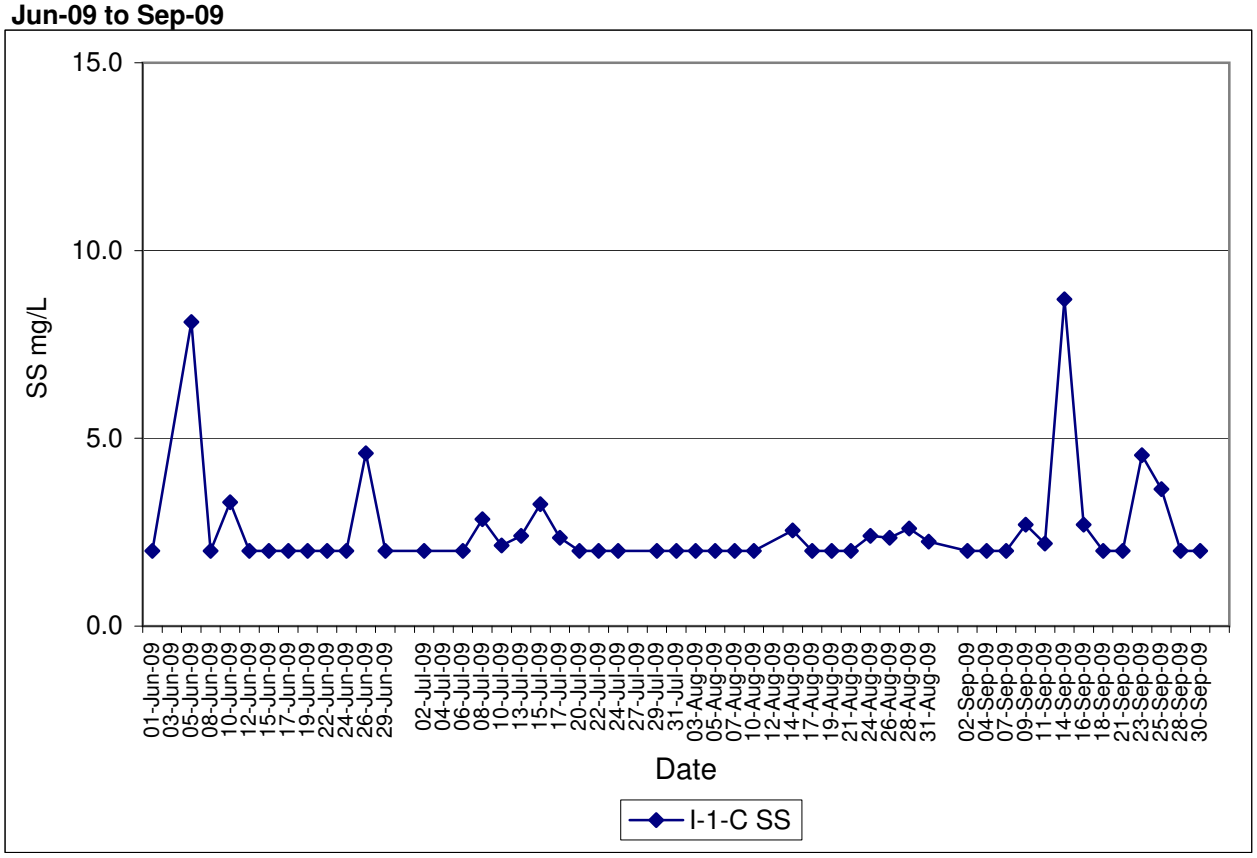
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Water Quality Results at Squatters (I-3-C)
Jun-09 to Sep-09



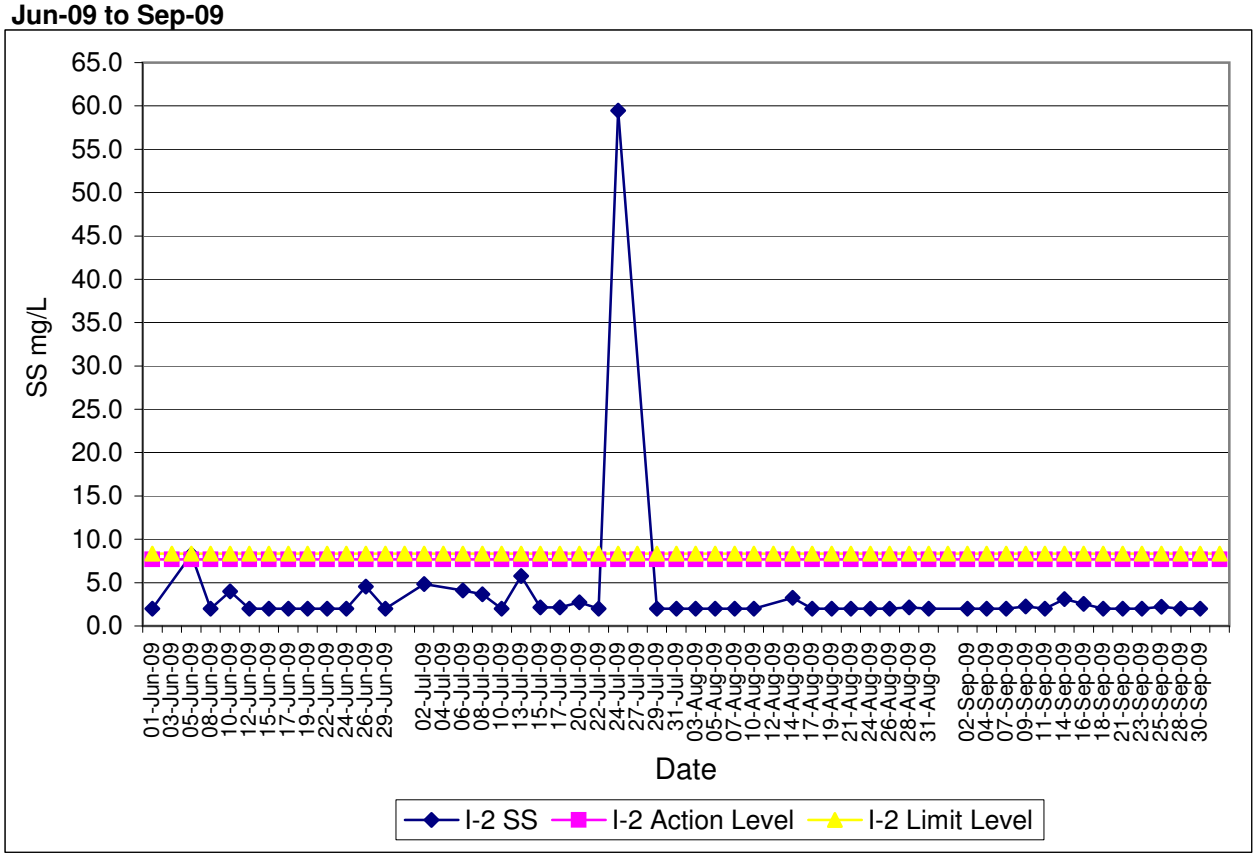
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Water Quality Results at Sik Sik Yuen Ho Fung College (I-1)
Jun-09 to Sep-09



