



Maeda - CREC - SELI Joint Venture

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

Monthly EM&A Report (July 2011)

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Report No EB000364R0662

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EXECUTIVE SUMMARY

- Drainage Services Department (DSD) has awarded the contract for the Design and Construction of Tsuen Wan Drainage Tunnel (hereafter referred to as the "Project") to Maeda-CREC-SELI Joint Venture (MCSJV). MCSJV has appointed Hyder Consulting Limited (HCL) as the Environmental Team (ET) to undertake the Environmental Monitoring and Audit (EM&A) works in accordance with the Environmental Monitoring and Audit Manual (EM&A Manual) and Environmental Permit (EP). Commencement of the construction work had been notified to the Environmental Protection Department (EPD) in January 2008. This Monthly EM&A Report summarises the EM&A works undertaken in July 2011.
- According to the EM&A Manual, there are four designated air quality monitoring locations, five designated noise monitoring locations and five water quality monitoring locations during the construction phase: (i) Sik Sik Yuen Ho Fung College (ASR 1, NSR 1 and Intake I-1); (ii) Hong Hoi Chee Hong Temple (ASR 3, NSR 3 and Intake I-2); (iii) Squatters (NSR 6 and Intake I-3); (iv) Beach Tower (Long Beach Gardens) (ASR 8, NSR 8 and Outfall O-1); and (v) Greenview Terrace (Block 1) (ASR 9, NSR 9 and Outfall O-1).
- During the non restricted hours, major construction activities undertaken by the Contractor at Tsuen Wan Drainage Tunnel included site cleaning and tidying at Outfall, I-1, I-2 and I-3; construction of spiral ramp structure at Outfall; tunnel boring machine (TBM) drilling of the tunnel and mucking out of tunnel spoil at Outfall; construction of box culvert at Outfall; placing leveling stone for formation of sea wall at Portion E; installation of precast sea wall blocks at Portion E; disposal of the excavated soil under the arc bridge to TM38 at Portion E; drilling, rock splitting and excavation of vortex shaft at I-3; removal of piling platform and reinstatement of slope at I-3; drilling, excavation and rock splitting of man access shaft and vortex drop shaft at I-2; preparation works for blasting at I-2; excavation and construction of skin wall at Portion G at I-2; construction of receiving pit for pipe jacking at Portion G at I-2; construction of cascade at I-1; construction of H pile wall along Shing Mun Road at I-1; construction of crane platform for TBM retrieval at I-1; and excavation of skin wall abutment at I-1.
- Underground mining and probe drilling were undertaken during restricted hours during the reporting period.
- No exceedances have been recorded for air quality monitoring during the reporting month.
- No exceedances have been recorded for air borne noise monitoring during the reporting month.
- Exceedances for river water quality monitoring are summarised in the following table:

Parameter	Action Level Exceedance	Limit Level Exceedance
DO	Nil	Nil
Turbidity	Nil	Seven records at I-1 on 20 July 2011, at I-2 on 20 July 2011 and at I-3 on 2, 11, 15, 20 and 22 July 2011
SS	One record at I-2 on 29 July 2011	Six records at I-1 on 18 and 20 July 2011, at I-2 on 20 July 2011 and at I-3 on 11, 15 and 29 July 2011



Exceedances for marine water quality monitoring are summarised in the following table:

Parameter	Action Level Exceedance	Limit Level Exceedance
DO	Three records at O-1(ET) on 8, 15 and 25 July 2011	Twelve records at O-1(FT) on 2, 8 and 15 July 2011 and at O-1(ET) on 2, 8, 15, 20 and 25 July 2011
Turbidity	Nil	Nil
SS	Nil	Three records at O-1(FT) on 8, 15 and 25 July 2011

