

Maeda - CREC - SELI Joint Venture



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

Quarterly EM&A Report
(October - December 2008)

January 2009

Report no: EB000364R0152

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Quarterly EM&A Report
(October - December 2008)

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Report no: EB000364R0152

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Contents

Executive Summary	1
1 Introduction	3
2 Project Information	3
2.1 Project Organization and Management Structure	3
2.2 Construction Progress	3
2.3 Mitigation Measures	4
3 EM&A Requirement	4
3.1 General.....	4
3.2 EM&A on Air Quality; Noise and Water Quality.....	4
4 Quarterly Summary; Environmental Condition and Non-Compliance Records	11
4.1 Summary of Waste Disposal Records.....	11
4.2 Weather Conditions	11
4.3 Summary of Project-Related Exceedances	11
5 Complaint	12
6 Summary of Notification of Summons; Successful Prosecutions and Corrective Actions	12
7 Comments; Recommendations and Conclusion	12

Appendices

Appendix A	Site Map and Works Area
Appendix B	Organization Chart
Appendix C	Work Programme
Appendix D	Implementation Status of Environmental Mitigation Measures
Appendix E	Monitoring Locations
Appendix F	Monitoring Results
Appendix G	Interim Notifications of Environmental Quality Limits Exceedances

List of Tables

Table 3-1	Frequency of Air Quality; Noise and Water Quality Monitoring
Table 3-2	Air Quality Monitoring Locations
Table 3-3	Noise Monitoring Locations
Table 3-4	Water Quality Monitoring Locations
Table 3-5	Action & Limit Levels for Air Quality
Table 3-6	Action & Limit Levels for Noise
Table 3-7	Action & Limit Levels for Water Quality
Table 3-8	Summary of Air Quality Monitoring Results
Table 3-9	Summary of Impact Noise Monitoring Results
Table 3-10	Summary of Impact Water Quality Monitoring Results
Table 4-1	Waste Generated from October to December 2008
Table 4-2	Summary of Project- related Exceedances
Table 5-1	Cumulative Statistic of Environmental Complaints
Table 6-1	Cumulative Statistics of notification of summons and successful prosecutions

Executive Summary

1. This quarterly EM&A summary report under the Main Contract for the Design and Construction of Tsuen Wan Drainage Tunnel (hereafter referred to as the “Project”) to Maeda-CREC-SELI Joint Venture (MCSJV), which summarises the findings of environmental impact monitoring works during the period from October to December 2008.
2. Noise monitoring was performed at five monitoring stations (NSR1, NSR3, NSR6, NSR8 and NSR9). Air quality monitoring was carried out at four monitoring stations (ASR1, ASR3, ASR8 and ASR9). Water quality monitoring was carried out at three monitoring stations (Intake I-1, Intake I-2 and Intake I-3). Noise level was measured in terms of L_{eq} , L_{10} and L_{90} (30min). Air quality was measured in terms of 1-hour Total Suspended Particulates (TSP). Water quality was measured in terms of Temperature, pH, Dissolved Oxygen (DO), Turbidity (Tby) and Suspended Solid (SS).
3. Details of all monitoring stations are summarized in the below table.

Type of Monitoring	Monitoring Station ID	Name of Premises	Status of Monitoring Works during the Reporting Period
Air Quality Monitoring	ASR1	Sik Sik Yuen Ho Fung College	Ongoing
	ASR3	Hong Hoi Chee Hong Temple	Ongoing
	ASR8	Beach Tower (Long Beach Gardens)	Ongoing
	ASR9	Greenview Terrace (Block 1)	Ongoing
Noise Monitoring	NSR1	Sik Sik Yuen Ho Fung College	Ongoing
	NSR3	Hong Hoi Chee Hong Temple	Ongoing
	NSR6	Squatters	Ongoing
	NSR8	Beach Tower (Long Beach Gardens)	Ongoing
	NSR9	Greenview Terrace (Block 1)	Ongoing
Water Quality Monitoring	I-1	Intake I-1	Ongoing
	I-2	Intake I-2	Ongoing
	I-3	Intake I-3	Ongoing
	O-1	Outfall O-1	Not yet commenced until construction of rip rap is in place.

4. The major construction activities undertaken by the Contractor during the period from October to December 2008 include pre-construction survey, site clearance; hoarding & fencing erection; tree transplanting; slope stabilization; soil nailing; pipe pile; relocation of verified boulder; formation of access road; and pre-bore H-piling.
5. No construction activities were carried out during the restricted hours during the reporting period.
6. One exceedance of Action Level for air quality monitoring related to Project activities were recorded on 27 November 2008 during the reporting period. Other exceedances for air quality monitoring were not related to Project activities. No project related exceedance of noise and water quality monitoring was recorded. The below table summarizes the exceedances of air quality, noise and water quality in the reporting period.

Parameter	Action Level Exceedance	Limit Level Exceedance
Air	<ul style="list-style-type: none"> ▪ Two recorded on 11 October at ASR 1 (non project related) ▪ One recorded on 27 November at ASR 9 (project related) 	Nil
Noise	Nil	Nil
DO	Nil	Nil
Turbidity	Nil	Nil
SS	<ul style="list-style-type: none"> ▪ One recorded on 29 October at I-2 (non project related) ▪ Two recorded at I-1 on 5 and 8 and 19 December (non project related) ▪ One recorded on 29 December at I-3 (non project related) 	<ul style="list-style-type: none"> ▪ Two recorded on 4 and 6 October at I-1 (non project related) ▪ One recorded on 31 October at I-2 (non project related) ▪ One recorded at I-1 on 17 November (non project related) ▪ One recorded at I-1 on 19 December (non project related)

7. Waste figures during the reporting period are summarized in the below table.

Status of Waste Management	
Inert C&D Material Disposed of to Public Fill at Tuen Mun (m³)	436.8
Inert C&D Material Reused in the Contract (m³)	10
Metals Generated (kg)	5
Paper / Cardboard Packaging (kg)	600.0
Plastics (kg)	0
Chemical Waste (kg)	0
General Waste Disposed of to NENT Landfill (m³)	30.3

8. No environmental complaint was received in the reporting quarter.

9. No Notification of Summons was received since the commencement of the Project.

1 Introduction

- 1.1.1 The Drainage Services Department (DSD) proposes to construct a tunnel of an internal diameter of 6.5m and length 5.13km, with the purpose to alleviate the flooding risk in Tsuen Wan and Kwai Chung.
- 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 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 commenced on January 2008. This is the third quarterly EM&A report summarising the impact monitoring results and audit findings of the EM&A program during the reporting period in October - December 2008.

2 Project Information

2.1 Project Organization and Management Structure

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

2.2 Construction Progress

- 2.2.1 It is anticipated that the overall project programme from the detail design to completion of all civil works shall take approximately 54 months. The construction programme is presented in Appendix C.
- 2.2.2 The major construction activities undertaken in the reporting quarter are:
- Site clearance;
 - Hoarding & fencing erection;
 - Tree survey & transplanting;
 - Slope stabilization;
 - Pre-construction survey;
 - Soil nailing;

- Relocation of verified boulder;
- Formation of access road; and
- Pre-bore H-piling

2.3 Mitigation Measures

2.3.1 The environmental mitigation measures that have been implemented and their status are given in Appendix D.

3 EM&A Requirement

3.1 General

3.1.1 The EM&A requirements are stipulated in the EM&A Manual. The principal purposes of the EM&A program are to assess the compliance with applicable environmental legislation and associated regulations; to ensure the implementation of mitigation measures specified in the EM&A Manual; and to identify any remedial works necessary for redressing any unacceptable or unanticipated environmental impacts.

3.2 EM&A on Air Quality; Noise and Water Quality Monitoring Parameters

3.2.1 The air quality; noise and water quality frequencies and parameters are shown in Table 3-1.

Type of Monitoring	Monitoring Station ID	Parameter	Frequency
Air Quality Monitoring	ASR1; ASR3; ASR8 and ASR9	1-hour TSP	Once every 6-day
Noise Monitoring	NSR1; NSR3; NSR6; NSR8 and NSR9	Leq (30 min.)	Once every week
Water Quality Monitoring	I-1; I-1-C; I-2; I-2-C; I-3; I-3-C	DO (mg/l)	Three days per week
		SS (mg/l)	
		Turbidity (NTU)	
		pH	
		Temperature (°C)	

Table 3-1 Frequency of Air Quality; Noise and Water Quality Monitoring

Monitoring Locations

3.2.2 The monitoring locations for air quality; noise and water quality are shown in Tables 3-2; 3-3; 3-4 and Appendix E.

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

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

Table 3-3 Noise Monitoring Locations

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 1 During Flood Tide
O-1 (ET)*	Outfall 1 During 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

Note: *Water quality monitoring will be undertaken when the construction of rip rap is in placed.

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

Table 3-4 Water Quality Monitoring Locations

Performance Limits (AL Levels)

- 3.2.3 In accordance with the EM&A Manual; the appropriate Action and Limit Levels for Air Quality; Noise and Water Quality were established and are presented in Tables 3-5; 3-6 and 3.7. Should non-compliance of the air quality; noise and water quality criteria occur; actions in accordance with the Event / Action Plan stipulated in contract specific EM&A Manual should be carried out.

Station	1-hr TSP Level in $\mu\text{g}/\text{m}^3$	
	Action Level	Limit Level
ASR1	307	500
ASR3	327	500
ASR8	337	500
ASR9	329	500

Table 3-5 Action & Limit Levels for Air Quality

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

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

Table 3-6 Action & Limit Levels for Noise

Parameters	Action	Limit
DO in mg/l (Surface; Middle & Bottom)	<u>Surface & Middle</u> 5%-ile of baseline data for surface and middle layer. <u>Bottom</u> 5%-ile of baseline data for bottom layer.	<u>Surface & Middle</u> 4mg/l except 5mg/l for FCZ or 1%-ile of baseline data for surface and middle layer <u>Bottom</u> 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 3-7 Action & Limit Levels for Water Quality

Monitoring Result

3.2.4 A summary of air quality monitoring results is presented in Table 3-8 and Appendix F.

Monitoring Station	1-hour TSP ($\mu\text{g}/\text{m}^3$)			Action Level ($\mu\text{g}/\text{m}^3$)	Limit Level ($\mu\text{g}/\text{m}^3$)
	Range				
ASR1	10.1	-	520.9	307	500
ASR3	19.1	-	215.3	327	500
ASR8	20.8	-	258.6	337	500
ASR9	16.7	-	<i>376.0</i>	329	500

Italic indicates the exceedances of *Action Levels*

Bold indicates the exceedances of **Limit Levels**

Table 3-8 Summary of Air Quality Monitoring Results

3.2.5 A total of one project related and two non project related exceedances were recorded in the reporting period.

3.2.6 Two non project related exceedance of 1-hr TSP were recorded at ASR 1 on 11 October 2008. The 2nd and 3rd measurements of 1-hr TSP monitoring at ASR 1 were exceeded Action and Limit Levels respectively. River clearance by a small backhoe was undertaken during measurement and no major fugitive dust was generated from on-site activities. In addition, emission from the stockpiled construction material arising from renovation works within Ho Fung College was observed. As such, it is concluded that both exceedances were not project related.

3.2.7 One project related exceedance of 1-hr TSP monitoring at ASR 9 was recorded on 27 November 2008. The 1st measurement of 1-hr TSP monitoring at ASR 9 has exceeded Action Level. Fugitive dust generated from tree logging and site tidiness was observed during the measurement of 1st 1-hr TSP monitoring. Contractor had immediately provided water spraying for dust suppression.

3.2.8 All measured noise monitoring levels were complying with the Action and Limit Levels in the reporting period. A summary of noise monitoring results is presented in Table 3-9 and Appendix F.

Monitoring Station	Leq (30mins) dB(A)			Limit Level dB(A)
	Range			
NSR1	62	-	68	65 / 70*
NSR3	60	-	73	75
NSR6	60	-	63	75
NSR8	59	-	67	75
NSR9	59	-	66	75

Bold indicates the exceedances of **Limit Levels**

* Noise limit level at NSR 1 reduces from 70dB(A) to 65 dB(A) during examination period from 4 to 18 December 2008.

Table 3-9 Summary of Impact Noise Monitoring Results

3.2.9 A summary of water quality monitoring results is presented in Table 3-10 and Appendix F.

3.2.10 None of exceedance related to project construction activities was recorded during reporting quarter but a total of nine non project related exceedances were recorded.

3.2.11 A total of four non project related exceedances were recorded in October 2008 including:

- exceedance of Baseline Limit Level of SS recorded at I-1 on 4 October was contributed by muddy water generated from CEDD's project (Yick Hing) at upper stream;
- exceedance of Control Limit Level of SS (130% higher than I-1-C) was recorded at I-1 on 6 October but no direct disturbance was observed contributed by the project construction activities.
- exceedance of Control Action Level of SS (120% higher than I-2-C) recorded at I-2 on 29 October was well below both Baseline Action & Limit Levels and no direct disturbance was observed contributed by the project construction activities
- exceedance of Control Limit Level of SS (130% higher than I-2-C) recorded at 31 October at I-2 was well below both Baseline Action & Baseline Limit Levels and no direct disturbance was observed contributed by project construction activities.

3.2.12 One non project related exceedance was recorded in November 2008 including:

- exceedance of Control Limit Level of SS (130% higher than I-1-C) recorded at I-1 on 17 November was well below both Baseline Action & Limit Levels and no direct disturbance was observed contributed by the project construction activities

3.2.13 A total of four non project related exceedance were recorded in December 2008 including:

- exceedance of Control Action Level of SS (120% higher than I-1-C) recorded at I-1 on 5 and 8 December was below both baseline Action and Limit Levels and was within the range of baseline SS concentration and exceedance was considered to be contributed by natural variation

- exceedance of Limit Level of SS recorded at I-1 on 19 December was over both Baseline Action and Limit Levels, but was below both 120% and 130% of the measured level at Control Station and no direct disturbance was observed contributed by project construction activities
- exceedance of Action Level of SS was recorded at I-3 on 29 December was over Baseline Action Level, but the measured SS level was well below both 120% and 130% of the measured level at Control Station and no direct disturbance was observed contributed by project construction

3.2.14 Details of the above mentioned exceedance investigations could be referred to the notifications of exceedances as enclosed in Appendix G.

Monitoring Station	Temperature	DO (mg/L)		pH	Turbidity (NTU)		Suspended Solid (mg/L)	
	Range	Range	Action / Limit Level	Range	Range	Action / Limit Level	Range	Action / Limit Level
I-1	15.80 - 26.55	4.20 - 5.50	3.42 / 3.34	7.04 - 8.45	3.08 - 9.28	9.75 / 12.47	2.00 - 77.85	8.85 / 10.17
I-1-C	15.80 - 26.40	4.34 - 5.58	-	7.04 - 8.70	3.14 - 10.14	-	2.00 - 79.60	-
I-2	16.20 - 26.55	3.67 - 5.43	3.66 / 3.63	7.48 - 8.42	2.96 - 5.43	6.63 / 6.99	2.00 - 6.50	7.68 / 8.34
I-2-C	16.30 - 27.00	4.02 - 5.45	-	7.45 - 8.32	3.07 - 6.58	-	2.00 - 6.20	-
I-3	14.40 - 26.60	4.23 - 5.91	3.65 / 3.51	7.20 - 8.73	2.59 - 3.76	3.99 / 4.18	2.00 - <i>6.60</i>	6.13 / 7.23
I-3-C	14.50 - 26.80	4.37 - 5.54	-	7.25 - 8.71	2.63 - 3.87	-	2.00 - 7.20	-

Note: *Italic* indicates the exceedances of *Action Levels*

Bold indicates the exceedances of **Limit Levels**

Table 3-10 Summary of Impact Water Quality Monitoring Results

4 Quarterly Summary; Environmental Condition and Non-Compliance Records

4.1 Summary of Waste Disposal Records

4.1.1 According to the information provided by the Contractor; the quantities of C&D materials in the reporting period are summarized in Table 4-1.

Status of Waste Management	October 08	September 08	December 08
Inert C&D Material Disposed of to Public Fill at Tuen Mun (m ³)	232.4	60.3	144.1
Inert C&D Material Reused in other Contract (m ³)	Nil	Nil	10
Metals Generated (kg)	Nil	Nil	5
Paper / Cardboard Packaging (kg)	200	250	150
Plastics (kg)	Nil	Nil	Nil
Chemical Waste (kg)	Nil	Nil	Nil
General Waste Disposed of to NENT Landfill (m ³)	12	12.1	6.2

Table 4-1 Waste Generated from October to December 2008

4.2 Weather Conditions

4.2.1 The weather conditions during the period from October to December 2008 were mainly sunny, and occasional cloudy weather.

4.3 Summary of Project-Related Exceedances

4.3.1 Summary of exceedance results are summarized in Table 4-2. For the exceedances that are considered to be non-related to the construction activities; please refer to the monthly EM&A reports separately. Appendix G shows the Interim Notifications of Environmental Quality Limits Exceedances recorded in the reporting period.

Environmental Monitoring	Total No. of Measurement	Action Level Exceedance	% of Action Level Exceedance	Limit Level Exceedance	% of Limit Level Exceedance
Air Quality	192	1	0.5	0	0
Noise	65	0	0	0	0
Water	240*	0	0	0	0

*A total of 84 water monitoring was undertaken in December 2008.

Table 4-2 Summary of Project- related Exceedances

5 Complaint

- 5.1.1 No complaint was received during the reporting period. Cumulative statistics of environmental complaints are shown in Table 5-1.

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

Table 5-1 Cumulative Statistic of Environmental Complaints

6 Summary of Notification of Summons; Successful Prosecutions and Corrective Actions

- 6.1.1 No summons and successful prosecution was received during the reporting period.
- 6.1.2 Cumulative statistics of Notification of Summons; Successful Prosecutions and Convictions are shown in Table 6-1.

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

Table 6-1 Cumulative Statistics of notification of summons and successful prosecutions

7 Comments; Recommendations and Conclusion

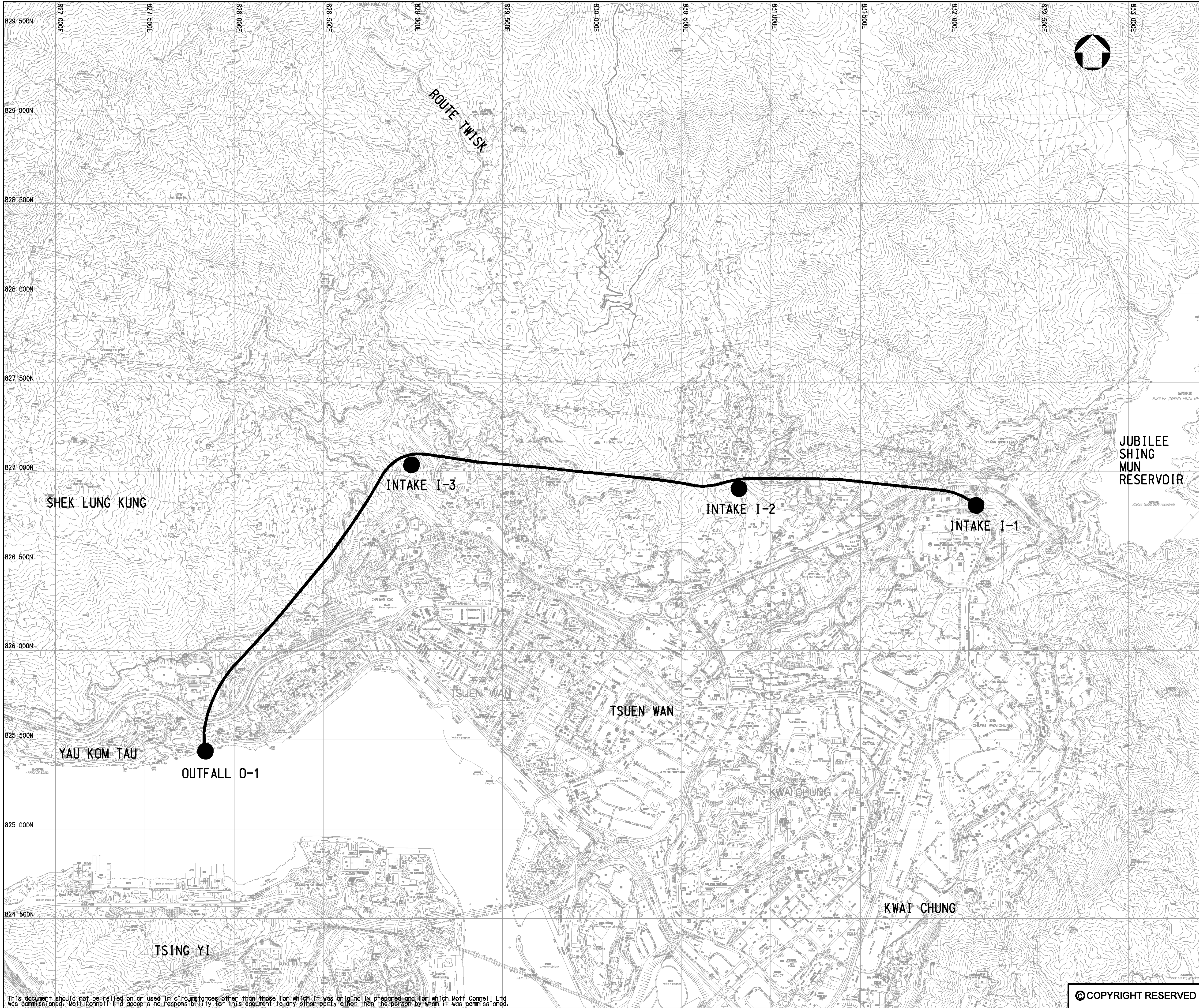
- 7.1.1 During the reporting period, one project related exceedance of air quality monitoring was recorded on 27 November 2008. Other exceedances for air quality monitoring were not related to Project activities. Exceedances of water quality monitoring were recorded but none of these exceedances were related to Project's construction activities.
- 7.1.2 No construction noise complaint was received and all measured construction noise levels were below Limit Level in the reporting period.
- 7.1.3 Waste management mitigation measures have been implemented by the Contractor within the reporting period. Waste figures during the reporting period are summarized in the below table.

Status of Waste Management	
Inert C&D Material Disposed of to Public Fill at Tuen Mun (m³)	436.8
Inert C&D Material Reused in the Contract (m³)	10
Metals Generated (kg)	5
Paper / Cardboard Packaging (kg)	600.0
Plastics (kg)	0
Chemical Waste (kg)	0
General Waste Disposed of to NENT Landfill (m³)	30.3

- 7.1.4 No environmental complaint was received during the reporting period.
- 7.1.5 No Notification of Summons has been received since the commencement of the Project.
- 7.1.6 The environmental performance of the Contractor during the reporting period was considered satisfactory.

Appendix A

Site Map and Works Area



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

B1	MAR 05	EL	FOR EMA&A MANUAL	<i>M</i>	<i>De</i>
Rev	Date	Drawn	Description	Ch'kd	App'd

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

Project

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

Title

TUNNEL ALIGNMENT
AND SURROUNDING AREA

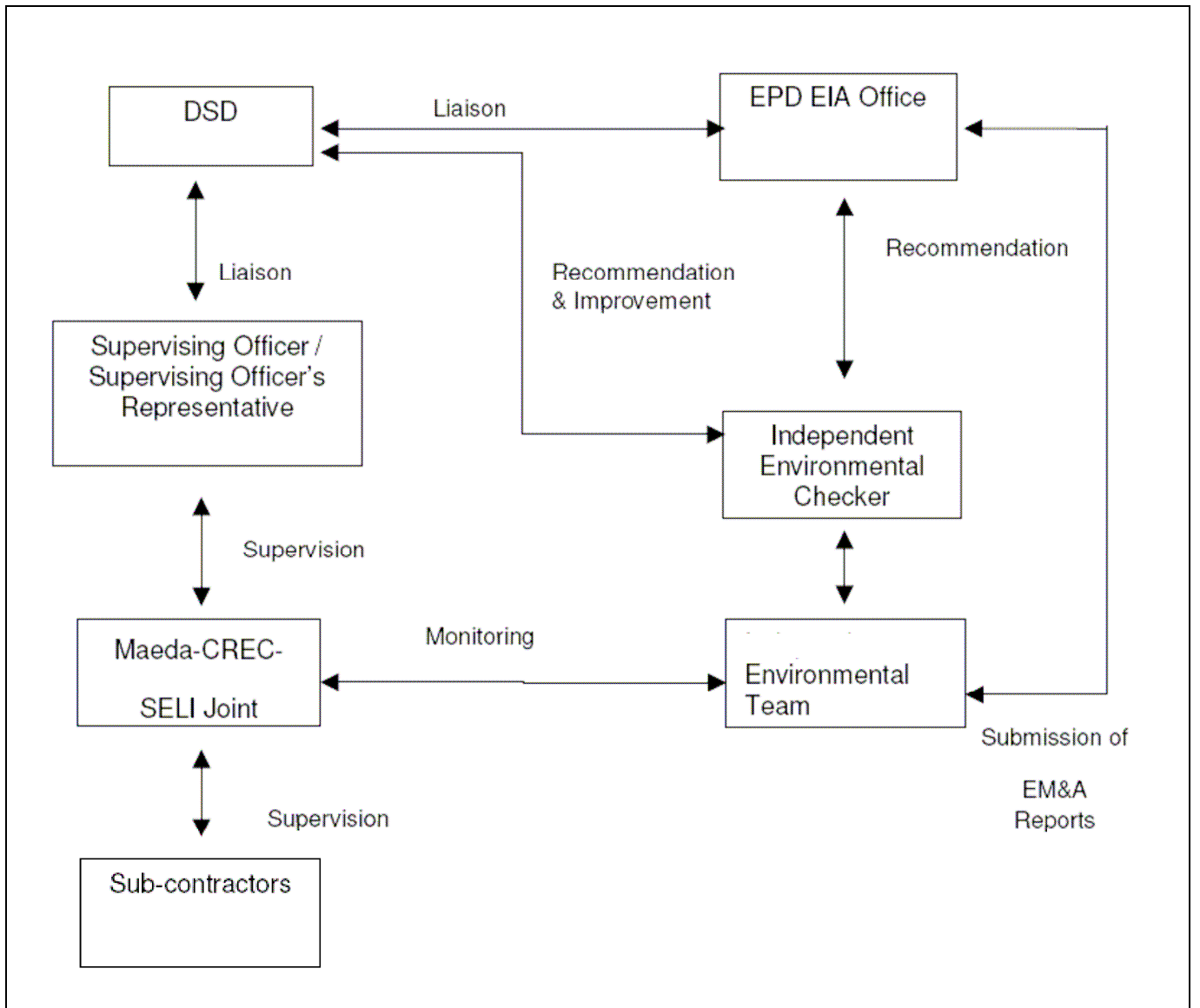
Designed	CF	<i>cf</i>	Eng.Chk.	MT	<i>M</i>
Drawn	HL	HL	Approved	TMC	<i>De</i>
Dwg.Chk.	KN	<i>KN</i>	Scale		
Project	204417				Status
CAD file	J:\204417\DRAWING\FIGURE EMA&A MANUAL\FIGURE1.1.dgn				
Drawing No.	FIGURE 1.1				Rev 01

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Appendix B

Organization Chart



Appendix C

Work Programme

Preliminaries

Project Dates

ID	Activity Description	Start	Finish	Early Start	Early Finish	Total
01R0000002	Tender Issue Date	26JUN07A				2
01R0000004	Tender Closing Date	05OCT07A				2
01R0000006	Letter of Acceptance Issued Date	14DEC07				2
01R0000008	Contract Commencement Date	28DEC07				2
01R0000010	Completion of Section 1 of the Works		27JUL11*			2
01R0000012	Completion of Section 2 of the Works		27JUL11*			2
01R0000014	Completion of Section 3 of the Works		27JUL11*			2
01R0000016	Completion of Section 4 of the Works		27JUL11*			2
01R0000018	Completion of Section 5 of the Works		27JUL11*			2
01R0000020	Completion of Section 6 of the Works		27JUL11*			2
01R0000022	Completion of Section 7 of the Works		26JUL12*			2

14 days after LOA

1308 days from DOC including DOC
 1308 days from DOC including DOC
 1308 days from DOC including DOC
 1308 days from DOC including DOC
 1308 days from DOC including DOC
 1308 days from DOC including DOC

1673 days from DOC including DOC

ID	Activity Description	Start	Finish	Early Start	Early Finish	Total
01R00A0102	Possession Portion A - 90d of DOC	26MAR08				2
01R00A0104	Handover of Portion A		13MAY11			2
01R00B0102	Possession of Portion B - 90d of DOC	26MAR08				2
01R00B0104	Handover of Portion B		16JUL11			2
01R00C0102	Possession of Portion C - 90d of DOC	26MAR08				2
01R00C0104	Handover of Portion C		05MAY11			2
01R00D0102	Possession of Portion D on DOC	28DEC07				2
01R00D0104	Handover of Portion D		17JUN11			2
01R00E0102	Possession of Portion E - 650d of DOC	07OCT09				2
01R00E0104	Handover of Portion E		17JUN11			2
01R00F0102	Possession of Portion F on DOC	28DEC07				2
01R00F0104	Handover of Portion F		28JAN11			2
01R00G0102	Possession of Portion G - 700d of DOC	26NOV09				2
01R00G0104	Handover of Portion G		02JUN11			2
01R00I0102	Possession of Portion I on DOC	28DEC07				2
01R00I0104	Handover of Portion I		27JUL11			2
01R00J0102	Possession of Portion J	01DEC08*				2
01R00J0104	Handover of Portion J		12JUN09*			2
01R0H10102	Possession of Portion H1 on DOC	28DEC07				2

The exact date to be agreed with WSD

WSD Tunnel Shutdown ER 4.2.10 (f) allows 50 days from the date of

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

Early Bar	
Progress Bar	
Critical Activity	

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

Sheet 1 of 42

ID	Activity Description	Orig Dur	Early Start	Early Finish	Cal ID	Total Float
01R0H10104	Handover of Portion H1	0		24SEP12	2	0
01R0H20102	Possession of Portion H2 - 300d of DOC	0	22OCT08		2	0
01R0H20104	Handover of Portion H2	0		24SEP12	2	0
SECTION WORKS TOP COMPLETION						
01R1000202	S1-Works in Portions A to F except works in S2-7	1,308	28DEC07	27JUL11	2	0
01R1000204	S1-Maintenance Period (365 days)	365	28JUL11	26JUL12	2	0
01R20A0206	S2-Slope Stabilization works within Portion A	1,218	26MAR08	26JUL11	2	0
01R20A0208	S2-Maintenance Period (365 days)	365	27JUL11	25JUL12	2	0
01R30B0210	S3-Slope Stabilization works within Portion B	1,218	26MAR08	26JUL11	2	0
01R30B0212	S3-Maintenance Period (365 days)	365	27JUL11	25JUL12	2	0
01R40C0214	S4-Slope Stabilization works within Portion C	1,218	26MAR08	26JUL11	2	0
01R40C0216	S4-Maintenance Period (365 days)	365	27JUL11	25JUL12	2	0
01R50D0218	S5-Slope Stabilization works within Portion D	1,308	28DEC07	27JUL11	2	0
01R50D0220	S5-Maintenance Period (365 days)	365	28JUL11	26JUL12	2	0
01R60G0222	S6-Works within Portion G	608	26NOV09	26JUL11	2	0
01R60G0224	S6-Maintenance Period (365 days)	365	27JUL11	25JUL12	2	0
01R7000226	S7-Landscape softworks & establishment works	1,673	28DEC07	26JUL12	2	0
01R7000228	S7-Maintenance Period (30 days)	30	27JUL12	25AUG12	2	0
AGILITIES FOR THE SO AS PER 12.3.1						
01R0000302	Provide temporary accommodation	7	28DEC07	03JAN08	2	1
01R0000304	Design the SO's principle office	30	28DEC07	26JAN08	2	1
01R0000305	Erect Hoarding/Signboard/Gate/Fencing	35	28JAN08	11MAR08	1	0
01R0000306	Erect SO's principle office in Portion H1/H2	60	28JAN08	14APR08	1	0
01R0000308	Provide secondary offices, directed by SO	64	14MAR08	16MAY08	2	0
01R0000310	Provide transport for the SO as per App. ER,M	90	28DEC07	26MAR08	2	0
01R0000311	Provide survey equipments as per App. ER,M	30	28DEC07	26JAN08	2	0
01R0000314	Maintain & Service the Principle Office	1,594	15APR08	25AUG12	2	0
01R0000316	Maintain & Service the Secondary Office	1,585	24APR08	25AUG12	2	0
01R0000318	Maintain & Service the transportation	1,688	12JAN08	25AUG12	2	0
01R0000319	Maintain & Service the survey equipments	1,673	27JAN08	25AUG12	2	0
01R0000320	Demolish & removal of Principle Office	30	26AUG12	24SEP12	2	0
CONTRACTOR'S ACCOMMODATION AS PER 12.3.1						
01R0001402	Design Contractor's main office	30	28DEC07	26JAN08	2	1
01R0001404	Erect Contractor's main office in Portion H1/H2	60	28JAN08	14APR08	1	0
01R0001406	Maintain & Service the Contractor's office	1,594	15APR08	25AUG12	2	0
01R0001408	Demolish & removal of Contractor's main office	30	26AUG12	24SEP12	2	0

Activity Description	Orig. Dur.	Early Start	Early Finish	Cal. ID	Total Float
01R0000502 Prepare/Submit draft Works Programme	7	14DEC07	20DEC07	2	0
01R0000504 SO's review/comment on draft Works Programme	14	21DEC07	03JAN08	2	0
01R0000506 Prepare/Submit 1st 3-Month Rolling Programme	14	14DEC07	27DEC07	2	7
01R0000508 Submit Detailed Works Programme	7	04JAN08	10JAN08	2	0
01R0000510 SO's Approval of Works Programme	7	11JAN08	17JAN08	2	0
01R0000512 Monthly Update for all Programme	1,682	18JAN08	25AUG12	2	0
01R0000514 Contractor's Monthly Progress Report	1,678	22JAN08	25AUG12	2	0
Safety Plan per SCC31					
01R0000602 Submit draft Safety Plan	14	14DEC07	27DEC07	2	0
01R0000604 Hold an ad hoc meeting with RE on Safety Plan	7	28DEC07	03JAN08	2	7
01R0000606 Submit 6 copies of the Safety Plan	35	14DEC07	17JAN08	2	0
01R0000608 Submit updated safety organization chart monthly	1,682	18JAN08	25AUG12	2	0
17R0000602 Fulfill all relevant safety obligation	1,703	28DEC07	25AUG12	2	0
Contractors All Insurances					
01R0000704 Submit documents for all insurances are effected	21	14DEC07	03JAN08	2	0
Quality System per SCC9					
01R0000802 Appoint a Quality Manager	14	28DEC07	10JAN08	2	0
01R0000804 Submit proposed Quality System for SO's consent	28	14DEC07	10JAN08	2	0
01R0000806 Submit QSSP for approval of the SO	28	28DEC07	24JAN08	2	0
01R0000808 Maintain & update Quality System	1,675	25JAN08	25AUG12	2	0
EM/Environmental					
01R0000902 Nominate Environmental Officer	14	14DEC07	27DEC07	2	0
01R0000903 Establish a billing account for disposal	21	14DEC07	03JAN08	2	0
01R0000904 Submit draft EMP	21	14DEC07	03JAN08	2	0
01R0000906 Revise draft EMP within 7 days of SO's notice	14	04JAN08	17JAN08	2	0
01R0000908 Submit final version of EMP	45	14DEC07	27JAN08	2	0
01R0000910 Review/update/submit EMP monthly	1,642	28JAN08	26JUL12	2	0
01R0000912 Employ IET	21	14DEC07	03JAN08	2	0
01R0000914 Submit Baseline Monitoring Plan	21	28DEC07	17JAN08	2	0
01R0000915 Seek for EPD's Agreement on WQML & schedule	21	18JAN08	07FEB08	2	0
01R0000916 Carry out baseline monitoring	37	31JAN08	07MAR08	2	0
01R0000918 Prepare/submit reports for baseline monitoring	20	27FEB08	17MAR08	2	0
01R0000920 Impact monitoring & reporting	1,592	18MAR08	26JUL12	2	0
17R0000902 Fulfill all relevant environmental obligation	1,673	28DEC07	26JUL12	2	0

to be
within 14 days of LOA
within 7 days from the submission of DSP
within 35 days of LOA
as per SCC9, SCC10 & SCC45
as per SCC 74 within 14 days of DOC
within 28 days of LDA
within 28 days of DOC
as per ER B.1 Clause 174A1(2)
per Notes to Tenderer (AA)
SCC69, within 21 days of LOA
as per SCC69
as per SCC69, within 45 days of LOA
to the approval of the SO
for approval of the SO & EPD
for approval of the SO

ID	Activity Description	Orig Dur	Early Start	Early Finish	Cal ID	Total Float
01R0001002	Nominate IUIMS co-ordinator	7	14DEC07	20DEC07	2	0
01R0001004	SO approve IUIMS co-ordinator	14	21DEC07	03JAN08	2	21
01R0001006	Submit brand name of UGS detection equipment	7	28DEC07	03JAN08	2	22
01R0001008	Utilities detection & report to the SO	21	04JAN08	24JAN08	2	22
01R0001010	Liaison with UUs prior to apply XP	21	04JAN08	24JAN08	2	21
01R0001012	Application of XP through the SO/DSD	7	25JAN08	31JAN08	2	22
01R0001014	Process XP Application by HYD & others	20	01FEB08	20FEB08	2	22
01R0001016	Issue of XP	0	20FEB08	20FEB08	2	22

Pre-construction condition survey

01R0001102	Appoint a Qualified Structural Engineer	30	28DEC07	26JAN08	2	4
01R0001104	Submit nos. & extent of the affected EBS	30	28DEC07	26JAN08	2	4
01R0001106	Carry out pre-construction condition survey	72	28JAN08	28APR08	1	3
01R0001108	Prepare/submit reports for pre-construction C.S.	72	05FEB08	07MAY08	1	3

Management of Sub-contractors as per SCO 24

01R0001202	Appoint Traffic Consultant/Traffic Engineer	14	14DEC07	27DEC07	2	7
01R0001204	Eng's Approval of Traffic Consultant	7	28DEC07	03JAN08	2	7
01R0001206	Prepare/submit TTA Schemes (ingress & egress)	14	04JAN08	17JAN08	2	7
01R0001216	Obtain endorsement of TTA schemes from TMLG	21	18JAN08	07FEB08	2	7
01R0001234	Approval of TTA schemes by the Authorities	28	08FEB08	06MAR08	2	7

ICE

01R0001302	Submit a Sub-contractor Management Plan	30	14DEC07	12JAN08	2	0
01R0001304	Submit Quarterly the Updated SMP	1,597	12APR08	25AUG12	2	0

Tree

01R0001502	Appoint Landscape Specialist Contractor	14	14DEC07	27DEC07	2	83
01R0001504	SO's Approval of Landscape Contractor	7	28DEC07	03JAN08	2	83
01R0001506	Nominate competent person to oversee tree works	45	14DEC07	27JAN08	2	59
01R0001510	Obtain Tree Removal Permit by Others	90	28DEC07	26MAR08	2	0
01R0001512	Remove / Transplant Trees start	0	27MAR08		2	0

Survey

01R0001602	Appoint Surveyors	14	28DEC07	10JAN08	2	17
01R0001604	SO's Approval of Surveyor	7	11JAN08	17JAN08	2	17
01R0001608	Initial Survey	28	18JAN08	22FEB08	1	14
01R0001610	Maintain & carry out survey works	1,000	23FEB08	11JUL11	1	14

as per SCO83; within 7 days of LOA/Internet Interface Utility Management System
 as per ER.B1 1.59; within 7 days of DOC
 ER.B1 1.18A3(1); not less than 17 working days
 as per ER. B1 1.61;
 as per ER. B1 1.61; within 30 days of DOC
 DDA Submission
 HYD & Police ER.B1 1.15 (9) refers
 within 30 days of LOA
 ER.B1 26.02A; within 45 days of LOA
 ER 1.5.3 (2); within 3 mths from DOC
 ER 1.5.3(2) within 3 months from DOC

ID	Activity Description	DU	Early Start	Early Finish	Call Total
01R0001802	Submit Smart Card Sys for SO's Approval	7	28DEC07	03JAN08	2
01R0001804	Install & start Operating Smart-Card System	60	28DEC07	25FEB08	2
01R0001806	Operate & Maintain Smart-Card System	1,643	28FEB08	25AUG12	2

ID	Activity Description	DU	Early Start	Early Finish	Call Total
01R0001902	Procurement of G.I./Grouting Sub-contractor	60	14DEC07	11FEB08	2
01R0001904	Procurement of Spoil Disposal Sub-contractor	60	14DEC07	11FEB08	2
01R0001906	Procurement of Earthwork Sub-contractor	60	14DEC07	11FEB08	2
01R0001908	Procurement of Concrete Supplier	45	14DEC07	27JAN08	2
01R0001910	Procurement of Re-bar Supplier	90	14DEC07	12MAR08	2
01R0001912	Procurement of Soil Nailing Sub-contractor	60	28DEC07	25FEB08	2
01R0001914	Procurement of Piling Sub-contractor	90	14DEC07	12MAR08	2
01R0001916	Procurement of Pre-cast Lining Sub-contractor	80	14DEC07	02MAR08	2
01R0001918	Procurement of R.C. Works Sub-contractor	90	14DEC07	12MAR08	2
01R0001920	Procurement of Drainage works Sub-contractor	90	14DEC07	12MAR08	2
01R0001922	Procurement of Steelworks Sub-contractor	90	14DEC07	08APR08	1
01R0001924	Procurement of Comm. Syst. Sub-contractor	45	17MAY08	30JUN08	2
01R0001925	Procurement of Flow Monit. Syst. Sub-contractor	45	17MAY08	30JUN08	2
01R0001926	Procurement of Pipe Jacking Sub-contractor	45	09OCT08	22NOV08	2
01R0001928	Submit Contractor's Management Team	0	0	10JAN08	2
01R0001930	Submit Photographer for Monthly Progress Photo	0	27JAN08	25APR08	2
01R0001932	Install Project Signboards at Potions A, B, C & D	120	28DEC07	25APR08	2
01R0001934	Develop/implement TDMS	60	22JUN08	20AUG08	2
01R0001936	Procurement & delivery of Communication System	180	03JAN09	01JUL09	2
01R0001938	Procurement/delivery of Flow Monitoring Devices	120	30OCT08	26FEB09	2
01R0001940	Prepare/submit Operation & Maintenance Manual	90	02AUG11	30OCT11	2
01R0001942	Prepare/submit As-built Drawings	90	28JUL11	25OCT11	2
01R0001944	Produce 2 documentary video for tunnel	30	28JUL11	26AUG11	2

ID	Activity Description	DU	Early Start	Early Finish	Call Total
01R0002202	Prepare/submit preliminary CRA	366	14DEC07	13DEC08	2
01R0002204	SO's acceptance of preliminary CRA	420	08MAR08	01MAY09	2
01R0002206	Prepare/submit detailed CRA	418	20APR08	11JUN09	2
01R0002208	SO's acceptance of detailed CRA	455	28JUN08	25SEP09	2

ID	Activity Description	DU	Early Start	Early Finish	Call Total
01R0002302	Prepare/submit a physical model as per ER 4.4.8	90	14DEC07	12MAR08	2
01R0002304	Prepare/submit a 3-D animation model	90	14DEC07	12MAR08	2

As per ER.B30 30.06(2)

Including temporary works

Per SCC 74

Per ER10.7

Representation of the TDMS to the SO & DSD before 3 months of the Tunnel excavation

As per ER4.4.11

As per ER4.4.12

ER 4.4.13

AIP submission

DDA submission

the acceptance of the SO

the acceptance of the SO as per ER's Note 4.4.9

ID	Activity Description	Orig Bar	Early Start	Early Finish	Chg ID	Total Float
01R0002402	Propose the design of web page	30	28DEC07	26JAN08	2	0
01R0002404	Produce the web page for approval of SO	30	27JAN08	25FEB08	2	0
01R0002406	SO's approval of web page	30	26FEB08	26MAR08	2	0
01R0002408	Submit updated web pages monthly	1,613	27MAR08	25AUG12	2	0