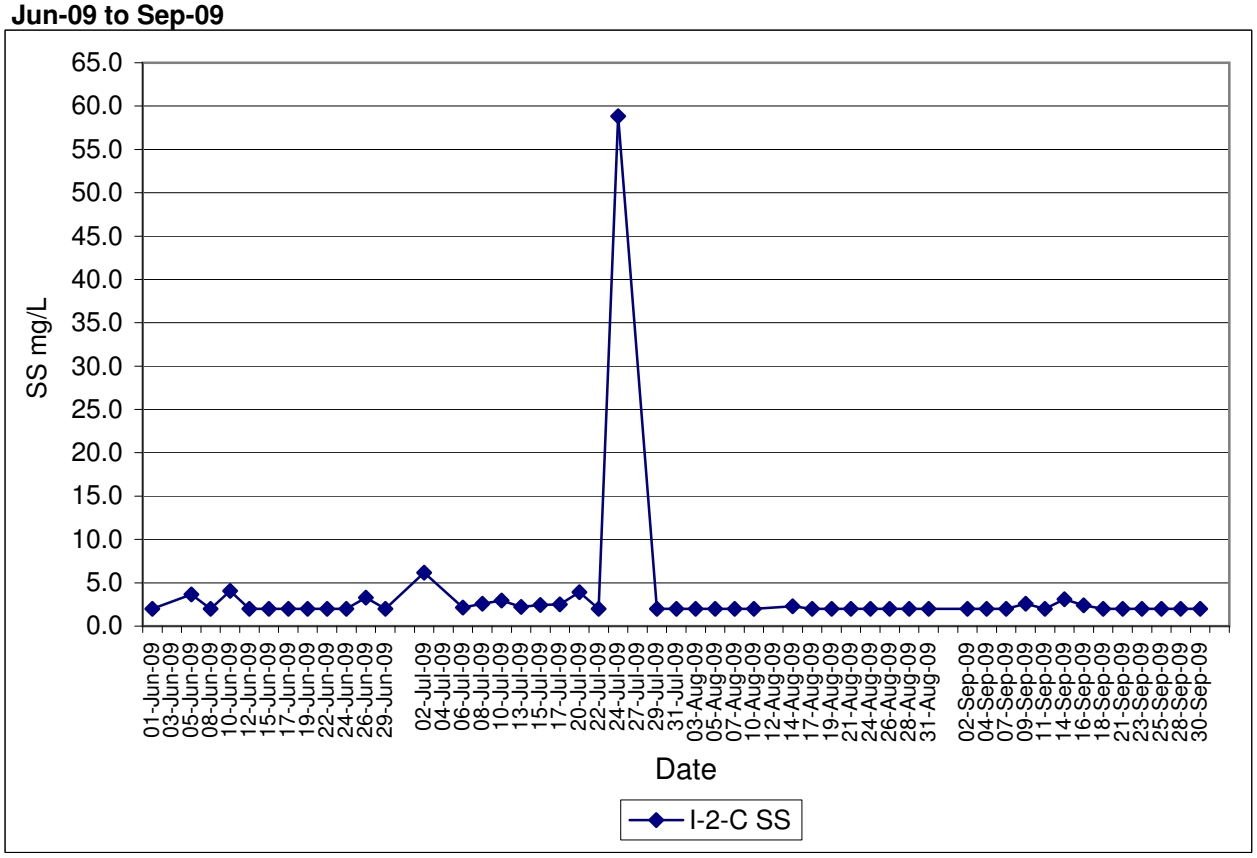
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Water Quality Results at Sik Sik Yuen Ho Fung College (I-1-C)
Jun-09 to Sep-09



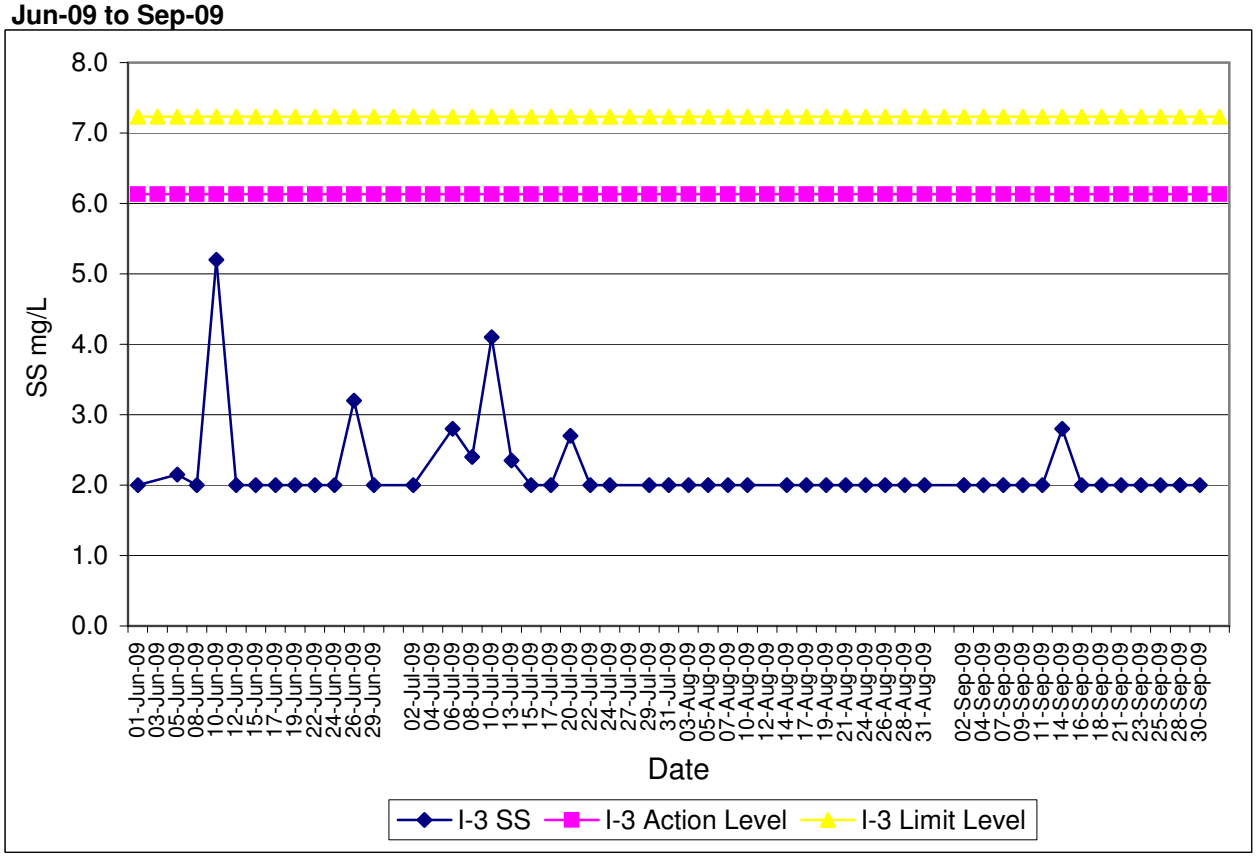
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Water Quality Results at Hong Hoi Chee Hong Temple (I-2)
Jun-09 to Sep-09