- The status of waste generation in the reporting month is:
 - A total of 3,484.5 m³ C&D material was disposed of to public fill at Tuen Mun. A
 quantity of 1,047.5 m³ and 17,430.0 m³ inert C&D materials were reused in the
 Contract and other Contracts, respectively. Detail information could be referred to
 Section 5.1.1 of this report.
 - About 39.0 m³ general waste was disposed of to NENT Landfill;
 - About 200.0 kg paper/cardboard was recycled in the reporting month;
 - About 75,025.0 kg metal was generated in the reporting month;
 - About 5.0 kg plastic waste was disposed of in the reporting month; and
 - About 1,653.0 kg chemical waste was disposed of in the reporting month.
- In this reporting month, two site inspections and one monthly site audit were carried out by ET and Independent Environmental Checker (IEC) respectively, to ensure proper implementation of environmental mitigation measures specified in the EM&A Manual and compliance with environmental legislation. All observations, which were recorded on the site inspection checklists, were passed to the Contractor together with the ET's recommendations.
- As advised by the Contractor and verified by ET:
 - No non-compliance regarding the site inspection was received in the reporting month;
 - No environmental complaint was received during the reporting month; and
 - No summons and prosecution was received in the reporting month.
- The major construction works for the upcoming three months will be:
 - Site cleaning and tidying at Outfall, I-1, I-2 and I-3;
 - TBM drilling of the tunnel and mucking out of tunnel spoil at Outfall;
 - Construction of spiral ramp structure at Outfall;
 - Construction of box culvert at Outfall;
 - Placing leveling stone and bagged concrete for formation of sea wall at Portion E;
 - Installation of precast seawall blocks and panels for construction of outfall apron at Portion E;
 - Drilling and excavation of vortex shaft at I-3;



- Backfilling for PB wall at I-3;
- Construction of approach channel at I-3;
- Tree establishment works of the transplanted trees at I-3;
- Drilling, excavation and rock splitting of man access shaft and vortex drop shaft at I-2;
- Blasting for man access shaft and vortex drop shaft at I-2;
- Construction of approach channel structure at I-2;
- Construction of drainage works at Portion G at I-2;
- Construction of cascade at I-1;
- Construction of H pile wall along Shing Mun Road at I-1;
- Construction of crane platform for TBM retrieval at I-1; and
- Construction of vehicular access at I-1.



1 INTRODUCTION

- 1.1.1 The Drainage Services Department (DSD) proposed to construct a tunnel with an internal diameter of 6.5 m and a length of 5.13 km, 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 designated project and related activities taking place concurrently. From the EIA, the recommendations for monitoring contained herein are made.
- 1.1.3 The Maeda-CREC-SELI Joint Venture (MCSJV) was awarded by DSD with the Contract Design and Construction of Tsuen Wan Drainage Tunnel.
- 1.1.4 Hyder was commissioned by the MCSJV as the Environmental Team (ET) to implement an EM&A programme in accordance with the EM&A Manual. The proposed tunnel section flows from the junction of Shing Mun Road and Wo Yi Hop Road and discharges to south of Yau Kom Tau underneath Castle Peak Road as shown in Appendix A.
- 1.1.5 The construction works of the Project was commenced in January 2008. This is the fortieth monthly EM&A report summarising the impact monitoring results and audit findings of the EM&A programme in July 2011.



2 PROJECT INFORMATION

2.1 Project Organization and Management Structure

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

2.2 Construction Progress

- 2.2.1 The overall project programme from the detail design to completion of all civil works shall take approximately 54 months. The construction programme is presented in Appendix C.
- 2.2.2 The major construction activities undertaken in the reporting month were:
 - Site cleaning and tidying at Outfall, I-1, I-2 and I-3;
 - Construction of spiral ramp structure at Outfall;
 - Tunnel boring machine (TBM) drilling of the tunnel and mucking out of tunnel spoil at Outfall;
 - Construction of box culvert at Outfall;
 - Place leveling stone for formation of sea wall at Portion E;
 - Installation of precast sea wall blocks at Portion E;
 - Disposal of the excavated soil under the arc bridge to TM38 at Portion E;
 - Drilling, rock splitting and excavation of vortex shaft at I-3;
 - Removal of piling platform and reinstatement of slope at I-3;
 - Drilling, excavation and rock splitting of man access shaft and vortex drop shaft at I-2;
 - Preparation works for blasting at I-2;
 - Excavation and construction of skin wall at Portion G at I-2;
 - Construction of receiving pit for pipe jacking at Portion G at I-2;
 - Construction of cascade at I-1;
 - Construction of H pile wall along Shing Mun Road at I-1;
 - Construction of crane platform for TBM retrieval at I-1; and
 - Excavation of skin wall abutment at I-1.
- 2.2.3 As confirmed by the Contractor, no marine mud dredging works for basin scheme at Portion E was conducted in the reporting month.
- 2.2.4 Underground mining and probe drilling were undertaken during the restricted hours in the reporting period.