Schedule Milestones to NOBIS Centre No. 16

01R0002501	1R 1; On provision of SO's Accommodation	0		14APR08	2	1,624	◆ accommodation for occupation as per App. ER.M
01R0002502	1R 2; On providing documents of effected CWI	0		03JAN08	2	1,726	◆ care of the works insurance has been effected
01R0002503	1R 3; On providing documents of effected TPI	0		03JAN08	2	1,726	◆ 3rd party insurance has been effected
01R0002504	1R 4; On P-providing documents of effected PII	0		03JAN08	2	1,726	◆ P.I. insurance has been effected.
01R0002505	1R 5; On delivery of all Land Transport for SO	0		26MAR08	2	1,643	◆ land transport delivered for use of the SO
01R0002506	1R 6; On install. of computer facilities for SO	0		14APR08	2	1,624	◆ computer facilities for use of the SO
01R0002507	1R 7; On accept. of detailed CRA incl. PCS	0		25SEP09	2	1,095	◆ detailed CRA incl. pre-condition survey
01R0002508	1R 8; On acceptance of Physical Model by the SO	0		12MAR08	2	1,657	◆ physical model completed as per ER 4.4.8
01R0002509	1R 9; On acceptance of 3-D Animation Model	0		12MAR08	2	1,657	◆ 3-D animation model completed as per ER 4.4.9
01R0002510	1R 10; On satisf. operation of CCTV for 3 mth	0		31JUL08	2	1,516	◆ for 3mths of the remote CCTV installed in Portions A, B, C & D as per ER 4.4.10;
01R0002511	1R 11; On acceptance of O&MM	0		30OCT11	2	330	◆ O&MM completed as per ER 4.4.11
01R0002512	1R 12; On acceptance of as-built drwgs.	0		25OCT11	2	335	◆ built drwgs. completed as per ER 4.4.12
01R0002513	1R 13; On acceptance of T.R/Video/Brouchure	0		26AUG11	2	395	◆ tunnel report & vedeo & brocher submitted as per ER 4.4.13
01R0002514	1R 14; On complete all wks for 3 mth frm DOC	0		27MAR08	2	1,582	◆ of all obligations by this C.S. 3-mths from DOC
01R0002515	1R 15; On complete all wks for 6 mth frm DOC	0		26JUN08	2	1,491	◆ of all obligations by this CS 6 mths from DOC
01R0002516	1R 16; On complete all wks for 9 mth frm DOC	0		25SEP08	2	1,400	◆ of all obligations by this CS 9 mths from DOC
01R0002517	1R 17; On complete all wks for 12 mth frm DOC	0		26DEC08	2	1,308	◆ of all obligations by this CS 12 mths from DOC
01R0002518	1R 18; On complete all wks for 15 mth frm DOC	0		27MAR09	2	1,217	◆ of all obligations by this CS 15 mths from DOC
01R0002519	1R 19; On complete all wks for 18 mth frm DOC	0		26JUN09	2	1,126	◆ of all obligations by this CS 18 mths from DOC
01R0002520	1R 20; On complete all wks for 21 mth frm DOC	0		25SEP09	2	1,035	◆ of all obligations by this CS 21 mths from DOC
01R0002521	1R 21; On complete all wks for 24 mth frm DOC	0		26DEC09	2	943	◆ of all obligations by this CS 24 mths from DOC
01R0002522	1R 22; On complete all wks for 27 mth frm DOC	0		27MAR10	2	852	◆ of all obligations by this CS 27 mths from DOC
01R0002523	1R 23; On complete all wks for 30 mth frm DOC	0		26JUN10	2	761	◆ of all obligations by this CS 30 mths from DOC
01R0002524	1R 24; On complete all wks for 33 mth frm DOC	0		25SEP10	2	670	◆ of all obligations by this CS 33 mths from DOC
01R0002525	1R 25; On complete all wks for 36 mth frm DOC	0		26DEC10	2	578	◆ of all obligations by this CS 36 mths from DOC
01R0002526	1R 26; On complete all wks for 39 mth frm DOC	0		27MAR11	2	487	◆ of all obligations by this CS 39 mths from DOC
01R0002527	1R 27; On complete all wks for 42 mth frm DOC	0		26JUN11	2	396	◆ of all obligations by this CS 42 mths from DOC
01R0002528	1R 28; On complete all wks for 45 mth frm DOC	0		25SEP11	2	305	◆ of all obligations by this CS 45 mths from DOC
01R0002529	1R 29; On issuance of completion certificates	0		13AUG11	2	408	◆ of completion except Section 7
01R0002530	1R 30; On complete all wks for 3 mth frm CMP	0		26OCT11	2	334	◆ of all obligations 3 mths from DOM excl. Sec. 7
01R0002531	1R 31; On complete all wks for 6 mth frm CMP	0		25JAN12	2	243	◆ of all obligations 6 mths from DOM excl. Sec. 7
01R0002532	1R 32; On complete all wks for 9 mth frm CMP	0		25APR12	2	152	◆ of all obligations 9 mths from DOM excl. Sec. 7
01R0002533	1R 33; On issuance of maintenance certificate	0		25AUG12	2	30	◆ certificate

Schedule of Milestones for Cost Centre No. 16R

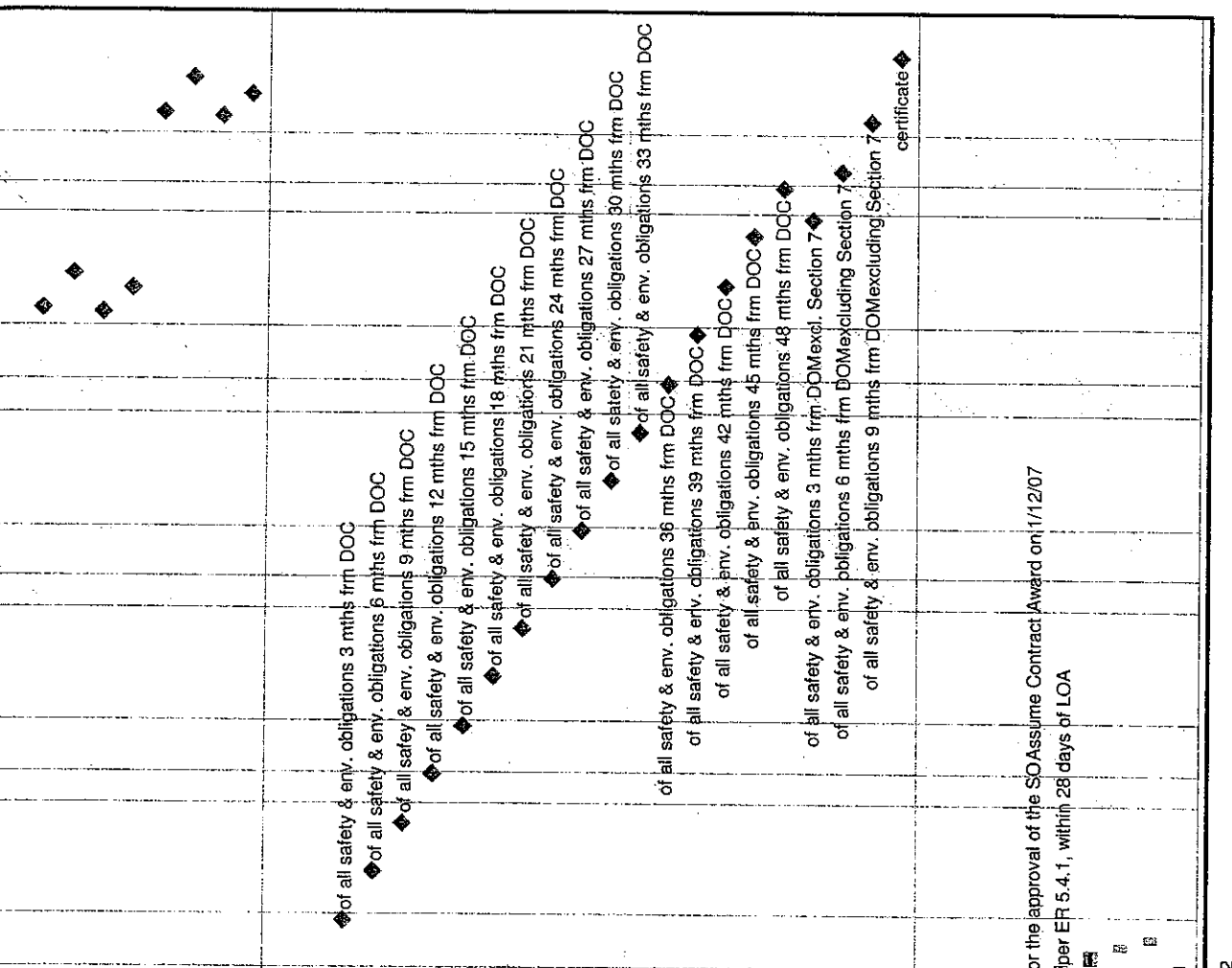
ID	Activity Description	Early Start	Early Finish	Cal	Total	Cal	ID	Float
16R7003001	16R 1; On completion of landscape wks; Portion A	0	13MAY11	2	500			
16R7003002	16R 2; On completion of landscape wks; Portion B	0	16JUL11	2	436			
16R7003003	16R 3; On completion of landscape wks; Portion C	0	05MAY11	2	508			
16R7003004	16R 4; On completion of landscape wks; Portion D	0	17JUN11	2	465			
16R7003005	16R 5; On completion of establish wks; Portion A	0	12MAY12	2	135			
16R7003006	16R 6; On completion of establish wks; Portion B	0	15JUL12	2	71			
16R7003007	16R 7; On completion of establish wks; Portion C	0	04MAY12	2	143			
16R7003008	16R 8; On completion of establish wks; Portion D	0	16JUN12	2	100			

Schedule of Milestones for Cost Centre No. 17R

ID	Activity Description	Early Start	Early Finish	Cal	Total	Cal	ID	Float
17R0003101	17R 1; On complet of all wks for 3 mth frm DOC	0	27MAR08	2	1,642			
17R0003102	17R 2; On complet of all wks for 6 mth frm DOC	0	26JUN08	2	1,551			
17R0003103	17R 3; On complet of all wks for 9 mth frm DOC	0	26SEP08	2	1,459			
17R0003104	17R 4; On complet of all wks for 12 mth frm DOC	0	26DEC08	2	1,368			
17R0003105	17R 5; On complet of all wks for 15 mth frm DOC	0	27MAR09	2	1,277			
17R0003106	17R 6; On complet of all wks for 18 mth frm DOC	0	27JUN09	2	1,185			
17R0003107	17R 7; On complet of all wks for 21 mth frm DOC	0	26SEP09	2	1,094			
17R0003108	17R 8; On complet of all wks for 24 mth frm DOC	0	26DEC09	2	1,003			
17R0003109	17R 9; On complet of all wks for 27 mth frm DOC	0	28MAR10	2	911			
17R0003110	17R 10; On complet all wks for 30 mth frm DOC	0	27JUN10	2	820			
17R0003111	17R 11; On complet all wks for 33 mth frm DOC	0	26SEP10	2	729			
17R0003112	17R 12; On complet all wks for 36 mth frm DOC	0	26DEC10	2	638			
17R0003113	17R 13; On complet all wks for 39 mth frm DOC	0	28MAR11	2	546			
17R0003114	17R 14; On complet all wks for 42 mth frm DOC	0	27JUN11	2	455			
17R0003115	17R 15; On complet all wks for 45 mth frm DOC	0	26SEP11	2	364			
17R0003116	17R 16; On complet all wks for 48 mth frm DOC	0	26DEC11	2	273			
17R0003117	17R 17; On complet of all wks for 3 mth frm CMP	0	26OCT11	2	334			
17R0003118	17R 18; On complet of all wks for 6 mth frm CMP	0	25JAN12	2	243			
17R0003119	17R 19; On complet of all wks for 9 mth frm CMP	0	26APR12	2	151			
17R0003120	17R 20; On issuance of maintenance certificate	0	25AUG12	2	30			

Design/Design Check for Permanent Works

ID	Activity Description	Early Start	Early Finish	Cal	Total	Cal	ID	Float
02L10D0102	Employ Independent Designer	7	14DEC07	20DEC07	2	2		
02L10D0104	Prepare & submit Project Design Plan (PDP)	28	14DEC07	10JAN08	2	2		
02L10D0106	SO's review & comment on PDP	28	11JAN08	07FEB08	2	2		
02L10D0108	Provide further information of (PDP)	14	08FEB08	21FEB08	2	17		
02L10D0110	SO approves PDP	14	22FEB08	06MAR08	2	17		
02L10D0112	Employ Independent Design Checker	14	28DEC07	10JAN08	2	1		



for the approval of the SO Assume Contract Award on 1/12/07
 per ER 5.4.1, within 28 days of LOA

ID	Activity Description	Orig Dur	Early Start	Early Finish	Cal ID	Total Float
02L1DD00114	Approval of Design Checker by the SO	28	11JAN08	07FEB08	2	1
Design Packages for Work Submittal						
Temp. Access Rd Design at P. D; +14mPD to +69mPD						
02L1DD0102	Design preparation by the Designer	14	17JAN08	30JAN08	2	2
02L1DD0104	Design certification by the Design Checker	14	01FEB08	14FEB08	2	1
02L1DD0106	Design submission for the SO's approval	1	15FEB08	15FEB08	1	1
02L1DD0108	Design review by the SO	28	16FEB08	14MAR08	2	2
02L1DD0110	Obtain design approval from the SO	0		14MAR08	2	2
Boulder Assessment & Design for Stabili. Measure						
02L1DD0302	Design preparation for the AIP submission	15	31JAN08	14FEB08	2	3
02L1DD0304	Design (AIP) certification by the Design Checker	14	15FEB08	28FEB08	2	19
02L1DD0306	Design (AIP) submission for the SO's approval	1	29FEB08	29FEB08	1	16
02L1DD0308	Design (AIP) review by the SO	14	01MAR08	14MAR08	2	19
02L1DD0310	Obtain design (AIP) approval from the SO	0		14MAR08	2	19
02L1DD0312	AIP submission for rel. authorities' approval	1	15MAR08	15MAR08	1	13
02L1DD0314	Design (AIP) review by the rel. authorities	28	16MAR08	12APR08	2	20
02L1DD0316	Obtain rel. authorities' approval for AIP	1	14APR08	14APR08	1	16
02L1DD0318	Obtain SO's consent for design (AIP)	0		15APR08	2	20
02L1DD0320	Design preparation for the DDA submission	30	24MAR08	22APR08	2	20
02L1DD0322	Design (DDA) certification by the Design Checker	14	23APR08	06MAY08	2	20
02L1DD0324	Design (DDA) submission for the SO's approval	1	07MAY08	07MAY08	1	16
02L1DD0326	Design (DDA) review by the SO	14	08MAY08	21MAY08	2	20
02L1DD0328	Obtain design (DDA) approval from the SO	0		21MAY08	2	20
02L1DD0330	DDA submission for rel. authorities' approval	1	22MAY08	22MAY08	1	16
02L1DD0332	Design (DDA) review by the rel. authorities	28	23MAY08	19JUN08	2	20
02L1DD0334	Obtain rel. authorities' approval for DDA	1	20JUN08	20JUN08	1	16
02L1DD0336	Obtain SO's consent for design (DDA)	0		21JUN08	2	20
Site Formation Design; +69mPD to +40mPD						
02L1DD0402	Design preparation for the AIP submission	14	17JAN08	30JAN08	2	2
02L1DD0404	Design (AIP) certification by the Design Checker	14	27JAN08	09FEB08	2	2
02L1DD0406	Design (AIP) submission for the SO's approval	1	11FEB08	11FEB08	1	1
02L1DD0408	Design (AIP) review by the SO	14	12FEB08	25FEB08	2	1
02L1DD0410	Obtain design (AIP) approval from the SO	0		25FEB08	2	1
02L1DD0412	AIP submission for rel. authorities' approval	1	26FEB08	26FEB08	1	1
02L1DD0414	Design (AIP) review by the rel. authorities	12	27FEB08	09MAR08	2	1
02L1DD0416	Obtain rel. authorities' approval for AIP	1	10MAR08	10MAR08	1	1
02L1DD0418	Obtain SO's consent for design (AIP)	0		11MAR08	2	1
02L1DD0420	Design preparation for the DDA submission	14	05MAR08	18MAR08	2	1
02L1DD0422	Design (DDA) certification by the Design Checker	14	12MAR08	25MAR08	2	1
02L1DD0424	Design (DDA) submission for the SO's approval	1	26MAR08	26MAR08	1	1
02L1DD0426	Design (DDA) review by the SO	14	27MAR08	09APR08	2	1
02L1DD0428	Obtain design (DDA) approval from the SO	0		09APR08	2	1

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

TBM Launching Chamber Design

02L1DD0702	Design preparation for the AIP submission	15	14MAR08	28MAR08	2	36
02L1DD0704	Design (AIP) certification by the Design Checker	15	29MAR08	12APR08	2	36
02L1DD0706	Design (AIP) submission for the SO's approval	1	14APR08	14APR08	1	28
02L1DD0708	Design (AIP) review by the SO	30	15APR08	14MAY08	2	35
02L1DD0710	Obtain design (AIP) approval from the SO	0		14MAY08	2	35
02L1DD0712	AIP submission for rel. authorities' approval	1	15MAY08	15MAY08	1	29
02L1DD0714	Design (AIP) review by the rel. authorities	28	16MAY08	12JUN08	2	35
02L1DD0716	Obtain rel. authorities's approval for AIP	1	13JUN08	13JUN08	1	29
02L1DD0718	Obtain SO's consent for design (AIP)	0		14JUN08	2	35
02L1DD0720	Design preparation for the DDA submission	30	23MAY08	21JUN08	2	35
02L1DD0722	Design (DDA) certification by the Design Checker	15	22JUN08	06JUL08	2	35
02L1DD0724	Design (DDA) submission for the SO's approval	1	07JUL08	07JUL08	1	30
02L1DD0726	Design (DDA) review by the SO	30	08JUL08	06AUG08	2	35
02L1DD0728	Obtain design (DDA) approval from the SO	0		06AUG08	2	35
02L1DD0730	DDA submission for rel. authorities' approval	1	07AUG08	07AUG08	1	30
02L1DD0732	Design (DDA) review by the rel. authorities	28	08AUG08	04SEP08	2	35
02L1DD0734	Obtain rel. authorities's approval for DDA	1	05SEP08	05SEP08	1	27
02L1DD0736	Obtain SO's consent for design (DDA)	0		06SEP08	2	36

Hopper Foundation Design

02L1DD0802	Design preparation by the Designer	15	28MAY08	11JUN08	2	47
02L1DD0804	Design certification by the Design Checker	15	12JUN08	26JUN08	2	77
02L1DD0806	Design submission for the SO's approval	1	27JUN08	27JUN08	1	65
02L1DD0808	Design review by the SO	30	28JUN08	27JUL08	2	77
02L1DD0810	Obtain design approval from the SO	0		27JUL08	2	77

Steel Platform & Hopper Design

02L1DD0902	Design preparation by the Designer	30	12JUN08	11JUL08	2	47
02L1DD0904	Design certification by the Design Checker	15	12JUL08	26JUL08	2	47
02L1DD0906	Design submission for the SO's approval	1	28JUL08	28JUL08	1	40
02L1DD0908	Design review by the SO	30	28JUL08	27AUG08	2	46
02L1DD0910	Obtain design approval from the SO	0		27AUG08	2	46

Overhead Gantry Support & Noise Enclosure Design

02L1DD1002	Design preparation by the Designer	30	28APR08	27MAY08	2	47
02L1DD1004	Design certification by the Design Checker	15	28MAY08	11JUN08	2	60
02L1DD1006	Design submission for the SO's approval	1	12JUN08	12JUN08	1	50
02L1DD1008	Design review by the SO	30	13JUN08	12JUL08	2	60
02L1DD1010	Obtain design approval from the SO	0		12JUL08	2	60
02L1DD1012	Design submission for rel. authorities' approval	1	14JUL08	14JUL08	1	51
02L1DD1014	Design review by the rel. authorities	28	15JUL08	11AUG08	2	59
02L1DD1016	Obtain design approval from rel. authorities'	1	12AUG08	12AUG08	1	48
02L1DD1018	Obtain SO's consent for design	0		13AUG08	2	60

ID	Activity Description	Orig. Dur.	Early Start	Early Finish	Cal. ID	Total Float
02L1DD1102	Design preparation for the AIP submission	30	29MAR08	27APR08	2	47
02L1DD1104	Design (AIP) certification by the Design Checker	21	28APR08	18MAY08	2	130
02L1DD1106	Design (AIP) submission for the SO's approval	1	19MAY08	19MAY08	1	109
02L1DD1108	Design (AIP) review by the SO	60	20MAY08	18JUL08	2	130
02L1DD1110	Obtain design (AIP) approval from the SO	0		18JUL08	2	130
02L1DD1112	AIP submission for rel. authorities' approval	1	19JUL08	19JUL08	1	108
02L1DD1114	Design (AIP) review by the rel. authorities	21	20JUL08	09AUG08	2	130
02L1DD1116	Obtain rel. authorities' approval for AIP	1	11AUG08	11AUG08	1	108
02L1DD1118	Obtain SO's consent for design (AIP)	0		12AUG08	2	129
02L1DD1120	Design preparation for the DDA submission	30	21JUL08	19AUG08	2	129
02L1DD1122	Design (DDA) certification by the Design Checker	28	20AUG08	16SEP08	2	129
02L1DD1124	Design (DDA) submission for the SO's approval	1	17SEP08	17SEP08	1	106
02L1DD1126	Design (DDA) review by the SO	60	18SEP08	16NOV08	2	130
02L1DD1128	Obtain design (DDA) approval from the SO	0		16NOV08	2	130
02L1DD1130	DDA submission for rel. authorities' approval	1	17NOV08	17NOV08	1	106
02L1DD1132	Design (DDA) review by the rel. authorities	28	18NOV08	15DEC08	2	130
02L1DD1134	Obtain rel. authorities' approval for DDA	1	16DEC08	16DEC08	1	102
02L1DD1136	Obtain SO's consent for design (DDA)	0		17DEC08	2	131

ID	Activity Description	Orig. Dur.	Early Start	Early Finish	Cal. ID	Total Float
02L1DD1202	Design preparation for the AIP submission	30	12JUL08	10AUG08	2	262
02L1DD1204	Design (AIP) certification by the Design Checker	30	11AUG08	09SEP08	2	262
02L1DD1206	Design (AIP) submission for the SO's approval	1	10SEP08	10SEP08	1	209
02L1DD1208	Design (AIP) review by the SO	60	11SEP08	09NOV08	2	263
02L1DD1210	Obtain design (AIP) approval from the SO	0		09NOV08	2	263
02L1DD1212	AIP submission for rel. authorities' approval	1	10NOV08	10NOV08	1	212
02L1DD1214	Design (AIP) review by the rel. authorities	28	11NOV08	08DEC08	2	263
02L1DD1216	Obtain rel. authorities' approval for AIP	1	09DEC08	09DEC08	1	212
02L1DD1218	Obtain SO's consent for design (AIP)	0		10DEC08	2	264
02L1DD1220	Design preparation for the DDA submission	30	18NOV08	17DEC08	2	264
02L1DD1222	Design (DDA) certification by the Design Checker	30	18DEC08	16JAN09	2	264
02L1DD1224	Design (DDA) submission for the SO's approval	1	17JAN09	17JAN09	1	213
02L1DD1226	Design (DDA) review by the SO	60	18JAN09	18MAR09	2	264
02L1DD1228	Obtain design (DDA) approval from the SO	0		18MAR09	2	264
02L1DD1230	DDA submission for rel. authorities' approval	1	19MAR09	19MAR09	1	215
02L1DD1232	Design (DDA) review by the rel. authorities	28	20MAR09	16APR09	2	264
02L1DD1234	Obtain rel. authorities' approval for DDA	1	17APR09	17APR09	1	216
02L1DD1236	Obtain SO's consent for design (DDA)	0		18APR09	2	264

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

ID	Activity Description	Child Dur	Early Start	Early Finish	CSI ID	Total Float
02L1FF0314	Design (AIP) review by the rel. authorities	28	16MAY08	12JUN08	2	3
02L1FF0316	Obtain rel. authorities' approval for AIP	1	13JUN08	13JUN08	1	2
02L1FF0318	Obtain SO's consent for design (AIP)	0		14JUN08	2	3
02L1FF0320	Design preparation for the DDA submission	30	23MAY08	21JUN08	2	3
02L1FF0322	Design (DDA) certification by the Design Checker	15	22JUN08	06JUL08	2	3
02L1FF0324	Design (DDA) submission for the SO's approval	1	07JUL08	07JUL08	1	3
02L1FF0326	Design (DDA) review by the SO	50	08JUL08	26AUG08	2	3
02L1FF0328	Obtain design (DDA) approval from the SO	0		26AUG08	2	3
02L1FF0330	DDA submission for rel. authorities' approval	1	27AUG08	27AUG08	1	3
02L1FF0332	Design (DDA) review by the rel. authorities	28	28AUG08	24SEP08	2	4
02L1FF0334	Obtain rel. authorities' approval for DDA	1	25SEP08	25SEP08	1	3
02L1FF0336	Obtain SO's consent for design (DDA)	0		26SEP08	2	5

Impact Assessment on KCRC West Rail Tunnel						
ID	Activity Description	Child Dur	Early Start	Early Finish	CSI ID	Total Float
02L1FF0402	Design preparation for the AIP submission	30	08APR08	07MAY08	2	190
02L1FF0404	Design (AIP) certification by the Design Checker	15	08MAY08	22MAY08	2	190
02L1FF0406	Design (AIP) submission for the SO's approval	1	23MAY08	23MAY08	1	158
02L1FF0408	Design (AIP) review by the SO	60	24MAY08	22JUL08	2	191
02L1FF0410	Obtain design (AIP) approval from the SO	0		22JUL08	2	191
02L1FF0412	AIP submission for rel. authorities' approval	1	23JUL08	23JUL08	1	155
02L1FF0414	Design (AIP) review by the rel. authorities	28	24JUL08	20AUG08	2	191
02L1FF0416	Obtain rel. authorities' approval for AIP	1	21AUG08	21AUG08	1	155
02L1FF0418	Obtain SO's consent for design (AIP)	0		22AUG08	2	192
02L1FF0420	Design preparation for the DDA submission	30	31JUL08	29AUG08	2	192
02L1FF0422	Design (DDA) certification by the Design Checker	15	30AUG08	13SEP08	2	192
02L1FF0424	Design (DDA) submission for the SO's approval	1	16SEP08	16SEP08	1	155
02L1FF0426	Design (DDA) review by the SO	60	17SEP08	15NOV08	2	190
02L1FF0428	Obtain design (DDA) approval from the SO	0		15NOV08	2	190
02L1FF0430	DDA submission for rel. authorities' approval	1	17NOV08	17NOV08	1	150
02L1FF0432	Design (DDA) review by the rel. authorities	28	18NOV08	15DEC08	2	189
02L1FF0434	Obtain rel. authorities' approval for DDA	1	16DEC08	16DEC08	1	149
02L1FF0436	Obtain SO's consent for design (DDA)	0		17DEC08	2	189

Impact Assessment on WSD Tsuen Wan Reservoir G.						
ID	Activity Description	Child Dur	Early Start	Early Finish	CSI ID	Total Float
02L1FF0502	Design preparation for the AIP submission	30	08MAY08	06JUN08	2	251
02L1FF0504	Design (AIP) certification by the Design Checker	15	07JUN08	21JUN08	2	251
02L1FF0506	Design (AIP) submission for the SO's approval	1	23JUN08	23JUN08	1	205
02L1FF0508	Design (AIP) review by the SO	60	24JUN08	22AUG08	2	250
02L1FF0510	Obtain design (AIP) approval from the SO	0		22AUG08	2	250
02L1FF0512	AIP submission for rel. authorities' approval	1	23AUG08	23AUG08	1	201
02L1FF0514	Design (AIP) review by the rel. authorities	28	24AUG08	20SEP08	2	251
02L1FF0516	Obtain rel. authorities' approval for AIP	1	22SEP08	22SEP08	1	200
02L1FF0518	Obtain SO's consent for design (AIP)	0		23SEP08	2	251
02L1FF0520	Design preparation for the DDA submission	30	01SEP08	30SEP08	2	251

ID	Activity Description	Orig Bur	Early Start	Early Finish	Cal ID	Total Float
02L1FF0522	Design (DDA) certification by the Design Checker	15	01OCT08	15OCT08	2	251
02L1FF0524	Design (DDA) submission for the SO's approval	1	16OCT08	16OCT08	1	202
02L1FF0526	Design (DDA) review by the SO	60	17OCT08	15DEC08	2	251
02L1FF0528	Obtain design (DDA) approval from the SO	0		15DEC08	2	251
02L1FF0530	DDA submission for rel. authorities' approval	1	16DEC08	16DEC08	1	201
02L1FF0532	Design (DDA) review by the rel. authorities	28	17DEC08	13JAN09	2	251
02L1FF0534	Obtain rel. authorities's approval for DDA	1	14JAN09	14JAN09	1	204
02L1FF0536	Obtain SO's consent for design (DDA)	0		15JAN09	2	251

Design Activities for Vertical Portion A						
Temp. Steel Decking Design Over Shing Mun Nullah						
ID	Activity Description	Orig Bur	Early Start	Early Finish	Cal ID	Total Float
02L1AA0102	Design preparation by the Designer	14	08FEB08	21FEB08	2	22
02L1AA0104	Design certification by the Design Checker	14	22FEB08	06MAR08	2	29
02L1AA0106	Design submission for the SO's approval	1	07MAR08	07MAR08	1	21
02L1AA0108	Design review by the SO	28	08MAR08	04APR08	2	29
02L1AA0110	Obtain design approval from the SO	0		04APR08	2	29
E/S Design for Spiral Ramp/Cascade/Box Culvert						
02L1AA0202	Design preparation for the AIP submission	15	22FEB08	07MAR08	2	22
02L1AA0204	Design (AIP) certification by the Design Checker	15	08MAR08	22MAR08	2	22
02L1AA0206	Design (AIP) submission for the SO's approval	1	25MAR08	25MAR08	1	16
02L1AA0208	Design (AIP) review by the SO	21	26MAR08	15APR08	2	20
02L1AA0210	Obtain design (AIP) approval from the SO	0		15APR08	2	20
02L1AA0212	AIP submission for rel. authorities' approval	1	16APR08	16APR08	1	16
02L1AA0214	Design (AIP) review by the rel. authorities	21	17APR08	07MAY08	2	20
02L1AA0216	Obtain rel. authorities's approval for AIP	1	08MAY08	08MAY08	1	16
02L1AA0218	Obtain SO's consent for design (AIP)	0		09MAY08	2	20
02L1AA0220	Design preparation for the DDA submission	30	17APR08	16MAY08	2	20
02L1AA0222	Design (DDA) certification by the Design Checker	15	17MAY08	31MAY08	2	20
02L1AA0226	Design (DDA) submission for the SO's approval	1	02JUN08	02JUN08	1	16
02L1AA0228	Design (DDA) review by the SO	21	03JUN08	23JUN08	2	20
02L1AA0230	Obtain design (DDA) approval from the SO	0		23JUN08	2	20
02L1AA0232	DDA submission for rel. authorities' approval	1	24JUN08	24JUN08	1	16
02L1AA0234	Design (DDA) review by the rel. authorities	21	25JUN08	15JUL08	2	20
02L1AA0236	Obtain rel. authorities's approval for DDA	1	16JUL08	16JUL08	1	17
02L1AA0238	Obtain SO's consent for design (DDA)	0		17JUL08	2	20
Temp. Platform Design for H-Piling						
02L1AA0302	Design preparation by the Designer	15	22FEB08	07MAR08	2	627
02L1AA0304	Design certification by the Design Checker	15	08MAR08	22MAR08	2	1,618
02L1AA0306	Design submission for the SO's approval	1	25MAR08	25MAR08	1	1,312
02L1AA0308	Design review by the SO	28	26MAR08	22APR08	2	1,616
Cascade & Box Culvert Design for Portion A						
02L1AA0402	Design preparation for the AIP submission	30	08MAR08	06APR08	2	627

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

ID	Activity Description	Orig Dur	Early Start	Early Finish	Cal ID	Total Float
02L1BB0510	Obtain design (AIP) approval from the SO	0		20JUN08	2	25
02L1BB0512	AIP submission for rel. authorities' approval	1	21JUN08	21JUN08	1	20
02L1BB0514	Design (AIP) review by the rel. authorities	15	22JUN08	06JUL08	2	25
02L1BB0516	Obtain rel. authorities's approval for AIP	1	07JUL08	07JUL08	1	22
02L1BB0518	Obtain SO's consent for design (AIP)	0		08JUL08	2	25
02L1BB0520	Design preparation for the DDA submission	30	16JUN08	15JUL08	2	25
02L1BB0522	Design (DDA) certification by the Design Checker	15	16JUL08	30JUL08	2	25
02L1BB0524	Design (DDA) submission for the SO's approval	1	31JUL08	31JUL08	1	21
02L1BB0526	Design (DDA) review by the SO	60	01AUG08	29SEP08	2	25
02L1BB0528	Obtain design (DDA) approval from the SO	0		29SEP08	2	25
02L1BB0530	DDA submission for rel. authorities' approval	1	30SEP08	30SEP08	1	20
02L1BB0532	Design (DDA) review by the rel. authorities	28	01OCT08	28OCT08	2	26
02L1BB0534	Obtain rel. authorities's approval for DDA	1	29OCT08	29OCT08	1	22
02L1BB0536	Obtain SO's consent for design (DDA)	0		30OCT08	2	26

Temp. Support Design for MA and MAMT Connection

02L1BB0602	Design preparation for the AIP submission	30	21APR08	20MAY08	2	527
02L1BB0604	Design (AIP) certification by the Design Checker	15	21MAY08	04JUN08	2	804
02L1BB0606	Design (AIP) submission for the SO's approval	1	05JUN08	05JUN08	1	653
02L1BB0608	Design (AIP) review by the SO	60	06JUN08	04AUG08	2	804
02L1BB0610	Obtain design (AIP) approval from the SO	0		04AUG08	2	804
02L1BB0612	AIP submission for rel. authorities' approval	1	05AUG08	05AUG08	1	652
02L1BB0614	Design (AIP) review by the rel. authorities	15	06AUG08	20AUG08	2	804
02L1BB0616	Obtain rel. authorities's approval for AIP	1	21AUG08	21AUG08	1	652
02L1BB0618	Obtain SO's consent for design (AIP)	0		22AUG08	2	804
02L1BB0620	Design preparation for the DDA submission	30	31JUL08	29AUG08	2	804
02L1BB0622	Design (DDA) certification by the Design Checker	15	30AUG08	13SEP08	2	804
02L1BB0624	Design (DDA) submission for the SO's approval	1	16SEP08	16SEP08	1	652
02L1BB0626	Design (DDA) review by the SO	60	17SEP08	15NOV08	2	803
02L1BB0628	Obtain design (DDA) approval from the SO	0		15NOV08	2	803
02L1BB0630	DDA submission for rel. authorities' approval	1	17NOV08	17NOV08	1	651
02L1BB0632	Design (DDA) review by the rel. authorities	28	18NOV08	15DEC08	2	802
02L1BB0634	Obtain rel. authorities's approval for DDA	1	16DEC08	16DEC08	1	648
02L1BB0636	Obtain SO's consent for design (DDA)	0		17DEC08	2	803

Permanent Design for MA/MAS/VDS/DC/AVS

02L1BB0702	Design preparation for the AIP submission	30	21MAY08	19JUN08	2	527
02L1BB0704	Design (AIP) certification by the Design Checker	15	20JUN08	04JUL08	2	730
02L1BB0706	Design (AIP) submission for the SO's approval	1	05JUL08	05JUL08	1	591
02L1BB0708	Design (AIP) review by the SO	60	06JUL08	03SEP08	2	730
02L1BB0710	Obtain design (AIP) approval from the SO	0		03SEP08	2	730
02L1BB0712	AIP submission for rel. authorities' approval	1	04SEP08	04SEP08	1	592
02L1BB0714	Design (AIP) review by the rel. authorities	15	05SEP08	19SEP08	2	730
02L1BB0716	Obtain rel. authorities's approval for AIP	1	20SEP08	20SEP08	1	592

ID	Activity Description	Orig. Dur.	Early Start	Early Finish	Cal. ID	Total Cal. Float
02L1BB0718	Obtain SO's consent for design (AIP)	0	22SEP08	2	729	
02L1BB0720	Design preparation for the DDA submission	30	31AUG08	29SEP08	2	729
02L1BB0722	Design (DDA) certification by the Design Checker	15	30SEP08	14OCT08	2	729
02L1BB0724	Design (DDA) submission for the SO's approval	1	15OCT08	15OCT08	1	592
02L1BB0726	Design (DDA) review by the SO	60	16OCT08	14DEC08	2	729
02L1BB0728	Obtain design (DDA) approval from the SO	0	14DEC08	2	729	
02L1BB0730	DDA submission for rel. authorities' approval	1	15DEC08	15DEC08	1	591
02L1BB0732	Design (DDA) review by the rel. authorities	28	16DEC08	12JAN09	2	729
02L1BB0734	Obtain rel. authorities' approval for DDA	1	13JAN09	13JAN09	1	591
02L1BB0736	Obtain SO's consent for design (DDA)	0	14JAN09	2	729	

Permanent Design for MA and MA/MT Connection

02L1BB0802	Design preparation for AIP submission	30	20JUN08	19JUL08	2	527
02L1BB0804	Design (AIP) certification by the Design Checker	15	20JUL08	03AUG08	2	527
02L1BB0806	Design (AIP) submission for the SO's approval	1	04AUG08	04AUG08	1	429
02L1BB0808	Design (AIP) review by the SO	60	05AUG08	03OCT08	2	527
02L1BB0810	Obtain design (AIP) approval from the SO	0	03OCT08	2	527	
02L1BB0812	AIP submission for rel. authorities' approval	1	04OCT08	04OCT08	1	427
02L1BB0814	Design (AIP) review by the rel. authorities	15	05OCT08	19OCT08	2	527
02L1BB0816	Obtain rel. authorities' approval for AIP	1	20OCT08	20OCT08	1	429
02L1BB0818	Obtain SO's consent for design (AIP)	0	21OCT08	2	531	
02L1BB0820	Design preparation for the DDA submission	30	29SEP08	28OCT08	2	531
02L1BB0822	Design (DDA) certification by the Design Checker	15	29OCT08	12NOV08	2	531
02L1BB0824	Design (DDA) submission for the SO's approval	1	13NOV08	13NOV08	1	428
02L1BB0826	Design (DDA) review by the SO	60	14NOV08	12JAN09	2	531
02L1BB0828	Obtain design (DDA) approval from the SO	0	12JAN09	2	531	
02L1BB0830	DDA submission for rel. authorities' approval	1	13JAN09	13JAN09	1	428
02L1BB0832	Design (DDA) review by the rel. authorities	28	14JAN09	10FEB09	2	531
02L1BB0834	Obtain rel. authorities' approval for DDA	1	11FEB09	11FEB09	1	430
02L1BB0836	Obtain SO's consent for design (DDA)	0	12FEB09	2	531	

Boulder Assessment & Design of Stabfl. Measure

02L1BB0902	Design preparation for the AIP submission	15	06APR08	20APR08	2	50
02L1BB0904	Design (AIP) certification by the Design Checker	15	21APR08	05MAY08	2	50
02L1BB0906	Design (AIP) submission for the SO's approval	1	06MAY08	06MAY08	1	41
02L1BB0908	Design (AIP) review by the SO	21	07MAY08	27MAY08	2	50
02L1BB0910	Obtain design (AIP) approval from the SO	0	27MAY08	2	50	
02L1BB0912	AIP submission for rel. authorities' approval	1	28MAY08	28MAY08	1	41
02L1BB0914	Design (AIP) review by the rel. authorities	28	29MAY08	25JUN08	2	50
02L1BB0916	Obtain rel. authorities' approval for AIP	1	26JUN08	26JUN08	1	42
02L1BB0918	Obtain SO's consent for design (AIP)	0	27JUN08	2	50	
02L1BB0920	Design preparation for the DDA submission	30	05JUN08	04JUL08	2	50
02L1BB0922	Design (DDA) certification by the Design Checker	15	05JUL08	19JUL08	2	50
02L1BB0924	Design (DDA) submission for the SO's approval	1	21JUL08	21JUL08	1	42

ID	Activity Description	Orig Dur	Early Start	Early Finish	Cal ID	Total Float
02L1BB0926	Design (DDA) review by the SO	21	22JUL08	11AUG08	2	49
02L1BB0928	Obtain design (DDA) approval from the SO	0		11AUG08	2	49
02L1BB0930	DDA submission for rel. authorities' approval	1	12AUG08	12AUG08	1	41
02L1BB0932	Design (DDA) review by the rel. authorities	28	13AUG08	09SEP08	2	50
02L1BB0934	Obtain rel. authorities' approval for DDA	1	10SEP08	10SEP08	1	40
02L1BB0936	Obtain SO's consent for design (DDA)	0		11SEP08	2	50

Design Packages to Work in Position C						
ELS Design for Intake Structure Construction						
02L1CC0102	Design preparation by the Designer	15	08FEB08	22FEB08	2	30
02L1CC0104	Design certification by the Design Checker	15	23FEB08	08MAR08	2	30
02L1CC0106	Design submission for the SO's approval	1	10MAR08	10MAR08	1	21
02L1CC0108	Design review by the SO	28	11MAR08	07APR08	2	29
02L1CC0110	Obtain design approval from the SO	0		07APR08	2	29

Temp. Support Design for MA/MAS/VS/DC/AVS						
02L1CC0302	Design preparation for the AIP submission	30	09MAR08	07APR08	2	262
02L1CC0304	Design (AIP) certification by the Design Checker	15	08APR08	22APR08	2	262
02L1CC0306	Design (AIP) submission for the SO's approval	1	23APR08	23APR08	1	215
02L1CC0308	Design (AIP) review by the SO	60	24APR08	22JUN08	2	262
02L1CC0310	Obtain design (AIP) approval from the SO	0		22JUN08	2	262
02L1CC0312	AIP submission for rel. authorities' approval	1	23JUN08	23JUN08	1	215
02L1CC0314	Design (AIP) review by the rel. authorities	15	24JUN08	08JUL08	2	262
02L1CC0316	Obtain rel. authorities' approval for AIP	1	09JUL08	09JUL08	1	216
02L1CC0318	Obtain SO's consent for design (AIP)	0		10JUL08	2	263
02L1CC0320	Design preparation for the DDA submission	30	18JUN08	17JUL08	2	263
02L1CC0322	Design (DDA) certification by the Design Checker	15	18JUL08	01AUG08	2	263
02L1CC0324	Design (DDA) submission for the SO's approval	1	02AUG08	02AUG08	1	212
02L1CC0326	Design (DDA) review by the SO	60	03AUG08	01OCT08	2	263
02L1CC0328	Obtain design (DDA) approval from the SO	0		01OCT08	2	263
02L1CC0330	DDA submission for rel. authorities' approval	1	02OCT08	02OCT08	1	211
02L1CC0332	Design (DDA) review by the rel. authorities	28	03OCT08	30OCT08	2	263
02L1CC0334	Obtain rel. authorities' approval for DDA	1	31OCT08	31OCT08	1	211
02L1CC0336	Obtain SO's consent for design (DDA)	0		01NOV08	2	263

Temp. Support Design for MA and MA/MT Connection						
02L1CC0402	Design preparation for the AIP submission	30	08MAY08	06JUN08	2	395
02L1CC0404	Design (AIP) certification by the Design Checker	15	07JUN08	21JUN08	2	395
02L1CC0406	Design (AIP) submission for the SO's approval	1	23JUN08	23JUN08	1	320
02L1CC0408	Design (AIP) review by the SO	60	24JUN08	22AUG08	2	394
02L1CC0410	Obtain design (AIP) approval from the SO	0		22AUG08	2	394
02L1CC0412	AIP submission for rel. authorities' approval	1	23AUG08	23AUG08	1	320
02L1CC0414	Design (AIP) review by the rel. authorities	15	24AUG08	07SEP08	2	394
02L1CC0416	Obtain rel. authorities' approval for AIP	1	08SEP08	08SEP08	1	319
02L1CC0418	Obtain SO's consent for design (AIP)	0		09SEP08	2	394

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

ID	Activity Description	Orig Dur	Early Start	Early Finish	Cal ID	Total Float
02L1CC0628	Obtain design (DDA) approval from the SO	0		31DEC08	2	414
02L1CC0630	DDA submission for rel. authorities' approval	1	02JAN09	02JAN09	1	334
02L1CC0632	Design (DDA) review by the rel. authorities	28	03JAN09	30JAN09	2	413
02L1CC0634	Obtain rel. authorities' approval for DDA	1	31JAN09	31JAN09	1	337
02L1CC0636	Obtain SO's consent for design (DDA)	0		02FEB09	2	413

Boulder Assessment & Design for Stabili. Measure

02L1CC0702	Design preparation for the AIP submission	15	23FEB08	08MAR08	2	262
02L1CC0704	Design (AIP) certification by the Design Checker	15	09MAR08	23MAR08	2	319
02L1CC0706	Design (AIP) submission for the SO's approval	1	25MAR08	25MAR08	1	259
02L1CC0708	Design (AIP) review by the SO	28	26MAR08	22APR08	2	318
02L1CC0710	Obtain design (AIP) approval from the SO	0		22APR08	2	318
02L1CC0712	AIP submission for rel. authorities' approval	1	23APR08	23APR08	1	260
02L1CC0714	Design (AIP) review by the rel. authorities	28	24APR08	21MAY08	2	319
02L1CC0716	Obtain rel. authorities' approval for AIP	1	22MAY08	22MAY08	1	261
02L1CC0718	Obtain SO's consent for design (AIP)	0		23MAY08	2	319
02L1CC0720	Design preparation for the DDA submission	30	01MAY08	30MAY08	2	319
02L1CC0722	Design (DDA) certification by the Design Checker	15	31MAY08	14JUN08	2	319
02L1CC0724	Design (DDA) submission for the SO's approval	1	16JUN08	16JUN08	1	259
02L1CC0726	Design (DDA) review by the SO	28	17JUN08	14JUL08	2	321
02L1CC0728	Obtain design (DDA) approval from the SO	0		14JUL08	2	321
02L1CC0730	DDA submission for rel. authorities' approval	1	15JUL08	15JUL08	1	259
02L1CC0732	Design (DDA) review by the rel. authorities	28	16JUL08	12AUG08	2	321
02L1CC0734	Obtain rel. authorities' approval for DDA	1	13AUG08	13AUG08	1	259
02L1CC0736	Obtain SO's consent for design (DDA)	0		14AUG08	2	322

Design Packages for Wolfson Pond C

Drainage Impact Assessment

02L1GG0102	Design preparation for the AIP submission	30	15AUG08	13SEP08	2	322
02L1GG0104	Design (AIP) certification by the Design Checker	15	14SEP08	28SEP08	2	322
02L1GG0106	Design (AIP) submission for the SO's approval	1	29SEP08	29SEP08	1	260
02L1GG0108	Design (AIP) review by the SO	60	30SEP08	28NOV08	2	322
02L1GG0110	Obtain design (AIP) approval from the SO	0		28NOV08	2	322
02L1GG0112	AIP submission for rel. authorities' approval	1	29NOV08	29NOV08	1	260
02L1GG0114	Design (AIP) review by the rel. authorities	15	30NOV08	14DEC08	2	323
02L1GG0116	Obtain rel. authorities' approval for AIP	1	15DEC08	15DEC08	1	260
02L1GG0118	Obtain SO's consent for design (AIP)	0		16DEC08	2	323
02L1GG0120	Design preparation for the DDA submission	30	24NOV08	23DEC08	2	323
02L1GG0122	Design (DDA) certification by the Design Checker	15	24DEC08	07JAN09	2	323
02L1GG0124	Design (DDA) submission for the SO's approval	1	08JAN09	08JAN09	1	263
02L1GG0126	Design (DDA) review by the SO	60	09JAN09	09MAR09	2	323
02L1GG0128	Obtain design (DDA) approval from the SO	0		09MAR09	2	323
02L1GG0130	DDA submission for rel. authorities' approval	1	10MAR09	10MAR09	1	263
02L1GG0132	Design (DDA) review by the rel. authorities	28	11MAR09	07APR09	2	323

IB	Activity Description	Orig Dtl	Early Start	Early Finish	Cal ID	Total Float
02L1GG0134	Obtain rel. authorities' approval for DDA	1	08APR09	08APR09	1	261
02L1GG0136	Obtain SO's consent for design (DDA)	0		09APR09	2	323