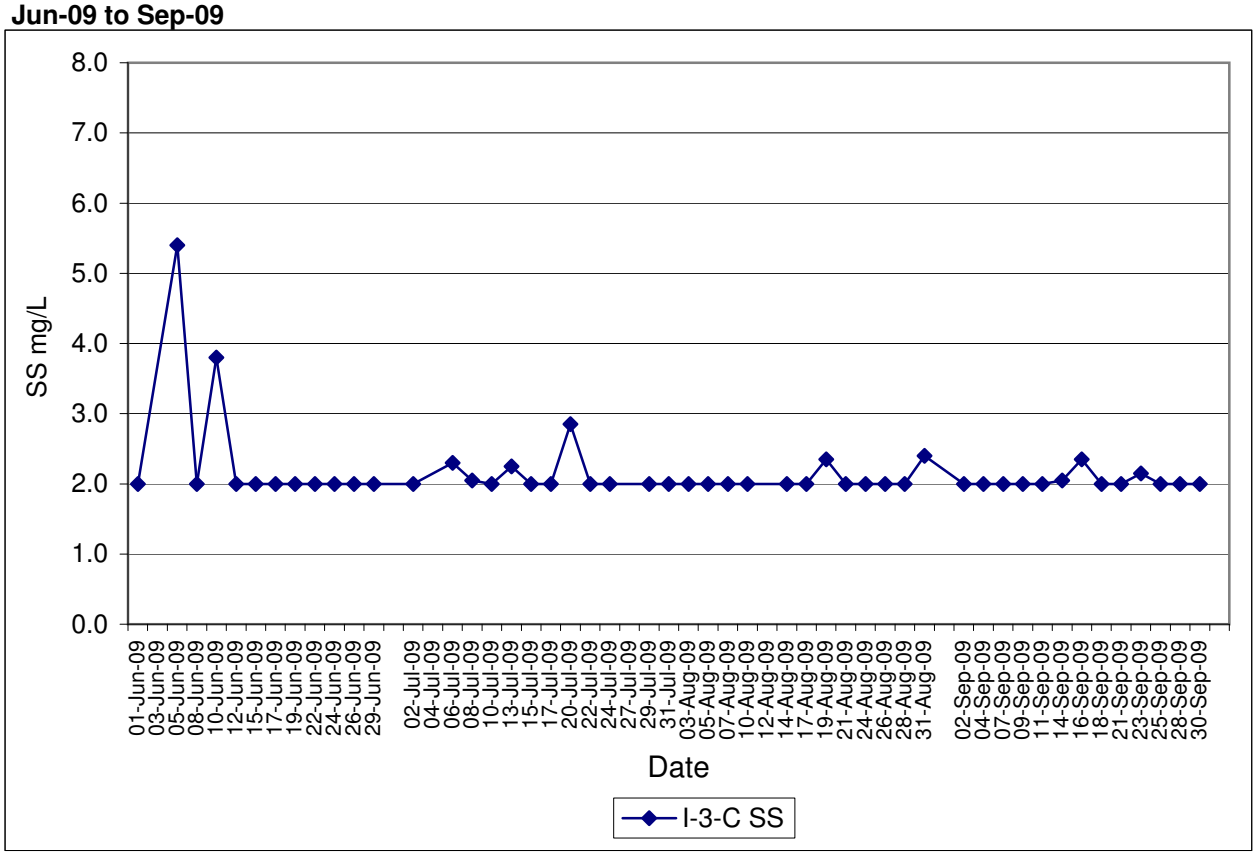
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Water Quality Results at Hong Hoi Chee Hong Temple (I-2-C)
Jun-09 to Sep-09



Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Water Quality Results at Squatters (I-3)
Jun-09 to Sep-09



Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Water Quality Results at Squatters (I-3-C)
Jun-09 to Sep-09



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	11-Sep-09
Time	9:40 AM
Monitoring Location	Sik Sik Yuen Ho Fung College (I-1)
Parameter	Suspended Solid
Action & Limit Levels	8.85 / 10.17
Measured Level	4.9 (higher than 130% of control station's SS)
Possible reason for Action or Limit Level Non-compliance	A low SS level of 2.2 is recorded at Control Station (I-1-C)
Actions taken / to be taken	The measured SS level was below baseline Action / Limit Level and was within the range of baseline SS concentration (1-10.5mg/L). Only water pumping work was undertaken during the measurement and no direct disturbance was observed from the site. Thus, the exceedance is considered to be contributed by natural variation and no action should be required.
Remarks	Following mitigation measures were provided: (1) sandbags were used at the gap of the bridge to avoid wastewater from site activities directly running down to the channel of I-1. (2) The working site was segregated with a wall and no wastewater was observed down to the channel-I1. (3) Sand/silts removal facilites was installed at the location of I-1.