2.3 Mitigation Measures

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



2.4 Status of License and Permit

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



3 SUMMARY OF EM&A REQUIREMENT

3.1 Air Quality

Air Quality Parameters

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

Monitoring Methodology

- 3.1.2 One-hour TSP monitoring was carried out under typical weather conditions (with no adverse weather such as typhoon signal or rain storm warning) three times every six days using High Volume Air Samplers (HVASs). Monitoring was conducted in accordance with the standard sampling method as set out in High Volume Method for Total Suspended Particulates, Part 50 Chapter 1 Appendix B, Title 40 of the Code of Federal Regulations of the USEPA.
- 3.1.3 After each sampling, the filter paper loaded with dust was kept in a clean and tightly sealed plastic bag. The filter paper was then re-conditioned in desiccators for 24 hours before obtaining the weight under laboratory conditions.
- 3.1.4 The average concentrations of the TSP were calculated based on the following information obtained from monitoring:
 - Flow rate;
 - Weight of the filter paper before and after sampling; and
 - Sampling period indicated by the elapsed-time meter.
- 3.1.5 All samples were kept in good condition (i.e. stored in sealed plastic bags, with brief description of the monitoring dates and locations) for a period of 6 months before disposal. Sample analysis was carried out by ALS Technichem (HK) Pty Limited (HOKLAS Registration Number 066).

Monitoring Equipment and Calibration

- 3.1.6 High Volume Air Samplers (HVASs) were used for 1-hour TSP monitoring to comply with the USEPA specifications in Appendix B Part 5 Reference Method for the Determination of Suspended Particulate Matter in the Atmosphere (High-Volume Method) of the Code of Federal Regulation dated June 1, 1991.
- 3.1.7 All HVASs were calibrated before commencement of monitoring using standard orifice 5points calibration method with orifice calibrator to determine the actual flow rate of each
 HVAS. This was used for the calculation of the TSP level. Calibration Kit Model TE5025A was used for calibration of the HVAS. Recalibration of the HVAS was carried
 out after motor maintenance, at least once every six months, which was about the
 expected life of carbon brush. The air quality monitoring equipment used during the



reporting month is shown in Table 3-1 below. The calibration certificates are included in Appendix F.

Equipment Type	Model	Serial Number	Calibration Orifice Number	Location
HVAS	BM2000HX	4994	1785	ASR 1
HVAS	BM2000HX	5875	1785	ASR 3
HVAS	TE5005X	1059	1785	ASR 8
HVAS	TE5005X	1713	1785	ASR 9

Table 3-1 Air Quality Monitoring Equipment

Monitoring Location

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

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

Table 3-2 Air Quality Monitoring Locations

Action and Limit Levels

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

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

Table 3-3 Action & Limit Levels for Air Quality



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



EVENIT	ACTION				
EVENT	ET	IEC	SOR	CONTRACTOR	
	 Inform IEC, SOR, Contractor and EPD; Repeat measurement to confirm finding; Increase monitoring frequency to daily; Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and SOR informed of the results. 	Contractor on possible remedial measures; • Advise SOR on the effectiveness of the proposed remedial measures; • Supervise implementation of remedial measures.	measures properly implemented.	days of notification; Implement the agreed proposals; Amend proposal if appropriate.	
	 Notify IEC, SOR, Contractor and EPD; Identify source; Repeat measurement to confirm findings; Increase monitoring frequency to daily; Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; Arrange meeting with IEC and SOR to discuss the remedial actions to be taken; Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and SOR informed of the results; If exceedance stops, cease additional monitoring. 	 Discuss amongst SOR, ET, and Contractor on the potential remedial actions; Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise SOR accordingly; Supervise the implementation of remedial measures. 	the IEC, agree with the Contractor on the remedial measures to be implemented; • Ensure remedial measures properly implemented; • If exceedance	 agreed proposals; Resubmit proposals if problem still not under control; Stop the relevant portion of works as determined by SOR until the exceedance is abated. 	