Temp. Platform Design for H-Piling at Portion G

02L1GG0202	Design preparation for the AIP submission	30	14SEP08	13OCT08	2	439
02L1GG0204	Design (AIP) certification by the Design Checker	15	14OCT08	28OCT08	2	439
02L1GG0206	Design (AIP) submission for the SO's approval	1	29OCT08	29OCT08	1	356
02L1GG0208	Design (AIP) review by the SO	28	30OCT08	26NOV08	2	439
02L1GG0210	Obtain design (AIP) approval from the SO	0		26NOV08	2	439
02L1GG0220	Design preparation for the DDA submission	30	11NOV08	10DEC08	2	439
02L1GG0222	Design (DDA) certification by the Design Checker	15	11DEC08	25DEC08	2	439
02L1GG0224	Design (DDA) submission for the SO's approval	1	27DEC08	27DEC08	1	354
02L1GG0226	Design (DDA) review by the SO	28	28DEC08	24JAN09	2	438
02L1GG0228	Obtain design (DDA) approval from the SO	0		24JAN09	2	438

ELS Design for Pipe Jacking at Portion G

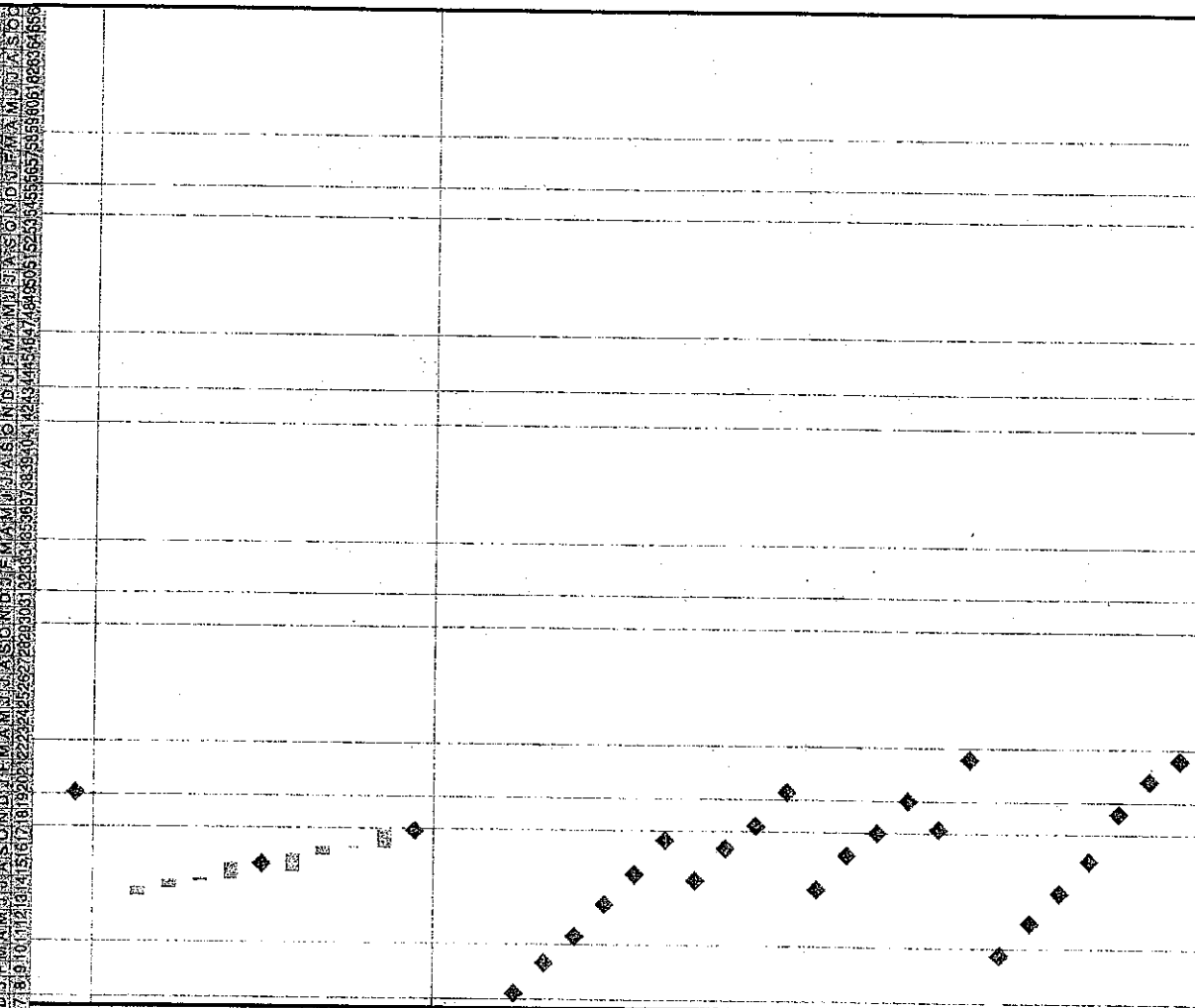
02L1GG0302	Design preparation for the AIP submission	15	14OCT08	28OCT08	2	630
02L1GG0304	Design (AIP) certification by the Design Checker	15	29OCT08	12NOV08	2	630
02L1GG0306	Design (AIP) submission for the SO's approval	1	13NOV08	13NOV08	1	509
02L1GG0308	Design (AIP) review by the SO	28	14NOV08	11DEC08	2	630
02L1GG0310	Obtain design (AIP) approval from the SO	0		11DEC08	2	630
02L1GG0320	Design preparation for the DDA submission	30	26NOV08	25DEC08	2	630
02L1GG0322	Design (DDA) certification by the Design Checker	15	26DEC08	09JAN09	2	630
02L1GG0324	Design (DDA) submission for the SO's approval	1	10JAN09	10JAN09	1	510
02L1GG0326	Design (DDA) review by the SO	28	11JAN09	07FEB09	2	631
02L1GG0328	Obtain design (DDA) approval from the SO	0		07FEB09	2	631

Design Package for ELS Works

Design for Communication System

02L1FE0102	Design preparation for the AIP submission	15	01JUL08	15JUL08	2	466
02L1FE0104	Design (AIP) certification by the Design Checker	15	16JUL08	30JUL08	2	466
02L1FE0106	Design (AIP) submission for the SO's approval	1	31JUL08	31JUL08	1	379
02L1FE0108	Design (AIP) review by the SO	30	01AUG08	30AUG08	2	466
02L1FE0110	Obtain design (AIP) approval from the SO	0		30AUG08	2	466
02L1FE0112	AIP submission for rel. authorities' approval	1	01SEP08	01SEP08	1	379
02L1FE0114	Design (AIP) review by the rel. authorities	28	02SEP08	29SEP08	2	465
02L1FE0116	Obtain rel. authorities' approval for AIP	1	30SEP08	30SEP08	1	377
02L1FE0118	Obtain SO's consent for design (AIP)	0		02OCT08	2	464
02L1FE0120	Design preparation for the DDA submission	30	17SEP08	16OCT08	2	464
02L1FE0122	Design (DDA) certification by the Design Checker	15	17OCT08	31OCT08	2	464
02L1FE0124	Design (DDA) submission for the SO's approval	1	01NOV08	01NOV08	1	377
02L1FE0126	Design (DDA) review by the SO	30	02NOV08	01DEC08	2	464
02L1FE0128	Obtain design (DDA) approval from the SO	0		01DEC08	2	464
02L1FE0130	DDA submission for rel. authorities' approval	1	02DEC08	02DEC08	1	375
02L1FE0132	Design (DDA) review by the rel. authorities	28	03DEC08	30DEC08	2	464

2009
 09/10/01/12/13/14/15/16/17/18/19/20/21/22/23/24/25/26/27/28/29/30/31/32/33/34/35/36/37/38/39/40/41/42/43/44/45/46/47/48/49/50/51/52/53/54/55/56/57/58/59/60/61/62/63/64/65/66



ID	Activity Description	Orig. Dur.	Early Start	Early Finish	Cal. ID	Total Float
02L1FE0134	Obtain rel. authorities approval for DDA	1	31DEC08	31DEC08	1	373
02L1FE0136	Obtain SO's consent for design (DDA)	0		02JAN09	2	464
Design for Flow Measurement System						
02L1FE0202	Design preparation for the AIP submission	15	01JUL08	15JUL08	2	816
02L1FE0204	Design (AIP) certification by the Design Checker	15	16JUL08	30JUL08	2	816
02L1FE0206	Design (AIP) submission for the SO's approval	1	31JUL08	31JUL08	1	682
02L1FE0208	Design (AIP) review by the SO	30	01AUG08	30AUG08	2	816
02L1FE0210	Obtain design (AIP) approval from the SO	0		30AUG08	2	816
02L1FE0220	Design preparation for the DDA submission	30	15AUG08	13SEP08	2	816
02L1FE0222	Design (DDA) certification by the Design Checker	15	14SEP08	28SEP08	2	816
02L1FE0224	Design (DDA) submission for the SO's approval	1	29SEP08	29SEP08	1	664
02L1FE0226	Design (DDA) review by the SO	30	30SEP08	29OCT08	2	818
02L1FE0228	Obtain design (DDA) approval from the SO	0		29OCT08	2	818

Schedule of Milestones for CoS Centre (02L)						
ID	Activity Description	Orig. Dur.	Early Start	Early Finish	Cal. ID	Total Float
02L10D1002	2L 1; On submission of PDP to the SO	0		10JAN08	2	1,719
02L10D1004	2L 2; On acceptance of PDP by the SO	0		06MAR08	2	1,663
02L10D1006	2L 3; On submission of AIP to the SO; Portion A	0		22APR08	2	1,616
02L10D1008	2L 4; On acceptance of AIP by the SO; Portion A	0		21JUN08	2	1,556
02L10D1010	2L 5; On submission of DDA to the SO; Portion A	0		15AUG08	2	1,501
02L10D1012	2L 6; On acceptance of DDA by the SO; Portion A	0		14OCT08	2	1,441
02L10D1014	2L 7; On submission of AIP to the SO; Portion B	0		04AUG08	2	1,512
02L10D1016	2L 8; On acceptance of AIP by the SO; Portion B	0		03OCT08	2	1,452
02L10D1018	2L 9; On submission of DDA to the SO; Portion B	0		13NOV08	2	1,411
02L10D1020	2L 10; On acceptance of DDA by the SO; Portion B	0		12JAN09	2	1,351
02L10D1022	2L 11; On submission of AIP to the SO; Portion C	0		22JUL08	2	1,525
02L10D1024	2L 12; On acceptance of AIP by the SO; Portion C	0		20SEP08	2	1,465
02L10D1026	2L 13; On submission of DDA to the SO; Portion C	0		01NOV08	2	1,423
02L10D1028	2L 14; On acceptance of DDA by the SO; Portion C	0		31DEC08	2	1,363
02L10D1030	2L 15; On submission of AIP by the SO; Portion D	0		09NOV08	2	1,415
02L10D1032	2L 16; On acceptance of DDA by the SO; Portion D	0		18MAR09	2	1,286
02L10D1034	2L 17; On submission of AIP to the SO; Portion F	0		25MAR08	2	1,644
02L10D1036	2L 18; On acceptance of AIP by the SO; Portion F	0		24MAY08	2	1,584
02L10D1038	2L 19; On submission of DDA to the SO; Portion F	0		18JUL08	2	1,529
02L10D1040	2L 20; On acceptance of DDA by the SO; Portion F	0		16SEP08	2	1,469
02L10D1042	2L 21; On submission of AIP by the SO; Portion G	0		11DEC08	2	1,383
02L10D1044	2L 22; On acceptance of DDA by the SO; Portion G	0		07FEB09	2	1,325
02L10D1046	2L 23; On completion of all works under this CC	0		18MAR09	2	1,286

ID	Activity Description	Orig Dur	Early Start	Early Finish	Cal ID	Total Float
3AL1FT0618	Verify method statement	3	24APR09	26APR09	2	0
3AL1FT0620	Monitoring of geotechnical instrumentation	45*	27APR09	10JUN09	2	0
3AL1FT0622	Subsequent Inspection/ repair damages (if any)	2	11JUN09	12JUN09	2	0
3AL1FT0624	WSD Tunnel starts operation	0	13JUN09		2	0
TBM Assembly & Initial Drilling Day Time Work						
3AL1FT0700	Carry out grouting trials from the surface at F1	30	26MAY08	30JUN08	1	109
3AL1FT0702	TBM initial assembly & start-up test	25	10NOV08	08DEC08	1	0
3AL1FT0704	TBM mobilization to tunnel face (CH5085)	2	09DEC08	10DEC08	1	0
3AL1FT0706	Install back-up system (3 decks + 3 platforms)	7	11DEC08	18DEC08	1	0
3AL1FT0708	TBM advances; CH5085-5075	2	19DEC08	20DEC08	1	0
3AL1FT0710	TBM advances; P7 CH5075-5033	11	22DEC08	06JAN09	1	0
3AL1FT0712	Install back-up system (6 decks)	10	07JAN09	17JAN09	1	0
3AL1FT0714	TBM advances; P7 CH5033-5005	7	19JAN09	29JAN09	1	0
3AL1FT0716	Install back-up system (1 decks)	1	30JAN09	30JAN09	1	0
3AL1FT0718	TBM advances; CH 5005-5000	1	31JAN09	31JAN09	1	0
3AL1FT0719	TBM advances; WSDYKWTW/F6c CH5000-4963	9	02FEB09	11FEB09	1	0
3AL1FT0720	Conveyor belt sys	10	12FEB09	23FEB09	1	0
3AL1FT0722	Install noise enclosure	20	12FEB09	06MAR09	1	0

ID	Activity Description	Orig Dur	Early Start	Early Finish	Cal ID	Total Float
Main Tunnel Works Day & Night Work						
3AL1FT0802	Apply to EPD for CNP for 24 hrs. tunnel work	14	23OCT08	05NOV08	2	76
3AL1FT0804	EPD process/approve CNP application	45	06NOV08	20DEC08	2	76
3AL1FT0806	TBM advances; WSD YKWTW/F6c CH4963-4830	16	07MAR09	25MAR09	1	0
3AL1FT0808	TBM advances; CH4830-4760	3	26MAR09	28MAR09	1	0
3AL1FT0810	TBM advances; F6b CH4760-4740	3	30MAR09	01APR09	1	0
3AL1FT0812	TBM advances; CH4740-4555	9	02APR09	16APR09	1	0
3AL1FT0814	TBM advances; F6a CH4555-4510	6	17APR09	23APR09	1	0
3AL1FT0816	TBM advances; CH4510-4460	2	24APR09	25APR09	1	0
3AL1FT0818	TBM advances; WSD T3/P6 CH4460-4250	36	27APR09	10JUN09	1	0
3AL1FT0820	TBM advances; P6 CH4250-4220	4	11JUN09	15JUN09	1	8
3AL1FT0822	TBM advances; CH4220-3840	18	16JUN09	07JUL09	1	8
3AL1FT0824	TBM advances; P5 CH3840-3820	3	08JUL09	10JUL09	1	8
3AL1FT0826	TBM advances CH3820-3575	12	11JUL09	24JUL09	1	8
3AL1FT0828	TBM advances; P4 CH3575-3525	6	25JUL09	31JUL09	1	8
3AL1FT0830	TBM advances; CH3525-3308	10	01AUG09	12AUG09	1	8
3AL1FT0832	TBM advances; Noise sensitive area CH3308-3175	13	13AUG09	27AUG09	1	8
3AL1FT0834	TBM advances; P3/Noise sensitive area CH3175-3143	6	28AUG09	03SEP09	1	8
3AL1FT0836	TBM advances; P3 CH3143-3125	2	04SEP09	05SEP09	1	8
3AL1FT0838	TBM advances; CH3125-2970	7	07SEP09	14SEP09	1	8
3AL1FT0840	TBM advances; WSD WS Reservoir CH2970-2865	13	15SEP09	29SEP09	1	8

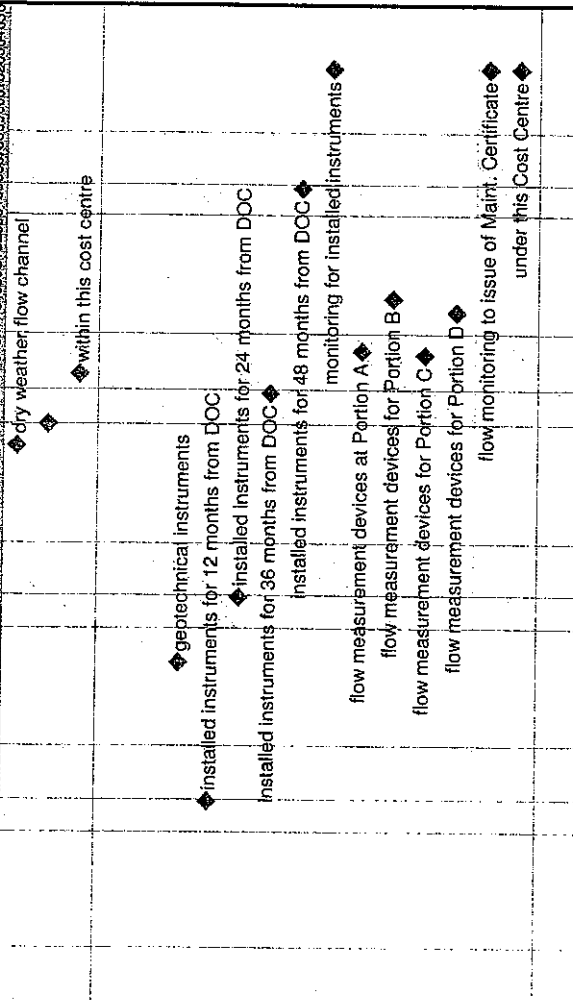
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 02 FEB 01 02 FEB 03 FEB 04 FEB 05 FEB 06 FEB 07 FEB 08 FEB 09 FEB 10 FEB 11 FEB 12 FEB 13 FEB 14 FEB 15 FEB 16 FEB 17 FEB 18 FEB 19 FEB 20 FEB 21 FEB 22 FEB 23 FEB 24 FEB 25 FEB 26 FEB 27 FEB 28 FEB 29 FEB 30
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 09 SEP 01 02 SEP 03 SEP 04 SEP 05 SEP 06 SEP 07 SEP 08 SEP 09 SEP 10 SEP 11 SEP 12 SEP 13 SEP 14 SEP 15 SEP 16 SEP 17 SEP 18 SEP 19 SEP 20 SEP 21 SEP 22 SEP 23 SEP 24 SEP 25 SEP 26 SEP 27 SEP 28 SEP 29 SEP 30
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 12 DEC 01 02 DEC 03 DEC 04 DEC 05 DEC 06 DEC 07 DEC 08 DEC 09 DEC 10 DEC 11 DEC 12 DEC 13 DEC 14 DEC 15 DEC 16 DEC 17 DEC 18 DEC 19 DEC 20 DEC 21 DEC 22 DEC 23 DEC 24 DEC 25 DEC 26 DEC 27 DEC 28 DEC 29 DEC 30
 13 JAN 01 14 JAN 02 15 JAN 03 16 JAN 04 17 JAN 05 18 JAN 06 19 JAN 07 20 JAN 08 21 JAN 09 22 JAN 10 23 JAN 11 24 JAN 12 25 JAN 13 26 JAN 14 27 JAN 15 28 JAN 16 29 JAN 17 30 JAN 18 31 JAN 19 30 JAN 20 31 JAN 21 30 JAN 22 31 JAN 23 30 JAN 24 31 JAN 25 30 JAN 26 31 JAN 27 30 JAN 28 31 JAN 29 30 JAN 30 31 JAN 31 30

ID	Activity Description	Orig Dur	Early Start	Early Finisht	Cal ID	Total Float
6AR1FT0932	6aR 16; On completion of grouting wks at F4	0		28OCT09	2	1,062
6AR1FT0934	6aR 17; On completion of grouting wks at F3	0		19NOV09	2	1,040
6AR1FT0936	6aR 18; On completion of grouting wks at F2	0		27JAN10	2	971
6AR1FT0938	6aR 19; On completion of grouting wks at P2	0		27FEB10	2	940
6AR1FT0940	6aR 20; On completion of grouting wks at P1	0		13MAR10	2	926
6AR1FT0942	6aR 21; On completion of 10% grout by lift at F1	0		31MAR10	2	908
6AR1FT0944	6aR 22; On completion of 20% grout by lift at F1	0		09APR10	2	899
6AR1FT0946	6aR 23; On completion of 30% grout by lift at F1	0		14APR10	2	894
6AR1FT0948	6aR 24; On completion of 40% grout by lift at F1	0		19APR10	2	889
6AR1FT0950	6aR 25; On completion of 50% grout by lift at F1	0		23APR10	2	885
6AR1FT0952	6aR 26; On completion of 60% grout by lift at F1	0		28APR10	2	880
6AR1FT0954	6aR 27; On completion of 70% grout by lift at F1	0		04MAY10	2	874
6AR1FT0956	6aR 28; On completion of 80% grout by lift at F1	0		10MAY10	2	868
6AR1FT0958	6aR 29; On completion of 90% grout by lift at F1	0		11MAY10	2	867
6AR1FT0960	6aR 30; On completion of grouting works at F1	0		14MAY10	2	864
6AR1FT0970	6aR 31; On completion of all works under this CC	0		20MAY10	2	858

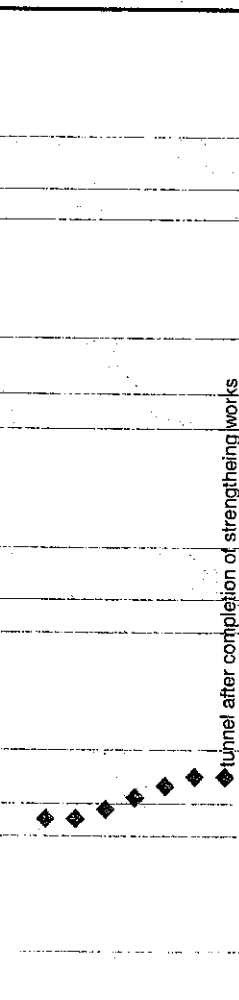
Schedule of Milestones to Coast Centre No. 3aL

3AL1FT1002	3aL 1; On providing evidence of procuring TBM	0		19JAN08	2	1,710
3AL1FT1004	3aL 2; On providing evidence of TBM Factory Test	0		04SEP08	2	1,481
3AL1FT1006	3aL 3; On delivery of all parts of TBM to the SI	0		09NOV08	2	1,415
3AL1FT1008	3aL 4; On completion of site comm. & test. of TB	0		08DEC08	2	1,386
3AL1FT1010	3aL 5; On completion of 5% perm. tunnel lining	0		25MAR09	2	1,279
3AL1FT1012	3aL 6; On completion of 10% perm. tunnel lining	0		09APR09	2	1,264
3AL1FT1014	3aL 7; On completion of 15% perm. tunnel lining	0		22MAY09	2	1,221
3AL1FT1016	3aL 8; On completion of 20% perm. tunnel lining	0		22JUN09	2	1,190
3AL1FT1018	3aL 9; On completion of 25% perm. tunnel lining	0		10JUL09	2	1,172
3AL1FT1020	3aL 10; On completion of 30% perm. tunnel lining	0		24JUL09	2	1,158
3AL1FT1022	3aL 11; On completion of 35% perm. tunnel lining	0		10AUG09	2	1,141
3AL1FT1024	3aL 12; On completion of 40% perm. tunnel lining	0		09SEP09	2	1,111
3AL1FT1026	3aL 13; On completion of 45% perm. tunnel lining	0		03OCT09	2	1,087
3AL1FT1028	3aL 14; On completion of 50% perm. tunnel lining	0		24OCT09	2	1,066
3AL1FT1030	3aL 15; On completion of 55% perm. tunnel lining	0		09NOV09	2	1,050
3AL1FT1032	3aL 16; On completion of 60% perm. tunnel lining	0		27NOV09	2	1,032
3AL1FT1034	3aL 17; On completion of 65% perm. tunnel lining	0		09DEC09	2	1,020
3AL1FT1036	3aL 18; On completion of 70% perm. tunnel lining	0		21DEC09	2	1,008
3AL1FT1038	3aL 19; On completion of 75% perm. tunnel lining	0		22JAN10	2	976
3AL1FT1040	3aL 20; On completion of 80% perm. tunnel lining	0		05FEB10	2	962
3AL1FT1042	3aL 21; On completion of 85% perm. tunnel lining	0		01MAR10	2	938
3AL1FT1044	3aL 22; On completion of 90% perm. tunnel lining	0		15MAR10	2	924
3AL1FT1046	3aL 23; On completion of 95% perm. tunnel lining	0		07APR10	2	901
3AL1FT1048	3aL 24; On completion of perm. tunnel lining	0		14MAY10	2	864

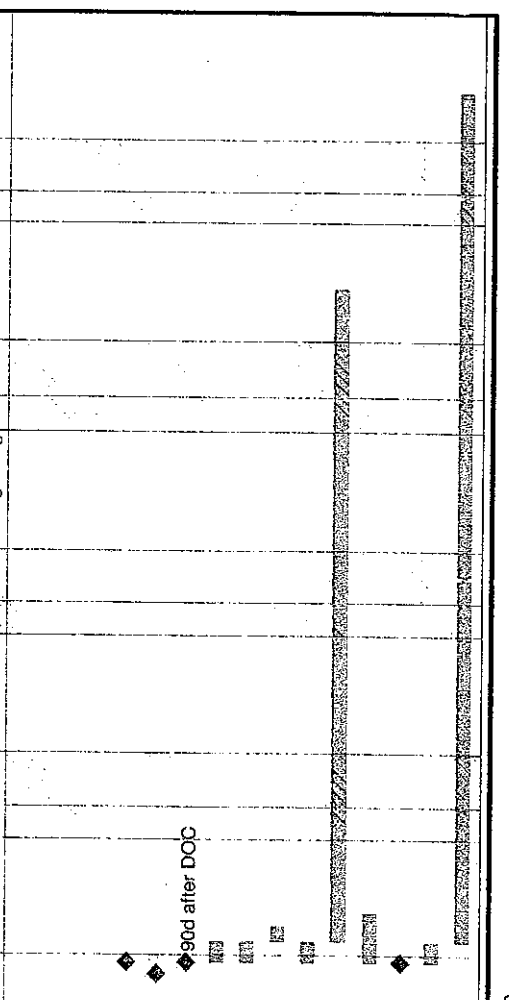
under this Coast Centre



ID	Activity Description	Orig. Dur.	Entry Start	Entry Finish	Cal ID	Total Float
3AL1FT1050	3aL 25; On completion of maint. access/flow chan	0	24SEP10	2	731	
3AL1FT1052	3aL 26; On completion of provision of communic.	0	01NOV10	2	693	
3AL1FT1054	3aL 27; On completion of all works under this CC	0	28JAN11	2	605	
Schedule of Milestones for Cost Centre No. 3dL						
3DL10T1202	3dL 1; On complet. of install geo instrument.	0	02SEP09	2	1,118	
3DL10T1204	3dL 2; Maint./monit. geo. inst. for 12 mth	0	26DEC08	2	1,368	
3DL10T1206	3dL 3; Maint./monitor geo. inst. for 24	0	26DEC09	2	1,003	
3DL10T1208	3dL 4; Maint./monitor geo. inst. for 36	0	26DEC10	2	638	
3DL10T1210	3dL 5; Maint./monitor geo. inst. for 48	0	26DEC11	2	273	
3DL10T1212	3dL 6; On completion of maint. & monit. of geo.	0	26JUL12	2	60	
3DL10T1214	3dL 7; On installation of FMD at Portion A	0	12MAR11	2	562	
3DL10T1216	3dL 8; On installation of FMD at Portion B	0	10JUN11	2	472	
3DL10T1218	3dL 9; On installation of FMD at Portion C	0	05MAR11	2	569	
3DL10T1220	3dL 10; On installation of FMD at Portion D	0	19MAY11	2	494	
3DL10T1222	3dL 11; On completion of maint. & monit. of FMD	0	26JUL12	2	60	
3DL10T1224	3dL 12; On completion of all works under this CC	0	26JUL12	2	60	



ID	Activity Description	Orig. Dur.	Entry Start	Entry Finish	Cal ID	Total Float
10AR1JT131	10aR 1; On installation of temp. ventilation	0	03DEC08	2	1,391	
10AR1JT132	10aR 2; On installation temp. lighting	0	03DEC08	2	1,391	
10AR1JT133	10aR 3; On completion of 25% strengthening wks	0	20DEC08	2	1,374	
10AR1JT134	10aR 4; On completion of 50% strengthening wks	0	10JAN09	2	1,353	
10AR1JT135	10aR 5; On completion of 75% strengthening wks	0	31JAN09	2	1,332	
10AR1JT136	10aR 6; On completion of strengthening works	0	16FEB09	2	1,316	
10AR1JT137	10aR 7; On rechange of the water after wrk comp	0	18FEB09	2	1,314	



ID	Activity Description	Orig. Dur.	Entry Start	Entry Finish	Cal ID	Total Float
01R1AI1108	Obtain tree felling permit	0	26MAR08	2	90	
01R1AI1110	Obtain TTA (ingress & egress) approval	0	07MAR08	2	59	
01R1AI1112	Possession of site	0	26MAR08	1	12	
01R1AI1114	Site establishment	30	27MAR08	02MAY08	1	31
01R1AI1116	Site clearance	30	27MAR08	02MAY08	1	31
01R1AI1117	Erect temp. steel decking spanning Shing M. Nui	24	03MAY08	31MAY08	1	31
01R1AI1122	Install remote control CCTV as per ER 4.4-10	30	27MAR08	02MAY08	1	12
01R1AI1124	Maintain & operate CCTV	1,165	03MAY08	11JUL11	2	16
16R7AI1102	Tree transplanting; 4 nos.	72	27MAR08	23JUN08	1	73
3DL1AI1104	Obtain approval for Geotechnical Instrumentation	0	26MAR08	2	29	
3DL1AI1106	Installation of Geotechnical Instrumentation	30	27MAR08	02MAY08	1	24
3DL1AI1108	Monitor/report Geotechnical Instrumentation	1,230	03MAY08	27JUN12	1	24

ID	Activity Description	Orig Dur	Early Start	Early Finish	Cal ID	Total Float
07R1A11202	Erect piling platform	24	19JUN08	17JUL08	1	17
07R1A11204	Install 273 mm dia. temp. pipe piles; 175 nos.	36	18JUL08	28AUG08	1	17
11R2A11206	350mm dia. pre-bored H-piles; 66 nos.	36	29AUG08	19OCT08	1	17
11R2A11208	Construct skin wall/access platforms; Portion A	72	02JUL10	24SEP10	1	198
Remainder Soil Nailing Works						
11R2A11302	Erect scaffolding & working platform	24	03MAY08	31MAY08	1	57
11R2A11304	Install test nails & proof loading test; 2 nos.	12	02JUN08	16JUN08	1	57
11R2A11306	Soil nailing at western side; 28 nos.	12	17JUN08	30JUN08	1	57
11R2A11308	Soil nailing at eastern side; 122 nos.	24	17JUN08	15JUL08	1	57
11R2A11310	Construct soil nail heads; 150 nos.	24	16JUL08	12AUG08	1	57
Construction of Spire Ramp & Cascade						
Excavation from Existing GL to +103.5mPD						
04L1A11402	Bulk excavation; soil (80m3)	4	16SEP08	19SEP08	1	17
04L1A11404	Install test tie-back & proof load test; 1 no.	10	20SEP08	02OCT08	1	17
04L1A11406	Install working tie-backs; 10 nos.	10	03OCT08	15OCT08	1	17
Excavation from +103.5mPD to +100.5mPD						
04L1A11408	Bulk excavation; soil (240m3)	4	16OCT08	20OCT08	1	17
04L1A11410	Install test tie-back & proof load test; 1 no.	10	21OCT08	31OCT08	1	17
04L1A11412	Install working tie-backs; 10 nos.	10	01NOV08	12NOV08	1	17
Excavation from +100.5mPD to +97.5mPD						
04L1A11414	Bulk excavation; soil (510m3)	6	13NOV08	19NOV08	1	17
04L1A11416	Install test tie-back & proof load test; 1 no.	10	20NOV08	01DEC08	1	17
04L1A11418	Install working tie-backs; 22 nos.	10	02DEC08	12DEC08	1	17
Excavation from +97.5mPD to +94.5mPD						
04L1A11420	Bulk excavation; soil (950m3)	12	13DEC08	29DEC08	1	17
04L1A11422	Install test tie-back & proof load test; 1 no.	10	30DEC08	10JAN09	1	17
04L1A11424	Install working tie-backs; 37 nos.	12	12JAN09	24JAN09	1	17
Excavation from +94.5mPD to +91.5mPD						
04L1A11426	Bulk excavation; soil (1130m3)	12	29JAN09	11FEB09	1	17
04L1A11428	Bulk excavation; rock (650m3)	24	12FEB09	11MAR09	1	17
04L1A11430	Install test tie-back & proof load test; 1 no.	10	05FEB09	16FEB09	1	19
04L1A11432	Install working tie-backs; 43 nos.	18	17FEB09	09MAR09	1	19
Excavation from +91.5mPD to +88.5mPD						
04L1A11434	Bulk excavation; soil (1860m3)	18	12MAR09	01APR09	1	17
04L1A11436	Bulk excavation; rock (420m3)	18	26MAR09	20APR09	1	17
04L1A11438	Install test tie-back & proof load test; 1 no.	10	26MAR09	07APR09	1	17
04L1A11440	Install working tie-backs; 27 nos.	12	08APR09	24APR09	1	17

ID	Activity Description	Orig. Dur.	Early Start	Early Finish	Cal. ID	Total Float
Excavation from +88.5mPD to +72.5mPD; North						
04L1A11442	Bulk excavation; rock (6300m3)	110	25APR09	04SEP09	1	17
07R1A11444	Bulk excavation for vehicular access; 1400m3	30	01AUG09	04SEP09	1	17
07R1A11446	Construct vehicular access	36	05SEP09	19OCT09	1	17
Excavation to Bottom Level to south west of SR						
04L1A11448	Bulk excavation; rock (5300m3)	88	20OCT09	03FEB10	1	71
Construction of Spiral Ramp Structure						
07R1A11402	Raft foundation	12	20OCT09	03NOV09	1	17
07R1A11404	Construct RC spiral ramp	192	04NOV09	30JUN10	1	17
07R1A11406	Construct RC spiral ramp top	12	02JUL10	15JUL10	1	17
Dismantle & removal of TBM						
04L1A11450	Install temporary steel works for removal of TBM	24	16APR10	14MAY10	1	17
04L1A11452	Disassembly & demobilization of TBM	50	15MAY10	15JUL10	1	17
Construction of Cascade Structure						
04L1A11454	Construct box culvert & cascade	72	16JUL10	09OCT10	1	17

ID	Activity Description	Orig. Dur.	Early Start	Early Finish	Cal. ID	Total Float
Modification of Existing Channel to Dry Season						
07R1A11502	Modify channel bed & construct weir; Phase 1	36	01NOV10	11DEC10	1	0
07R1A11504	Modify channel bed and orifice; Phase 2	36	13DEC10	26JAN11	1	61
07R1A11506	Modify channel bed and orifice; Phase 3	36	27JAN11	12MAR11	1	61
Remaining Works to be Handover						
07R1A11602	Backfill & compaction above box culvert; Port. A	72	11OCT10	06JAN11	1	90
07R1A11606	Finishing & reinstatement works; Portion A	48	14FEB11	11APR11	1	61
07R1A11608	Pre-handover inspections and remedial works	48	14MAR11	13MAY11	1	61
07R1A11610	Contractor serve notice for Works completion	7	14MAY11	20MAY11	2	412
07R1A11612	SO issues completion certificate	21	21MAY11	10JUN11	2	412
16R7A11602	Landscaping works at Portion A	72	14FEB11	13MAY11	1	62
16R7A11604	Establishment Works at Portion A	365	14MAY11	12MAY12	2	75
3DL1A11602	Install flow measurement devices at Intake I-1	24	14FEB11	12MAR11	1	82
3DL1A11604	Maintain & monitor flow monitoring	365	13MAR11	11MAR12	2	137
Schedule of Milestones at Cost Centre No. 1						
04L1A11802	4L 1; On completion of 50% excavation	0		24APR09	2	1,249
04L1A11804	4L 2; On completion of excavation	0		03FEB10	2	964
04L1A11806	4L 3; On completion of 25% concreting	0		05AUG10	2	781
04L1A11808	4L 4; On completion of 50% concreting	0		26AUG10	2	760
04L1A11810	4L 5; On completion of 75% concreting	0		16SEP10	2	739
04L1A11812	4L 6; On completion of Cascade	0		09OCT10	2	716
04L1A11814	4L 7; On completion of connecting BC	0		19OCT09	2	1,071
04L1A11816	4L 8; On completion of all works under this CC	0		13MAY11	2	500

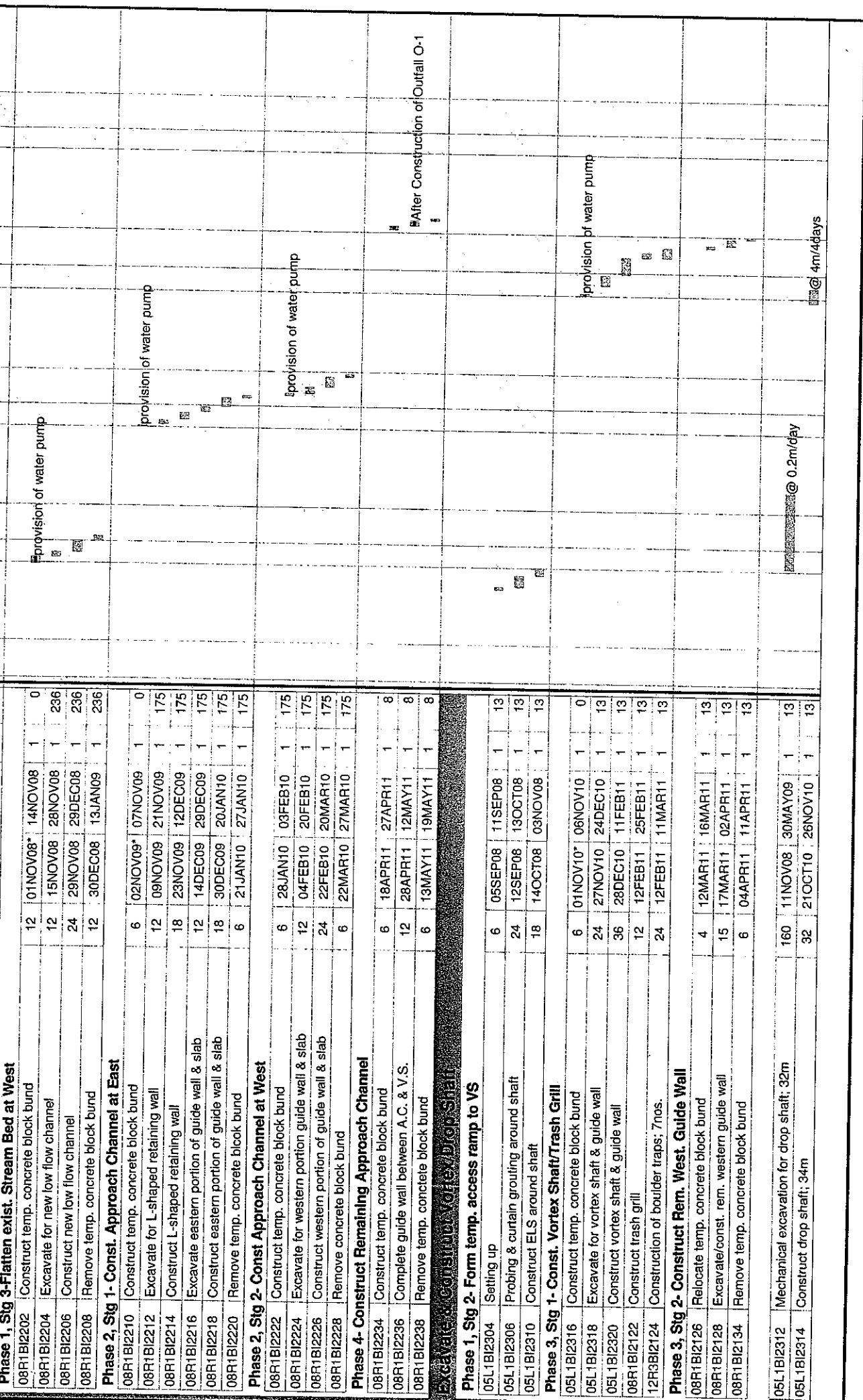
ID	Activity Description	Orig. Bur	Early Start	Early Finish	Cal. Total ID	Total Float
07R1A11902	7R 1; On completion of trash grills	0	12MAR11	2	562	
07R1A11904	7R 2; On completion of 25% excavation	0	29DEC08	2	1,365	
07R1A11906	7R 3; On completion of 50% excavation	0	11MAR09	2	1,293	
07R1A11908	7R 4; On completion of 75% excavation	0	02JUN09	2	1,210	
07R1A11910	7R 5; On completion of all excavation	0	04SEP09	2	1,116	
07R1A11912	7R 6; On completion of spiral ramp to +80mPD	0	22DEC09	2	1,007	
07R1A11914	7R 7; On completion of spiral ramp to +90mPD	0	02MAR10	2	937	
07R1A11916	7R 8; On completion of spiral ramp to +100mPD	0	10MAY10	2	868	
07R1A11918	7R 9; On completion of spiral access ramp	0	15JUL10	2	802	
07R1A11920	7R 10; On completion of all works under this CC	0	13MAY11	2	500	

Schedule of Milestones for Cost Centre No. 11R						
11R2A11R02	11R 1; On completion of soil nailing works	0	12AUG08	2	1,504	
11R2A11R04	11R 2; On completion of piling at platform	0	19SEP08	2	1,466	
11R2A11R06	11R 3; On completion of piling at branch access	0	13OCT08	2	1,442	
11R2A11R08	11R 4; On completion of all works under this CC	0	24SEP10	2	731	

Construction of Intake I-2

Preliminary Works						
01R1B12108	Obtain TTA (ingress & egress) approval	0	06MAR08	2	36	
01R1B12110	Possession of Portion B -90d of DOC	0	26MAR08	2	15	
01R1B12112	Site establishment	30	27MAR08	02MAY08	1	13
01R1B12114	Site clearance	30	27MAR08	02MAY08	1	13
01R1B12116	Install remote control CCTV as per ER 4.4.10	30	27MAR08	02MAY08	1	12
01R1B12118	Maintain & operate CCTV	1,165	03MAY08	11JUL11	2	16
16R7B12002	Tree transplanting; 1 no.	72	03APR08	30JUN08	1	398
3DL1B12104	Obtain approval for Geotechnical Instrumentation	0	26MAR08	2	16	
3DL1B12106	Installation of Geotechnical Instrumentation	30	27MAR08	02MAY08	1	13
3DL1B12108	Monitor/report Geotechnical Instrumentation	1,230	03MAY08	27JUN12	1	24

Stream Diversion Approach Channel/H-Pile Wall						
Phase 1, Stg 1-Construct 550 dia. H-Pile Wall						
12R3B12202	Form temp. access ramp along west side of stream	24	05APR08	03MAY08	1	13
12R3B12204	Mobilize piling rig & set up	6	05MAY08	10MAY08	1	13
12R3B12206	15 nos. pre-bored H-piles at southern end	10	13MAY08	23MAY08	1	13
12R3B12208	Remove southern access ramp (tail)	12	24MAY08	06JUN08	1	13
12R3B12210	Remaining 44 nos. pre-bored H-piles	30	07JUN08	14JUL08	1	298
12R3B12212	Demolize piling rig	1	15JUL08	15JUL08	1	298
12R3B12214	Excavate for skin wall & remove temp. access	40	16JUL08	30AUG08	1	298



ID	Activity Description	Orig Dur	Early Start	Early Finish	Cal ID	Total Float
Excavate & Construct Air Vent Shaft						
Phase 1, Stg 2- Form temp. access ramp to VS						
05L1B12302	Form temp. access ramp; Lo Wai Rd to Drop Shaft	24	07JUN08	07JUL08	1	13
05L1B12402	Construct temp. platform for RCD	10	08JUL08	18JUL08	1	13
05L1B12404	Mobilize & set up plans for RCD excavation	6	19JUL08	25JUL08	1	13
05L1B12406	Excavate by RCD; 34m @ 1m/day	34	26JUL08	03SEP08	1	13
05L1B12408	Demobilize RCD	1	04SEP08	04SEP08	1	13
05L1B12410	Dismante & remove temp platform	6	04NOV08	10NOV08	1	13
35L1B12412	Construct air vent shaft; 34m	34	27NOV10	08JAN11	1	67
Excavate & Construct Man Access Shaft						
05L1B12502	Construct ELS around shaft	24	01NOV08	28NOV08	1	0
05L1B12504	Probing & curtain grouting around shaft	24	29NOV08	29DEC08	1	443
05L1B12512	Mechanical excavation for man access shaft; 38m	190	30DEC08	21AUG09	1	443
05L1B12514	Construct man access shaft including stairs; 38m	76	27NOV10	02MAR11	1	67
Excavate & Construct De-aeration Chamber						
05L1B12602	Mechanical excavation for chamber; 22.5m	132	01JUN09	05NOV09	1	13
05L1B12604	Construct de-aeration chamber	32	10SEP10	20OCT10	1	13
Excavate & Construct Adit Tunnel						
35L1B12102	Mechanical excavation for Adit Tunnel	200	06NOV09	13JUL10	1	13
35L1B12104	Construct adit tunnel; 60m	50	14JUL10	09SEP10	1	13
35L1B12106	Mechanical excavation breakthrough	12	12JAN11	25JAN11	1	38
35L1B12108	Construct collar between MT & AT	36	26JAN11	11MAR11	1	38
Excavate & Construct Man Access Tunnel						
05L1B12802	Mechanical excavation for Man Access Tunnel	240	06NOV09	28AUG10	1	109
05L1B12804	Mechanical excavation breakthrough	3	30AUG10	01SEP10	1	109
05L1B12806	Construct man access tunnel; 35m	36	27NOV10	11JAN11	1	38
Remaining Works Prior to Handover						
08R1B12102	Finishing & reinstatement works; Portion B	48	18APR11	17JUN11	1	8
08R1B12103	Pre-handover inspections and remedial works	48	20MAY11	16JUL11	1	8
08R1B12104	Contractor serve notice for Works completion	7	17JUL11	23JUL11	2	348
08R1B12105	SO issues completion certificate	21	24JUL11	13AUG11	2	348
16R7512102	Landscaping works at Portion B	72	18APR11	16JUL11	1	8
16R7512104	Establishment Works at Portion B	365	17JUL11	15JUL12	2	11
3DL1B12101	Install flow measurement devices at Intake I-2	24	13MAY11	10JUN11	1	11