Prepared by: Terence Kong

Designation: Environmental Team Leader

Signature:

Date: 18-Sep-09

Photographic record for exceedance of Suspended Solid recorded at Sik Sik Yuen Ho Fung College (I-1) on 11-Sep-09

Site photo

Photo taken at I-1

Photo taken at I-1-C

Interim Notifications of Environmental Quality Limits Exceedances

Incident Report on Action Level or Limit Level Non-compliance

Project	Tsuen Wan Drainage Tunnel
Date	14-Sep-09
Time	10:47 AM
Monitoring Location	Squatters (I-3)
Parameter	Suspended Solid
Action & Limit Levels	6.13 / 7.23
Measured Level	2.8 (higher than 130% of control station's SS)
Possible reason for Action or Limit Level Non-compliance	A low SS level of 2.1 is recorded at Control Station (I-3-C)
Actions taken / to be taken	The measured SS level was below baseline Action / Limit Level and was within the range of baseline SS concentration (1- 7.5mg/L). Site cleaning and tidying, soil nailing, formation of access road and disposal of C&D materials were undertaken during measurement. No direct disturbance was observed from the site. Thus, the exceedance is considered to be contributed by natural variation and no action should be required.
Remarks	Following mitigation measures were provided: (1) Gabion wall has been constructed to avoid any water from rainstorm and from site activities directly running down to the river of I-3. (2) Sedimentation Pond and Sand/silts removal facilities was installed at the location of I-3.

Prepared by: Terence Kong

Designation: Environmental Team Leader

Signature:

Date: 21-Sep-09

Photographic record for exceedance of Suspended Solid recorded at Squatters (I-3) on 14-Sep-09

Site photo

Photo taken at I-3

Photo taken at I-3-C

Interim Notifications of Environmental Quality Limits Exceedances

Incident Report on Action Level or Limit Level Non-compliance

Project	Tsuen Wan Drainage Tunnel
Date	16-Sep-09
Time	11:27 AM
Monitoring Location	Sik Sik Yuen Ho Fung College (I-1)
Parameter	Suspended Solid
Action & Limit Levels	8.85 / 10.17
Measured Level	3.3 (higher than 120% of control station's SS)
Possible reason for Action or Limit Level Non-compliance	A low SS level of 2.7 is recorded at Control Station (I-1-C)
Actions taken / to be taken	The measured SS level was below baseline Action / Limit Level and was within the range of baseline SS concentration (1-10.5mg/L). Only site cleaning and tidying as well as preparation and formation of working platform were undertaken during the measurement and no direct disturbance was observed from the site. Thus, the exceedance is considered to be contributed by natural variation and no action should be required.
Remarks	Following mitigation measures were provided: (1) sandbags were used at the gap of the working platform to avoid wastewater from site activities directly running down to the channel of I-1. (2) The working site was segregated with a wall and no wastewater was observed down to the channel - I1. (3) Sand/silts removal facilities were installed at the location of I-1.

Prepared by: Terence Kong

Designation: Environmental Team Leader

Signature:

Date: 24-Sep-09

Photographic record for exceedance of Suspended Solid recorded at Sik Sik Yuen Ho Fung College (I-1) on 16-Sep-09

Site photo

Photo taken at I-1

Photo taken at I-1-C

Interim Notifications of Environmental Quality Limits Exceedances

Incident Report on Action Level or Limit Level Non-compliance

Project	Tsuen Wan Drainage Tunnel
Date	7-Sep-09
Time	N/A
Monitoring Location	Roof top of Greenview Terrace facing to the construction site (NSR 9)
Parameter	Noise
Action & Limit Levels	When one documented complaint is received / 75 dB(A)
Measured Level	N/A
Possible reason for Action or Limit Level Non-compliance	Daytime Construction works (Soil nailing, excavation, rock breaking and drilling, loading and unloading the materials)
Actions taken / to be taken	The documented complaint for noise is considered to trigger the action level and the Contractor was also reminded to enhance the on-site noise mitigation measures continuously. Noise monitoring frequency would be proposed to increase twice per week by ET
Remarks	Please refer to the Complaint Investigation Report (CIR-009) attached for details.

Prepared by: Terence Kong

Designation: Environmental Team Leader

Signature:

Date: 6-Oct-09

Complaint Investigation Report

Contractor: Maeda – CREC – SELI Joint Venture	**ET Received Date:** 7 September 2009	**Ref:** CIR – 009
Project: Design and Construction of Tsuen Wan Drainage Tunnel		
COMPLAINANT		
Name: Mr. Lam, Greenview Terrace Property Management Office Tel: 2490 9680 Fax: 3426 9700	Address: No. 6 Castle Peak Road, Tsuen Wan, N.T.	
COMPLAINT INVESTIGATION		
Description (cause of impact, type of impact and location, etc.)		

Details of the Complaint

A complaint (SOR ref: (DC/2007/12)/M45/500/02628) was received from Greenview Terrace regarding to daytime construction noise level ($L_{eq(30min)}$) was sometimes exceeded 75 dB(A) at the outfall construction site. The complaint date was corresponded to 22 August 2009.

Findings/ Observations

Regular daytime construction noise monitoring, in accordance with EM&A Manual are performed by Environmental Team. The monitoring station concerned is NSR9 (i.e. at the roof top of Greenview Terrace facing to the construction site).

Soil nailing, excavation, rock breaking and drilling, loading and unloading the materials were generally observed during monitoring period in July and August 2009. The monitoring results from 6 July 2009 to 31 August 2009 at NSR 9 under EM&A requirements were summarised in the attached table. In accordance with EIAO-TM, the daytime construction noise limit is 75 dB(A) for NSR9. The measured noise levels complied with the limit level in accordance with the EIAO-TM. These cases would also be treated as an action level exceedance on noise and would be reported in next EM&A report.

The Contractor and the Environmental Team were also undertaken site investigation on the subject area in response to Greenview Terrace's complaint. The mitigation measures during the site investigation were observed as follows:

Noise

- Several layers of sound insulation sheets were installed at several locations of the site area.
- Movable noise barriers were used to surround the breaking activities.
- Noise insulation materials were used to enclose the breaking tip tightly.

Conclusion/Proposed Action

Based on our site inspection and monitoring results, no noise levels ($L_{eq(30min)}$) from the measurement taken from ET were exceeded 75dB(A). However, it was a recurrent case from Greenview Terrace. The Contractor was reminded to enhance the on-site noise mitigation measures. The enhanced mitigation measures are proposed as follows:

1. A staff from the Contractor was designated to take the reading of Leq (5mins) at the roof of Greenview Terrace. In case of the Leq (5min) exceed 73 dB(A), the Contractor would re-schedule the noisy plants to mitigate the escalation of noise level.
2. The designated staff was reminded to record all the weather condition including raining and wind speed.
3. Tools box talk for Contractor's Team was carried out for reminding that the movable barrier should be placed to the breaking activities as much as possible.
4. Several movable noise barriers had been placed on site and the movable noise barriers was modified.
5. Existing 25 ton rock breaker had been replaced by the another breaker.
6. The breaking tap of the 25 ton rock breaker had been replaced by another breaking tap.
7. A joint filler wall was installed at the vertical face of westbound to mitigate the noise rebound from the vertical face to high level of Greenview Terrace.
8. Noise monitoring frequency was increased twice per week.