Table 3-4 Event/Action Plan for Air Quality



3.2 Noise

Noise Parameters

- 3.2.1 The construction noise level was measured in terms of equivalent A-weighted sound pressure level (L_{eq}) measured in decibels (dB(A)). Monitoring of $L_{eq(30 \text{ min})}$ was carried out at the noise monitoring locations on a weekly basis during normal construction working hours (0700-1900 hours from Monday to Saturday except public holidays). For all other time periods (i.e. restricted hours), $L_{eq(5 \text{ min})}$ would be employed for comparison with the Noise Control Ordinance (NCO) criteria if necessary.
- 3.2.2 The two statistical sound levels L_{10} and L_{90} , the level exceeded for 10 and 90 percent of the time respectively, were also recorded during monitoring. Major noise sources observed, both on-site and off-site, were recorded on the field data sheet. All measurements were recorded and presented to the nearest 0.1 dB(A) in this report. Results are presented in Section 4.

Monitoring Methodology

- 3.2.3 Sound level meters, which comply with the International Electrotechnical Commission Publication 651:1979 (Type 1) and 804:1985 (Type 1) specifications as referred to the Technical Memorandum (TM) issued under the Noise Control Ordinance, were used. Noise levels for the A-weighted levels L_{eq(30min)}, L₁₀ and L₉₀ were measured throughout the impact monitoring. An average, by sound power, of six consecutive 5-minute readings was used to provide L_{eq(30 min)} for non-restricted hours (07:00-19:00 hours from Monday to Saturday except public holidays). A facade correction of 3 dB(A) was applied to the measurements that were carried out under free field conditions.
- 3.2.4 During the impact monitoring, parameters such as dates, weather condition, equipment used, measurement results and major noise sources were recorded on the field data record sheet. Monitoring would not be carried out in the presence of fog, rain or strong wind with a steady speed exceeding 5 m/s. In relation to the monitored noise levels, other noise sources such as road traffic might make a significant contribution to the overall noise environment. Therefore, noise monitoring activities would take into account such influencing factors, which were not present during the baseline monitoring period.

Monitoring Equipment and Calibration

- 3.2.5 Rion Precision Sound Level Meters of Type NL-31 and B&K Integrating Sound Level Meter of Type 2238 in compliance with the International Electrotechnical Commission Publication specifications (Paragraph 3.2.3) were used for noise monitoring in this reporting month.
- 3.2.6 Prior to and following each noise measurement, the accuracy of the sound level meters was checked using an acoustic calibrator (B&K 4231) generating a known sound pressure level at a known frequency. Measurements were considered as valid only if the calibration levels from before and after the noise measurement agreed to within 1.0 dB(A). Sound level meters and calibrators were calibrated annually to ensure they performed to the same level of accuracy as stated in the manufacturer's specifications.



The noise monitoring equipment used during the reporting month are shown in Table 3-5 below. The calibration certificates are included in Appendix F.

Equipment Type	Manufacturer	Type Number	Serial Number	Location
Sound Level Meter	Rion	NL-31	00410224	NSR1, NSR3,
Sound Level Meter	B&K	2238	2562782	NSR6, NSR8 and _NSR9
Sound Level Meter	B&K	2238	2448529	_
Sound Level Calibrator	B&K	4231	2699361	_

Table 3-5 Noise Monitoring Equipment

Monitoring Location

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

Monitoring Station ID	Name of Premises	Floor Level
NSR1	Sik Sik Yuen Ho Fung College	G/F
NSR3	Hong Hoi Chee Hong Temple	Podium
NSR6	Squatters	G/F
NSR8	Beach Tower (Long Beach Gardens)	G/F
NSR9	Croonview Terrose (Plack 1)	Podium (up to 6 July 2009)
	Greenview Terrace (Block 1)	Roof* (since 16 July 2009)

^{*} The noise monitoring location of NSR9 had been adjusted to rooftop since 16 July 2009.