IB	Activity Description	Orig Bur	Early Start	Early Finish	Cal ID	Total Float
3DL1B12I03	T & C for flow measurement system	28	11JUN11	14JUL11	1	11
3DL1B12I05	Maintain & monitor flow monitoring	365	11JUN11	09JUN12	2	47

Schedule of Milestones for Cos Centre No 3b

3BL1B12A02	3bL 1; On establishing tunnelling equipments	0		05NOV09	2	1,054
3BL1B12A04	3bL 2; On completion of 12.5% perm. tunnel linin	0		20JUL10	2	797
3BL1B12A06	3bL 3; On completion of 25% perm. tunnel lining	0		27JUL10	2	790
3BL1B12A08	3bL 4; On completion of 37.5% perm. tunnel linin	0		04AUG10	2	782
3BL1B12A10	3bL 5; On completion of 50% perm. tunnel lining	0		11AUG10	2	775
3BL1B12A12	3bL 6; On completion of 62.5% perm. tunnel linin	0		19AUG10	2	767
3BL1B12A14	3bL 7; On completion of 75% perm. tunnel lining	0		26AUG10	2	760
3BL1B12A16	3bL 8; On completion of 87.5% perm. tunnel linin	0		02SEP10	2	753
3BL1B12A18	3bL 9; On completion of perm. tunnel lining	0		09SEP10	2	746
3BL1B12A20	3bL 10; On completion of all works under this CC	0		11MAR11	2	568

Schedule of Milestones for Cos Centre No 5f

05L1B12M02	5L 1; On completion of 25% of excavation	0		30MAY09	2	1,213
05L1B12M04	5L 2; On completion of 50% of excavation	0		14SEP09	2	1,106
05L1B12M06	5L 3; On completion of 75% of excavation	0		09MAR10	2	930
05L1B12M08	5L 4; On completion of all excavation	0		28AUG10	2	758
05L1B12M10	5L 5; On completion of drop shaft & vortex shaft	0		11FEB11	2	591
05L1B12M12	5L 6; On completion of de-aeration chamber	0		20OCT10	2	705
05L1B12M14	5L 7; On completion of air vent shaft	0		06JAN11	2	625
05L1B12M16	5L 8; On completion of man access shaft	0		02MAR11	2	572
05L1B12M18	5L 9; On completion of man access adit	0		11JAN11	2	622
05L1B12M20	5L 10; On completion of all works under this CC	0		16JUL11	2	436

Schedule of Milestones for Cos Centre No 8R

08R1B12R02	8R 1; On completion of approach channel	0		12MAY11	2	501
08R1B12R04	8R 2; On completion of trash grill	0		25FEB11	2	577
08R1B12R06	8R 3; On completion of all works under this CC	0		16JUL11	2	436

Schedule of Milestones for Cos Centre No 12R

12R3B12S02	12R 1; On completion of 50% pile retain. wall	0		14JUL08	2	1,533
12R3B12S04	12R 2; On completion of pile retain. wall	0		13SEP08	2	1,472
12R3B12S06	12R 3; On completion of boulder traps	0		11MAR11	2	563
12R3B12S08	12R 4; On completion of all works under this CC	0		16JUL11	2	436

equipment for tunnelling at Intake I-2
 ◆ for Adit Tunnel at Intake I-2
 ◆ for Adit Tunnel at Intake I-2
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 ◆ under this Cost Centre

◆ below G.L. except for Adit at Intake I-2
 ◆ below G.L. except for Adit at Intake I-2
 ◆ below G.L. except for Adit at Intake I-2
 ◆ vortex shaft at Intake I-2
 ◆ chamber at Intake I-2
 ◆ shaft at Intake I-2
 ◆ adit at Intake I-2
 ◆ under this Cost Centre

channel and associated decking at Intake I-2
 ◆ at Intake I-2
 ◆ under this Cost Centre

◆ wall at Intake I-2
 ◆ wall at Intake I-2
 ◆ traps at Intake I-2
 ◆ under this Cost Centre

Construction of Intake I-3

Preliminary Works

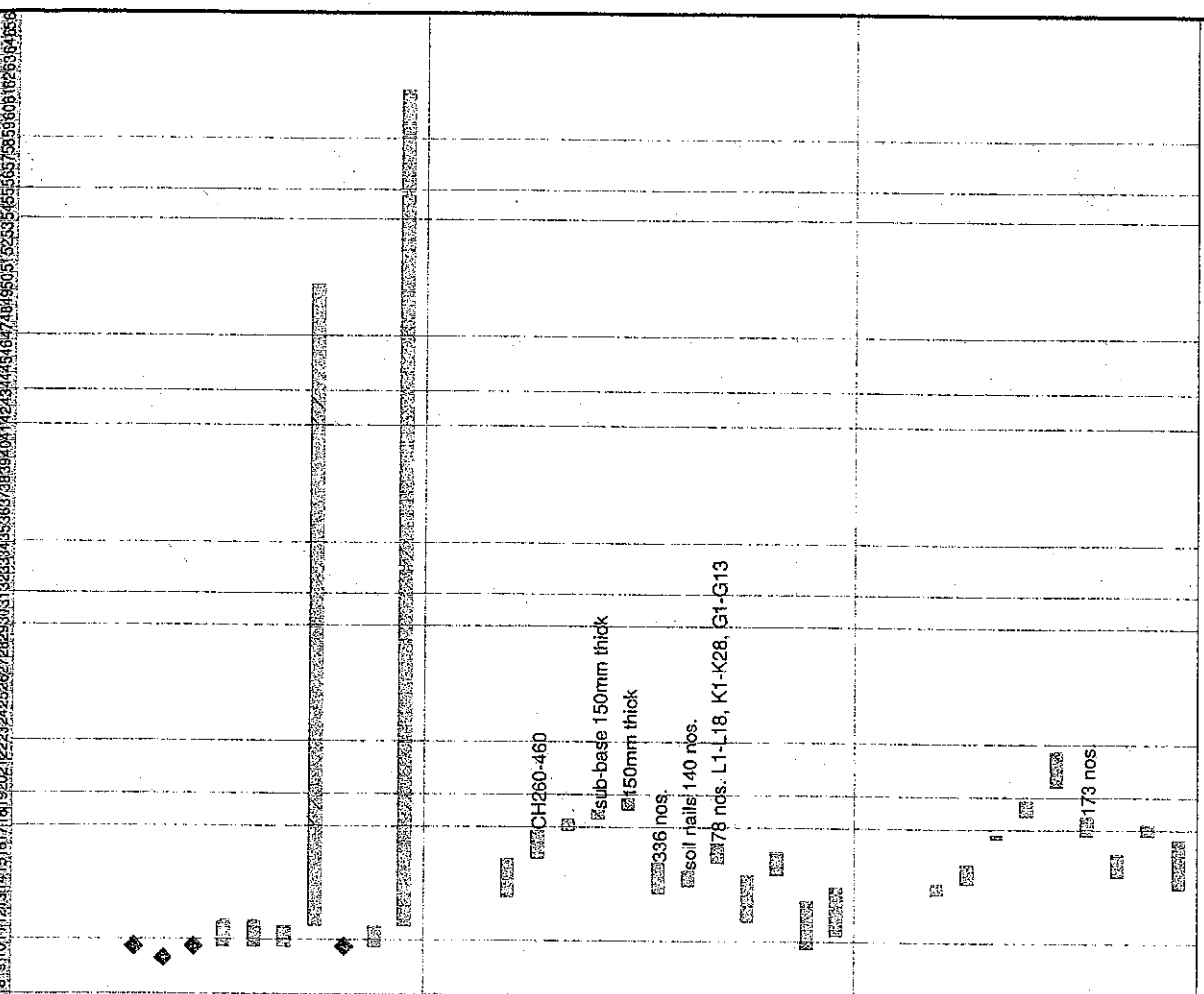
ID	Activity Description	Orig. Dur.	Early Start	Early Finish	Cat. ID	Total Float
01R1C13108	Obtain tree felling permit	0		26MAR08	2	88
01R1C13110	Obtain TTA (ingress & egress) approval	0		06MAR08	2	108
01R1C13112	Possession of Portion C -90d of DOC	0	26MAR08		2	15
01R1C13114	Site establishment	40	27MAR08	15MAY08	1	71
01R1C13116	Site clearance	40	27MAR08	15MAY08	1	71
01R1C13118	Install remote control CCTV as per ER 4.4.10	30	27MAR08	02MAY08	1	12
01R1C13120	Maintain & operate CCTV	1,165	03MAY08	11JUL11	2	16
3DL1C13104	Obtain approval for Geotechnical Instrumentation	0		26MAR08	2	29
3DL1C13106	Installation of Geotechnical Instrumentation	30	27MAR08	02MAY08	1	24
3DL1C13108	Monitor/report Geotechnical Instrumentation	1,230	03MAY08	27JUN12	1	24

Construction of Upper Portion of Access Road

ID	Activity Description	Orig. Dur.	Early Start	Early Finish	Cat. ID	Total Float
09R1C13204	Excavation of fill slope; 13000m3	60	27JUN08	05SEP08	1	382
09R1C13206	Construction of Drainage System; 200m	40	06SEP08	25OCT08	1	382
09R1C13208	Backfill & prepare road formation; CH260-460	18	27OCT08	15NOV08	1	382
09R1C13210	Laying of Sub-base/Road Kerbs; CH260-460	16	17NOV08	04DEC08	1	382
09R1C13212	Concrete paving; CH260-460	16	05DEC08	23DEC08	1	382
13R1C13206	Install soil nails at NW portion; 336 nos.	48	04JUL08	28AUG08	1	83
13R1C13208	Excavation & install soil nails at NW portion	24	19JUL08	15AUG08	1	94
13R1C13210	Install soil nails at central portion; 78 nos.	31	29AUG08	06OCT08	1	83
13R4C13202	350mm dia. pre-bored H-piles, Wall A; 388 nos.	70	16MAY08	07AUG08	1	83
13R4C13204	Construct skin wall A at Portion C; 175 m3;	36	08AUG08	19SEP08	1	393
16R7C13202	Tree transplant (group 1); 15 nos.	72	27MAR08	23JUN08	1	71
16R7C13204	Tree transplant (group 2); 21 nos.	72	22APR08	18JUL08	1	71

Construction of Temporary Access Road

ID	Activity Description	Orig. Dur.	Early Start	Early Finish	Cat. ID	Total Float
09R1C13302	Excavation to form access road A	18	05JUL08	25JUL08	1	90
09R1C13304	Backfill to form access road A & B; 1200m3	28	26JUL08	27AUG08	1	90
09R1C13306	Excavation to form access road B	6	15OCT08	21OCT08	1	71
09R1C13308	Cut rock slope to 80 degree to +65mPD; 940m3	25	26NOV08	24DEC08	1	71
09R1C13310	Cut rock slope to 80 deg. to +63mPD; 1500m3	50	21JAN09	23MAR09	1	311
13R1C13304	Excavate/install soil nails at SE end; 173 nos.	30	22OCT08	25NOV08	1	71
13R4C13302	350mm dia. pre-bored H-piles, Wall B; 106 nos.	36	08AUG08	19SEP08	1	90
13R4C13306	Construct skin wall B at Portion C; 48m3	18	22OCT08	11NOV08	1	366
16R7C13316	Tree transplanting (group 3B); 15 nos.	72	19JUL08	14OCT08	1	71



Construction of Lower part of Access Road

ID	Activity Description	Orig Dur	Early Start	Early Finish	Cal ID	Total Float
09R1CI3402	Cut rock slope to 80 deg.; 2800m3	60	13MAY09	23JUL09	1	274
09R1CI3406	Construction of Drainage System; CH0-260	60	24JUL09	02OCT09	1	274
09R1CI3408	Backfill & prepare road formation; CH0-260	30	03OCT09	09NOV09	1	274
09R1CI3410	Laying of Sub-base/Road Kerbs; CH0-260	32	10NOV09	16DEC09	1	274
09R1CI3412	Concrete paving; CH0-260	32	17DEC09	26JAN10	1	274
09R1CI3414	Reinstate temporary Access Road	48	27JAN10	26MAR10	1	274
13R1CI3402	Boulder Treatment; 5050m3	112	28AUG08	12JAN09	1	288
13R1CI3404	Excavate & install soil nail (NW Turning Area)	72	26NOV08	24FEB09	1	274
13R1CI3406	Excavate & install soil nails (SE Portion)	60	25FEB09	12MAY09	1	274
16R7CI3402	Tree transplanting (group 3A); 16 nos.	72	26NOV08	24FEB09	1	274

Excavate & Construct Air Vent Shaft

Phase 1	Activity Description	Orig Dur	Early Start	Early Finish	Cal ID	Total Float
06L1CI3502	Modify & flatten the stream bed	6	26NOV08	02DEC08	1	78
06L1CI3504	Construct temporary concrete block wall bund	12	03DEC08	16DEC08	1	78
06L1CI3506	Mobilization & setting up of RCD rig	6	27DEC08	03JAN09	1	71
06L1CI3508	Drilling for air vent shaft	14	05JAN09	20JAN09	1	71
06L1CI3510	Construction of air vent shaft	14	21JAN09	09FEB09	1	192

Excavate & Construct Drop Shaft

Phase 1	Activity Description	Orig Dur	Early Start	Early Finish	Cal ID	Total Float
06L1CI3602	Probing & curtain grouting	18	21JAN09	13FEB09	1	71
06L1CI3604	Construct temp. rain shelter & bund	24	21JAN09	20FEB09	1	71
06L1CI3606	Bulk excavation for Vortex (southern portion)	57	14FEB09	25APR09	1	71
06L1CI3608	Bulk excavation for drop shaft	60	27APR09	09JUL09	1	71
06L1CI3610	Construction of vortex (southern portion)	24	10JUL09	06AUG09	1	71

Phase 2

06L1CI3612	Construction of drop shaft	12	19FEB10	04MAR10	1	83
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Phase 3

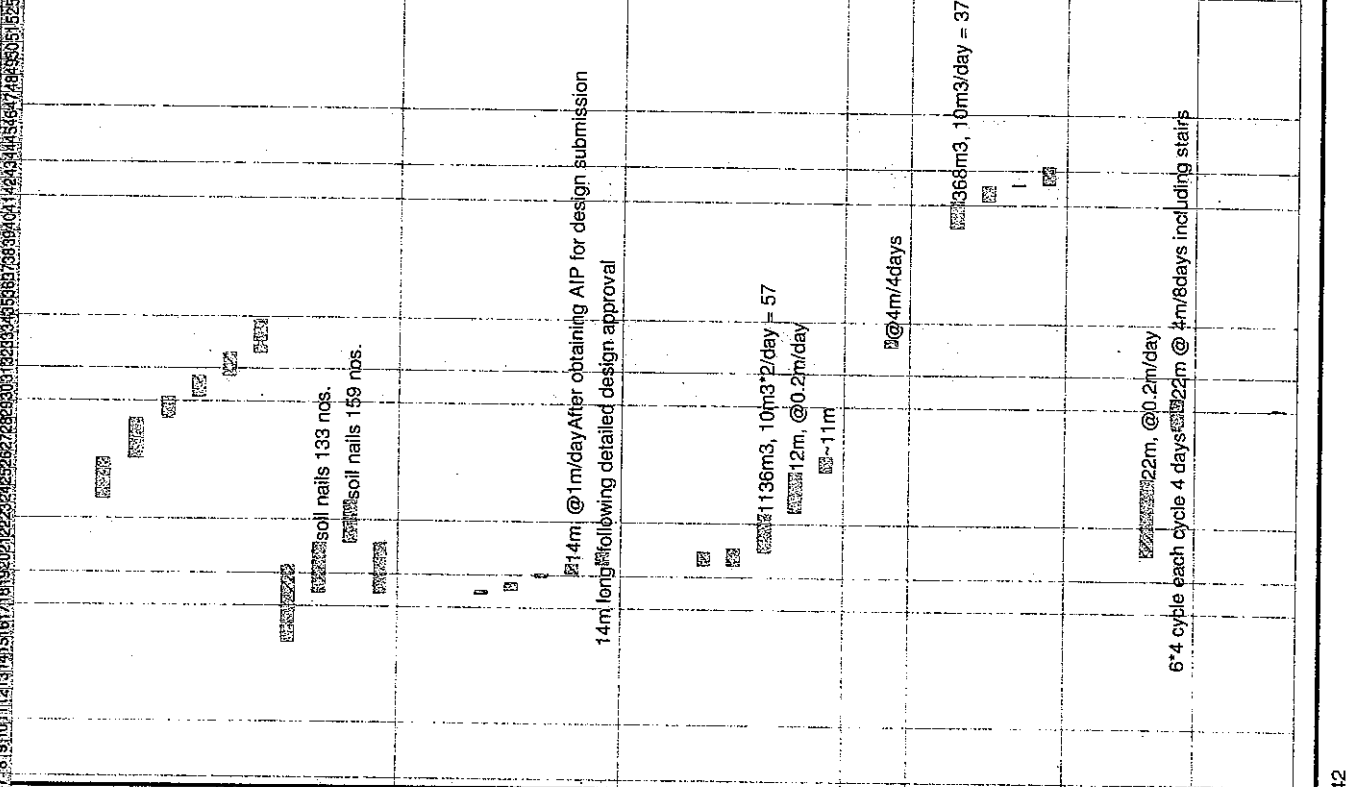
06L1CI3614	Bulk excavation for Vortex (northern portion)	37	21SEP10	05NOV10	1	106
06L1CI3616	Construction of vortex (northern portion)	24	06NOV10	03DEC10	1	106
06L1CI3618	Relocate flood wall within vortex	4	04DEC10	08DEC10	1	106
06L1CI3620	Construct remaining of the vortex	24	09DEC10	08JAN11	1	106

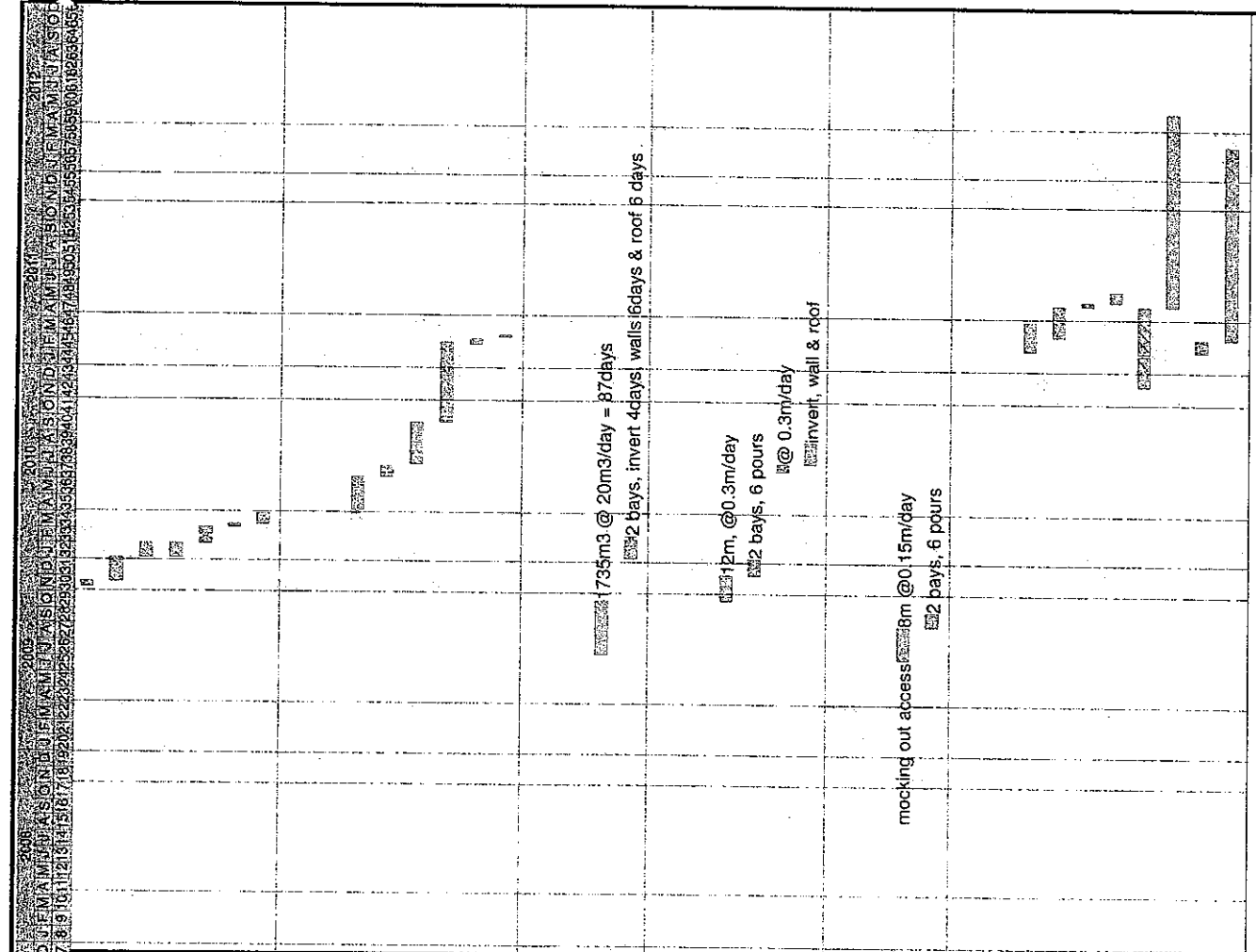
Excavate & Construct Man Access Shaft

Phase 1	Activity Description	Orig Dur	Early Start	Early Finish	Cal ID	Total Float
06L1CI3706	Bulk excavation for man access shaft	110	14FEB09	30JUN09	1	170
06L1CI3708	Construction of man access shaft	44	30SEP09	23NOV09	1	170

Modification of Streambeds (Dry Season Works)

Phase 2	Activity Description	Orig Dur	Early Start	Early Finish	Cal ID	Total Float
09R1CI3802	Construct temporary sand bag bund	6	02NOV09	07NOV09	1	0





ID	Activity Description	Orig Dur	Early Start	Early Finish	Cal ID	Total Float
09R1C18804	Removal of large boulders	10	09NOV09	19NOV09	1	67
09R1C18806	Excavation of the stream bed	36	20NOV09	04JAN10	1	67
09R1C18808	Laying of granular filter	24	05JAN10	01FEB10	1	91
09R1C18810	Laying of rock armour	24	05JAN10	01FEB10	1	67
09R1C18812	Construction of boulder trap; 7 nos.	24	02FEB10	04MAR10	1	67
09R1C18814	Removal of sand bag bund	4	05MAR10	09MAR10	1	67
09R1C18816	Construct temporary concrete block bund	18	10MAR10	30MAR10	1	67
Excavate & Construct Approach Channel						
Phase 3						
09R1C18902	Excavation of the Stream Bed	54	31MAR10	08JUN10	1	67
09R1C18904	Laying Granular Filter within Stream Bed	18	09JUN10	30JUN10	1	67
09R1C18908	Open excavation for Approach Channel	69	02JUL10	20SEP10	1	67
09R1C18910	Construction of Approach Channel	122	21SEP10	19FEB11	1	67
09R1C18912	Construction of trash grill	12	14FEB11	26FEB11	1	67
09R1C18914	Removal of concrete block bund	6	28FEB11	05MAR11	1	67
Excavate & Construct De-aeration Chamber						
Phase 2						
06L1C13102	Excavation for de-aeration chamber	87	10JUL09	21OCT09	1	83
06L1C13104	Construction of de-aeration chamber	32	09JAN10	18FEB10	1	83
Excavate & Construct Adit Tunnel						
Phase 2						
3CL1C13102	Mechanical excavation for Adit Tunnel	40	22OCT09	08DEC09	1	83
3CL1C13104	Construction of Adit Tunnel	24	09DEC09	08JAN10	1	83
3CL1C13106	Mechanical excavation breakthrough	12	22JUN10	06JUL10	1	206
3CL1C13108	Construct collar between MT & AT	36	07JUL10	17AUG10	1	206
Excavate & Construct Man Access Tunnel						
Phase 2						
06L1C13122	Mechanical excavation for man access tunnel	53	02JUL09	01SEP09	1	170
06L1C13124	Construction of man access tunnel	24	02SEP09	29SEP09	1	170
Remaining Works Prior to Handover to Client						
09R1C13142	Finishing & reinstatement works; Portion C	48	07FEB11	02APR11	1	67
09R1C13143	Pre-handover inspections and remedial works	48	07MAR11	05MAY11	1	67
09R1C13144	Contractor serve notice for Works completion	7	06MAY11	12MAY11	2	480
09R1C13146	SO issues completion certificate	21	13MAY11	02JUN11	2	480
16R7C13142	Landscaping works at Portion C	120	06DEC10	05MAY11	1	68
16R7C13144	Establishment Works at Portion C	365	06MAY11	04MAY12	2	83
3DL1C13141	Install flow measurement devices at intake I-3	24	07FEB11	05MAR11	1	88
3DL1C13143	Maintain & monitor flow monitoring	365	06MAR11	04MAR12	2	144

ID	Activity Description	Orig Dur	Early Start	Early Finish	Cat IB	Cat Total
13R4CI3S07	13R 7; On completion of 40% piles by number	0	27JUN08	27JUN08	2	1,550
13R4CI3S08	13R 8; On completion of 50% piles by number	0	09JUL08	09JUL08	2	1,538
13R4CI3S09	13R 9; On completion of 60% piles by number	0	19JUL08	19JUL08	2	1,528
13R4CI3S10	13R 10; On completion of 70% piles by number	0	30JUL08	30JUL08	2	1,517
13R4CI3S11	13R 11; On completion of 80% piles by number	0	07AUG08	07AUG08	2	1,509
13R4CI3S12	13R 12; On completion of 90% piles by number	0	28AUG08	28AUG08	2	1,488
13R4CI3S13	13R 13; On completion of all piling works	0	19SEP08	19SEP08	2	1,466
13R4CI3S14	13R 14; On completion of boulder traps	0	04MAR10	04MAR10	2	935
13R4CI3S15	13R 15; On completion of all work under this CC	0	26MAR10	26MAR10	2	913

Construction of Outfall O-1

Preliminary Works

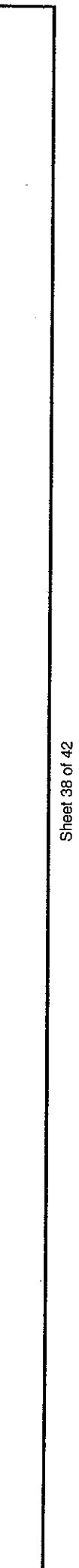
01R1DO0108	Obtain TTA (ingress & egress) approval	0	06MAR08	06MAR08	2	7
01R1DO0110	Obtain tree felling permit	0	26MAR08	26MAR08	2	0
01R1DO0112	Obtain excavation permit	0	20FEB08	20FEB08	2	22
01R1DO0114	Site establishment	30	14MAR08	22APR08	1	0
01R1DO0116	Site clearance	30	14MAR08	22APR08	1	0
01R1DO0118	Install remote control CCTV as per ER 4.4.10	30	14MAR08	22APR08	1	13
01R1DO0120	Maintain & operate CCTV	1,175	23APR08	11JUL11	2	16
01R1DO0126	Application/approval for temp. CLP Power Supply	200	28DEC07	14JUL08	2	9
01R1DO0128	Establish temp. CLP power sub-station	90	15JUL08	30OCT08	1	8
01R1DO0130	Apply for Marine Permit for Works at Portion E	14	30JUL09	12AUG09	2	58
01R1DO0132	Obtain marine permit from Marine Department	45	13AUG09	26SEP09	2	58
3DL1DO0104	Obtain approval for Geotechnical Instrumentation	0	14MAR08	14MAR08	2	2
3DL1DO0106	Installation of Geotechnical Instrumentation	30	08MAR08	16APR08	1	1
3DL1DO0108	Monitor/report Geotechnical Instrumentation	1,250	17APR08	06JUL12	1	17

Form Temporary Access/Tree Felling

10R1DO0202	Form 80m long (+14 to +69mPD) temp. access road	60	18MAR08	02JUN08	1	0
14R1DO0202	Existing boulder stabilization works	100	23JUN08	21OCT08	1	16
16R7DO0202	Tree transplanting; 164 nos.	120	28MAR08	20AUG08	1	0

Form Temporary Launching Platform

10R1DO0302	Cut slope (69 to 41mPD)/install perm. soil nails	90	26APR08	13AUG08	1	0
10R1DO0304	Cut slope & form launching platform; 41 to 24mPD	90	25JUN08	11OCT08	1	0
10R1DO0306	Cut rock benching & form platform; 14 to 24mPD	72	14AUG08	08NOV08	1	0
3AL1DO0302	Excavate TBM launching chamber; 15m long	24	19OCT08	08NOV08	1	0
3AL1DO0304	Install crane/gantry facilities	40	13OCT08	27NOV08	1	0
3AL1DO0306	Install steel platform, hopper & other facilities	120	13OCT08	07MAR09	1	0



ID	Activity Description	Orig Dur	Earlv Start	Earlv Finish	Cal ID	Total Float
10R1DO0706	Excavate for box culvert (upper part)	66	01SEP10	19NOV10	1	8
10R1DO0708	Construct box-culvert (upper part)	66	15OCT10	04JAN11	1	8
10R1DO0710	Excavate for cascade construction	36	05JAN11	18FEB11	1	8
10R1DO0712	Construct cascade	48	19FEB11	16APR11	1	8
10R1DO0714	Construct retaining wall, baffle, railing etc.	48	19FEB11	16APR11	1	33

ID	Activity Description	Orig Dur	Earlv Start	Earlv Finish	Cal ID	Total Float
10R1DO0804	Excavate & formation for 100m*16m slab	72	11MAY10	05AUG10	1	93
10R1DO0806	Construct concrete apron with pre-cast RC slabs	72	26MAY10	19AUG10	1	93
10R1DO0808	Installation of precast stepped blocks	144	06AUG10	27JAN11	1	93
10R1DO0810	Removal of platform & formation	12	08MAR11	21MAR11	1	39
10R1DO0812	Install remain. Concrete apron for rem. Area	12	22MAR11	04APR11	1	39
14R5DO0802	Removal of sea wall armour	72	26APR10	22JUL10	1	93

ID	Activity Description	Orig Dur	Earlv Start	Earlv Finish	Cal ID	Total Float
10R1DO0904	Finishing & reinstatement works; Portion D	48	19MAR11	19MAY11	1	33
10R1DO0906	Pre-handover inspections and remedial works	48	18APR11	17JUN11	1	33
10R1DO0908	Contractor serve notice for Works completion	7	18JUN11	24JUN11	2	437
10R1DO0910	SO issues completion certificate	21	25JUN11	15JUL11	2	437
16R7DO0902	Landscaping works at Portion D	120	19JAN11	17JUN11	1	33
16R7DO0904	Establishment Works at Portion D	365	18JUN11	16JUN12	2	40
3DLDO0902	Install flow measurement devices at Outfall O-1	24	18APR11	19MAY11	1	29
3PLDO0904	Maintain & monitor flow monitoring	365	20MAY11	18MAY12	2	69

ID	Activity Description	Orig Dur	Earlv Start	Earlv Finish	Cal ID	Total Float
10R1DO1002	10R 1; On completion of 20% excavation works	0		09JUL08	2	1,538
10R1DO1004	10R 2; On completion of 40% excavation works	0		03SEP08	2	1,482
10R1DO1006	10R 3; On completion of 60% excavation works	0		08NOV08	2	1,416
10R1DO1008	10R 4; On completion of 80% excavation works	0		14OCT09	2	1,076
10R1DO1010	10R 5; On completion all excavation works	0		18FEB11	2	584
10R1DO1012	10R 6; On completion of cascade structure	0		16APR11	2	527
10R1DO1014	10R 7; On completion of spiral ramp to +16mPD	0		23FEB10	2	944
10R1DO1016	10R 8; On completion of spiral access ramp	0		25JUN10	2	822
10R1DO1018	10R 9; On completion box-culvert & open channel	0		07MAR11	2	567
10R1DO1020	10R 10; On completion of seabed protection wks	0		04APR11	2	539
10R1DO1022	10R 11; On completion of all works under this CC	0		17JUN11	2	465

ID	Activity Description	Orig Dur	Earlv Start	Earlv Finish	Cal ID	Total Float
14R5DO1102	14R 1; On complet. of remove exist. rock armour	0		23JUL10	2	795
14R5DO1104	14R 2; On complet. of 50% soil nailing by number	0		20JUN08	2	1,557
14R5DO1106	14R 3; On completion all soiling works	0		13AUG08	2	1,503

Drainage Improvement Works at Portion G

Preliminary Works

ID	Activity Description	Orig Dur	Early Start	Early Finish	Cal ID	Total Float
01R6GG0102	Prepare/submit Drainage Assessment Report	90	30MAY09	27AUG09	2	6
01R6GG0104	DAF reviewed/approved by SO and DSD	90	28AUG09	25NOV09	2	6
01R6GG0112	Obtain TTA (ingress & egress) approval	0		25NOV09	2	6
01R6GG0114	Possession of Portion G - 700d of DOC	0	0	26NOV09	2	6
01R6GG0116	Site clearance/Site Establishment	30	10DEC09	16JAN10	1	62
3DL6GG0104	Obtain approval for Geotechnical Instrumentation	0		25NOV09	2	6
3DL6GG0106	Installation of Geotechnical Instrumentation	12	26NOV09	09DEC09	1	5
3DL6GG0108	Monitor/report Geotechnical Instrumentation	770	10DEC09	20JUL12	1	5

Piling Works

15R6GG0200	Obtain SO's consent for temp. works design	0		24JAN09	1	351
15R6GG0202	Mobilization & set up for temp. platform	3	18JAN10	20JAN10	1	62
15R6GG0204	Construct steel working platform for H-piling	110	21JAN10	08JUN10	1	62
15R6GG0206	Mobilization & set up for H-piling; Wall 1	3	23APR10	26APR10	1	62
15R6GG0208	52 nos. 600mm dia. H-piles; Wall 1 @ 1.5 nr/day	35	27APR10	08JUN10	1	62
15R6GG0210	Excavate & construct skin wall 1 at Portion G	35	09JUN10	21JUL10	1	62
15R6GG0212	Mobilization & set up for H-piling; Wall 2	3	09JUN10	11JUN10	1	62
15R6GG0214	40 nos. 600mm dia. H-piles; Wall 2 @ 1.5 nr/day	27	12JUN10	15JUL10	1	62
15R6GG0216	Excavate & construct skin wall 2 at Portion G	27	16JUL10	16AUG10	1	62

Drainage Improvement Works

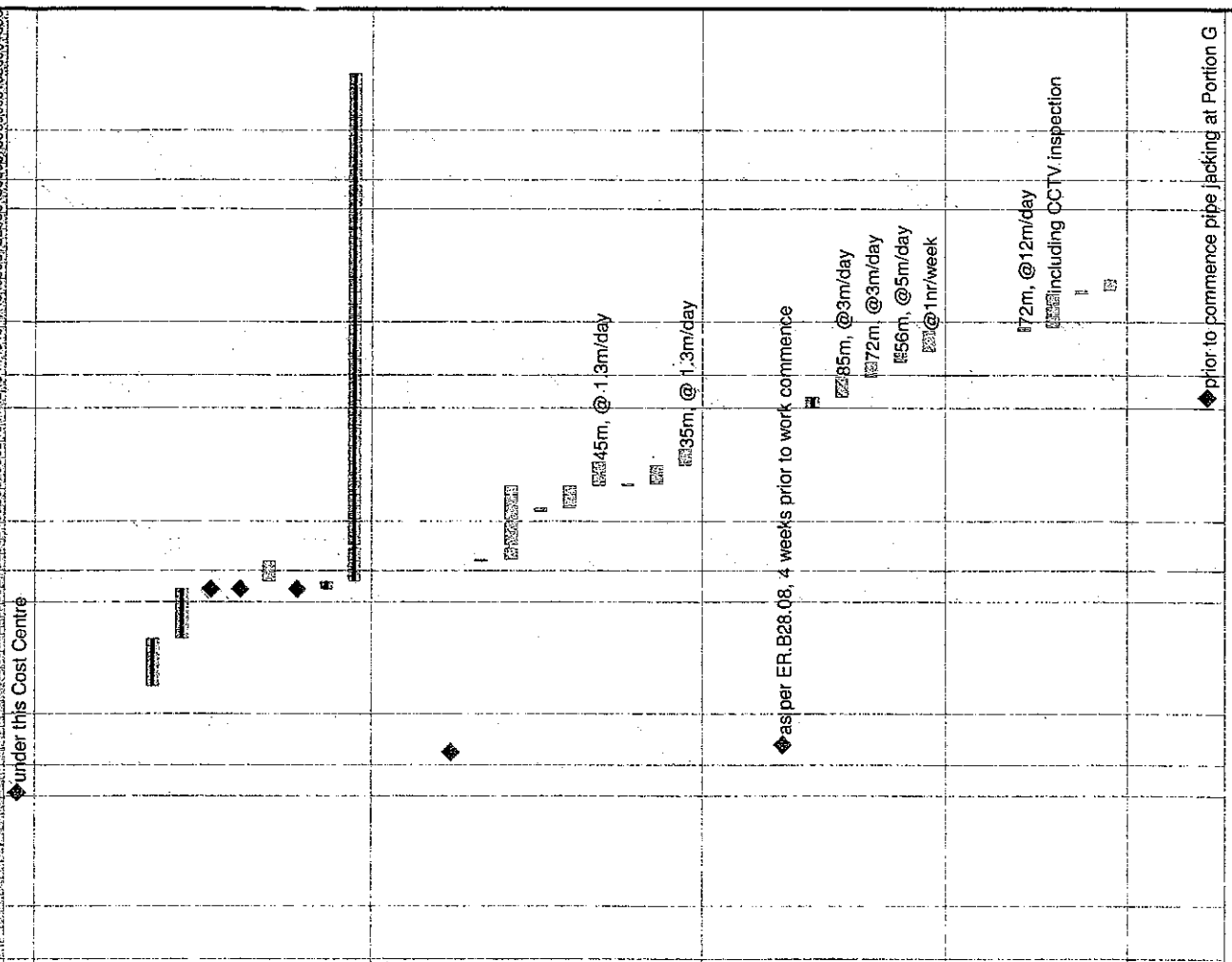
15R6GG0301	Obtain approval of ELS design package incl MS	0		07FEB09	2	631
15R6GG0302	Install ELS & excavate shaft for pipe jacking	18	01NOV10*	20NOV10	1	0
15R6GG0304	Construct 1.5m dia. drainage by pipe jacking	30	22NOV10	28DEC10	1	44
15R6GG0306	Construct 1.5m dia. drainage by open trenching	24	29DEC10	26JAN11	1	44
15R6GG0308	Construct .75m & 1.5m U and Stepped Channel	12	27JAN11	12FEB11	1	44
15R6GG0310	Construct 3 nos. manhole & 2 nos. catchpit	35	14FEB11	25MAR11	1	44

Remaining Works to be Handover to Client

15R6GG0312	Reinstate carriageway & footway	6	26MAR11	01APR11	1	44
15R6GG0402	Pre-handover inspections and remedial works	48	02APR11	02JUN11	1	44
15R6GG0404	Contractor serve notice for Works completion	7	03JUN11	09JUN11	2	452
15R6GG0408	SO issues completion certificate	21	10JUN11	30JUN11	2	452

Schedule of Milestones to Cost Centre No 15R

15R6GG0502	15R 1; On completion of all temp. works	0		20NOV10	2	674
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ID	Activity Description	On Dur	Early Start	Early Finish	Cal ID	Total Float
15R6GG0504	15R 2; On completion of 25% of pipejacking	0	30NOV10	2	664	
15R6GG0506	15R 3; On completion of 50% of pipejacking	0	08DEC10	2	656	
15R6GG0508	15R 4; On completion of 75% of pipejacking	0	17DEC10	2	647	
15R6GG0510	15R 5; On completion of all pipejacking	0	28DEC10	2	636	
15R6GG0512	15R 6; On completion of all wks under this CC	0	02JUN11	2	480	

- ◆ pipe jacking method at Portion G
- ◆ pipe jacking method at Portion G
- ◆ pipe jacking method at Portion G
- ◆ pipe jacking method at Portion G
- ◆ under this Cost Centre

Appendix D

Implementation Status of Environmental Mitigation Measures

IMPLEMENTATION SCHEDULE for October 2008

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	<p>Specific</p> <p>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.</p> <p>The dust suppression measures set out in the <i>Air Pollution Control (Construction Dust) Regulation</i>, in fact, are more extensive. Therefore, it is expected that with watering the construction site every four times daily together with strict implementation of dust suppression measures as stipulated in the <i>Air Pollution Control (Construction Dust) Regulation</i>, the dust level is expected to be reduced by over 75%.</p>	DSD's Contractor	Construction Work Sites	Air Pollution Control (Construction Dust) Regulation	N/A
	<p>General</p> <p>To further ensure compliance with the guideline and AQO limit at the ASRs at all time, it is recommended to implement the <i>Air Pollution Control (Construction Dust) Regulation</i> and include good site practice in the contract clauses to minimize cumulative dust impact. In addition, a comprehensive dust monitoring and audit programme is recommended to ensure proper implementation of the identified mitigation measures. Details of the monitoring and audit requirements are provided in a separate EM&A Manual.</p>				N/A
	<ul style="list-style-type: none"> 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
	<ul style="list-style-type: none"> dump truck for material transport should be totally enclosed by impervious sheeting; 				✓
	<ul style="list-style-type: none"> 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; 				✓
	<ul style="list-style-type: none"> stockpile of dusty materials should not extend beyond the pedestrian barriers, fencing or traffic cones; 				✓
	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> • 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; • 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 sealed 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. 	DSD's Contractor	Construction Work Sites	Air Pollution Control (Construction Dust) Regulation	<p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p>
Noise					
4.6.1	<p>During Construction</p> <p>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</p> <p><i>Good Site Practice</i></p> <p>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:</p> <ul style="list-style-type: none"> • 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; 	DSD's Contractor	Construction Work Sites	PN 2/93 Noise from Construction Activities & EIAO	<p style="text-align: center;">N/A</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p>

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	<ul style="list-style-type: none"> plant known to emit noise strongly in one direction should, where possible, be orientated to direct noise away from the NSRs; 	DSD's Contractor	Construction Work Sites	Air Pollution Control (Construction Dust) Regulation	✓
	<ul style="list-style-type: none"> mobile plant should be sited as far away from NSRs as possible; and 				✓
	<ul style="list-style-type: none"> material stockpiles and other structures should be effectively utilised, where practicable, to screen noise from on-site construction activities. 				✓
	<i>For Drill and Blast Works</i> <ul style="list-style-type: none"> Charge mass per delay should be decreased by minimising the number of blastholes firing on each delay. 				N/A
	<ul style="list-style-type: none"> Smaller blasthole patterns and longer delays should be used between dependent charges. 				N/A
	<ul style="list-style-type: none"> 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
	<i>For TBM Tunnelling</i> <ul style="list-style-type: none"> 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	<p>During Operation</p> <p>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</p> <ul style="list-style-type: none"> only well-maintained plant should be operated on-site; 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 plant known to emit noise strongly in one direction should, where possible, be orientated to direct noise away from the NSRs. 	DSD's Contractor	Project Area	NCO & EIAO	N/A
Water Quality					
5.9.1	<p>During Construction</p> <p>Mitigation measures and a spill control and response plan have been prepared for works at the intakes and work sites.</p> <p><i>Precautions to be taken at any time of year when rainstorms are likely:</i></p> <ul style="list-style-type: none"> 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. <p><i>Actions to be taken when a rainstorm is imminent or forecast:</i></p> <ul style="list-style-type: none"> Silt removal facilities, should be checked to ensure that they can function properly. 	DSD's Contractor	Construction Work Sites	Practice Note for Professional Persons with regard to site drainage (ProPECC PN 1/94) and WQO	✓
					✓
					✓
					✓