Noise monitoring was increased by ET. The measurement was taken on 10, 12, 15, 17 and 28 August 2009. The noise levels ($L_{eq,\ 30\ min}$) were shown in the following table. The measured noise levels were complied with the limit level in accordance with the EIAO-TM.

Date	Start Time	End Time	L_{eq}, dB(A)	Limit Level, dB(A)	Noise Sources
10-Aug-09	10:27	10:57	73	75	Breaker x 2, Backhoe x 1, Traffic Noise
12-Aug-09	09:57	10:27	74.1	75	Breaker x 2, Backhoe x 2, Traffic Noise
15-Aug-09	09:48	10:18	71.5	75	Breaker x 2 & Backhoe x 2, Traffic Noise
17-Aug-09	15:41	16:11	70.9	75	Breaker x 2, Backhoe x 2, Traffic and Aircraft Noise
28-Aug-09	14:34	15:04	73.5	75	Breaker x 2, Excavator x 1, Traffic and Aircraft Noise

Remark:
The location of PME will be changed on and off and the utilization time for each PME may not be in constant.

From the additional monitoring data above and under EM&A requirements, noise level ($L_{eq,\ 30\ min}$) from 6 July to 31 August 2009 was in the range of 71 to 74 dB(A) to the nearest integer. From the information of the Contractor, all the mitigation measures were implemented on 31 August 2009. Noise levels ($L_{eq,\ 30\ min}$) were also re-measured after the implementation of the mitigation measures and the monitoring results are shown in the following table.

Date	Start Time	End Time	L_{eq}, dB(A)	Limit Level, dB(A)	Noise Sources
4-Sep-09	10:20	10:50	72.8	75	Breaker x 1, Excavator x 1, Traffic Noise
10-Sep-09	15:30	16:00	69.9	75	Excavator x 1, Traffic Noise
11-Sep-09	09:50	10:20	71.9	75	Breaker x 1, Excavator x 1, Traffic Noise
16-Sep-09	15:30	16:00	71.2	75	Breaker x 1, Drilling Work, Traffic Noise
18-Sep-09	09:40	10:10	71.9	75	Breaker x 1, Drilling Work, Excavator x1, Traffic Noise
22-Sep-09	14:38	15:08	73.2	75	Excavator x 1, Breaker x 1, Traffic Noise
25-Sep-09	15:40	16:10	**74.8**	75	Breaker x 1, Excavator x 1, Decoration at 14/F, Traffic Noise
28-Sep-09	09:30	10:00	72.4	75	Breaker x 1, Excavator x 1
2-Oct-09	09:40	10:10	**73.7**	75	Breaker x 1, Excavator x 1, Decoration at 14/F, Traffic & Aircraft Noise

Remark:
The location of PME will be changed on and off and the utilization time for each PME may not be in constant.

Noise level ($L_{eq,\ 30\ min}$) from 4 Sep to 28 Sep 2009 was in the range of 70 to 73 dB(A) to the nearest integer after the implementation of the mitigation measures. The measured noise levels were complied with the limit level in accordance with the EIAO-TM. From the noise level on 25 September 2009 and 2 October 2009, the trend of noise level seemed to be increased since the decoration work at 14/F Greenview Terrace was the domain noise source during the monitoring. The noise level during that time would be considered for reference only but not count in the above range. In our investigation, there was no exceedance of the measured noise level at Greenview Terrace.

FOLLOW UP ACTION (S)

ET will continuously review the condition of the site during the routine site inspections and provide reminder to the Contractor. The noise monitoring frequency would be maintained in twice per week. This case would be reported an action level exceedance on noise and also would be recorded in complaint log in the monthly EM&A report (September 2009).

Prepared & Confirmed by:

Name: Terence Kong (ET Leader) Signature: Date: 12 October 2009

ATTACHMENTS: Noise Monitoring Data from 6 July to 31 August 2009.

Noise Monitoring Data from 6 July 2009 to 31 August 2009

Monitoring Locations	Date	Weather Conditions	Temperature (°C)	Wind Speed (m/s)	Wind Direction	Start Time	End Time	Limit Level dB(A)	$L_{eq(30min)}$ dB(A)	Observation / Site Condition	Remark
NSR 9 Greenview Terrace	06-Jul-09	Sunny	31	0.5	S	15:05	15:35	75	72.4	Soil Nailing,Excavation by backhoe	Traffic noise
	16-Jul-09	Sunny	32	0.3	E	10:05	10:35	75	71.4	Soil Nailing,Excavation by backhoe	Traffic noise
	22-Jul-09	Sunny	31	0.6	E	14:05	14:35	75	72.7	Soil Nailing,Excavation & Breaking by backhoe	Traffic noise
	28-Jul-09	Fine	30	0.5	E	15:18	15:48	75	71.4	Soil Nailing,Breaking by backhoe	Traffic noise, aircraft noise
	03-Aug-09	Sunny	27	0.9	E	15:13	15:43	75	72.3	Breaking by backhoe,excavation work	Traffic noise
	14-Aug-09	Cloudy	28	0.2	E	14:35	15:05	75	72.6	Drilling,Breaking by backhoe	Traffic noise, aircraft noise
	19-Aug-09	Cloudy	31	1.3	E	13:15	13:45	75	72.1	Drilling,Breaking by backhoe	Traffic noise, aircraft noise
	25-Aug-09	Sunny	32	0.8	E	10:25	10:55	75	73.0	Breaking by backhoe,excavation work	Traffic noise
	31-Aug-09	Sunny	33	0.5	E	10:10	10:40	75	73.5	Breaking by backhoe,excavation work	Traffic noise