Table 3-6 Noise Monitoring Locations

Construction Ground Borne Noise

- 3.2.8 Prediction of construction ground borne noise indicates the criteria will be achieved at most NSRs except exceedances predicted at Hong Hoi Chee Hong Temple (NSR3) and Squatters (NSR6). It is recommended to restrict the TBM operation in non-restricted period (i.e. 0700 1900 hours) at these NSRs. In order to ensure proper control of ground borne noise is executed by the contractor, a monitoring requirement is recommended at the Hong Hoi Chee Hong Temple at Intake 2 and Squatters at Intake 3 for compliance checking. Ground borne noise impact monitoring will be carried out only when operation of TBM is conducted within area under monitoring requirement. Detail of the monitoring area and period can be referred to a stand-alone document of *Ground Borne Noise Monitoring Methodology*.
- 3.2.9 Ground borne noise impact monitoring will be carried out once per week during the monitoring period at NSR 3 and NSR 6, respectively. Parameters such as date, weather condition, equipments used, measurement results and major noise sources will be



recorded on the field data record sheet. Monitoring should be carried out at the ground floor inside the building with all windows, doors and openings being closed. Electrical appliances, such as air conditioners and television, and any other that may emit sound during operation will be switched off or removed to minimise disturbance to the monitoring. If ground borne noise criterion is exceeded, the monitoring shall continue daily until acceptance has been restored against the criterion. Otherwise the monitoring can be discontinued.

- 3.2.10 The ground borne noise monitoring at NSR 6 was conducted from 1 March 2011 (chainage section 3406 m) to 14 April 2011 (chainage section 2991 m), in order to cover the ground borne noise monitoring zone for NSR 6. For NSR 3, the monitoring would be commenced in early August 2011 according to the progress of works. Layout plans showing the chainage and the locations of ground borne noise monitoring stations at NSR 6 and NSR 3 are shown in Appendix G.
- 3.2.11 The criteria including Technical Memorandum for the Assessment of Noise from Places other than Domestic Premises, Public Places or Construction Sites (TM-Places) under the NCO stipulate that noise transmitted primarily through the structural elements of building, or buildings, shall be 10 dB(A) less than the relevant ANLs. Daytime ground borne construction noise criterion of 60 dB(A) therefore applies with reference to Technical Memorandum on Environmental Impact Assessment Process (TM-EIAO) 70 dB(A) criterion for schools and taking account of the minus 10 dB(A) requirement under the NCO TM-Places. Following the same principle for ground borne noise criteria, ground borne construction noise levels inside domestic premises relying on opened window for ventilation will be limited to 65 dB(A), with reference to the daytime airborne noise criterion of 75 dB(A) in accordance with the TM-EIAO.

Action and Limit Levels

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

Time Period	Action	Limit
0700 – 1900 hours on normal weekdays	When one documented complaint is received	75 dB(A)*

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

Table 3-7 Action & Limit Levels for Air Borne Noise

Event	Action			
Event	ET Leader	IEC	SOR	Contractor
Action Level	Notify IEC and the Contractor.Carry out	 Review with analysed results submitted by ET. 	Confirm receipt of notification of exceedance in writing	Submit noise mitigation proposals to IEC.
	investigation. • Report the results of	 Review the proposed remedial measures by 	Notify the Contractor.Require the Contractor	•