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	<ul style="list-style-type: none"> • Open stockpiles of construction materials on site should be covered with tarpaulin or similar fabric. 	DSD's Contractor	Construction Work Sites	WQO	✓
<ul style="list-style-type: none"> • All temporary covers to slopes and stockpiles should be secured. 	✓				
<p><i>Actions to be taken during or after rainstorms:</i></p> <ul style="list-style-type: none"> • 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					
<i>General Precautions</i>	✓				
<ul style="list-style-type: none"> • No discharge of silty water into watercourses. 	✓				
<ul style="list-style-type: none"> • All materials to be used during construction and operation shall be identified and their hazard potential evaluated. 	✓				
<ul style="list-style-type: none"> • 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. 	✓				
<ul style="list-style-type: none"> • Any soil contaminated with chemicals/oils shall be removed from site and the void created shall be filled with suitable materials. 	✓				
<ul style="list-style-type: none"> • 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. 	✓				
<ul style="list-style-type: none"> • Suitable containers shall be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport 	✓				
<ul style="list-style-type: none"> • Chemical waste containers shall be suitably labelled to notify and warn the personnel who are handling the wastes to avoid accidents. 	✓				
<ul style="list-style-type: none"> • Storage areas shall be selected at safe locations on site and adequate space shall be allocated to the storage area. 	✓				
<ul style="list-style-type: none"> • Prevent obstructions and tripping hazards. 	✓				
<i>Storage Precautions</i>	✓				
<ul style="list-style-type: none"> • All chemical storage containers shall be correctly labelled. 	✓				
<ul style="list-style-type: none"> • Solid and impermeable enclosure walls or storage shelves shall be used. 	✓				
<ul style="list-style-type: none"> • Only compatible chemical wastes shall be stored in the same storage area. 	✓				
<ul style="list-style-type: none"> • The storage areas shall be inspected to detect any leakages or defective containers on a regular basis. 	✓				
<ul style="list-style-type: none"> • The storage areas shall be inspected to detect any leakages or defective containers on a regular basis. 	✓				
<ul style="list-style-type: none"> • Suitable notices warning of hazards, emergency response plans, telephone numbers etc shall be posted around the site, including storage areas. 	✓				
<ul style="list-style-type: none"> • 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
	<ul style="list-style-type: none"> Chemical waste containers shall be stored below eye level. 				✓
5.9.1	<ul style="list-style-type: none"> Adequate space for handling of the containers shall be provided 	DSD's Contractor	Construction Work Sites	WQO	✓
	<ul style="list-style-type: none"> Spill response kits shall be located adjacent/near to the storage areas. 				✓
	<ul style="list-style-type: none"> A log of chemical wastes shall be maintained. 				✓
	<ul style="list-style-type: none"> Incompatible chemicals shall be stored separately. 				✓
	<p>2 Responses/Action Plan</p>				
	<p>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:</p>				✓
	<ul style="list-style-type: none"> Only trained personnel who are equipped with protective clothing and equipment shall be allowed to enter the spillage area for clean up. 				✓
	<ul style="list-style-type: none"> Spills shall be transferred appropriate back into containers using suitable equipment. 				✓
	<ul style="list-style-type: none"> Absorbent materials shall be used to clean up the spills and shall be disposed of as chemical wastes. 				✓
	<ul style="list-style-type: none"> Where appropriate suitable solvents may be used to clean the contaminated area after removal of all contaminated materials. 				✓
	<ul style="list-style-type: none"> All necessary protective devices, safety equipment, containers and clean up materials for emergency use shall be maintained to a high standard. 				✓
	<p>3 Spill Clean Up and Disposal</p>				
	<p>Effect the response plan.</p>				✓
	<p>Control the leakage and absorb the spillage using suitably absorbent materials.</p>				✓
	<p>Provide safety equipment and personal protective equipment for handling of chemical wastes would be similar to that for handling of chemicals.</p>				✓
	<p><i>Safety equipment includes but is not limited to:</i></p>				✓
	<ul style="list-style-type: none"> Fire extinguishers. 				✓
	<ul style="list-style-type: none"> Spades, brushes, dustpan, mop and bucket (or similar readily available on site). 				✓
	<ul style="list-style-type: none"> Absorbent material such as dry sand, tissues and toweling (all materials readily available on-site). 				✓
	<ul style="list-style-type: none"> Containers including plaster bags, drums, etc. 				✓
	<ul style="list-style-type: none"> Absorbing materials. 	✓			
	<ul style="list-style-type: none"> Pumps. 	✓			
	<p><i>Personal protective equipment includes as appropriate:</i></p>	✓			
	<ul style="list-style-type: none"> First-aid kits. 	✓			
	<ul style="list-style-type: none"> Safety helmet and goggles. 	✓			
	<ul style="list-style-type: none"> 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			
5.9.1	<ul style="list-style-type: none"> Protective boot and clothing. Respirators and gas masks. 	DSD's Contractor	Construction Work Sites	WQO	✓			
	<ul style="list-style-type: none"> Face visor and masks. 				✓			
5.9.2	<p>Emergency Responses to Spillages</p> <p>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.</p> <p><i>The emergency plans should include the procedures for:</i></p> <ul style="list-style-type: none"> spill prevention and precaution; response actions; and spill clean up and disposal. <p><i>Spill prevention and precaution embraces good site practice and covers:</i></p> <ul style="list-style-type: none"> good housekeeping practices; chemical storage requirements; and chemical transfer and transport. 							✓
								✓
								✓
								✓
								✓
								✓
5.9.3	<p>During Operation</p> <p>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.</p>	DSD's Contractor	Project Area		N/A			
Waste Management								
6.5.1	<p>During Construction</p> <p><i>Vegetation Removed from Site Clearance</i> 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.</p>	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	✓			
	<p><i>Construction and Demolition Materials</i> 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.</p>				✓			

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 317,936m ³ 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	✓
	<i>Excavated Materials</i> 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	✓
	<i>Municipal Waste</i> 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	<i>Waste Management Plan</i> 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	<p>Avoidance</p> <p>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.</p> <p>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.</p>	DSD's Contractor	Construction Work Sites	EIAO	✓
					✓
7.7.2	<p>Minimisation</p> <p>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.</p> <p><i>Measures for Construction Runoff</i> 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.</p> <p><i>Good Construction Practice</i></p>				✓
					✓
	<p>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.</p> <p>Avoid any damage and disturbance, particularly those caused by filling and illegal dumping, to the remaining and surrounding natural stream habitats.</p> <p>Regularly check the work site boundaries to ensure that they are not breached and that no damage occurs to surrounding areas.</p> <p>Prohibit and prevent open fires within the site boundary during construction and provide temporary fire fighting equipment in the work areas.</p> <p>Treat any damage that may have occurred to individual major trees in the adjacent area with surgery.</p>	DSD's Contractor	Construction Work Sites	EIAO	✓
		✓			
		✓			
		✓			
		✓			

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	<p>Compensation</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>Provide armour rocks for the affected intertidal habitat in order to allow natural colonisation of intertidal organisms.</p>				N/A
					N/A
					N/A
					N/A
					N/A

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

Remarks:

- ✓ Compliance of mitigation measure
- × Non-compliance of mitigation measure
- N/A Not applicable

IMPLEMENTATION SCHEDULE for November 2008

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	<p>Specific</p> <p>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.</p> <p>The dust suppression measures set out in the <i>Air Pollution Control (Construction Dust) Regulation</i>, in fact, are more extensive. Therefore, it is expected that with watering the construction site every four times daily together with strict implementation of dust suppression measures as stipulated in the <i>Air Pollution Control (Construction Dust) Regulation</i>, the dust level is expected to be reduced by over 75%.</p> <p>General</p> <p>To further ensure compliance with the guideline and AQO limit at the ASRs at all time, it is recommended to implement the <i>Air Pollution Control (Construction Dust) Regulation</i> and include good site practice in the contract clauses to minimize cumulative dust impact. In addition, a comprehensive dust monitoring and audit programme is recommended to ensure proper implementation of the identified mitigation measures. Details of the monitoring and audit requirements are provided in a separate EM&A Manual.</p> <ul style="list-style-type: none"> • 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; • 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; 	DSD's Contractor	Construction Work Sites	Air Pollution Control (Construction Dust) Regulation	N/A
					N/A
					N/A
					✓
					✓
					✓
					✓

EIA Ref.	Recommended Mitigation Measures	Who to implement the measure ?	Location of the measure	What requirements or standards for the measure to achieve ?	Status
3.6.1	<ul style="list-style-type: none"> • 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; • 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 sealed 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. 	DSD's Contractor	Construction Work Sites	Air Pollution Control (Construction Dust) Regulation	<p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p>
Noise					
4.6.1	<p>During Construction</p> <p>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</p> <p><i>Good Site Practice</i></p> <p>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:</p> <ul style="list-style-type: none"> • 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; 	DSD's Contractor	Construction Work Sites	PN 2/93 Noise from Construction Activities & EIAO	<p style="text-align: center;">N/A</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p>

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	<ul style="list-style-type: none"> plant known to emit noise strongly in one direction should, where possible, be orientated to direct noise away from the NSRs; 	DSD's Contractor	Construction Work Sites	Air Pollution Control (Construction Dust) Regulation	✓
	<ul style="list-style-type: none"> mobile plant should be sited as far away from NSRs as possible; and 				✓
	<ul style="list-style-type: none"> material stockpiles and other structures should be effectively utilised, where practicable, to screen noise from on-site construction activities. 				✓
	<i>For Drill and Blast Works</i> <ul style="list-style-type: none"> Charge mass per delay should be decreased by minimising the number of blastholes firing on each delay. 				N/A
	<ul style="list-style-type: none"> Smaller blasthole patterns and longer delays should be used between dependent charges. 				N/A
	<ul style="list-style-type: none"> 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
	<i>For TBM Tunnelling</i> <ul style="list-style-type: none"> 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	<p>During Operation</p> <p>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</p> <ul style="list-style-type: none"> only well-maintained plant should be operated on-site; 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 plant known to emit noise strongly in one direction should, where possible, be orientated to direct noise away from the NSRs. 	DSD's Contractor	Project Area	NCO & EIAO	N/A
Water Quality					
5.9.1	<p>During Construction</p> <p>Mitigation measures and a spill control and response plan have been prepared for works at the intakes and work sites.</p> <p><i>Precautions to be taken at any time of year when rainstorms are likely:</i></p> <ul style="list-style-type: none"> 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. <p><i>Actions to be taken when a rainstorm is imminent or forecast:</i></p> <ul style="list-style-type: none"> Silt removal facilities, should be checked to ensure that they can function properly. 	DSD's Contractor	Construction Work Sites	Practice Note for Professional Persons with regard to site drainage (ProPECC PN 1/94) and WQO	✓
					✓
					✓
					✓

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	<ul style="list-style-type: none"> • Open stockpiles of construction materials on site should be covered with tarpaulin or similar fabric. • All temporary covers to slopes and stockpiles should be secured. <p data-bbox="293 376 1220 400"><i>Actions to be taken during or after rainstorms:</i></p> <ul style="list-style-type: none"> • Silt removal facilities should be checked and maintained to ensure satisfactory working conditions. <p data-bbox="293 464 1220 488"><u>Spill Control and Response Plan</u></p> <p data-bbox="293 496 1220 520">1 Prevention and Precaution Measures</p> <p data-bbox="293 528 1220 552"><i>General Precautions</i></p> <ul style="list-style-type: none"> • 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. <p data-bbox="293 1062 1220 1086"><i>Storage Precautions</i></p> <ul style="list-style-type: none"> • All chemical storage containers shall be correctly labelled. • Solid and impermeable enclosure walls or storage shelves shall be used. • Only compatible chemical wastes shall be stored in the same storage area. • The storage areas shall be inspected to detect any leakages or defective containers on a regular basis. • The storage areas shall be inspected to detect any leakages or defective containers on a regular basis. • Suitable notices warning of hazards, emergency response plans, telephone numbers etc shall be posted around the site, including storage areas. • Large and heavy containers shall be stored at ground level. 	DSD's Contractor	Construction Work Sites	WQO	<p data-bbox="1928 293 2101 325">✓</p> <p data-bbox="1928 341 2101 373">✓</p> <p data-bbox="1928 389 2101 421">✓</p> <p data-bbox="1928 549 2101 580">✓</p> <p data-bbox="1928 596 2101 628">✓</p> <p data-bbox="1928 644 2101 676">✓</p> <p data-bbox="1928 692 2101 724">✓</p> <p data-bbox="1928 740 2101 772">✓</p> <p data-bbox="1928 788 2101 820">✓</p> <p data-bbox="1928 836 2101 868">✓</p> <p data-bbox="1928 884 2101 916">✓</p> <p data-bbox="1928 932 2101 963">✓</p> <p data-bbox="1928 979 2101 1011">✓</p> <p data-bbox="1928 1027 2101 1059">✓</p> <p data-bbox="1928 1075 2101 1107">✓</p> <p data-bbox="1928 1123 2101 1155">✓</p> <p data-bbox="1928 1171 2101 1203">✓</p> <p data-bbox="1928 1219 2101 1251">✓</p> <p data-bbox="1928 1267 2101 1299">✓</p> <p data-bbox="1928 1315 2101 1347">✓</p> <p data-bbox="1928 1362 2101 1394">✓</p>

EIA Ref.	Recommended Mitigation Measures	Who to implement the measure ?	Location of the measure	What requirements or standards for the measure to achieve ?	Status
	<ul style="list-style-type: none"> Chemical waste containers shall be stored below eye level. 				✓
5.9.1	<ul style="list-style-type: none"> Adequate space for handling of the containers shall be provided 	DSD's Contractor	Construction Work Sites	WQO	✓
	<ul style="list-style-type: none"> Spill response kits shall be located adjacent/near to the storage areas. 				✓
	<ul style="list-style-type: none"> A log of chemical wastes shall be maintained. 				✓
	<ul style="list-style-type: none"> 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:				✓
	<ul style="list-style-type: none"> Only trained personnel who are equipped with protective clothing and equipment shall be allowed to enter the spillage area for clean up. 				✓
	<ul style="list-style-type: none"> Spills shall be transferred appropriate back into containers using suitable equipment. 				✓
	<ul style="list-style-type: none"> Absorbent materials shall be used to clean up the spills and shall be disposed of as chemical wastes. 				✓
	<ul style="list-style-type: none"> Where appropriate suitable solvents may be used to clean the contaminated area after removal of all contaminated materials. 				✓
	<ul style="list-style-type: none"> 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.				✓
	<i>Safety equipment includes but is not limited to:</i>				✓
	<ul style="list-style-type: none"> Fire extinguishers. 				✓
	<ul style="list-style-type: none"> Spades, brushes, dustpan, mop and bucket (or similar readily available on site). 				✓
	<ul style="list-style-type: none"> Absorbent material such as dry sand, tissues and toweling (all materials readily available on-site). 				✓
	<ul style="list-style-type: none"> Containers including plaster bags, drums, etc. 				✓
<ul style="list-style-type: none"> Absorbing materials. 	✓				
<ul style="list-style-type: none"> Pumps. 	✓				
<i>Personal protective equipment includes as appropriate:</i>	✓				
<ul style="list-style-type: none"> First-aid kits. 	✓				
<ul style="list-style-type: none"> Safety helmet and goggles. 	✓				
<ul style="list-style-type: none"> 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
5.9.1	• Protective boot and clothing.	DSD's Contractor	Construction Work Sites	WQO	✓
	• Respirators and gas masks.				✓
	• Face visor and masks.				
5.9.2	<p>Emergency Responses to Spillages</p> <p>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.</p> <p><i>The emergency plans should include the procedures for:</i></p> <ul style="list-style-type: none"> • spill prevention and precaution; • response actions; and • spill clean up and disposal. <p><i>Spill prevention and precaution embraces good site practice and covers:</i></p> <ul style="list-style-type: none"> • good housekeeping practices; • chemical storage requirements; and • chemical transfer and transport. 				✓ ✓ ✓ ✓ ✓ ✓
5.9.3	<p>During Operation</p> <p>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.</p>	DSD's Contractor	Project Area		N/A
Waste Management					
6.5.1	<p>During Construction</p> <p><i>Vegetation Removed from Site Clearance</i> 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.</p>	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	✓
	<p><i>Construction and Demolition Materials</i> 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.</p>				✓

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 317,936m ³ 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	✓
	<i>Excavated Materials</i> 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	✓
	<i>Municipal Waste</i> 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	<i>Waste Management Plan</i> 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	<p>Avoidance</p> <p>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.</p> <p>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.</p>	DSD's Contractor	Construction Work Sites	EIAO	✓
					✓
7.7.2	<p>Minimisation</p> <p>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.</p> <p><i>Measures for Construction Runoff</i> 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.</p> <p><i>Good Construction Practice</i></p>				✓
					✓
	<p>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.</p> <p>Avoid any damage and disturbance, particularly those caused by filling and illegal dumping, to the remaining and surrounding natural stream habitats.</p> <p>Regularly check the work site boundaries to ensure that they are not breached and that no damage occurs to surrounding areas.</p> <p>Prohibit and prevent open fires within the site boundary during construction and provide temporary fire fighting equipment in the work areas.</p> <p>Treat any damage that may have occurred to individual major trees in the adjacent area with surgery.</p>	DSD's Contractor	Construction Work Sites	EIAO	✓
		✓			
		✓			
		✓			
		✓			

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	<p>Compensation</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>Provide armour rocks for the affected intertidal habitat in order to allow natural colonisation of intertidal organisms.</p>				N/A
					N/A
					N/A
					N/A
					N/A

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

Remarks:

- ✓ Compliance of mitigation measure
- × Non-compliance of mitigation measure
- N/A Not applicable

IMPLEMENTATION SCHEDULE for December 2008

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	<p>Specific</p> <p>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.</p> <p>The dust suppression measures set out in the <i>Air Pollution Control (Construction Dust) Regulation</i>, in fact, are more extensive. Therefore, it is expected that with watering the construction site every four times daily together with strict implementation of dust suppression measures as stipulated in the <i>Air Pollution Control (Construction Dust) Regulation</i>, the dust level is expected to be reduced by over 75%.</p> <p>General</p> <p>To further ensure compliance with the guideline and AQO limit at the ASRs at all time, it is recommended to implement the <i>Air Pollution Control (Construction Dust) Regulation</i> and include good site practice in the contract clauses to minimize cumulative dust impact. In addition, a comprehensive dust monitoring and audit programme is recommended to ensure proper implementation of the identified mitigation measures. Details of the monitoring and audit requirements are provided in a separate EM&A Manual.</p> <ul style="list-style-type: none"> • 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; • 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; 	DSD's Contractor	Construction Work Sites	Air Pollution Control (Construction Dust) Regulation	<p>N/A</p> <p>N/A</p> <p>N/A</p> <p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p>

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	<ul style="list-style-type: none"> • 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; • 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 sealed 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. 	DSD's Contractor	Construction Work Sites	Air Pollution Control (Construction Dust) Regulation	<p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p>
Noise					
4.6.1	<p>During Construction</p> <p>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</p> <p><i>Good Site Practice</i></p> <p>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:</p> <ul style="list-style-type: none"> • 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; 	DSD's Contractor	Construction Work Sites	PN 2/93 Noise from Construction Activities & EIAO	<p style="text-align: center;">N/A</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p>

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	<ul style="list-style-type: none"> plant known to emit noise strongly in one direction should, where possible, be orientated to direct noise away from the NSRs; 	DSD's Contractor	Construction Work Sites	Air Pollution Control (Construction Dust) Regulation	✓
	<ul style="list-style-type: none"> mobile plant should be sited as far away from NSRs as possible; and 				✓
	<ul style="list-style-type: none"> material stockpiles and other structures should be effectively utilised, where practicable, to screen noise from on-site construction activities. 				✓
	<i>For Drill and Blast Works</i> <ul style="list-style-type: none"> Charge mass per delay should be decreased by minimising the number of blastholes firing on each delay. 				N/A
	<ul style="list-style-type: none"> Smaller blasthole patterns and longer delays should be used between dependent charges. 				N/A
	<ul style="list-style-type: none"> 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
	<i>For TBM Tunnelling</i> <ul style="list-style-type: none"> 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	<p>During Operation</p> <p>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</p> <ul style="list-style-type: none"> only well-maintained plant should be operated on-site; 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 plant known to emit noise strongly in one direction should, where possible, be orientated to direct noise away from the NSRs. 	DSD's Contractor	Project Area	NCO & EIAO	N/A
Water Quality					
5.9.1	<p>During Construction</p> <p>Mitigation measures and a spill control and response plan have been prepared for works at the intakes and work sites.</p> <p><i>Precautions to be taken at any time of year when rainstorms are likely:</i></p> <ul style="list-style-type: none"> 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. <p><i>Actions to be taken when a rainstorm is imminent or forecast:</i></p> <ul style="list-style-type: none"> Silt removal facilities, should be checked to ensure that they can function properly. 	DSD's Contractor	Construction Work Sites	Practice Note for Professional Persons with regard to site drainage (ProPECC PN 1/94) and WQO	✓
					✓
					✓
					✓

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	<ul style="list-style-type: none"> Open stockpiles of construction materials on site should be covered with tarpaulin or similar fabric. 	DSD's Contractor	Construction Work Sites	WQO	✓
	<ul style="list-style-type: none"> All temporary covers to slopes and stockpiles should be secured. 				✓
	<p><i>Actions to be taken during or after rainstorms:</i></p> <ul style="list-style-type: none"> 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				
	<i>General Precautions</i>				
	<ul style="list-style-type: none"> No discharge of silty water into watercourses. 				✓
	<ul style="list-style-type: none"> All materials to be used during construction and operation shall be identified and their hazard potential evaluated. 				✓
	<ul style="list-style-type: none"> 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. 				✓
	<ul style="list-style-type: none"> Any soil contaminated with chemicals/oils shall be removed from site and the void created shall be filled with suitable materials. 				✓
	<ul style="list-style-type: none"> 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. 				✓
	<ul style="list-style-type: none"> Suitable containers shall be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport 				✓
	<ul style="list-style-type: none"> Chemical waste containers shall be suitably labelled to notify and warn the personnel who are handling the wastes to avoid accidents. 				✓
	<ul style="list-style-type: none"> Storage areas shall be selected at safe locations on site and adequate space shall be allocated to the storage area. 				✓
	<ul style="list-style-type: none"> Prevent obstructions and tripping hazards. 				✓
	<i>Storage Precautions</i>				
	<ul style="list-style-type: none"> All chemical storage containers shall be correctly labelled. 				✓
	<ul style="list-style-type: none"> Solid and impermeable enclosure walls or storage shelves shall be used. 				✓
<ul style="list-style-type: none"> Only compatible chemical wastes shall be stored in the same storage area. 	✓				
<ul style="list-style-type: none"> The storage areas shall be inspected to detect any leakages or defective containers on a regular basis. 	✓				
<ul style="list-style-type: none"> The storage areas shall be inspected to detect any leakages or defective containers on a regular basis. 	✓				
<ul style="list-style-type: none"> Suitable notices warning of hazards, emergency response plans, telephone numbers etc shall be posted around the site, including storage areas. 	✓				
<ul style="list-style-type: none"> 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
	<ul style="list-style-type: none"> Chemical waste containers shall be stored below eye level. 				✓
5.9.1	<ul style="list-style-type: none"> Adequate space for handling of the containers shall be provided 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. 	DSD's Contractor	Construction Work Sites	WQO	✓
	<ul style="list-style-type: none"> A log of chemical wastes shall be maintained. 				✓
	<ul style="list-style-type: none"> Incompatible chemicals shall be stored separately. 				✓
	<p>2 Responses/Action Plan</p> <p>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:</p>				✓
	<ul style="list-style-type: none"> Only trained personnel who are equipped with protective clothing and equipment shall be allowed to enter the spillage area for clean up. 				✓
	<ul style="list-style-type: none"> Spills shall be transferred appropriate back into containers using suitable equipment. 				✓
	<ul style="list-style-type: none"> Absorbent materials shall be used to clean up the spills and shall be disposed of as chemical wastes. 				✓
	<ul style="list-style-type: none"> Where appropriate suitable solvents may be used to clean the contaminated area after removal of all contaminated materials. 				✓
	<ul style="list-style-type: none"> All necessary protective devices, safety equipment, containers and clean up materials for emergency use shall be maintained to a high standard. 				✓
	<p>3 Spill Clean Up and Disposal</p>				
	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.				✓
	<p><i>Safety equipment includes but is not limited to:</i></p> <ul style="list-style-type: none"> Fire extinguishers. 				✓
	<ul style="list-style-type: none"> Spades, brushes, dustpan, mop and bucket (or similar readily available on site). 				✓
	<ul style="list-style-type: none"> Absorbent material such as dry sand, tissues and toweling (all materials readily available on-site). 				✓
	<ul style="list-style-type: none"> Containers including plaster bags, drums, etc. 				✓
	<ul style="list-style-type: none"> Absorbing materials. 				✓
	<ul style="list-style-type: none"> Pumps. 				✓
	<p><i>Personal protective equipment includes as appropriate:</i></p> <ul style="list-style-type: none"> First-aid kits. 				✓
	<ul style="list-style-type: none"> Safety helmet and goggles. 	✓			
	<ul style="list-style-type: none"> 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
5.9.1	<ul style="list-style-type: none"> Protective boot and clothing. 	DSD's Contractor	Construction Work Sites	WQO	✓
	<ul style="list-style-type: none"> Respirators and gas masks. Face visor and masks. 				✓
5.9.2	<p>Emergency Responses to Spillages</p> <p>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.</p> <p><i>The emergency plans should include the procedures for:</i></p> <ul style="list-style-type: none"> spill prevention and precaution; response actions; and spill clean up and disposal. <p><i>Spill prevention and precaution embraces good site practice and covers:</i></p> <ul style="list-style-type: none"> good housekeeping practices; chemical storage requirements; and chemical transfer and transport. 				✓
					✓
					✓
					✓
					✓
					✓
5.9.3	<p>During Operation</p> <p>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.</p>	DSD's Contractor	Project Area		N/A
Waste Management					
6.5.1	<p>During Construction</p> <p><i>Vegetation Removed from Site Clearance</i> 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.</p>	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	✓
	<p><i>Construction and Demolition Materials</i> 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.</p>				✓

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 317,936m ³ 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	✓
	<i>Excavated Materials</i> 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	✓
	<i>Municipal Waste</i> 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	<i>Waste Management Plan</i> 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	<p>Avoidance</p> <p>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.</p> <p>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.</p>	DSD's Contractor	Construction Work Sites	EIAO	✓
					✓
7.7.2	<p>Minimisation</p> <p>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.</p> <p><i>Measures for Construction Runoff</i> 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.</p> <p><i>Good Construction Practice</i></p>				✓
					✓
	<p>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.</p> <p>Avoid any damage and disturbance, particularly those caused by filling and illegal dumping, to the remaining and surrounding natural stream habitats.</p> <p>Regularly check the work site boundaries to ensure that they are not breached and that no damage occurs to surrounding areas.</p> <p>Prohibit and prevent open fires within the site boundary during construction and provide temporary fire fighting equipment in the work areas.</p> <p>Treat any damage that may have occurred to individual major trees in the adjacent area with surgery.</p>	DSD's Contractor	Construction Work Sites	EIAO	✓
		✓			
		✓			
		✓			
		✓			

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	<p>Compensation</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>Provide armour rocks for the affected intertidal habitat in order to allow natural colonisation of intertidal organisms.</p>				N/A
					N/A
					N/A
					N/A
					N/A

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

Remarks:

- ✓ Compliance of mitigation measure
- × Non-compliance of mitigation measure
- N/A Not applicable

Appendix E

Monitoring Locations

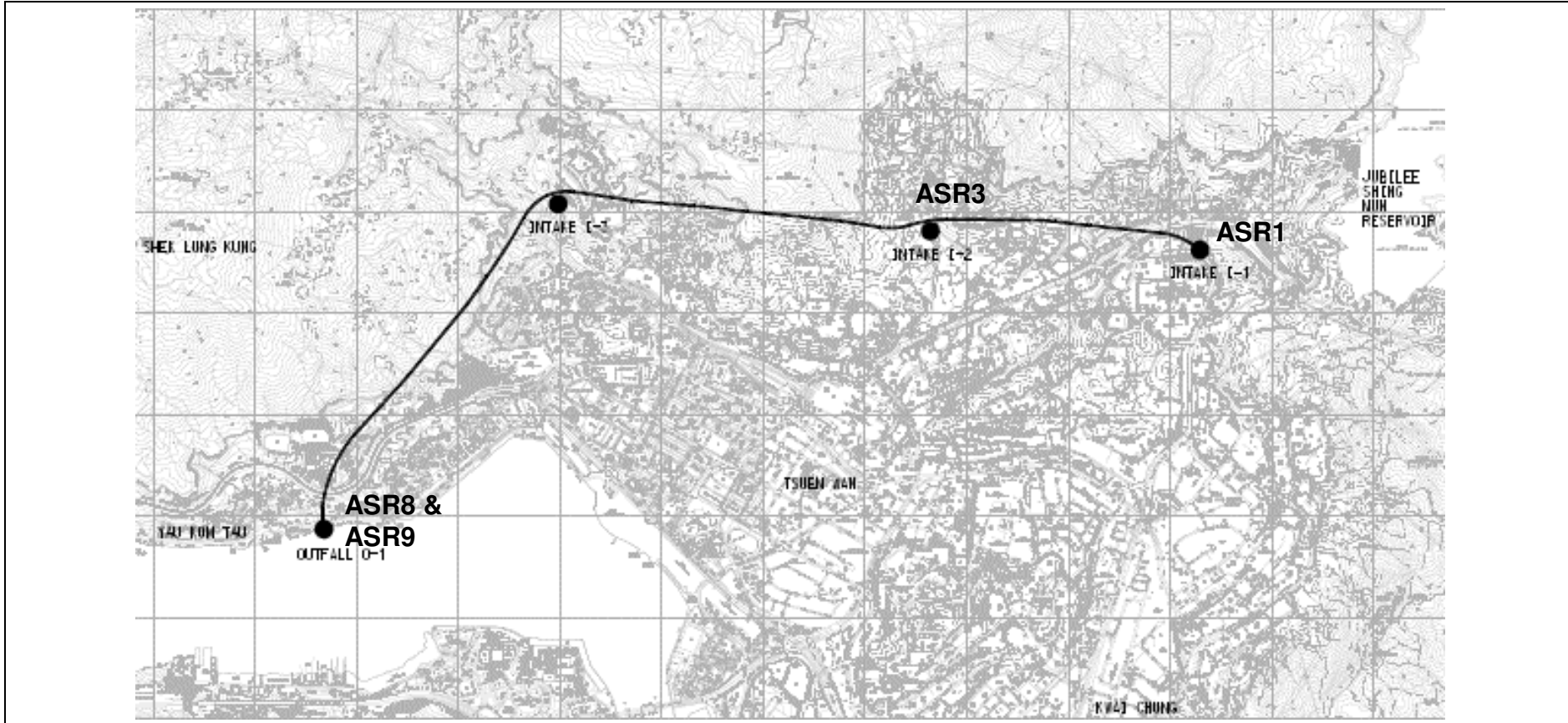


Figure 1 Air Quality Monitoring Stations

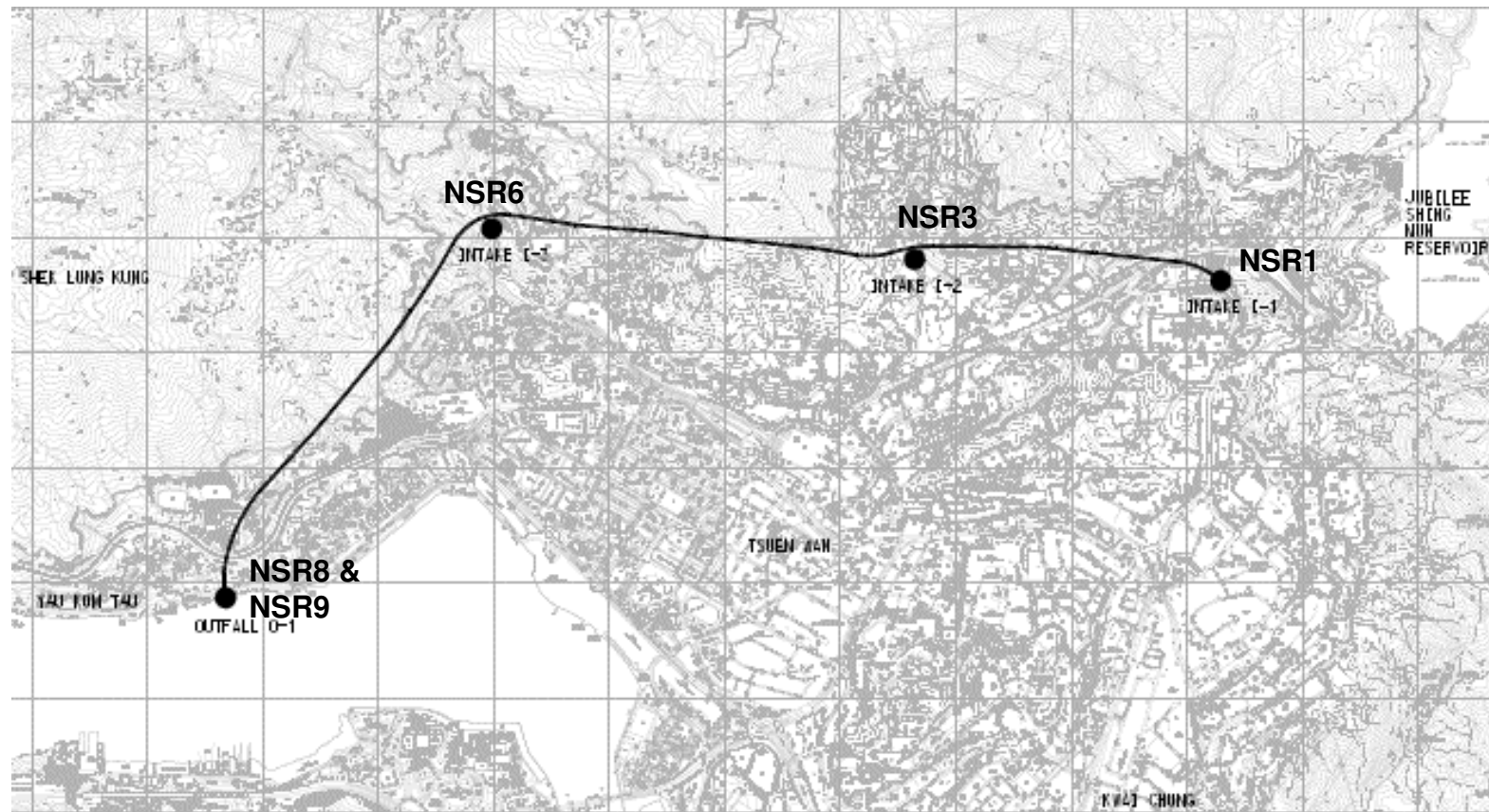


Figure 2 Noise Monitoring Stations

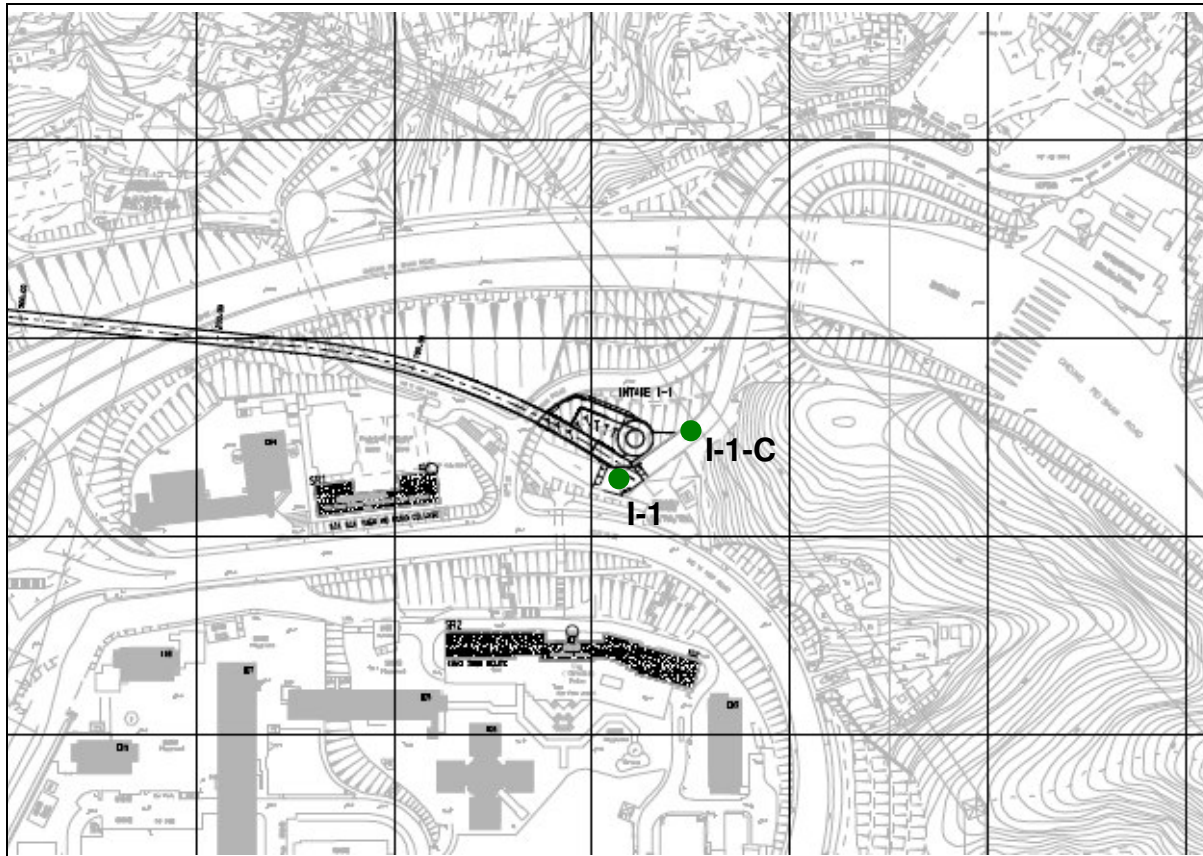


Figure 3 Water Quality Monitoring Stations: I-1 & I-1-C at Intake I-1

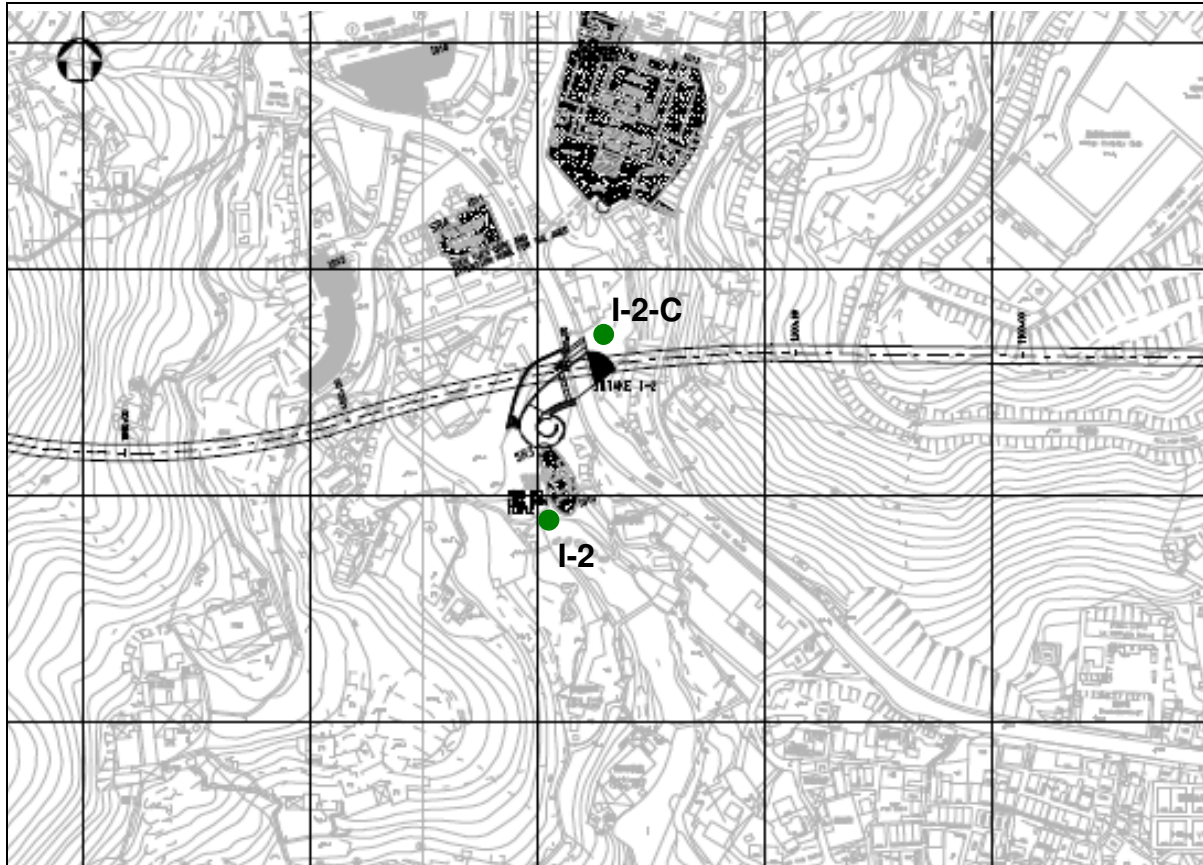


Figure 4 Water Quality Monitoring Stations: I-2 & I-2-C at Intake I-2



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

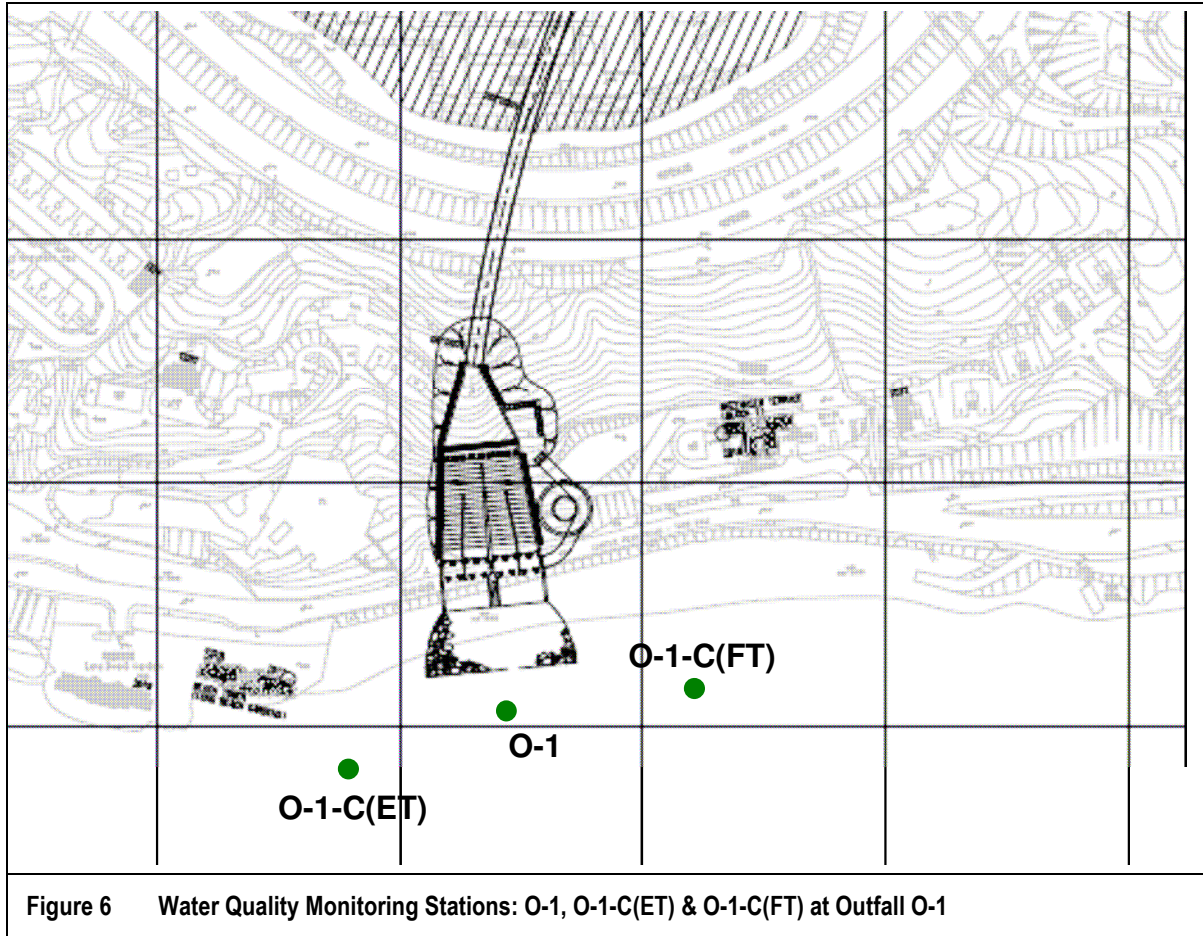
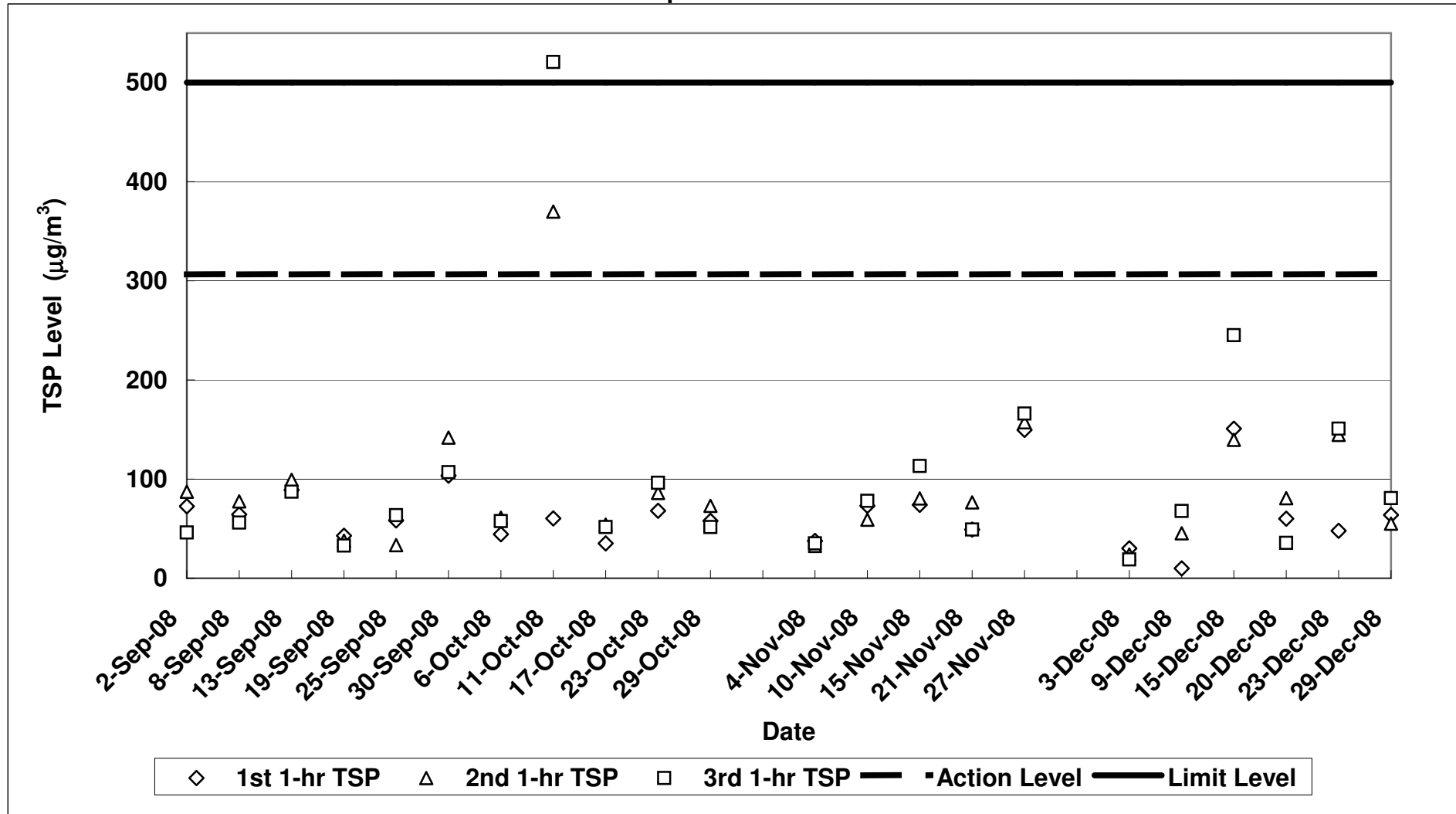


Figure 6 Water Quality Monitoring Stations: O-1, O-1-C(ET) & O-1-C(FT) at Outfall O-1