Appendix K

Complaint Log

APPENDIX K

COMPLAINT LOG

Complaint No.	Log Ref.	Date/Location	Complainant	Details of Complaint	Investigation / Mitigation Action	Status
1	CIR-001	9 March 2009 at Outfall	Public through EPD	EPD has received a complaint (EPD ref: EP3/N22/RW/04846-09) regarding to muddy effluent discharged from the outfall of the construction site from a public on 9 March 2009. Site investigation was also carried out by EPD with the Contractor on the same day.	Findings/ Observations In the afternoon on 9 March 2009, the Contractor was carrying out regular maintenance for removing silt accumulated in the wastewater treatment plant. During the maintenance works, some residual silt inside the plant was accidentally leaked out to the outfall discharge outlet. The reason was that a flexible pipe for disposing silt was found connecting to the concrete platform of the outfall discharge outlet. Conclusion/Remedial Action The complaint was valid and it was due to maintenance works at the wastewater treatment plant at the outfall area. The contractor had cleaned up the silt at discharge outlet and the channel at the outfall area on 12 March 2009 as shown in the attached photo. The ET will closely inspect the discharge outlet and the channel during the routine site inspections and provide advice to the Contractor. The Contractor was also advised to provide mitigation measures during any occasion of the maintenance work on the wastewater treatment plant. The discharge pipe of the treatment plant should be plugged and ensure not functioned when carrying out maintenance works on the wastewater treatment plant in order to prevent the discharge of silt or muddy water to the outlet. Flexible pipe for discharge of sludge should not be placed on the concrete platform under the outfall discharge outlet. For disposal of slit or sludge in the wastewater treatment plant, tanker should be used.	Closed
2	CIR-	8 May 2009	Public	EPD has received a complaint (EPD ref: EP3/N22/RW/09755-	Findings/ Observations Regular 1-hour TSP monitoring, in accordance with EM&A	

Complaint No.	Log Ref.	Date/Location	Complainant	Details of Complaint	Investigation / Mitigation Action	Status
	002	at Outfall	through EPD	09) regarding to construction dust from the outfall construction site on 8 May 2009. Site investigation was also carried out by EPD with the Contractor on 14 May 2009.	Manual, is performed by Environmental Team. The monitoring station concerned is ASR9 (i.e. at the podium level of Greenview Terrace facing to the construction site). The closest date for the 1-hour TSP concentration monitoring was on 6 May 2009 and 12 May 2009 at Greenview Terrace, ASR9. Soil nailing works and loading & unloading excavated materials were observed during monitoring. In accordance with the EM&A Manual and the Baseline Monitoring Report, all 1-hour TSP concentrations at ASR9 were below the established Action and Limit Levels. No exceedance was recorded on 6 and 12 May 2009. The contractor and the environmental team were also undertaken site investigation on the subject area in response to the complaint. It was confirmed that the air quality mitigation measures as recommended in EIA have been provided by the Contractor. The mitigation measures are as follows: • Water spraying was provided to the exposed surface. • Several automatic sprinklers were provided at the outfall construction site for water spraying of the haul road. • Water spraying was provided during dust generating works (e.g. rock breaking and soil nailing works). <u>Conclusion/Remedial Action</u> Based on the site inspection and monitoring results, the complaint is considered not justifiable since no action & limit level exceedance on construction dust are identified. Air quality mitigation measures as recommended in EIA have been implemented in order to control and minimise the air quality impact and nuisance arising from the construction activities. Nevertheless, in view of the recent dry and sunny weather, the haul road and the exposed area would be dry very quickly. The Contractor was recommended to provide more frequent water spraying especially in the dry and sunny	

Complaint No.	Log Ref.	Date/Location	Complainant	Details of Complaint	Investigation / Mitigation Action	Status
					weather.	
3	CIR-003	14 May 2009 at Outfall	Public through EPD	EPD has received a complaint (EPD ref: EP/RW/080206) regarding to daytime construction rock breaking at 7:15 am and dusty at the outfall construction site on 14 May 2009.	The closest date to the complaint for the 1-hour TSP monitoring & daytime construction noise monitoring was on 12, 18 and 27 May 2009 at Greenview Terrace, ASR9 and NSR9. Soil nailing, excavation, rock breaking, loading and unloading the materials were observed during monitoring period. The measured noise levels complied with the limit level in accordance with the EIAO-TM. All 1-hour TSP concentrations at ASR9 were below the established Action and Limit Levels. No 1-hour TSP exceedance was recorded. The contractor and the environmental team were also undertaken site investigation on the subject area in response to the complaint. Air quality mitigation measures as recommended in EIA have been implemented by the Contractor. However, noise mitigation measures could be further improved. Based on our site inspection and monitoring results, the complaint for dust is considered not justifiable since no action & limit level exceedance on construction dust is identified. Air quality mitigation measures as recommended in EIA have also been implemented in order to control and minimise the air quality impact arising from the construction activities. In view of the recent dry and sunny weather, the haul road and the exposed area would be dry very quickly. The Contractor was recommended to enhance water spraying especially in the dry and sunny weather. On the other hand, the complaint for noise is considered due to works and the Contractor was agreed to improve the on-site noise mitigation measures such as the following measures. ET's site inspection and the joint inspection with relevant parties was conducted on 29 May 2009 and 4 June 2009 respectively to confirm all the below measures have been implemented.	Closed

Complaint No.	Log Ref.	Date/Location	Complainant	Details of Complaint	Investigation / Mitigation Action	Status
					• For the idling plant, it should be switched off to reduce noise level generated. • The sound insulation sheets and noise insulation materials should be placed to enclose the breaking tip tightly and also aside or surrounding the breaking activities as recommended in the following photos 1-3 in noise mitigation measures. • Noise monitoring frequency was increased in order to check the effectiveness of the mitigation measures. The additional measurement was taken on 27 May, 8 June, 10 June and 12 June 2009 after all the measures implemented. The noise levels ($L_{eq,\ 30\ min}$) were 70.9 dB (A), 70.5 dB (A), 70.3 dB (A) and 70.3 dB (A) respectively, which comply with the limit level in accordance with the EIAO-TM. Soil nailing, excavation and rock breaking were observed during monitoring period. The measures were well in place and seemed effective during the measurement.	
4	CIR-004	10 July 2009 at Outfall	Public through EPD	EPD has received a complaint (EPD ref: EP3/N22/RW/15137-09) regarding to construction dust from the outfall construction site on 10 July 2009.	<u>Findings/ Observations</u> 1-hour TSP concentration monitoring was on 10 July 2009 at Greenview Terrace, ASR9. Soil nailing works, concrete breaking, excavation and loading & unloading excavated materials were observed during monitoring. All 1-hour TSP concentrations at ASR9 were below the established Action and Limit Levels. No exceedance was recorded on 10 July 2009. The contractor and the environmental team were also undertaken site investigation on the subject area in response to the complaint. It was confirmed that the air quality mitigation measures as recommended in EIA have been provided by the Contractor. The mitigation measures are as follows: • Water spraying was provided to the exposed surface.	Closed