Frank	Action			
Event	ET Leader	IEC	SOR	Contractor
	 investigation to IEC and the Contractor. Discuss with the Contractor and formulate remedial measures. Increase monitoring frequency to check mitigation measures. 	the Contractor and advise SOR accordingly. • Supervise the implement of remedial measures.	to propose remedial measures for the analysed noise problem. • Ensure remedial measures are properly implemented.	y
Limit Level	 Identify the source. Notify IEC, SOR, EPD and the Contractor. Repeat measurement to confirm findings. Increase monitoring frequency. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented. Inform IEC, SOR, and EPD the causes and actions taken for the exceedances. Assess effectiveness of the Contractor's remedial actions and keep IEC, EPD and SOR informed of the results. If exceedance stops, cease additional monitoring. 	 Discuss amongst SOR, ET Leader and the Contractor on the potential remedial actions. Review the Contractor's remedial actions whenever necessary to assure their effectiveness and advise SOR accordingly. Supervise the implementation of remedial measures. 	 Confirm receipt of notification of exceedance in writing Notify the Contractor. Require the Contractor to propose remedial measures for the analysed noise problem. Ensure remedial measures are properly implemented. If exceedance continues, consider what activity of the work is responsible and instruct the Contractor to stop that activity of work until the exceedance is abated. 	 Submit proposals for remedial actions to IEC within 3 working days of notification. Implement the agreed proposals. Resubmit proposals if problem still not under control. Stop the relevant activity of works as determined by the SOR until the exceedance is abated.

Table 3-8 Event/Action Plan for Airborne Noise

3.2.13 The Action and Limit levels for construction ground borne noise are defined in Table 3-9. If non-compliance of the criteria occurs, actions in accordance with the Action Plan in Table 3-10 would be carried out.



Monitoring Station ID		NSR 3	NSR 6	
Name of Premises		Hong Hoi Chee	Squatters	
		Hong Temple		
Action Level		When one documented compl	laint is received	
Limit Level	Working days during daytime (0700-1900 hours) (L _{eq(30min)})	65 dB(A)	65 dB(A)	

		Limit Levels for Ground E	Borne Noise	
Event	Action			
Event	ET Leader	IEC	SOR	Contractor
Action Level	 Notify IEC and the Contractor. Carry out investigation. Report the results of investigation to IEC and the Contractor. Discuss with the Contractor and formulate remedial measures. Increase monitoring frequency to daily until exceedance is abated 	the Contractor and advise SOR accordingly. • Supervise the implementation of remedial measures.	notification of exceedance in writing.	mitigation proposals.
Limit Level	 Identify the source. Notify IEC, SOR, EPD and the Contractor. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented. Inform IEC, SOR, and EPD the causes & actions taken for the exceedances. Assess effectiveness of the Contractor's remedial actions and keep IEC, EPD and SOR informed of the results. Increase monitoring frequency to daily until 	the Contractor on the potential remedial actions. Review the Contractor's remedial actions whenever necessary to assure their effectiveness and advise SOR accordingly. Supervise the implementation of remedial measures.	Confirm receipt of notification of exceedance in writing. Notify the Contractor. Require the Contractor to propose remedial measures for the analysed noise problem. Ensure remedial measures are properly implemented. If exceedance continues, consider what activity of the work is responsible and instruct the Contractor to stop that activity of work	 Take immediate action to avoid further exceedance. Submit proposals for remedial actions to IEC within 3 working days of notification. Implement the agreed proposals. Resubmit proposals if problem still not under control. Stop the relevant activity of works as determined by the SOR until the exceedance is abated.



Event	Action				
	ET Leader	IEC	SOR	Contractor	
exceedance is abated.		until the exce is abated.	eedance		

Table 3-10 Event/Action Plan for Ground Borne Noise

3.3 Water Quality

3.3.1 The water quality impact would be insignificant with the protection measures recommended in Section 5.6 of the EIA report. However, in view of the sensitive nature of the rivers/streams and bathing beaches near the Project site, it is suggested that a programme of monitoring should be established to confirm the effectiveness of these mitigation measures in protecting these water bodies.

Water Quality Parameters

- 3.3.2 Monitoring for Dissolved Oxygen (DO), temperature, turbidity, pH and suspended solids (SS) should be undertaken at designated monitoring locations. It should be noted that DO, temperature, turbidity and pH should be measured in-situ whereas SS is assayed in a laboratory.
- 3.3.3 In association with the water quality parameters, other relevant data should also be measured, such as monitoring location/position, time, weather conditions, and any special phenomena and description of work underway at the construction site etc.