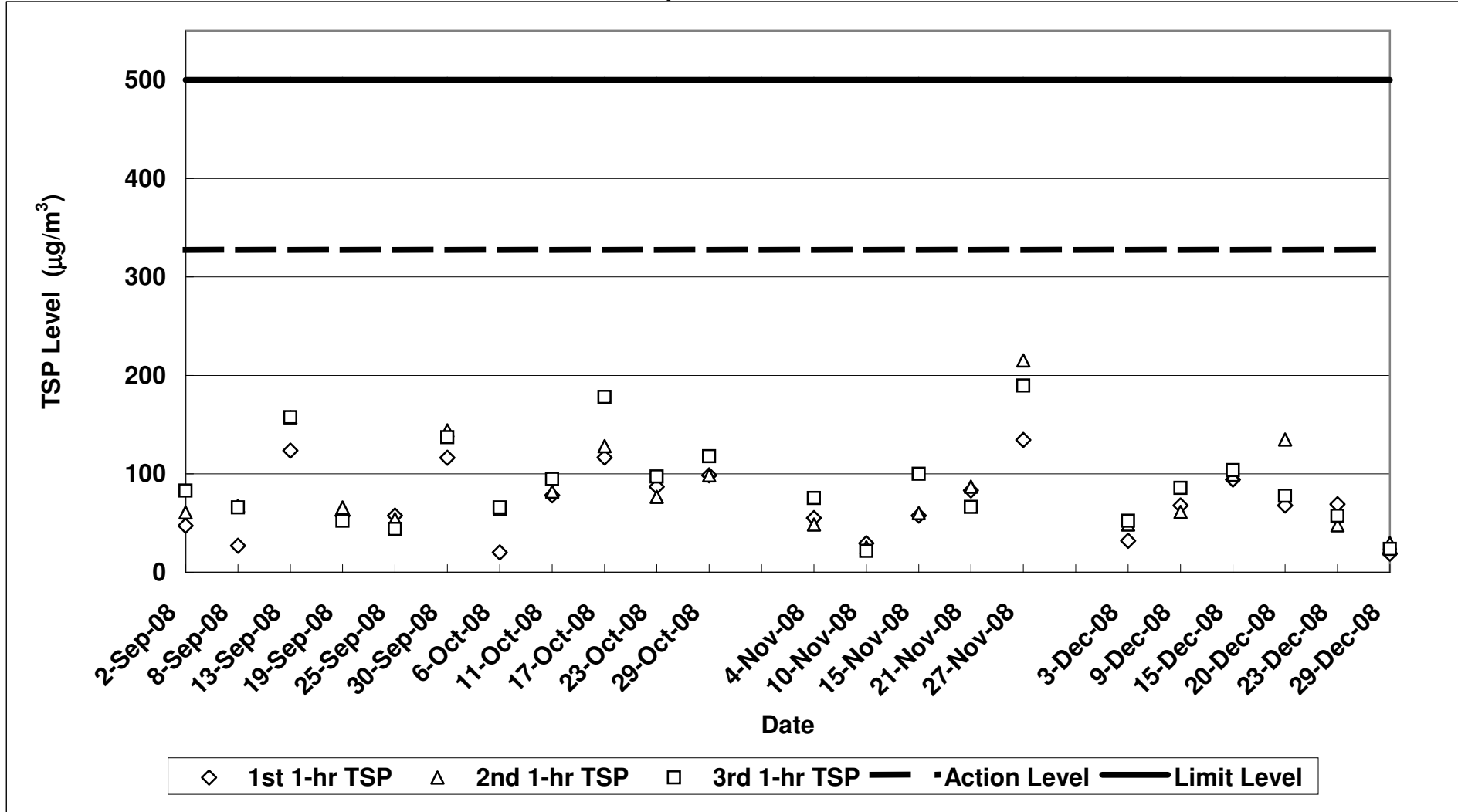
Appendix F

Monitoring Results

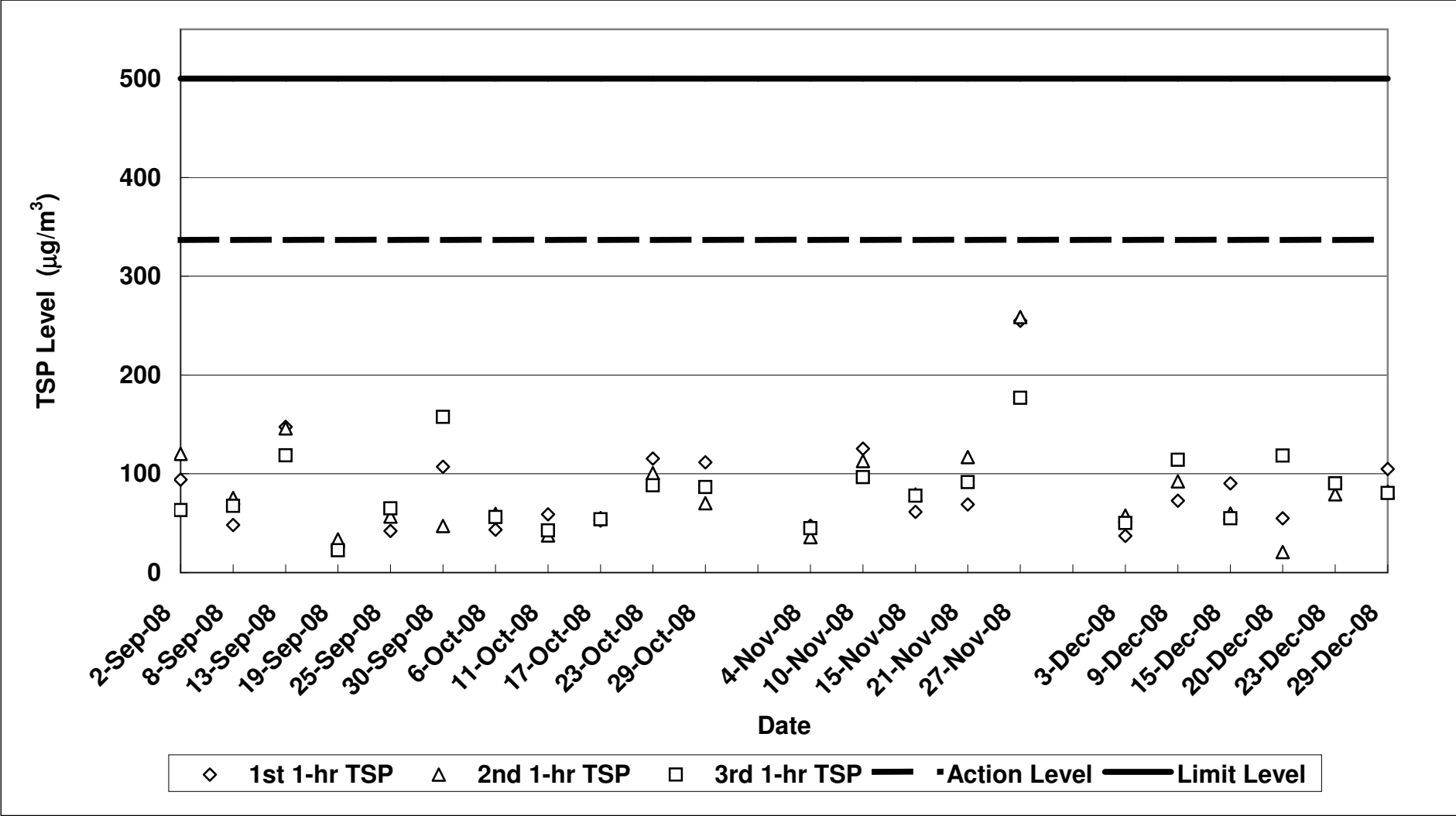
**Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
 Air Quality Monitoring (1-hr TSP) Results at Sik Sik Yuen Ho Fung College - Intake (ASR1)
 Sep-08 to Dec-08**



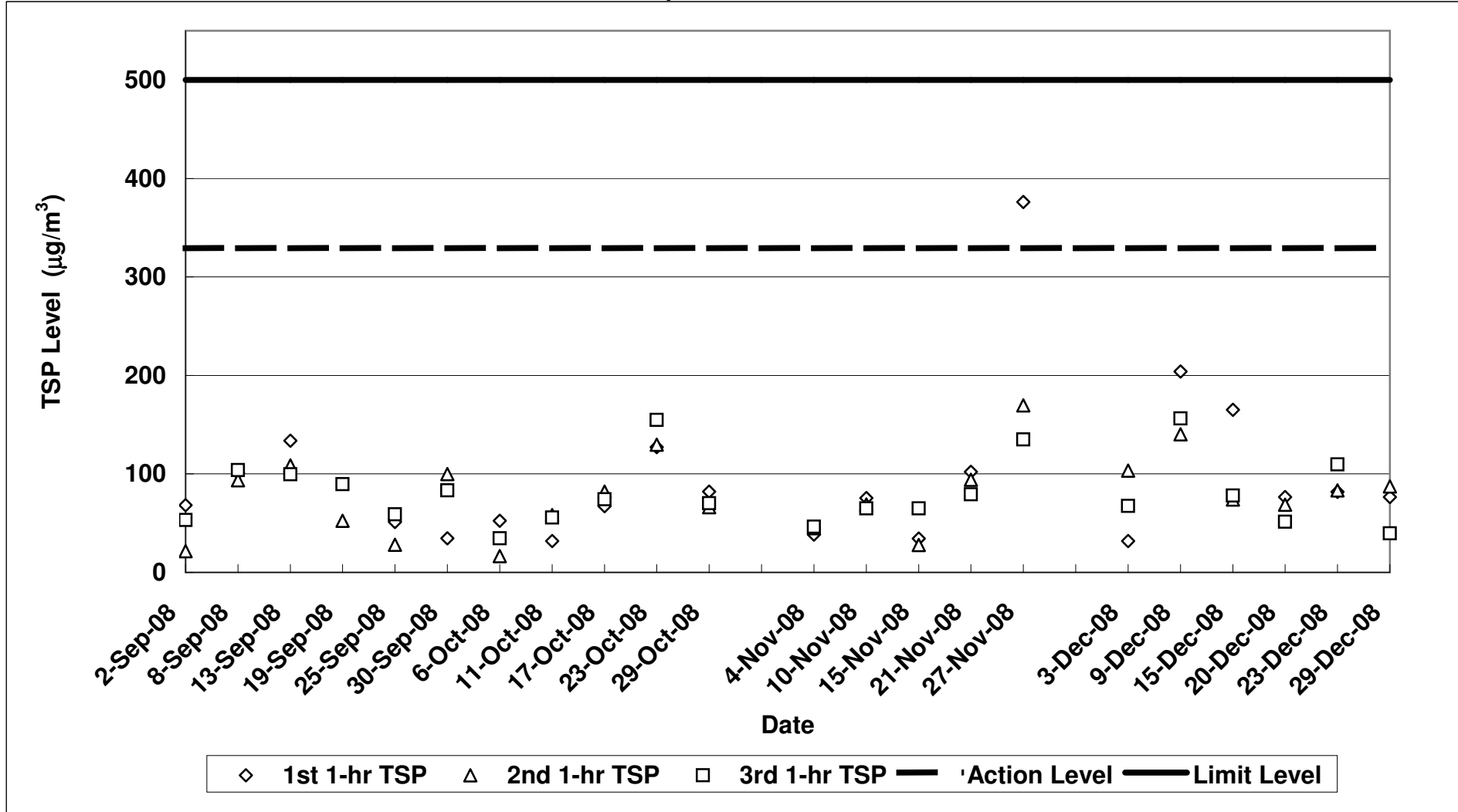
**Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
 Air Quality Monitoring (1-hr TSP) Results at Hong Hoi Chee Hong Temple - Intake (ASR3)
 Sep-08 to Dec-08**



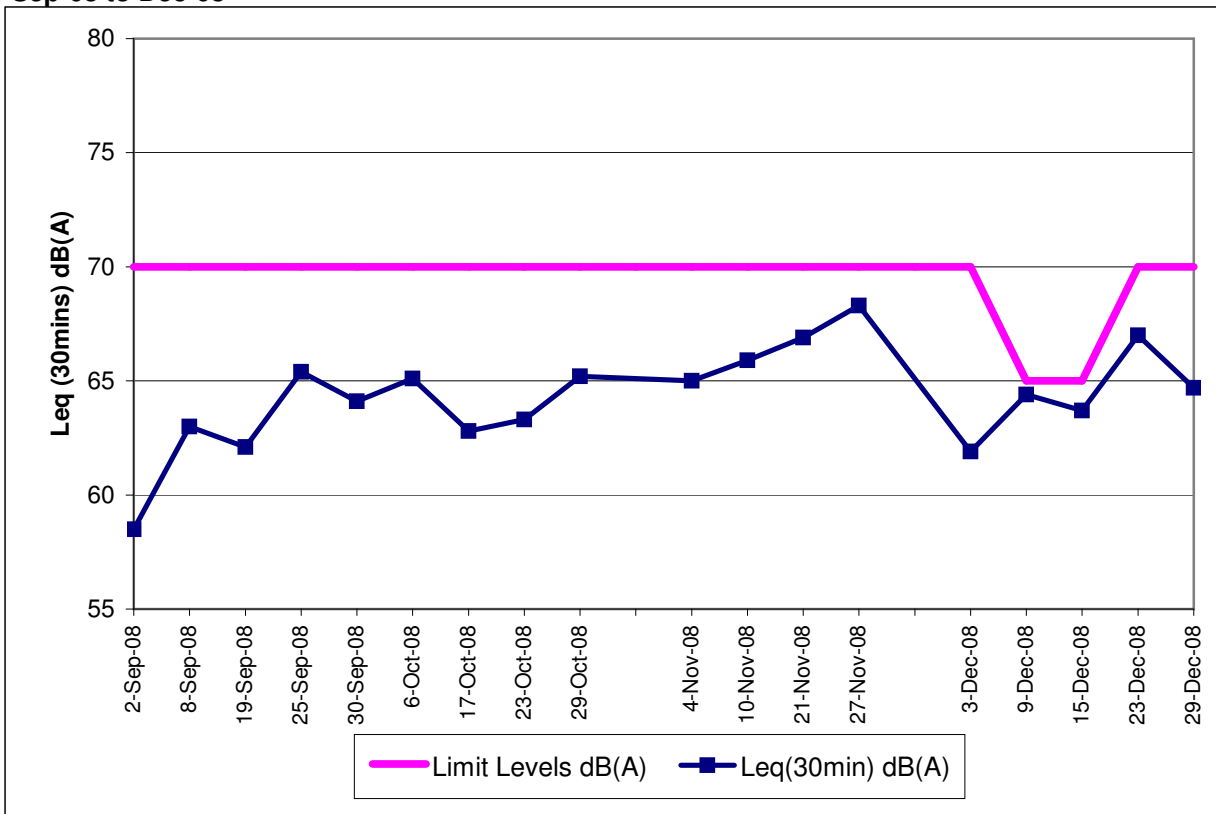
**Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
 Air Quality Monitoring (1-hr TSP) Results at Long Beach Gardens - Outfall (ASR8)
 Sep-08 to Dec-08**



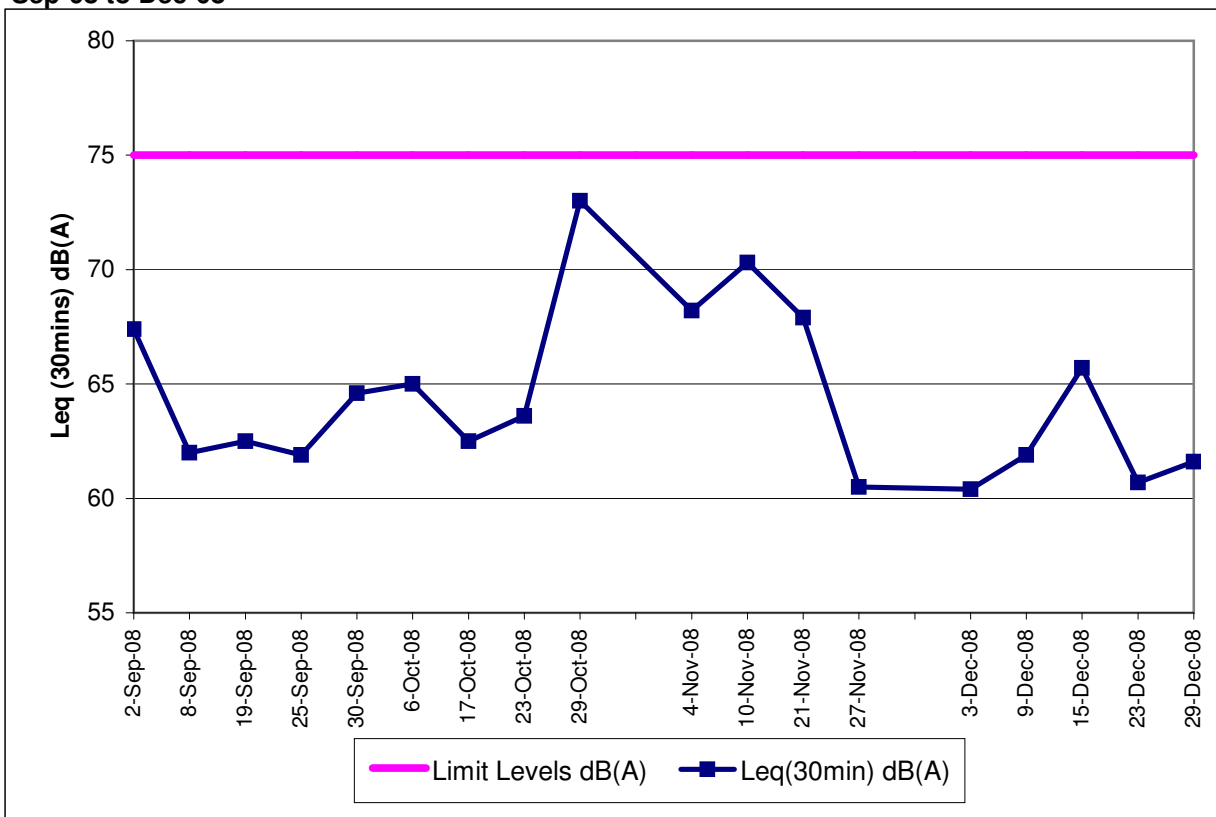
**Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
 Air Quality Monitoring (1-hr TSP) Results at Greenview Terrance - Outfall (ASR9)
 Sep-08 to Dec-08**



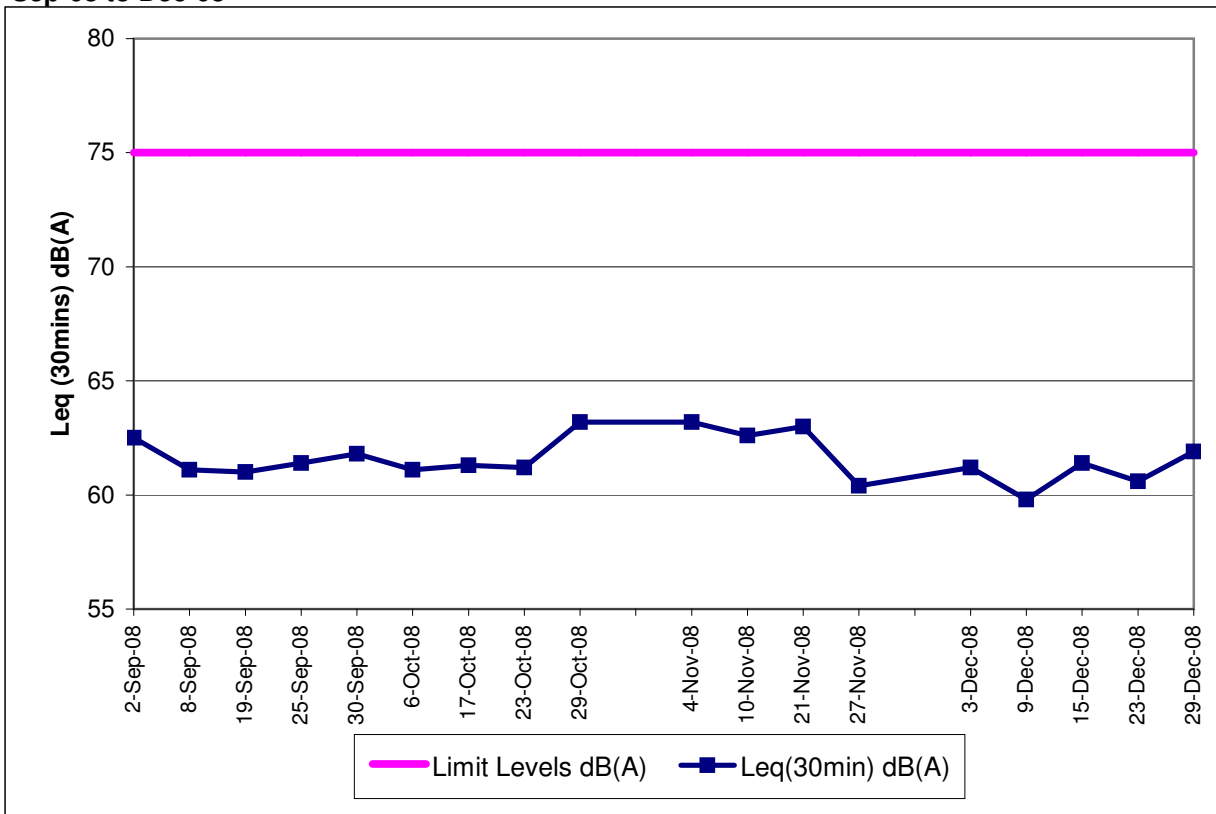
**Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
 Noise Monitoring Results at Sik Sik Yuen Ho Fung College (NSR 1)
 Sep-08 to Dec-08**



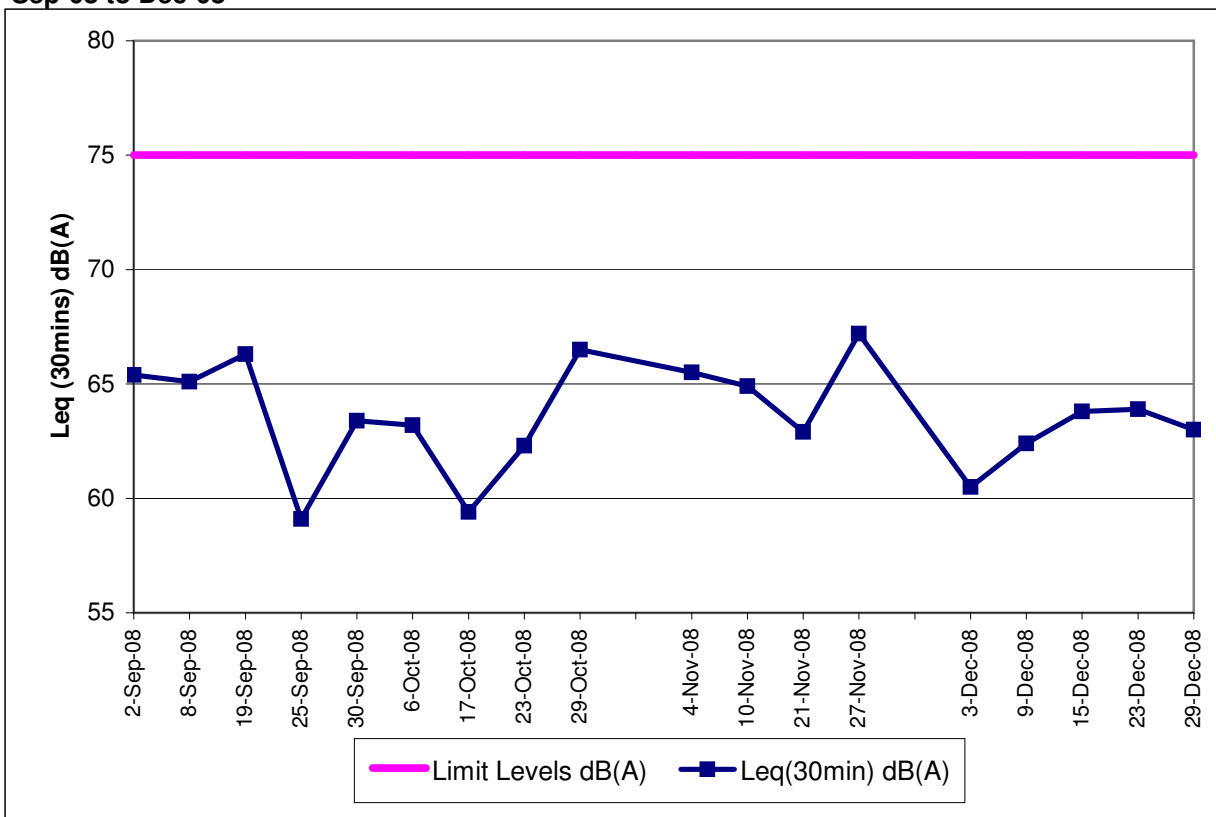
**Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
 Noise Monitoring Results at Hong Hoi Chee Hong Temple (NSR 3)
 Sep-08 to Dec-08**



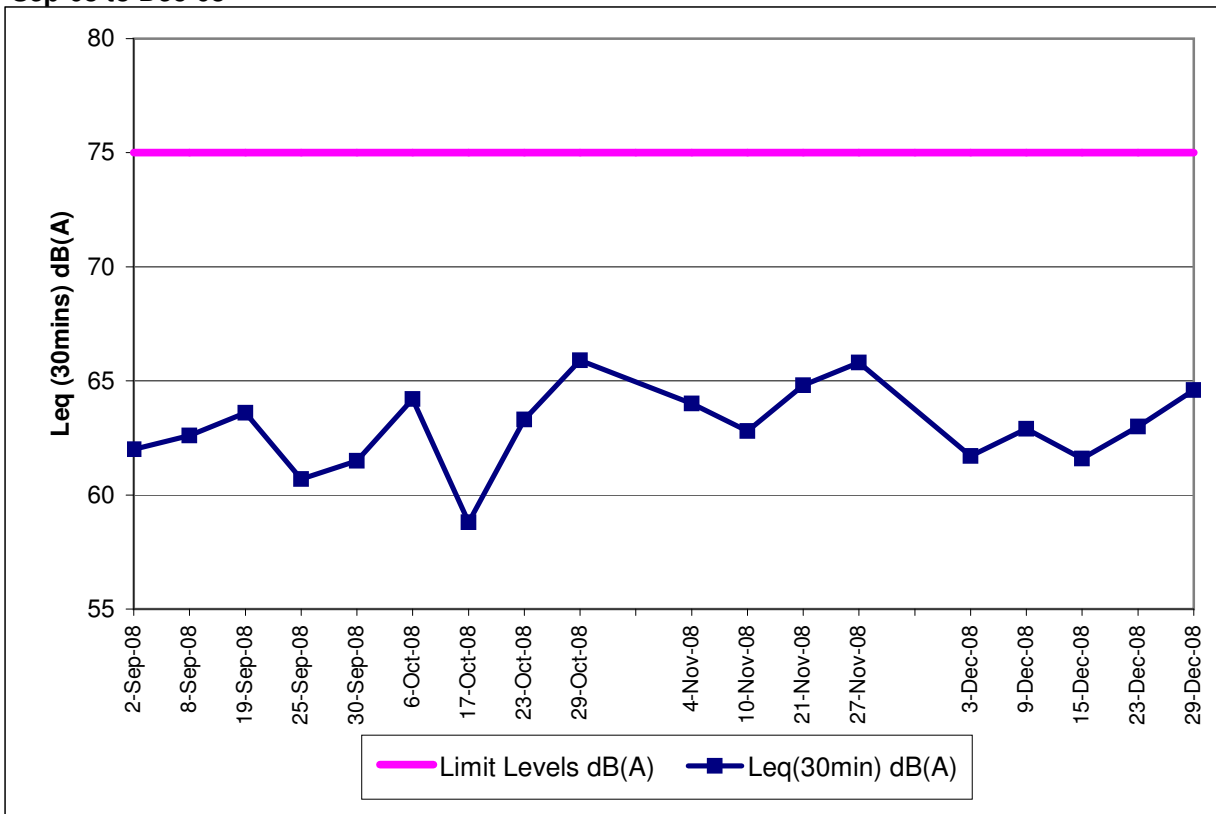
**Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
 Noise Monitoring Results at Squatters (NSR 6)
 Sep-08 to Dec-08**



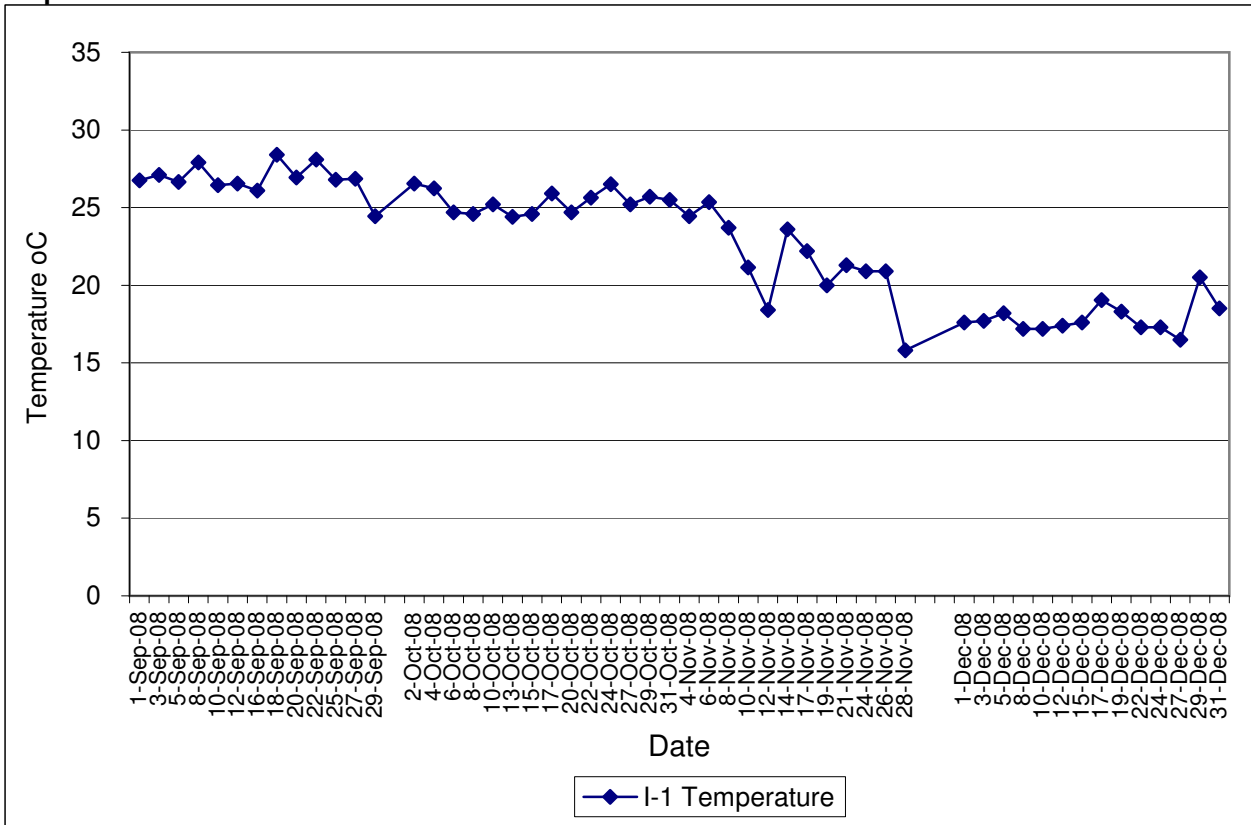
**Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
 Noise Monitoring Results at Long Beach Gardens (NSR 8)
 Sep-08 to Dec-08**



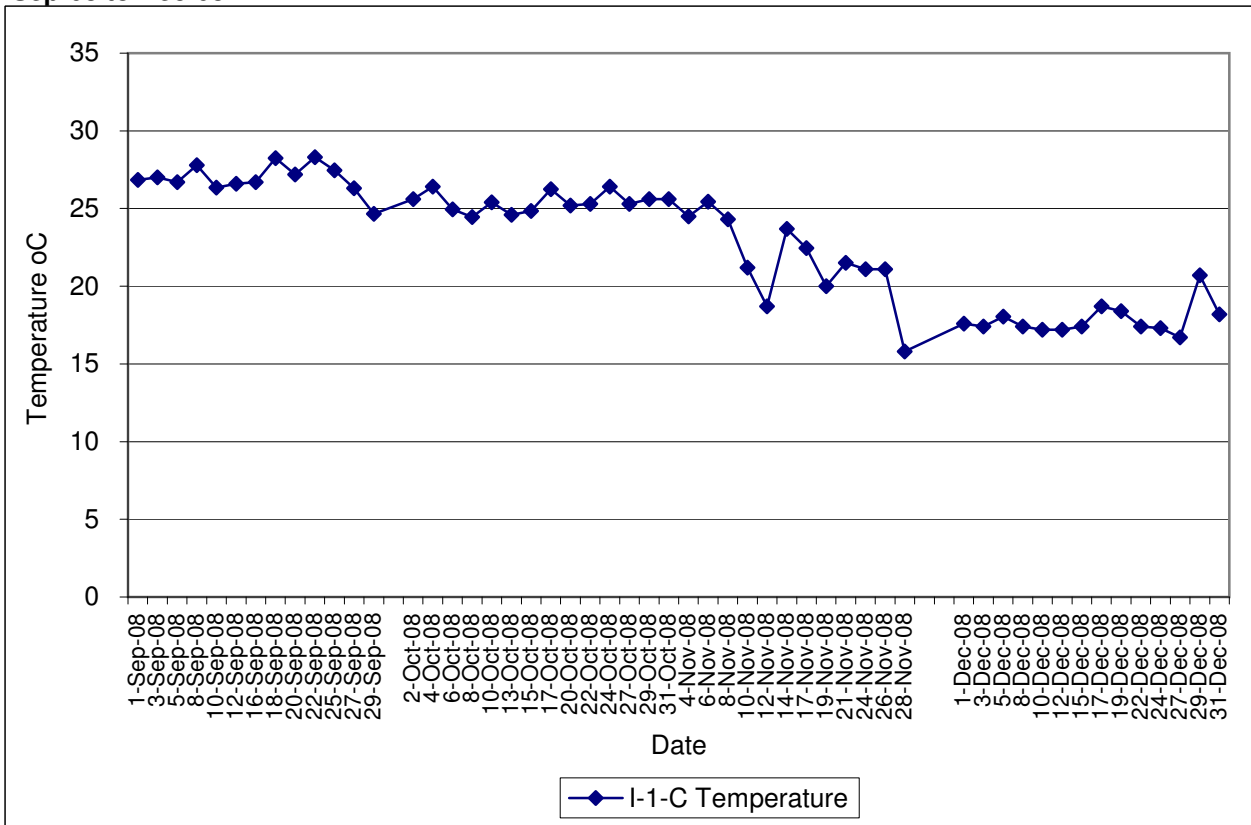
**Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Noise Monitoring Results at Greenview Terrace (NSR 9)
Sep-08 to Dec-08**



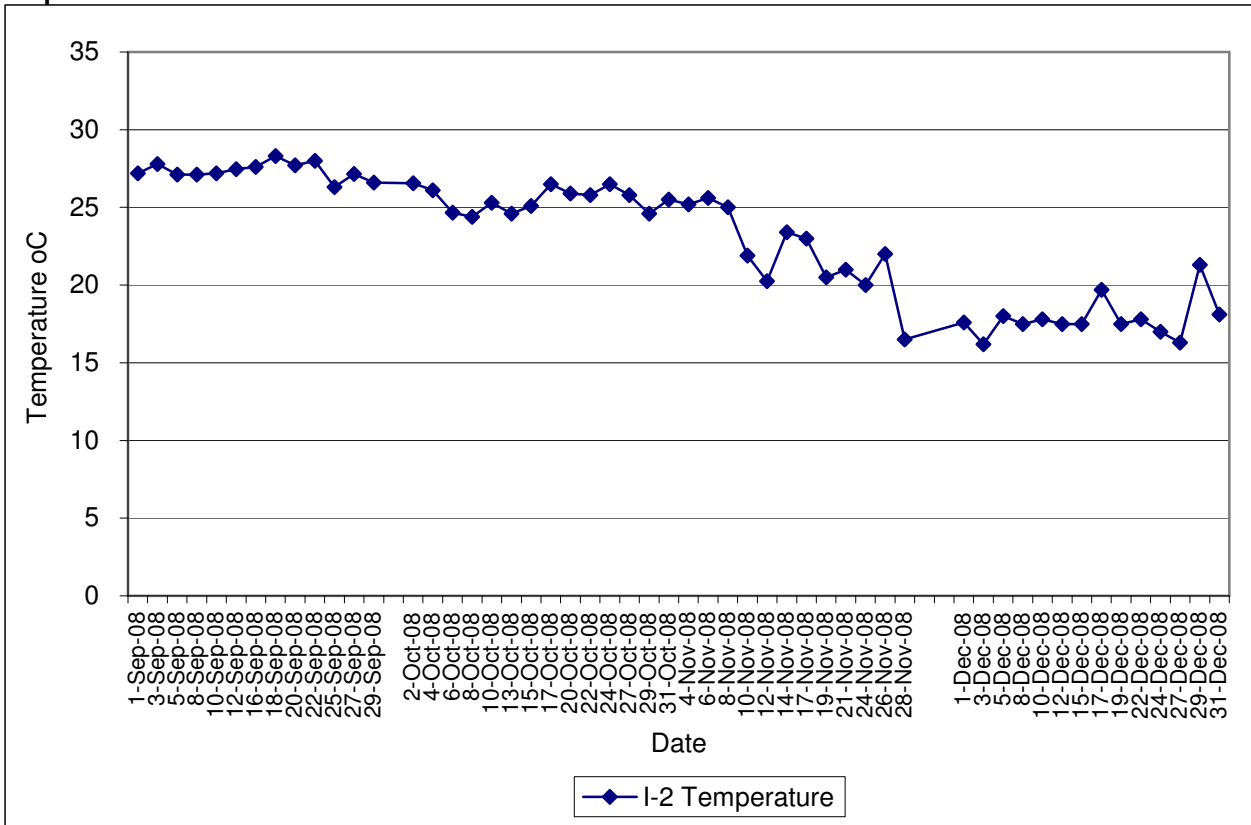
**Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
 Water Quality Results at Sik Sik Yuen Ho Fung College (I-1)
 Sep-08 to Dec-08**



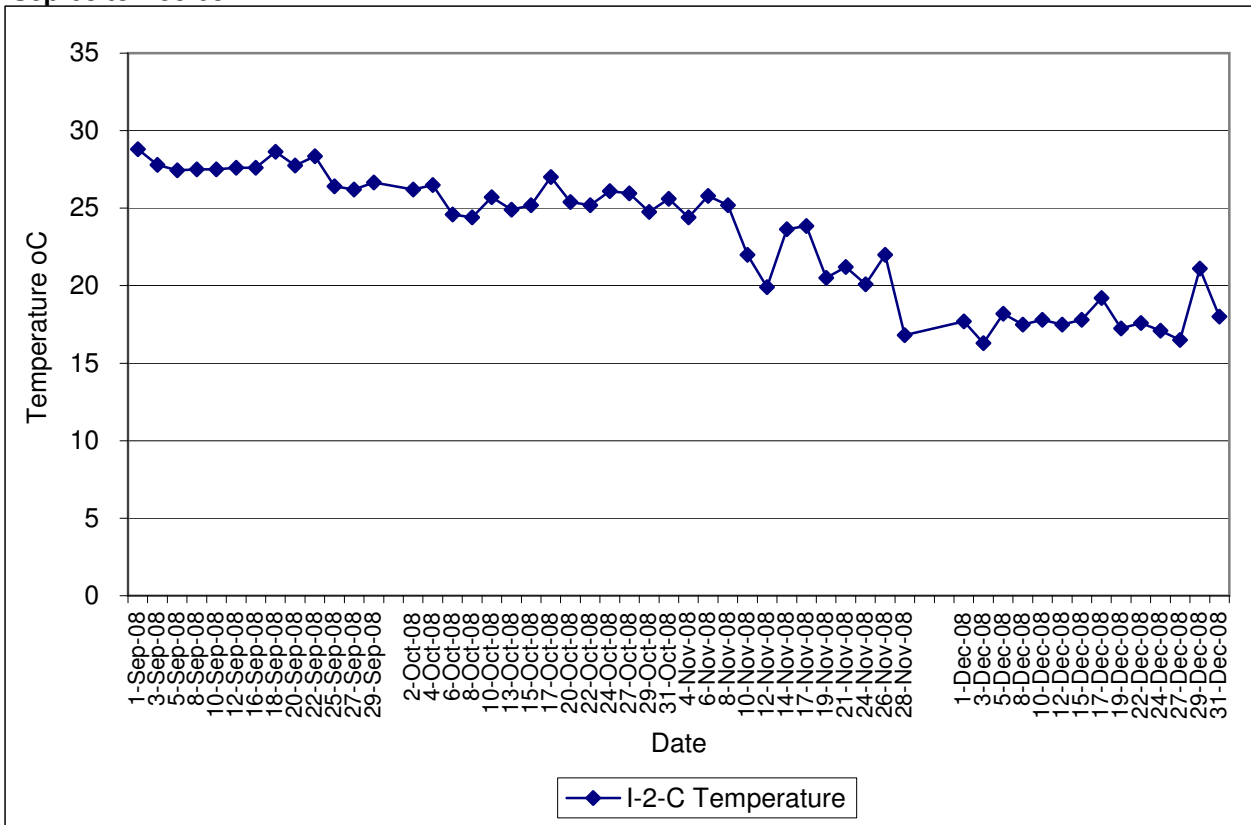
**Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
 Water Quality Results at Sik Sik Yuen Ho Fung College (I-1-C)
 Sep-08 to Dec-08**



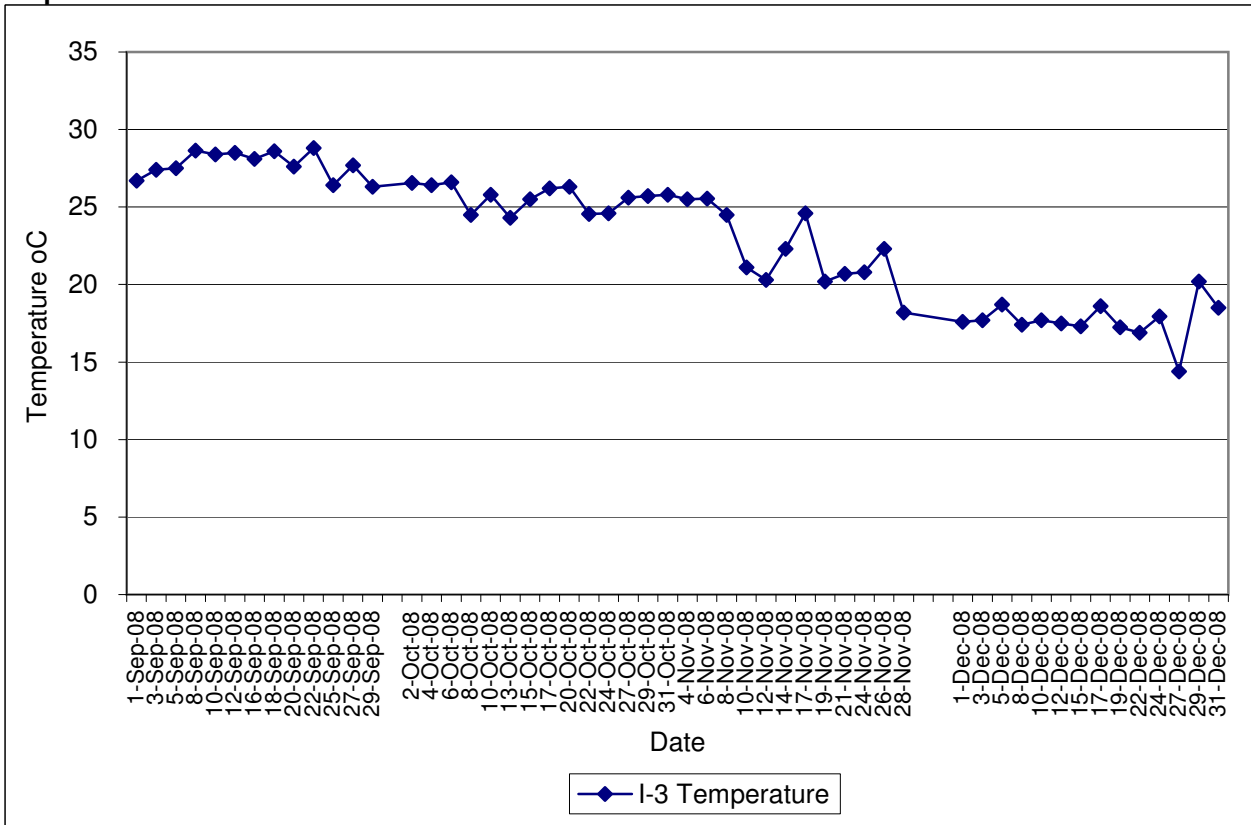
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Water Quality Results at Hong Hoi Chee Hong Temple (I-2)
Sep-08 to Dec-08