Complaint No.	Log Ref.	Date/Location	Complainant	Details of Complaint	Investigation / Mitigation Action	Status
					• Automatic sprinklers were provided at the outfall construction site for water spraying of the haul road. • Water spraying was provided during dust generating works (e.g. rock breaking and soil nailing works). • Tarpaulin was used for covering the dusty works in the Portal area. Conclusion/Remedial Action The complaint is considered not justifiable since no action & limit level exceedance on construction dust are identified	
5 & 6	CIR-005	29 July 2009 & 11 August 2009 at Outfall	Public through SOR	SOR has received two complaints (SOR ref: (DC/2007/12)/M45/500/02480, 02500) from Greenview Terrace regarding to daytime construction noise exceedance recorded at NSR9 on 8, 22, 23, 27 and 29 July 2009 and a large amount dust generated at the outfall construction site. The complaint dates were corresponded to 29 July and 11 August 2009.	Findings/ Observations Soil nailing, excavation, rock breaking and drilling, loading and unloading the materials were generally observed during monitoring period in July and August 2009. According to the noise monitoring results from 6 July 2009 to 31 August 2009 at NSR 9, the measured noise levels complied with the limit level in accordance with the EIAO-TM. All 1-hour TSP concentrations at ASR9 were below the established Action and Limit Levels from 6 July 2009 to 25 August 2009. Conclusion/Remedial Action The dust complaint on 22 July 2009 was due to the soil nailing works. The Contractor was reminded enhance the dust mitigation measures during soil nailing works. A designated staff was provided to spray water continuously during soil nailing. A nylon bag was placed on the drilling hole and keeping wet to suppress dust. A sprinkler was added at the hillside of the site and water spraying was provided continuously during operation of drilling to suppress dust. The documented complaint for noise is considered to trigger the action level and the Contractor was also reminded to enhance the on-site noise mitigation measures continuously. The enhanced mitigation measures are proposed as follows: • A staff from the Contractor was designated to take the reading of Leq (5mins) at the roof of Greenview Terrace. In case of the Leq (5min) exceed 73 dB(A), the Contractor	Same Case with Complaint No. 10

Complaint No.	Log Ref.	Date/Location	Complainant	Details of Complaint	Investigation / Mitigation Action	Status
					would re-schedule the noisy plants to mitigate the escalation of noise level. • The designated staff was reminded to record all the weather condition including raining and wind speed. • Tools box talk for the Contractor's Team was carried out for reminding that the movable barrier should be placed to the breaking activities as much as possible. • Movable noise barriers were placed on site and the movable noise barriers were also modified. • Existing 25 ton rock breaker had been replaced by the another breaker. • The breaking tap of the 25 ton rock breaker had been replaced by another breaking tap. • A joint filler wall was installed at the vertical face of westbound to mitigate the noise rebound from the vertical face to high level of Greenview Terrace. From the additional monitoring data and monitoring data under regular EM&A requirements, noise level ($L_{eq,\ 30\ min}$) between 6 July to 31 August 2009 was in the range of 71 to 74 dB(A) to the nearest integer. The noise monitoring frequency was maintained in twice per week to check whether the mitigation measures are effective. From the information of the Contractor, all the mitigation measures were implemented on 31 August 2009. Noise levels ($L_{eq,\ 30\ min}$) were also re-measured after the implementation of the mitigation measures. Noise level ($L_{eq,\ 30\ min}$) from 4 Sep to 28 Sep 2009 was in the range of 70 to 73 dB(A) to the nearest integer after the implementation of the mitigation measures. In our investigation, there was no exceedance of the measured noise level at Greenview Terrace.	
7	CIR-006	12 August 2009 at Outfall	Public through SOR	SOR has received a complaint (SOR ref:	<u>Findings/ Observations</u> Soil nailing, excavation, rock breaking and drilling, loading and unloading the materials were generally observed during	Closed

Complaint No.	Log Ref.	Date/Location	Complainant	Details of Complaint	Investigation / Mitigation Action	Status
				(DC/2007/12)/M45/500/02527) from Greenview Terrace, via Apple Daily regarding to daytime construction noise level ($L_{eq(30min)}$) was sometimes more than 80 dB(A) and a large amount dust generated at the outfall construction site. The complaint date was corresponded to 12 August 2009.	monitoring period in July and August 2009. According to the noise monitoring results from 6 July 2009 to 31 August 2009 at NSR 9, the measured noise levels complied with the limit level in accordance with the EIAO-TM. All 1-hour TSP concentrations at ASR9 were below the established Action and Limit Levels from 6 July 2009 to 25 August 2009. <u>Conclusion/Remedial Action</u> The dust complaint was considered not justifiable since no action & limit level exceedance on construction dust were identified. However, it was a recurrent case from Greenview Terrace. The Contractor was recommended to enhance water spraying continuously especially in rock breaking activities. On the other hand, there was no noise levels ($L_{eq(30min)}$) from the measurement taken from ET was more than 80 dB(A). However, it was a recurrent case from Greenview Terrace. The Contractor was reminded to enhance the on-site noise mitigation measures. The enhanced mitigation measures are proposed as follows: • A staff from the Contractor was designated to take the reading of Leq (5mins) at the roof of Greenview Terrace. In case of the Leq (5min) exceed 73 dB(A), the Contractor would re-schedule the noisy plants to mitigate the escalation of noise level. • The designated staff was reminded to record all the weather condition including raining and wind speed. • Tools box talk for the Contractor's Team was carried out for reminding that the movable barrier should be placed to the breaking activities as much as possible. • Movable noise barriers were placed on site and the movable noise barriers were also modified. • Existing 25 ton rock breaker had been replaced by the another breaker.	

Complaint No.	Log Ref.	Date/Location	Complainant	Details of Complaint	Investigation / Mitigation Action	Status
					• The breaking tap of the 25 ton rock breaker had been replaced by another breaking tap. • A joint filler wall was installed at the vertical face of westbound to mitigate the noise rebound from the vertical face to high level of Greenview Terrace. From the additional monitoring data and monitoring data under regular EM&A requirements, noise level ($L_{eq, 30 min}$) from 6 July to 31 August 2009 was in the range of 71 to 74 dB(A) to the nearest integer. The noise monitoring frequency was maintained in twice per week to check whether the mitigation measures are effective. From the information of the Contractor, all the mitigation measures were implemented on 31 August 2009. Noise levels ($L_{eq, 30 min}$) were also re-measured after the implementation of the mitigation measures. Noise level ($L_{eq, 30 min}$) from 4 Sep to 28 Sep 2009 was in the range of 70 to 73 dB(A) to the nearest integer after the implementation of the mitigation measures.	
8	CIR-007	14 August 2009 at Outfall	Public through EPD	EPD has received a complaint (EPD ref: EP3/N22/RW/17978-09) from Greenview Terrace regarding to daytime construction noise from the outfall construction site. The complaint date was corresponded to 14 August 2009.	Findings/ Observations Soil nailing, excavation, rock breaking and drilling, loading and unloading the materials were generally observed during monitoring period in July and August 2009. According to the noise monitoring results from 6 July 2009 to 31 August 2009 at NSR 9, the measured noise levels complied with the limit level in accordance with the EIAO-TM. Conclusion/Remedial Action This was a recurrent case from Greenview Terrace. The documented complaint for noise is considered to trigger the action level and the Contractor was reminded to enhance the on-site noise mitigation measures continuously. The enhanced mitigation measures are proposed as follows: • A staff from the Contractor was designated to take the reading of Leq (5mins) at the roof of Greenview Terrace. In case of the Leq (5min) exceed 73 dB(A), the Contractor	Same Case with Complaint No. 10