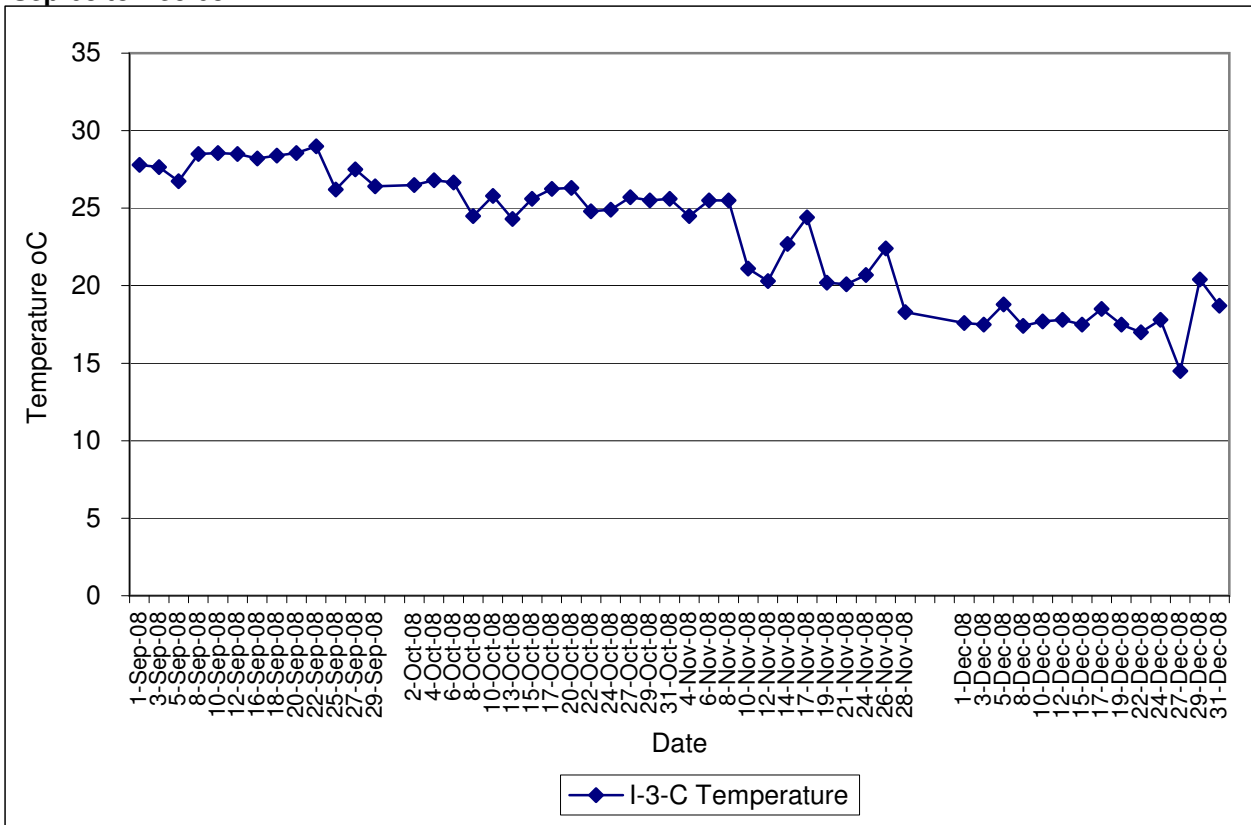
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Water Quality Results at Hong Hoi Chee Hong Temple (I-2-C)
Sep-08 to Dec-08



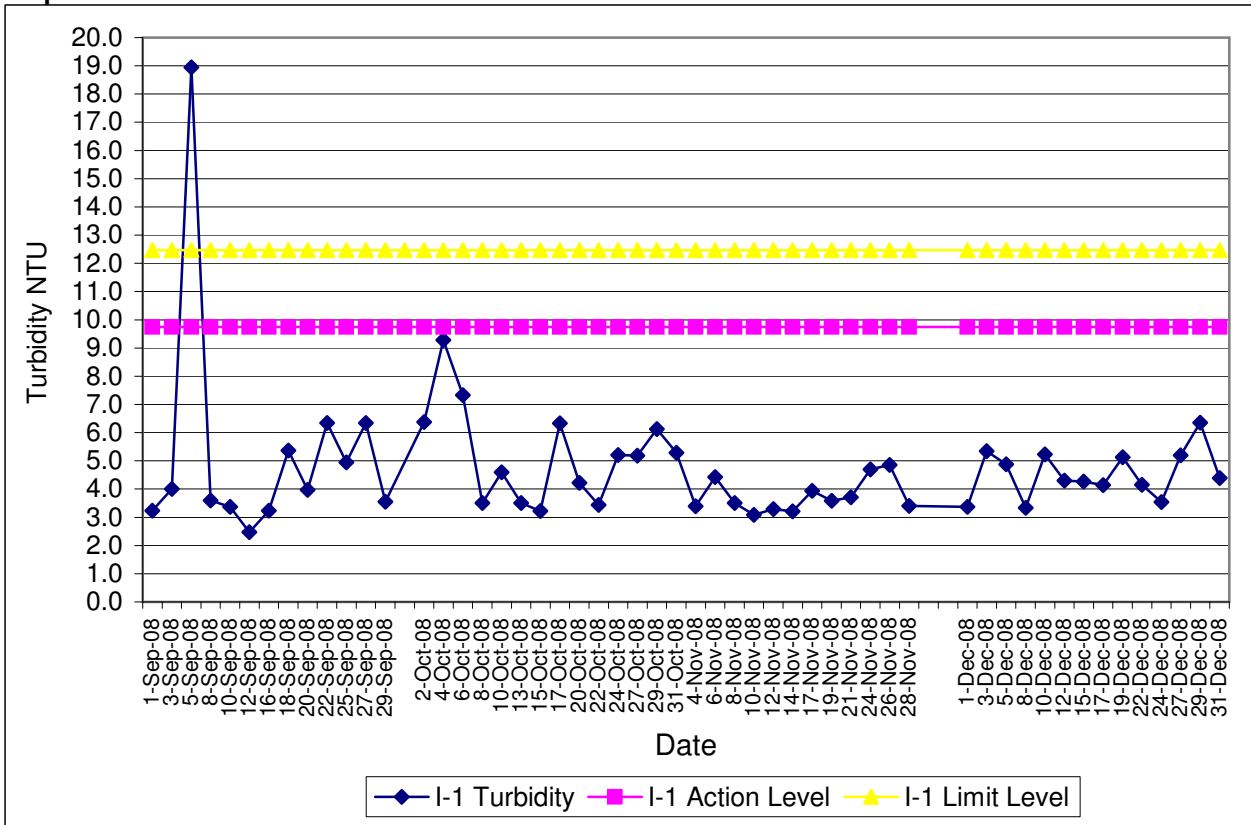
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Water Quality Results at Squatters (I-3)
Sep-08 to Dec-08



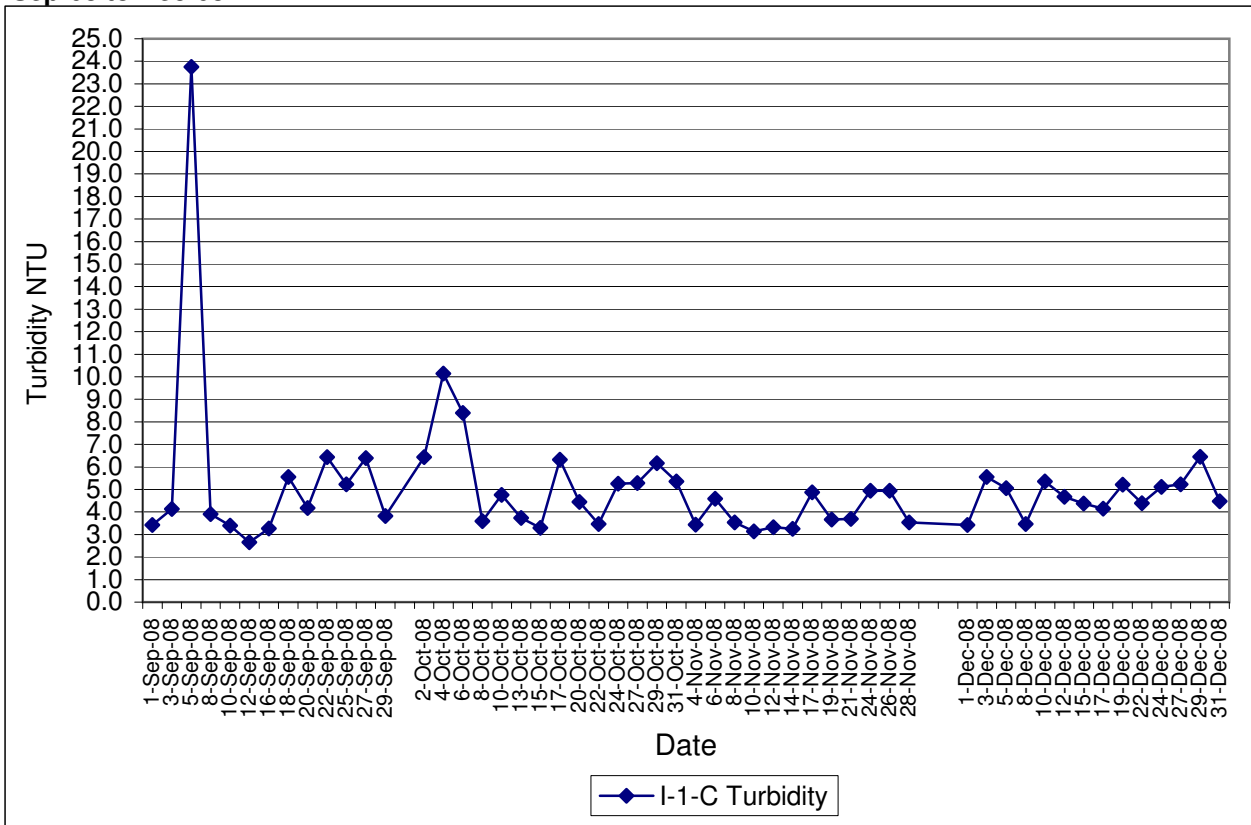
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Water Quality Results at Squatters (I-3-C)
Sep-08 to Dec-08



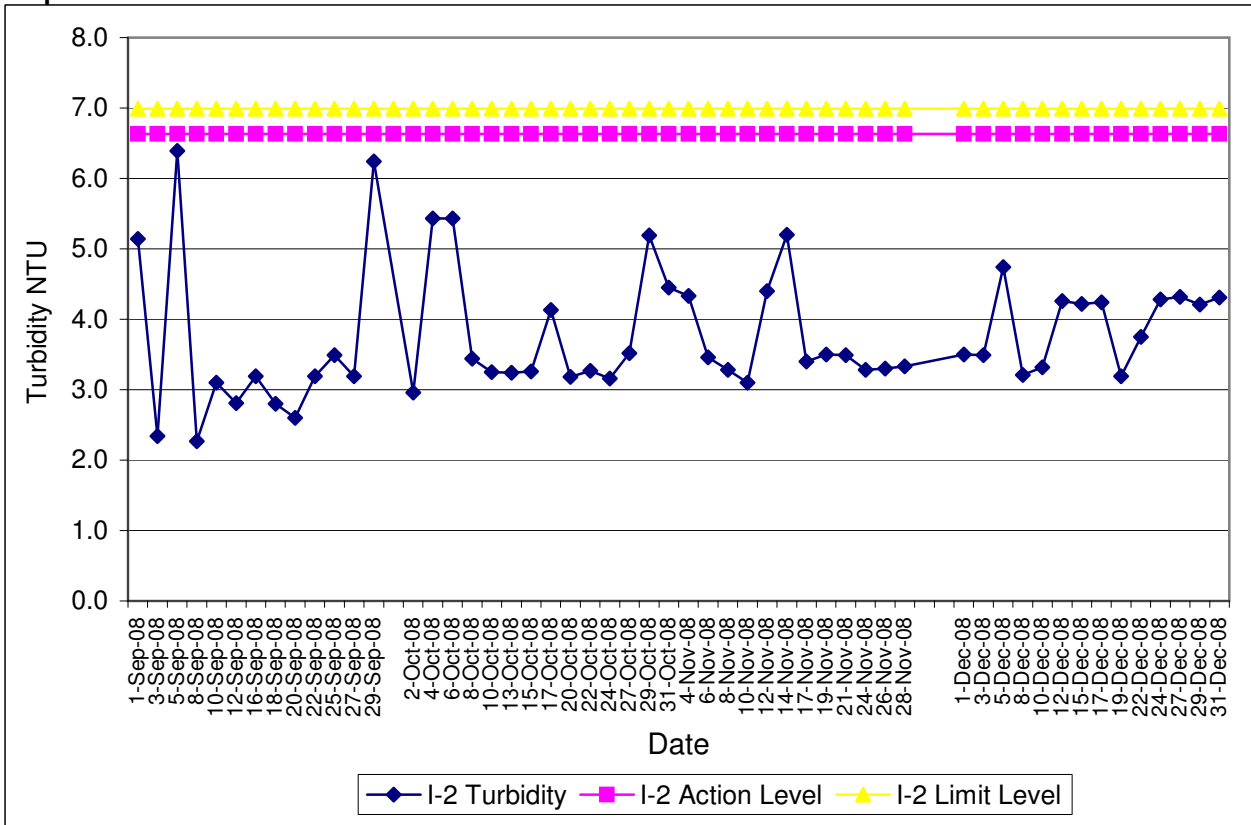
**Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Water Quality Results at Sik Sik Yuen Ho Fung College (I-1)
Sep-08 to Dec-08**



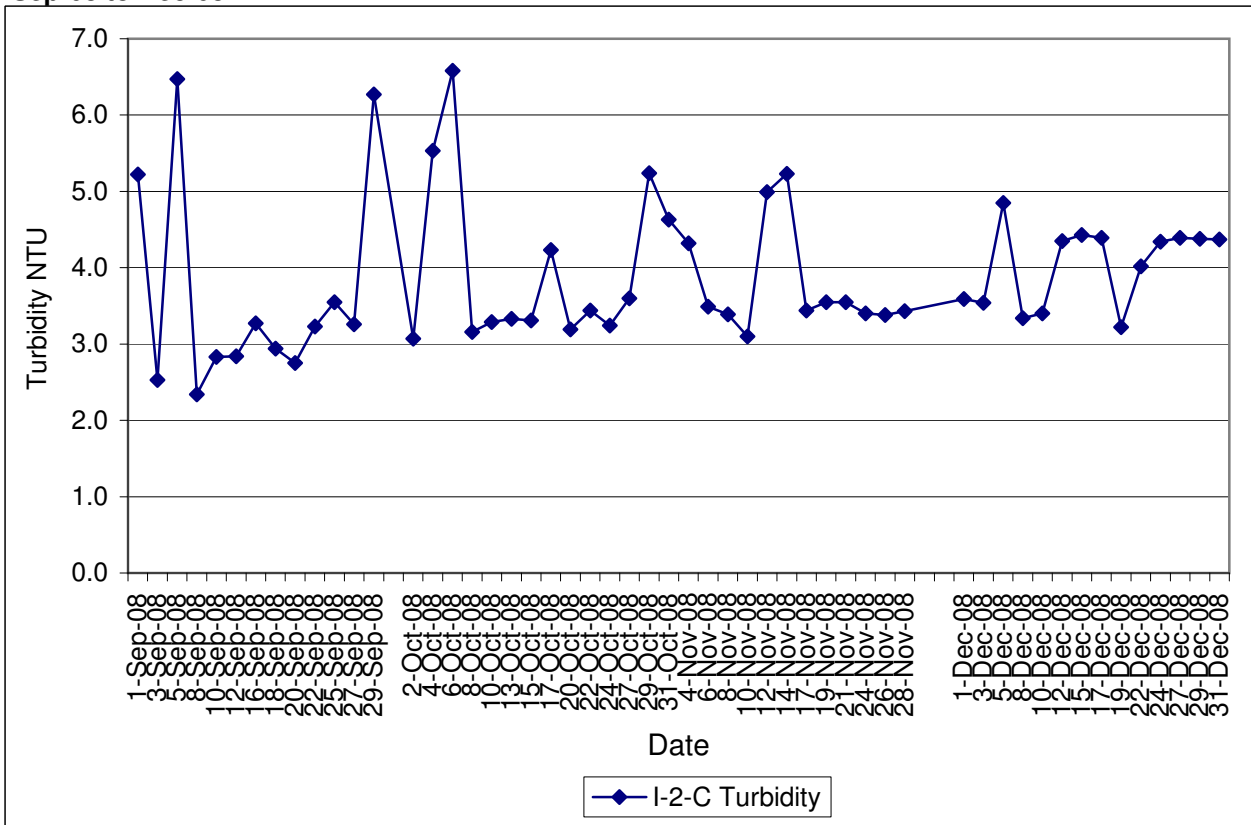
**Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Water Quality Results at Sik Sik Yuen Ho Fung College (I-1-C)
Sep-08 to Dec-08**



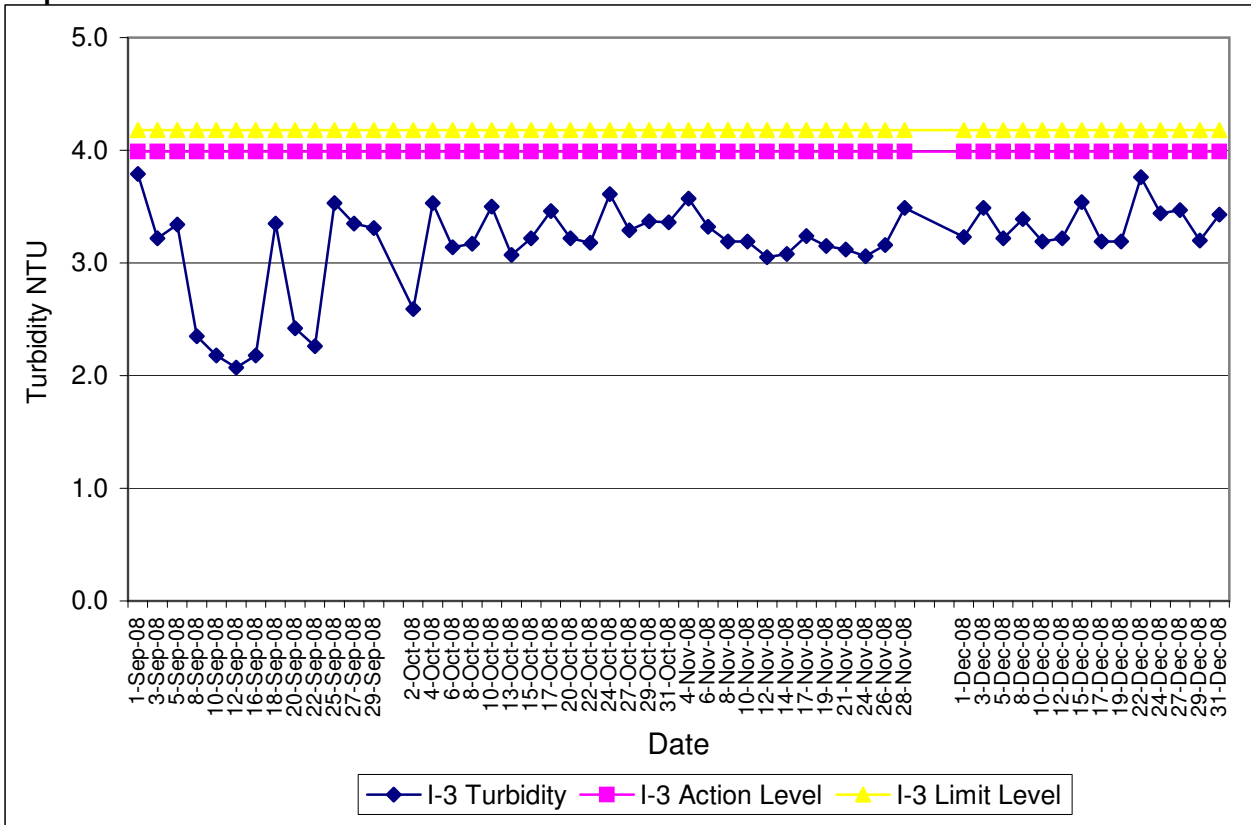
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Water Quality Results at Hong Hoi Chee Hong Temple (I-2)
Sep-08 to Dec-08



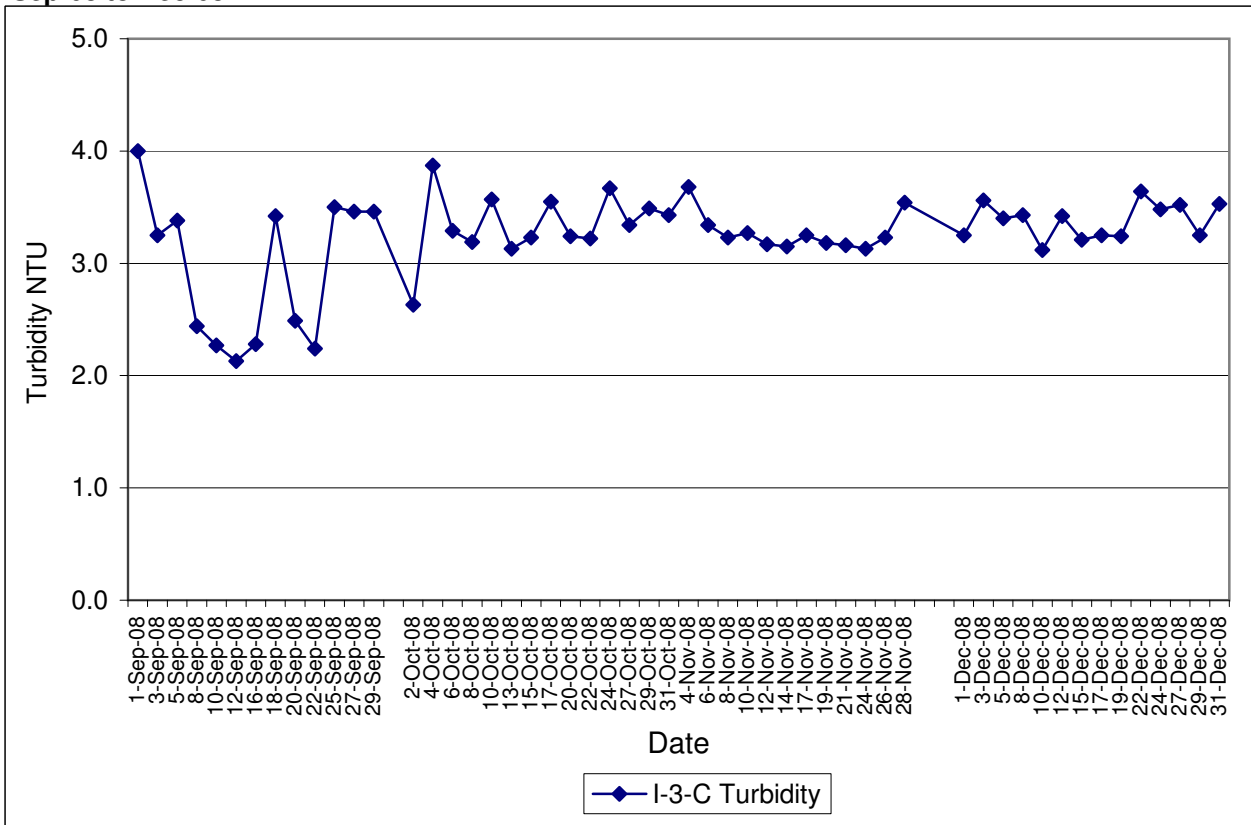
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Water Quality Results at Hong Hoi Chee Hong Temple (I-2-C)
Sep-08 to Dec-08



Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Water Quality Results at Squatters (I-3)
Sep-08 to Dec-08

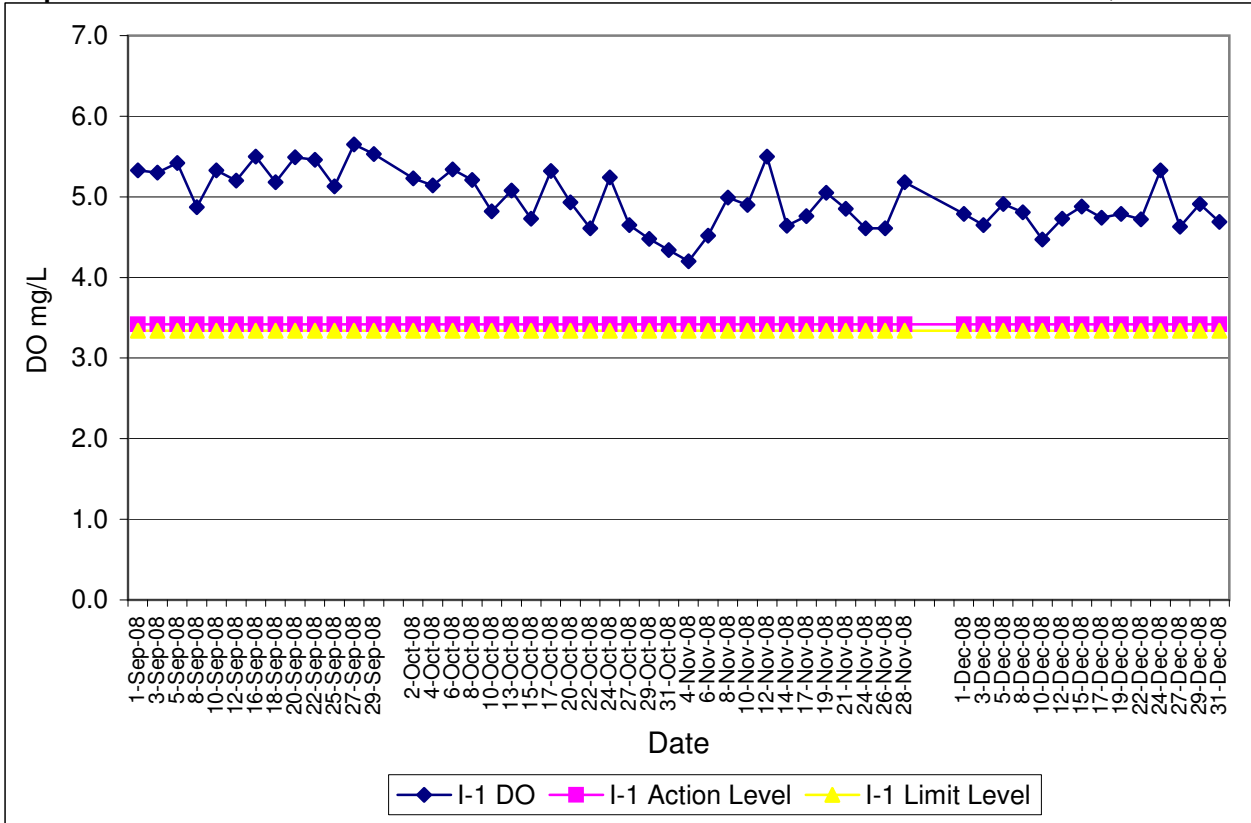


Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Water Quality Results at Squatters (I-3-C)
Sep-08 to Dec-08

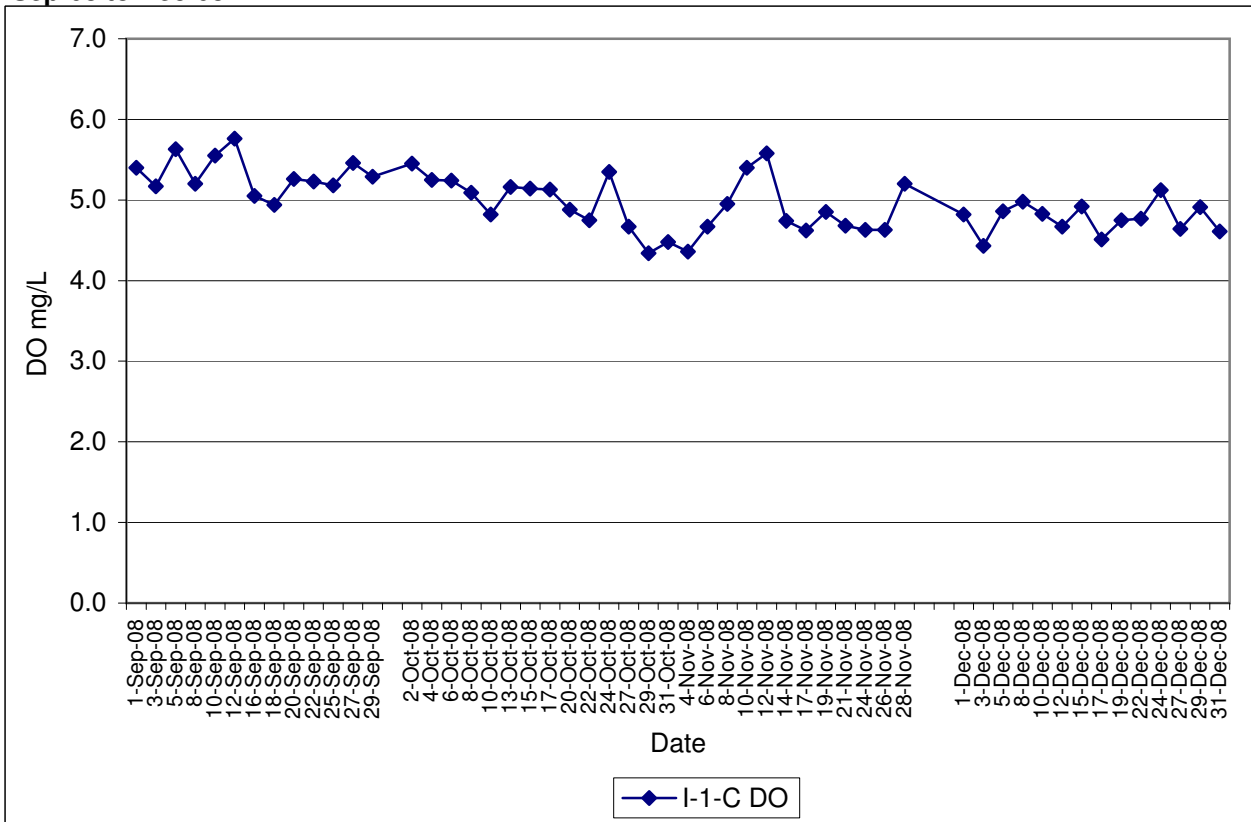


Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Water Quality Results at Sik Sik Yuen Ho Fung College (I-1)
Sep-08 to Dec-08

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

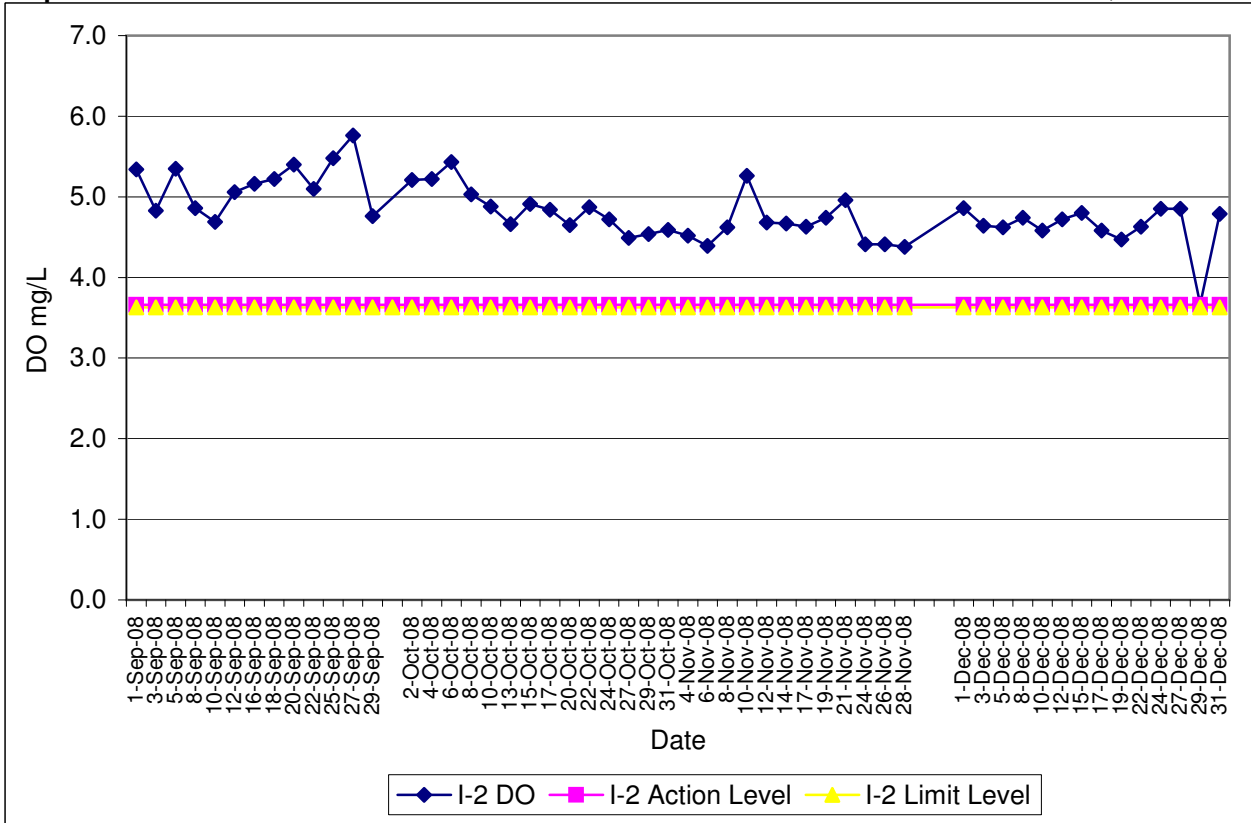


Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Water Quality Results at Sik Sik Yuen Ho Fung College (I-1-C)
Sep-08 to Dec-08

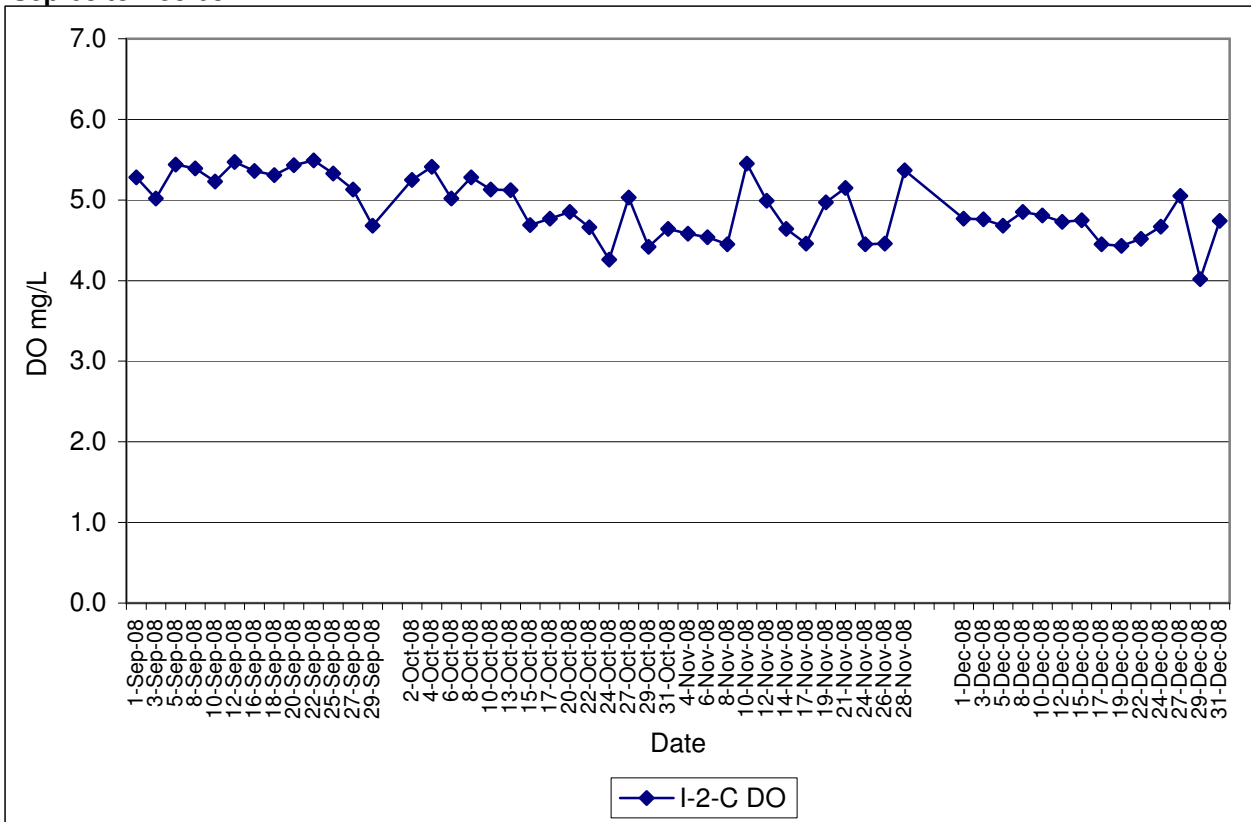


Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Water Quality Results at Hong Hoi Chee Hong Temple (I-2)
Sep-08 to Dec-08

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

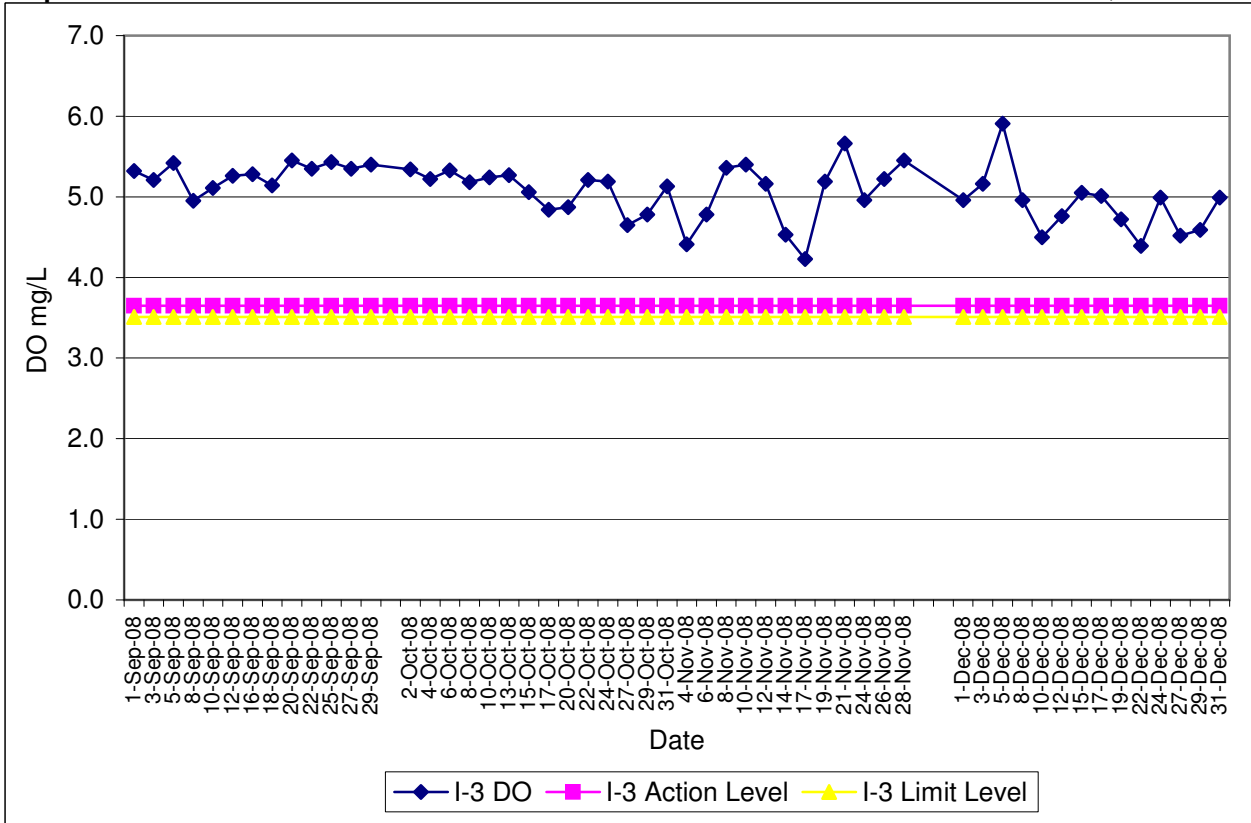


Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Water Quality Results at Hong Hoi Chee Hong Temple (I-2-C)
Sep-08 to Dec-08

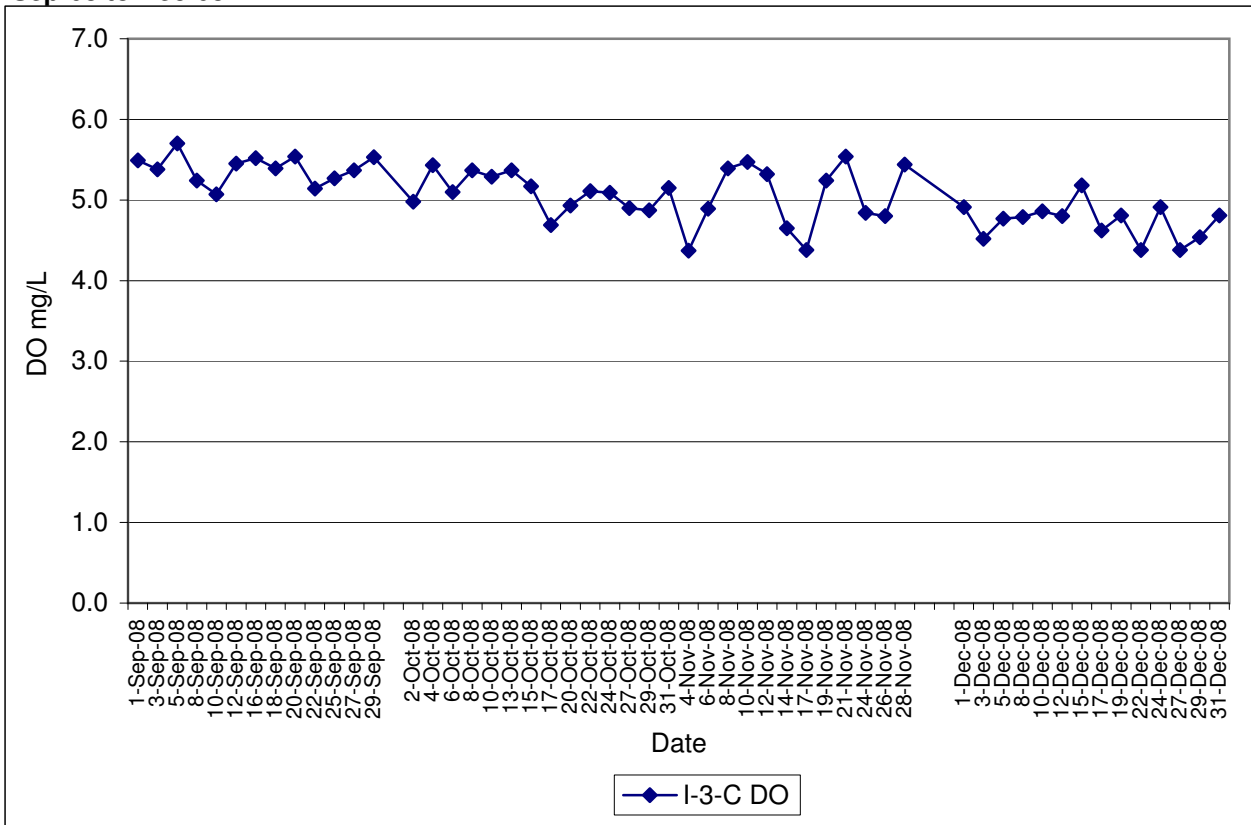


Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Water Quality Results at Squatters (I-3)
Sep-08 to Dec-08

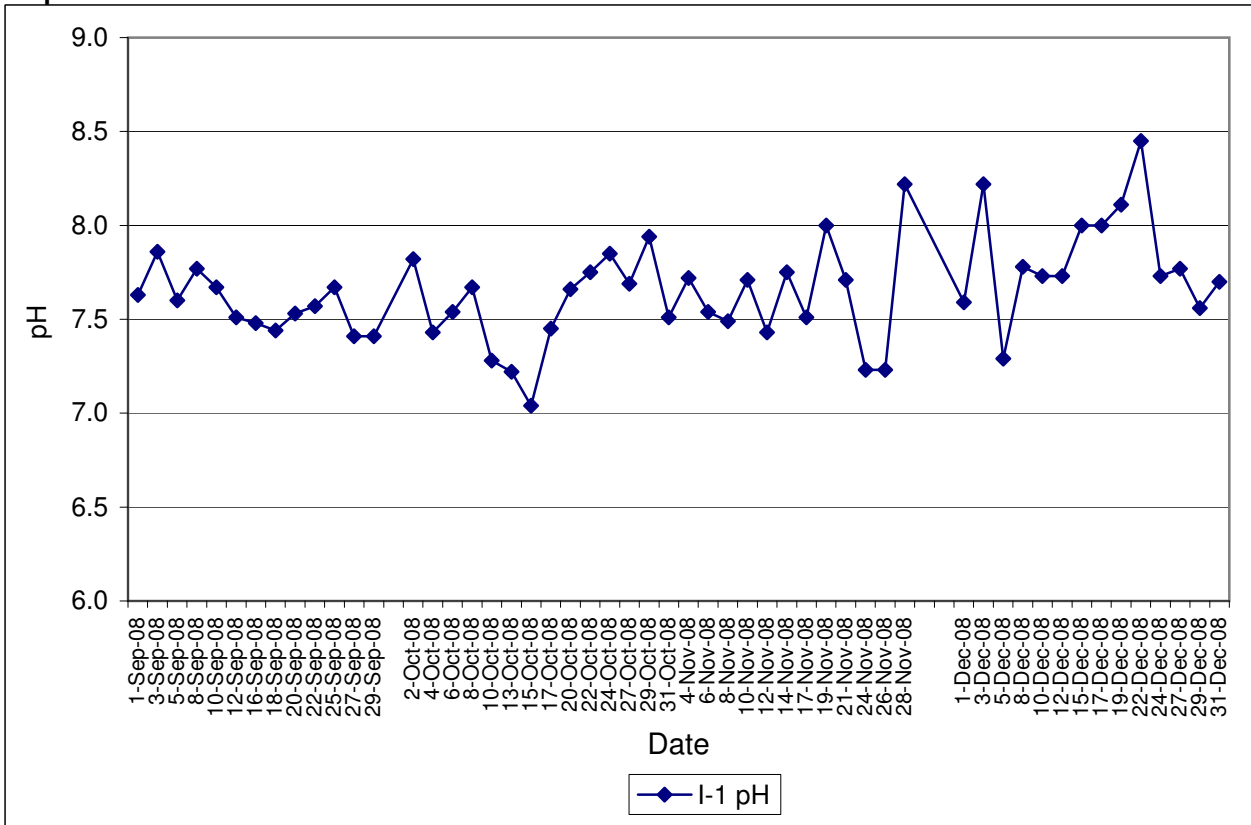
Note: Exceedances of Action / Limit Levels occur when the levels of DO are below the respective limit levels.