Complaint No.	Log Ref.	Date/Location	Complainant	Details of Complaint	Investigation / Mitigation Action	Status
					would re-schedule the noisy plants to mitigate the escalation of noise level. • The designated staff was reminded to record all the weather condition including raining and wind speed. • Tools box talk for the Contractor's Team was carried out for reminding that the movable barrier should be placed to the breaking activities as much as possible. • Movable noise barriers were placed on site and the movable noise barriers were also modified. • Existing 25 ton rock breaker had been replaced by the another breaker. • The breaking tap of the 25 ton rock breaker had been replaced by another breaking tap. • A joint filler wall was installed at the vertical face of westbound to mitigate the noise rebound from the vertical face to high level of Greenview Terrace. From the additional monitoring data and monitoring data under regular EM&A requirements, noise level ($L_{eq, 30 min}$) from 6 July to 31 August 2009 was in the range of 71 to 74 dB(A) to the nearest integer. The noise monitoring frequency would be maintained in twice per week to check whether the mitigation measures are effective. From the information of the Contractor, all the mitigation measures were implemented on 31 August 2009. Noise levels ($L_{eq, 30 min}$) were also re-measured after the implementation of the mitigation measures. Noise level ($L_{eq, 30 min}$) from 4 Sep to 28 Sep 2009 was in the range of 70 to 73 dB(A) to the nearest integer after the implementation of the mitigation measures.	
9	CIR-008	17 August 2009 at Portion D of the Site	Public through SOR	SOR has received a complaint (SOR ref:(DC/2007/12)/M45/500/02546) from Long Bench Garden	<u>Findings/ Observations</u> Soil nailing, excavation, rock breaking and drilling, loading and unloading the materials were generally observed during monitoring period in August 2009. The monitoring results from 3 August 2009 to 31 August 2009 at NSR 8 showed the	Closed

Complaint No.	Log Ref.	Date/Location	Complainant	Details of Complaint	Investigation / Mitigation Action	Status
				regarding to noise nuisance generated from the daytime construction work (rock-breaking) in Portion D of the Site. The complaint date was corresponded to 17 August 2009.	measured noise levels complied with the limit level in accordance with the EIAO-TM. The contractor and the environmental team were also undertaken site investigation on the subject area in response to the complaint. Noise mitigation measures should be enhanced continuously due to this complaint. Conclusion/Proposed Action The documented complaint for noise is considered to trigger the action level and the Contractor was reminded to enhance the on-site noise mitigation measures continuously. The enhanced mitigation measures are recommended as follows: • Movable noise barriers had been placed towards the direction of Long Bench Garden, particular for the pipe pile works in the portal. • Tools box talk for construction team was carried out for reminding that the movable barrier should be placed to the breaking activities as much as possible. • The existing noisy 25 ton rock breaker had been replaced by the other breaker. • A joint filler wall had been fixed on the vertical face of west bound to absorb the noise generated towards Long Beach Garden. Noise monitoring frequency was increased twice per week by ET due to this complaint. The measured noise levels were complied with the limit level in accordance with the EIAO-TM. No further complaint was received from Long Bench Garden within the reporting month.	
10	CIR-009	22 August 2009 at Outfall	Public through SOR	A complaint (SOR ref: (DC/2007/12)/M45/500/02628) was received from Greenview Terrace regarding to daytime construction noise level	Findings/ Observations Soil nailing, excavation, rock breaking and drilling, loading and unloading the materials were generally observed during monitoring period in July and August 2009. The monitoring results from 6 July 2009 to 31 August 2009 at NSR 9 showed the measured noise levels complied with the limit level in	Follow-up

Complaint No.	Log Ref.	Date/Location	Complainant	Details of Complaint	Investigation / Mitigation Action	Status
				(Leq(30min)) was sometimes exceeded 75 dB(A) at the outfall construction site. The complaint date was corresponded to 22 August 2009.	accordance with the EIAO-TM. The contractor and the environmental team were also undertaken site investigation on the subject area in response to the complaint. Noise mitigation measures should be enhanced continuously due to this complaint. <u>Conclusion/Proposed Action</u> The documented complaint for noise is considered to trigger the action level and the Contractor was reminded to enhance the on-site noise mitigation measures continuously. The enhanced mitigation measures are recommended as follows: • A staff from the Contractor was designated to take the reading of Leq (5mins) at the roof of Greenview Terrace. In case of the Leq (5min) exceed 73 dB(A), the Contractor would re-schedule the noisy plants to mitigate the escalation of noise level. • The designated staff was reminded to record all the weather condition including raining and wind speed. • Tools box talk for the Contractor's Team was carried out for reminding that the movable barrier should be placed to the breaking activities as much as possible. • Movable noise barriers were placed on site and the movable noise barriers were also modified. • Existing 25 ton rock breaker had been replaced by the another breaker. • The breaking tap of the 25 ton rock breaker had been replaced by another breaking tap. • A joint filler wall was installed at the vertical face of westbound to mitigate the noise rebound from the vertical face to high level of Greenview Terrace. From the additional monitoring data and monitoring data under regular EM&A requirements, noise level ($L_{eq,\ 30\ min}$) from 6 July to 31 August 2009 was in the range of 71 to 74 dB(A) to the nearest integer. The noise monitoring frequency was	

Complaint No.	Log Ref.	Date/Location	Complainant	Details of Complaint	Investigation / Mitigation Action	Status
					maintained in twice per week to check whether the mitigation measures are effective. From the information of the Contractor, all the mitigation measures were implemented on 31 August 2009. Noise levels ($L_{eq,\ 30\ min}$) were also re-measured after the implementation of the mitigation measures. Noise level ($L_{eq,\ 30\ min}$) from 4 Sep to 28 Sep 2009 was in the range of 70 to 73 dB(A) to the nearest integer after the implementation of the mitigation measures. In our investigation, there was no exceedance of the measured noise level at Greenview Terrace.	

Signed by Environmental Team Leader: Date: 12 October 2009