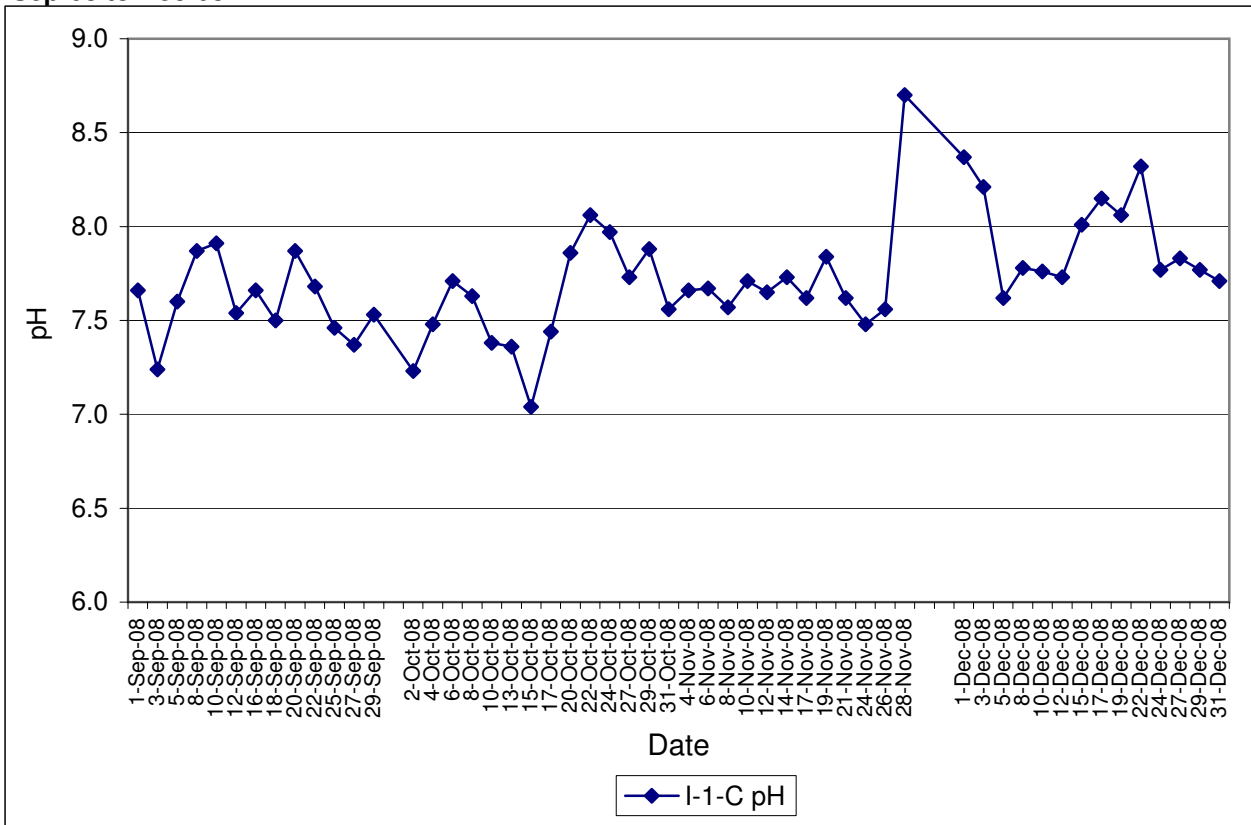
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Water Quality Results at Squatters (I-3-C)
Sep-08 to Dec-08



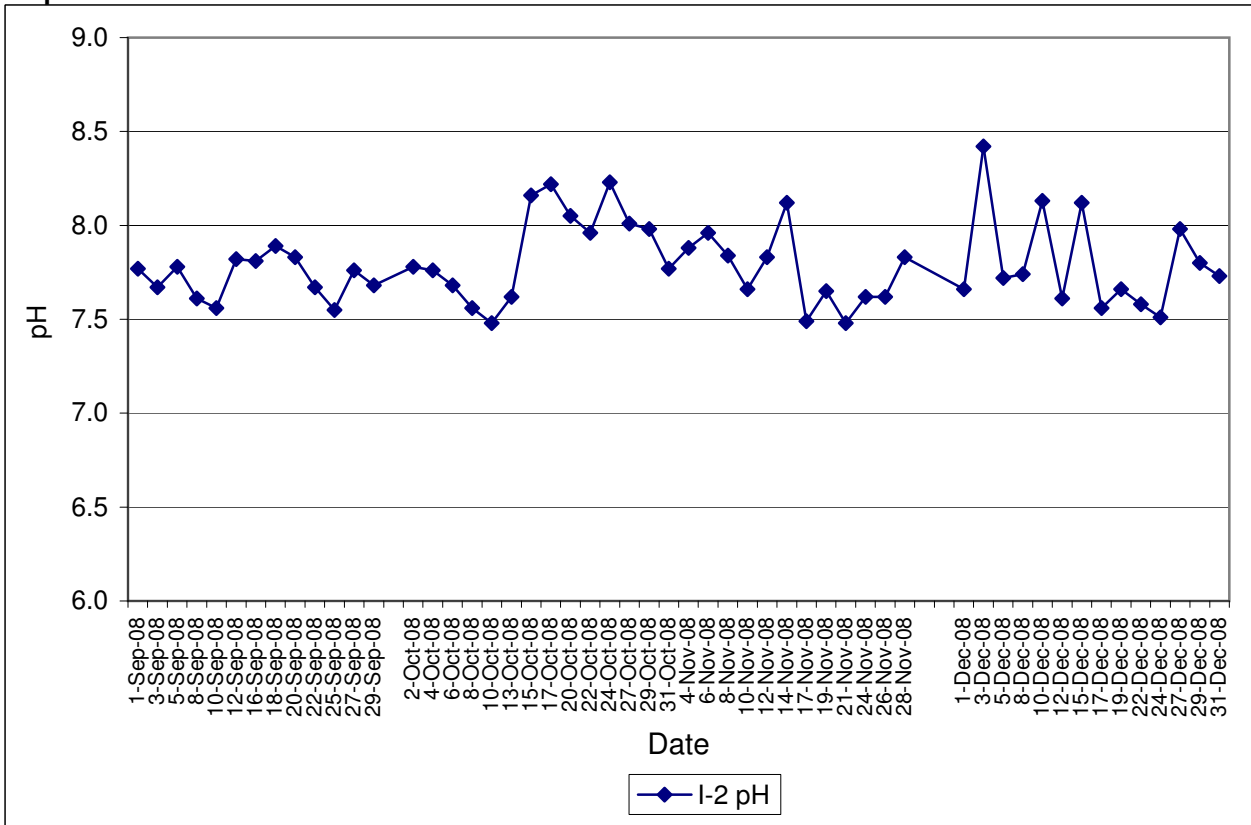
**Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
 Water Quality Results at Sik Sik Yuen Ho Fung College (I-1)
 Sep-08 to Dec-08**



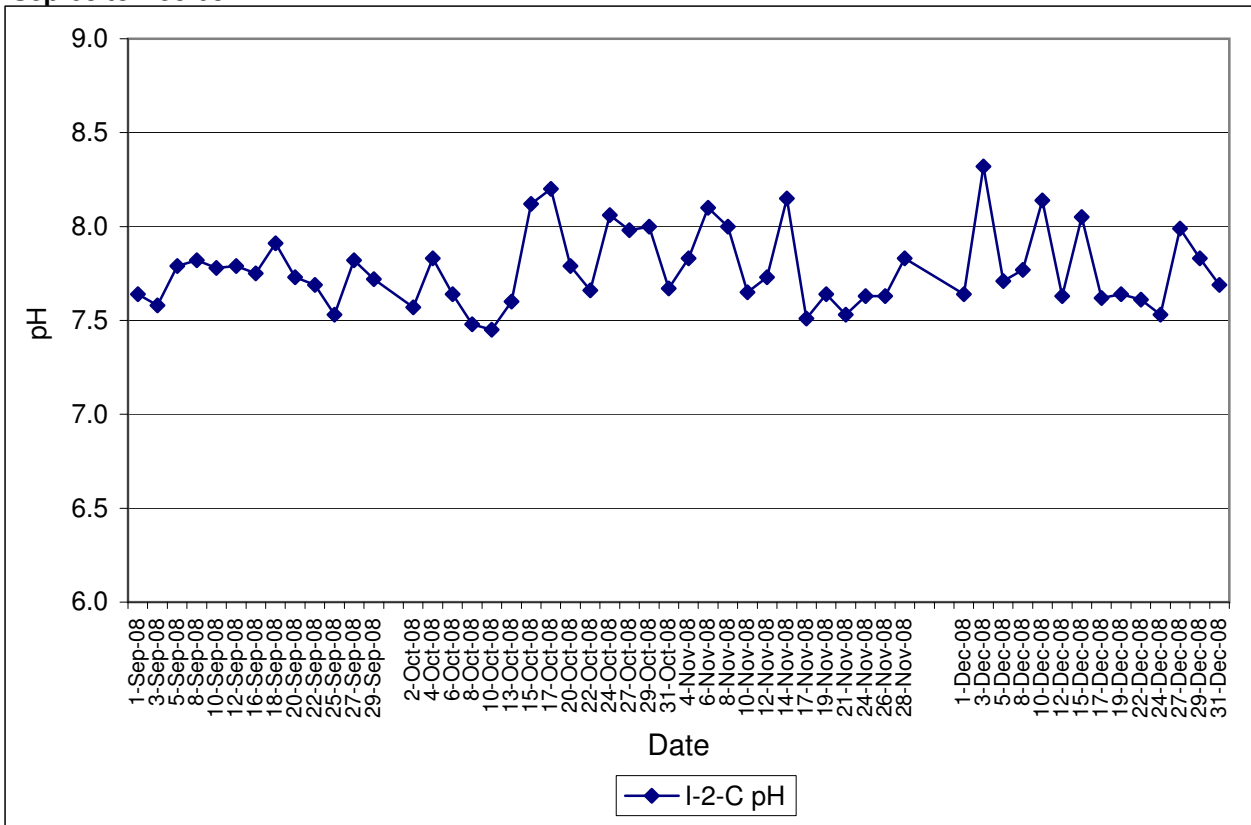
**Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
 Water Quality Results at Sik Sik Yuen Ho Fung College (I-1-C)
 Sep-08 to Dec-08**



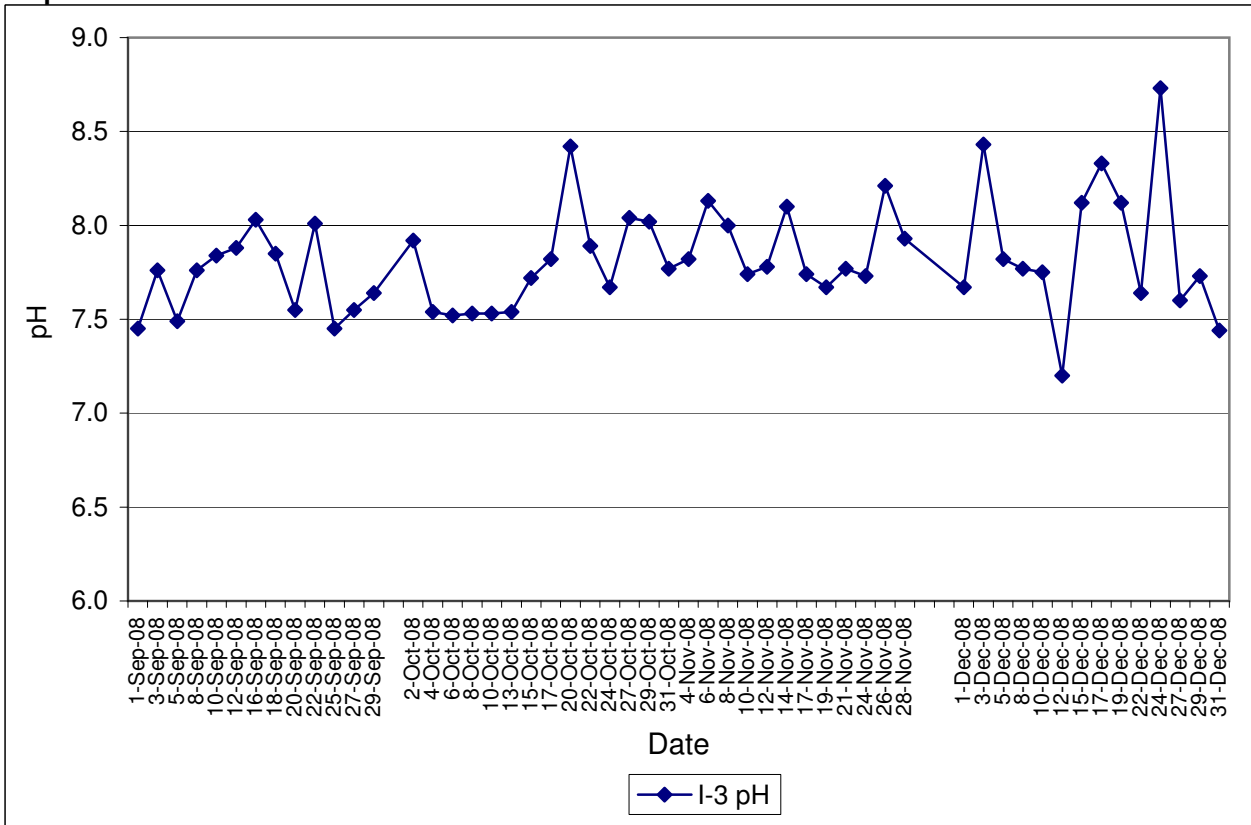
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Water Quality Results at Hong Hoi Chee Hong Temple (I-2)
Sep-08 to Dec-08



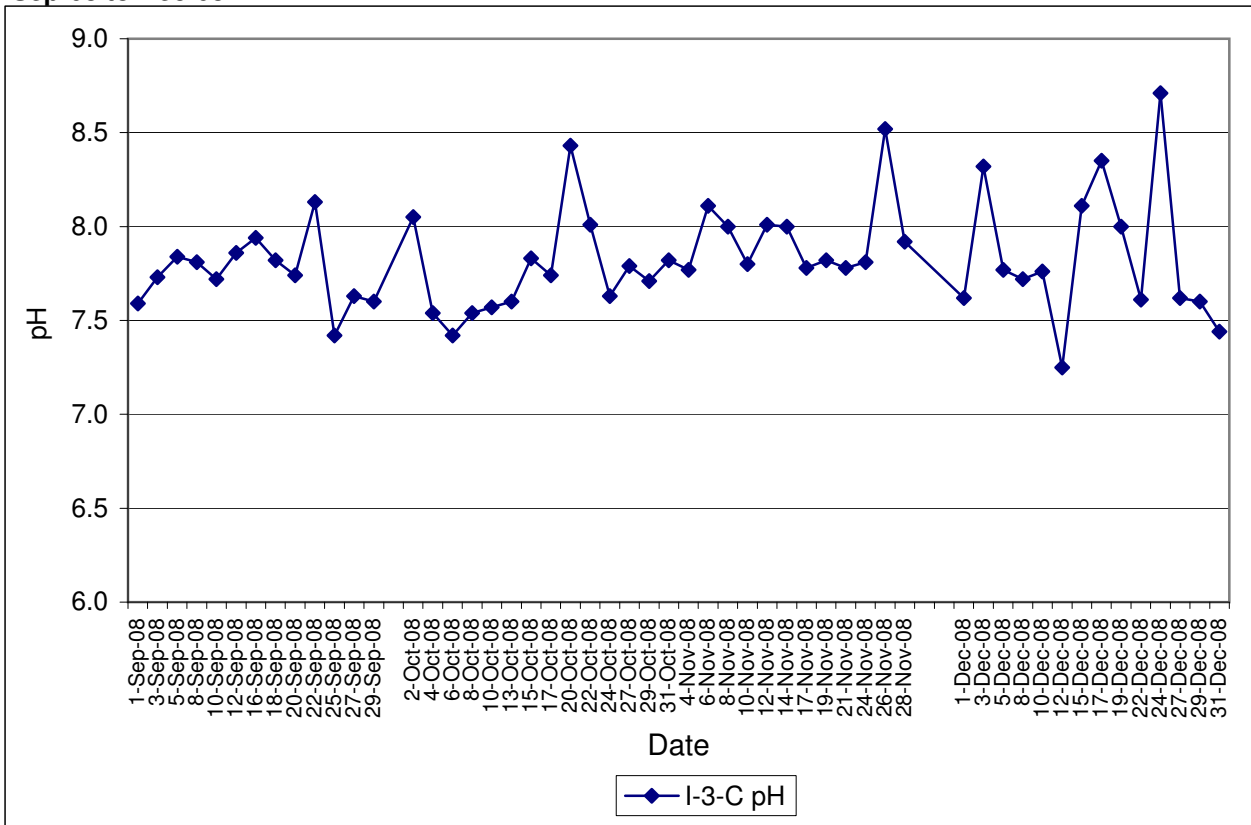
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Water Quality Results at Hong Hoi Chee Hong Temple (I-2-C)
Sep-08 to Dec-08



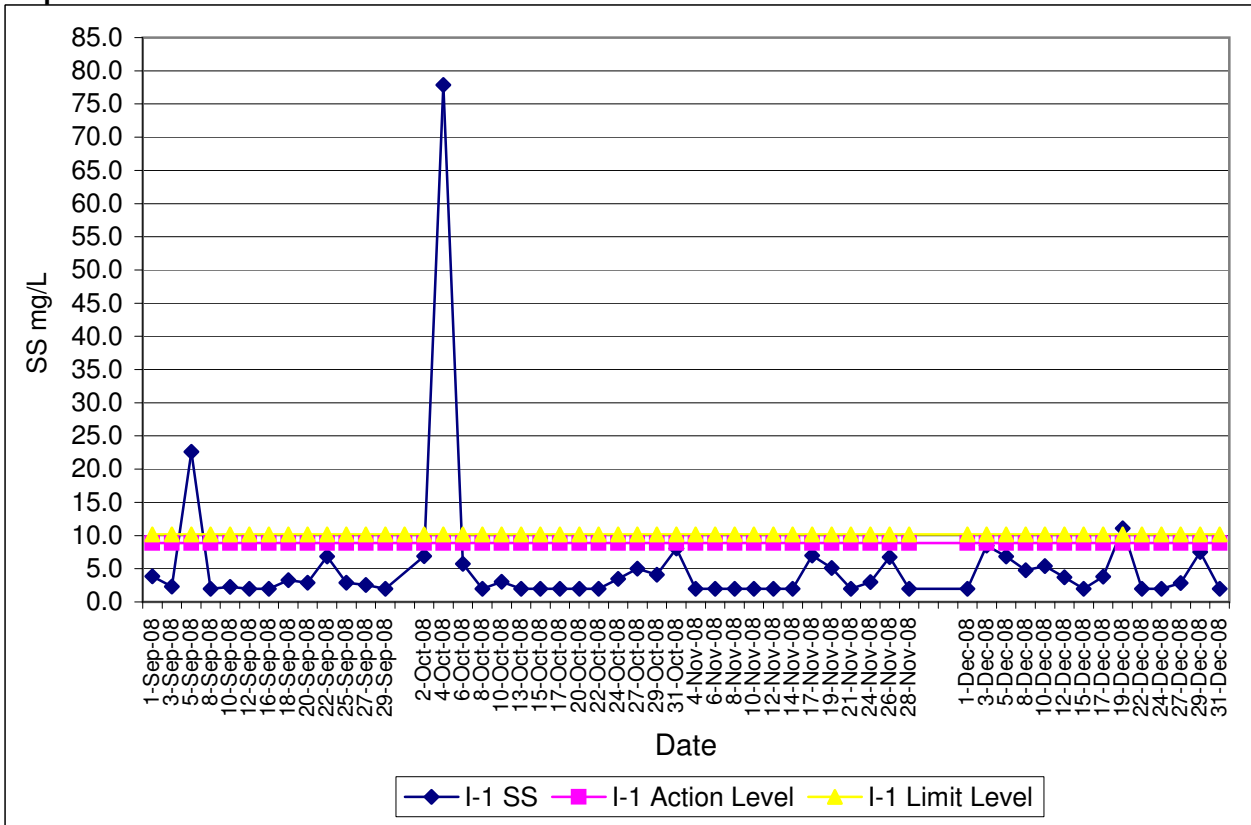
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Water Quality Results at Squatters (I-3)
Sep-08 to Dec-08



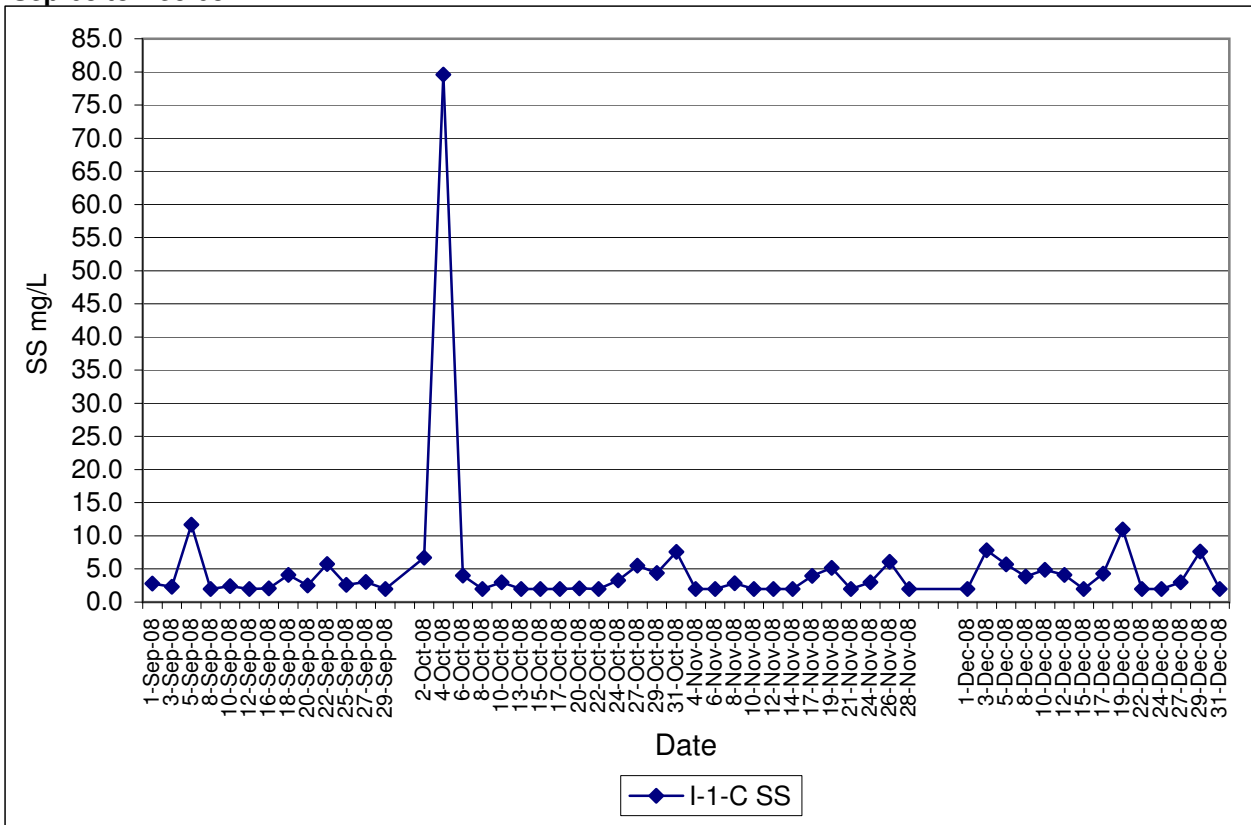
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Water Quality Results at Squatters (I-3-C)
Sep-08 to Dec-08



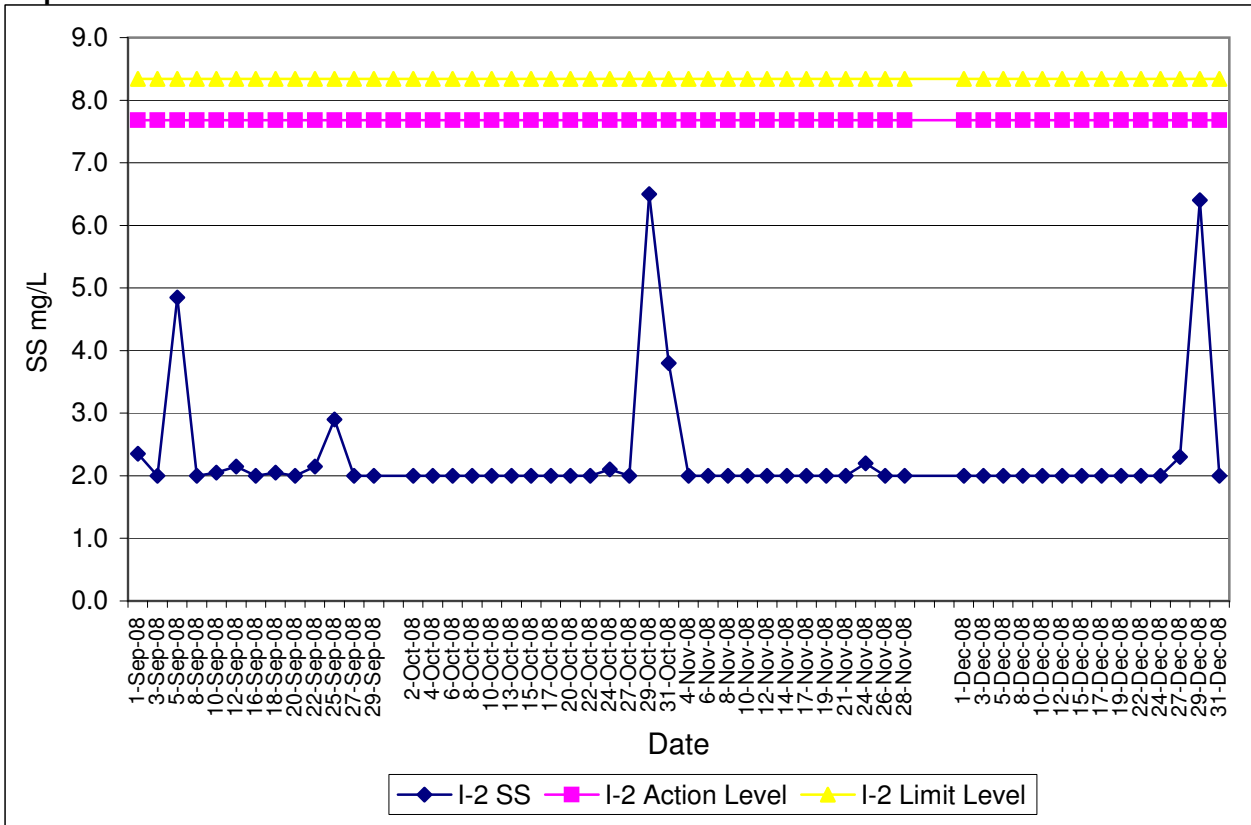
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Water Quality Results at Sik Sik Yuen Ho Fung College (I-1)
Sep-08 to Dec-08



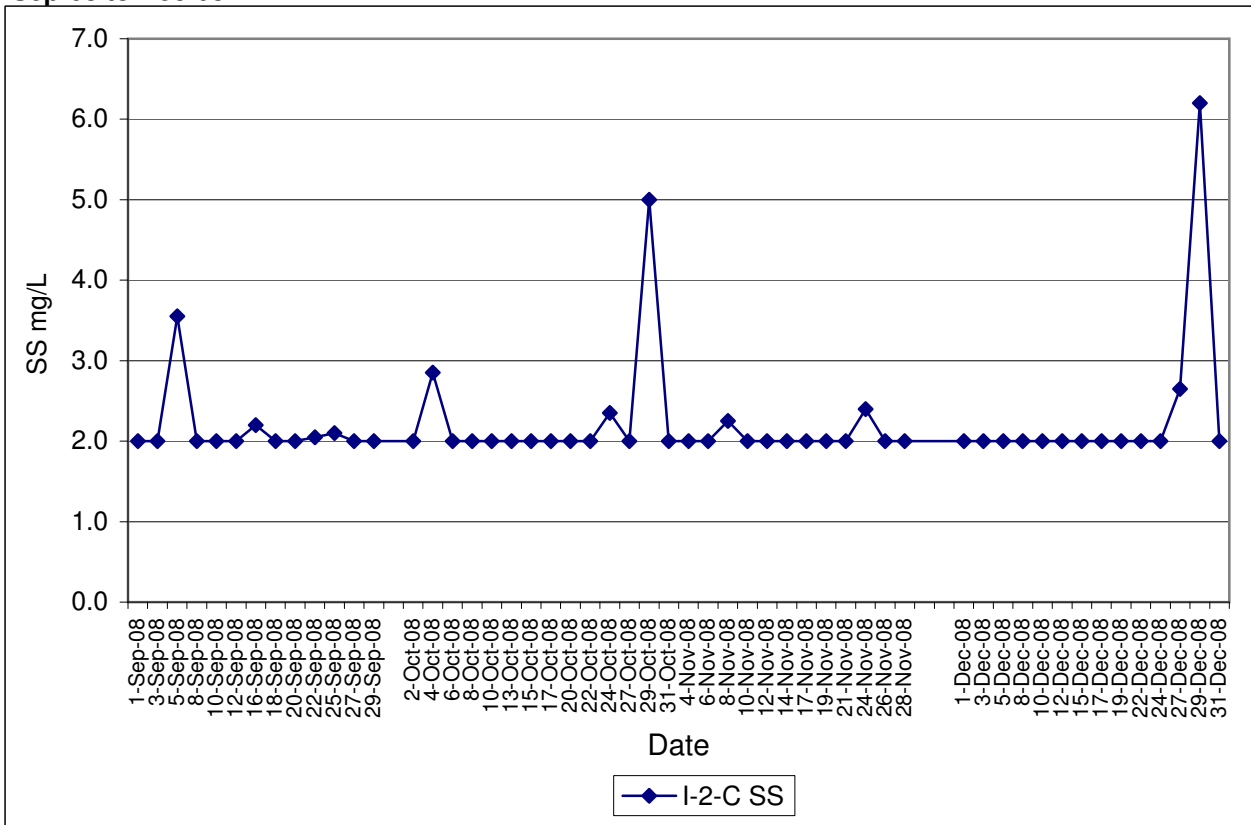
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Water Quality Results at Sik Sik Yuen Ho Fung College (I-1-C)
Sep-08 to Dec-08



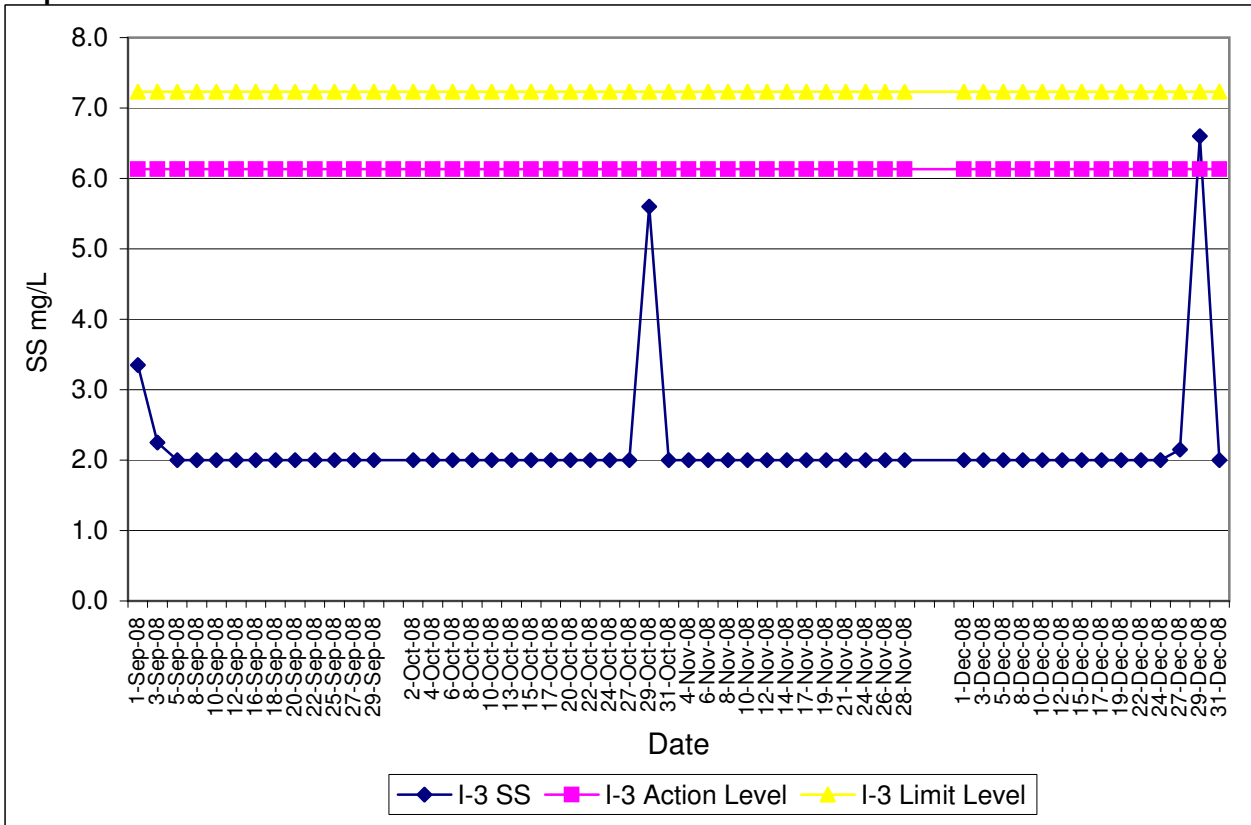
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Water Quality Results at Hong Hoi Chee Hong Temple (I-2)
Sep-08 to Dec-08



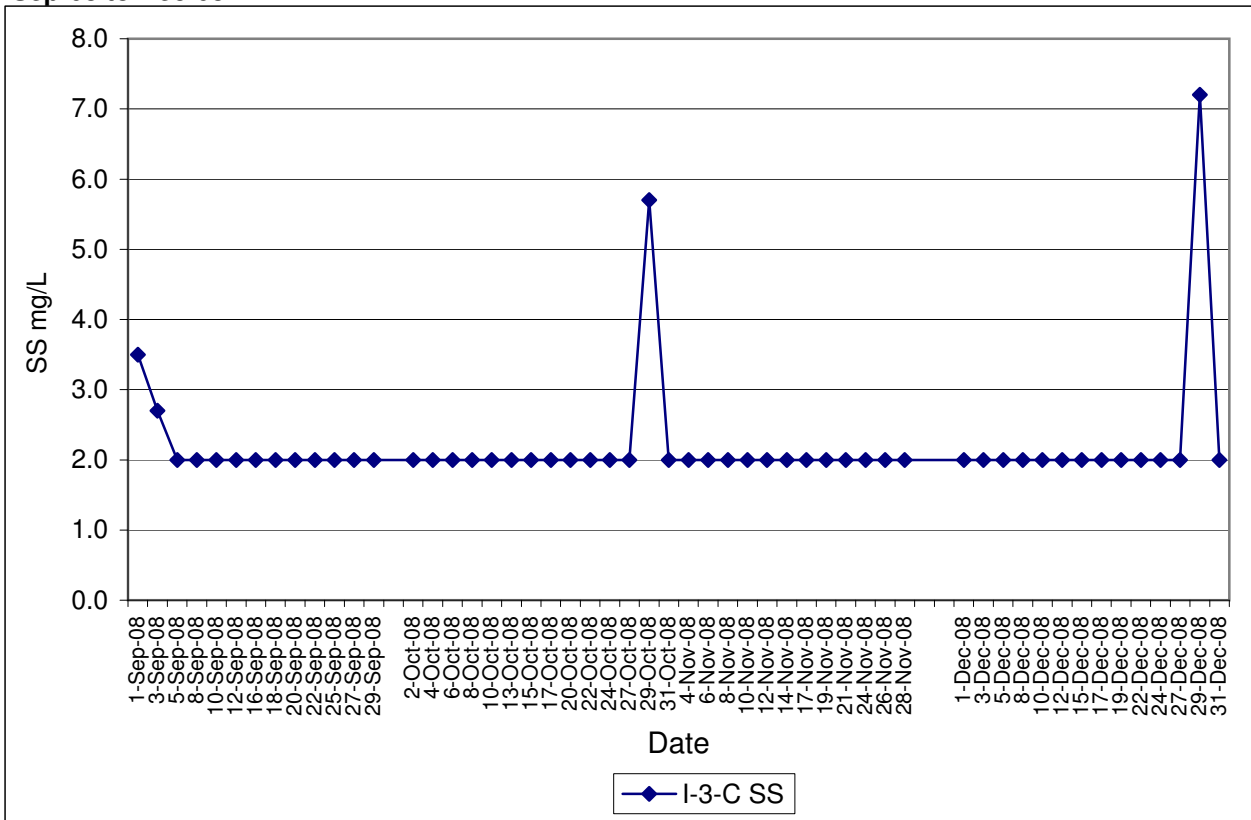
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Water Quality Results at Hong Hoi Chee Hong Temple (I-2-C)
Sep-08 to Dec-08



Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Water Quality Results at Squatters (I-3)
Sep-08 to Dec-08



Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel
Water Quality Results at Squatters (I-3-C)
Sep-08 to Dec-08



Appendix G

Interim Notifications of Environmental Quality Limits Exceedances

Interim Notifications of Environmental Quality Limits Exceedances

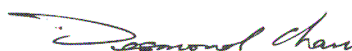
Incident Report on Action Level or Limit Level Non-compliance

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

Prepared by: Desmond Chan

Designation: Senior Environmental Consultant

Signature:



Date: 14-Oct-08

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



Interim Notifications of Environmental Quality Limits Exceedances

Incident Report on Action Level or Limit Level Non-compliance

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

Prepared by: Desmond Chan

Designation: Senior Environmental Consultant

Signature: 

Date: 15-Oct-08

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



Interim Notifications of Environmental Quality Limits Exceedances

Incident Report on Action Level or Limit Level Non-compliance

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

Prepared by: Desmond Chan

Designation: Environmental Team Leader

Signature: 

Date: 17-Oct-08

Interim Notifications of Environmental Quality Limits Exceedances

Incident Report on Action Level or Limit Level Non-compliance

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

Prepared by: Desmond Chan

Designation: Senior Environmental Consultant

Signature: 

Date: 06-Nov-08

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



Interim Notifications of Environmental Quality Limits Exceedances

Incident Report on Action Level or Limit Level Non-compliance

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

Prepared by: Desmond Chan

Designation: Senior Environmental Consultant

Signature: 

Date: 10-Nov-08

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



Interim Notifications of Environmental Quality Limits Exceedances

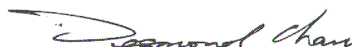
Incident Report on Action Level or Limit Level Non-compliance

Project	Tsuen Wan Drainage Tunnel
Date	17-Nov-08
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	7.0 (higher than 130% of control station's SS)
Possible reason for Action or Limit Level Non-compliance	A low SS level of 4.0 is recorded at Control Station (I-1-C)
Actions taken / to be taken	No action is taken as the monitoring result was well below both Baseline Action & Baseline Limit Levels and no direct disturbance was observed contributed by project construction activities including site tidiness, drilling temporary pipe pile for spiral ramp construction. No exceedance was recorded for the subsequence measurement performed on 19/11/2008.
Remarks	The control limit level exceedance is considered not project-related.

Prepared by: Desmond Chan

Designation: Senior Environmental Consultant

Signature:



Date: 25-Nov-08

Photographic record for exceedance of Suspended Solid recorded at Sik Sik Yuen Ho Fung College (I-1) on 17-Nov-08



Interim Notifications of Environmental Quality Limits Exceedances

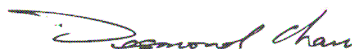
Incident Report on Action Level or Limit Level Non-compliance

Project	Tsuen Wan Drainage Tunnel
Date	27-Nov-08
Time	1:30 PM
Monitoring Location	Greenview Terrace (ASR9)
Parameter	Total Suspended Particulate
Action & Limit Levels	329.2 / 500
Measured Level	376
Possible reason for Action or Limit Level Non-compliance	Fugitive dust generated from tree logging and site tidiness was observed during the measurement of 1st 1hr TSP monitoring.
Actions taken / to be taken	Contractor was requested to provide water spraying for dust suppression. Water spraying was immediately provided by Contractor. The consequent monitoring results (2nd, 169.5ug/m ³ and 3rd, 135.1 ug/m ³) were below Action and Limit Level. The recommended dust suppression measures were effective.
Remarks	Nil

Prepared by: Desmond Chan

Designation: Senior Environmental Consultant

Signature:



Date: 4-Dec-08

Photographic record for exceedance of Total Suspended Particulate recorded at Greenview Terrace (ASR9) on 27-Nov-08



Interim Notifications of Environmental Quality Limits Exceedances

Incident Report on Action Level or Limit Level Non-compliance

Project	Tsuen Wan Drainage Tunnel
Date	5-Dec-08
Time	9:55 AM
Monitoring Location	Sik Sik Yuen Ho Fung College (I-1)
Parameter	Suspended Solid
Action & Limit Levels	8.85 / 10.17
Measured Level	6.9 (higher than 120% of control station's SS)
Possible reason for Action or Limit Level Non-compliance	A low SS level of 5.7 is recorded at Control Station (I-1-C) and natural variation
Actions taken / to be taken	The measured SS level was below baseline Action / Limit Level and was within the range of baseline SS concentration (1.0 - 10.5mg/L). With reference to photo records, pipe piling and levelling of concrete platform were undertaken during the measurement and no direct disturbance was observed. In addition, exposed earth was covered by impervious sheeting. Thus, the exceedance is considered to be contributed by natural variation and no action should be required.
Remarks	

Prepared by: Antony Wong

Designation: Environmental Team Leader

Signature:



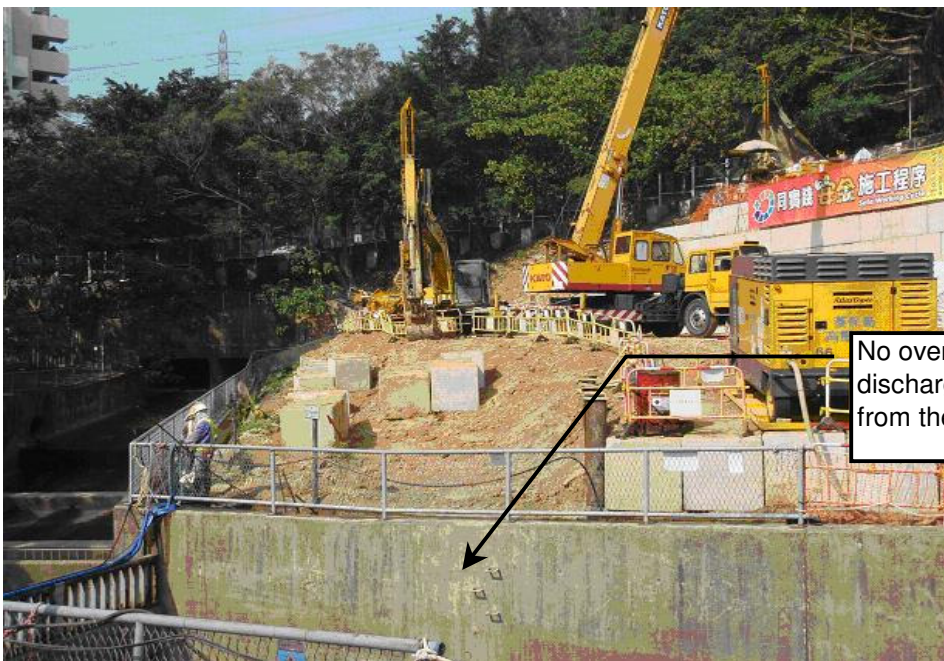
Date: 15-Dec-08

Photographic record for exceedance of Suspended Solid recorded at Sik Sik Yuen Ho Fung College (I-1) on 05-Dec-08



Pipe pile was undertaken at upper platform along Shing Mun Road

Exposed earth was covered by tarpaulin



No overflow or runoff discharge to the nullah from the site was observed

Interim Notifications of Environmental Quality Limits Exceedances

Incident Report on Action Level or Limit Level Non-compliance

Project	Tsuen Wan Drainage Tunnel
Date	8-Dec-08
Time	9:50 AM
Monitoring Location	Sik Sik Yuen Ho Fung College (I-1)
Parameter	Suspended Solid
Action & Limit Levels	8.85 / 10.17
Measured Level	4.8 (higher than 120% of control station's SS)
Possible reason for Action or Limit Level Non-compliance	A low SS level of 3.9 is recorded at Control Station (I-1-C) and natural variation
Actions taken / to be taken	The measured SS level was below baseline Action / Limit Level and was within the range of baseline SS concentration (1.0 - 10.5mg/L). With reference to site photo records, pipe piling and delivery of concrete block were undertaken during the measurement and no direct disturbance was observed. Thus, the exceedance is considered to be contributed by natural variation and no action should be required.
Remarks	

Prepared by: Antony Wong

Designation: Environmental Team Leader

Signature:



Date: 15-Dec-08

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



Interim Notifications of Environmental Quality Limits Exceedances


Incident Report on Action Level or Limit Level Non-compliance

Project	Tsuen Wan Drainage Tunnel
Date	19-Dec-08
Time	9:45 AM
Monitoring Location	Sik Sik Yuen Ho Fung College (I-1)
Parameter	Suspended Solid
Action & Limit Levels	8.85 / 10.17
Measured Level	11.1
Possible reason for Action or Limit Level Non-compliance	A high SS level of 11.0 was recorded at Control Station (I-1-C)
Actions taken / to be taken	The measured SS level is well below both 120% and 130% of the measured level at Control Station. No direct disturbance was observed contributed by project construction activities including site tidiness and drilling temporary pipe pile during the day of sampling. There is no evidence to show the exceedance is project-related. Thus, no action is required.
Remarks	

Prepared by: Antony Wong

Designation: Environmental Team Leader

Signature:



Date: 30-Dec-08

Photographic record for exceedance of Suspended Solid recorded at Sik Sik Yuen Ho Fung College (I-1) on 19-Dec-08



Interim Notifications of Environmental Quality Limits Exceedances

Incident Report on Action Level or Limit Level Non-compliance

Project	Tsuen Wan Drainage Tunnel
Date	29-Dec-08
Time	3:39 PM
Monitoring Location	Squatters (I-3)
Parameter	Suspended Solid
Action & Limit Levels	6.13 / 7.23
Measured Level	6.6
Possible reason for Action or Limit Level Non-compliance	A high SS level of 7.2 was recorded at Control Station (I-3-C)
Actions taken / to be taken	The measured SS level is well below both 120% and 130% of the measured level at Control Station. No direct disturbance was observed contributed by project construction activities including site tidiness during the day of sampling. There is no evidence to show the exceedance is project-related. Thus, no action is required.
Remarks	

Prepared by: Antony Wong

Designation: Environmental Team Leader

Signature:



Date: 6-Jan-09

Photographic record for exceedance of Suspended Solid recorded at Squatters (I-3) on 29-Dec-

08