Monitoring Methodology

- 3.3.4 In accordance with the EM&A Manual, the water quality monitoring for all specified parameters were measured at all designated monitoring locations including control points at an interval of 3 days per week. DO, temperature, turbidity, pH and SS measurements were undertaken at designated monitoring locations.
- 3.3.5 It should be noted that water samples for all monitoring parameters were collected, stored, preserved and analysed according to Standard Methods, APHA 17 ed. and/or methods agreed by the Director of Environmental Protection.
- 3.3.6 Each sample was analysed in accordance with the APHA Standard Methods for the Examination of Water and Wastewater, 18th edition, or an equivalent method approved by the EPD. In any circumstance, the sample testing should comply with a comprehensive quality assurance and quality control programme. The laboratory should be prepared to demonstrate the quality programmes to the EPD when requested.

Monitoring Equipment and Calibration

3.3.7 All the water samples collected were transferred to clearly labelled and pre-cleaned sample containers with necessary preservatives immediately after collection. The sample containers were provided by a HOKLAS accredited laboratory. About 1 L of

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samples was collected for all laboratory analysis. Following sampling, samples should be stored in a cool box at temperature between 0 and 4 °C, and transported to the laboratory within the sample retention time as advised by the laboratory under proper chain-of-custody system. The water quality monitoring equipment used during the reporting month is shown in Table 3-11 below.

Equipment Type	Manufacturer	Model	Quantity
DO / Temperature Meter	YSI	55/12	1
pH Meter / Temperature Meter	DKK-TOA	HM20P	1
pH Meter	Hanna	HI-8014	1
Turbidimeter	EUTECH	TN-100	1

Table 3-11 Water Quality Monitoring Equipment

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

Monitoring Location

3.3.9 Five designated impact monitoring locations (three river stations and two marine stations) and five control locations (three river control stations and two marine control stations) were identified in the contract specific EM&A Manual for river and marine water quality monitoring. These monitoring stations are listed in Table 3-12 below and shown in Appendix G.



Monitoring Station ID	Name of Premises
River	
<u>l-1</u>	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
Marine	
O-1 (FT) and (ET)	Outfall O-1 during Flood Tide and Ebb Tide
O-1-C (FT)	Control of Outfall O-1 during Flood Tide
O-1-C (ET)	Control of Outfall O-1 during Ebb Tide

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

Table 3-12 Water Quality Monitoring Locations

3.3.10 Note that there were 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 was sampled during each sampling. Control station to be sampled was determined based on the tidal information provided by the Hong Kong Observatory.

Action and Limit Levels

3.3.11 The Action and Limit levels for water quality monitoring parameters are defined in Table 3-13. In case of any exceedance, appropriate actions would be undertaken in accordance with the Event and Action Plan as described in Table 3-14.

Parameters	Action	Limit
DO in mg/L	Surface and Middle	Surface and Middle
(Surface, Middle and	5%-ile of baseline data for surface	4 mg/L except 5 mg/L for FCZ or
Bottom)	and middle layer.	1%-ile of baseline data for surface and middle layer
	<u>Bottom</u>	Bottom
	5%-ile of baseline data for bottom layer.	2 mg/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



Parameters	Action	Limit
		suspended solids levels for concerned sea water intakes)
Turbidity (Tby) in NT (depth-averaged)	U 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 limit.
- 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 necessary.

Table 3-13 Action/Limit Levels for Water Quality



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



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



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

Table 3-14 Event/Action Plan for Water Quality



4 MONITORING RESULT

4.1 Air Quality

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

1-hour TSP Monitoring

4.1.2 Results of 1-hour TSP level are shown in Table 4-1. All measurements were recorded and presented to the nearest 0.1 μ g/m³ in this report. Detailed results including weather conditions and graphical presentations are presented in Appendix I.

Station	Monitoring Date	Monitoring Result (μg/m³)	Action/Limit Levels (μg/m³)
		83.6	_
	06-Jul-11	108.6	
		76.1	
		140.0	_
	12-Jul-11	137.5	_
		95.0	
		126.3	_
ASR 1	18-Jul-11	87.5	307/500
		143.8	
		127.5	
	22-Jul-11	68.8	327/500
		112.5	
		162.5	
	28-Jul-11	146.3	
		121.3	
		113.0	
	06-Jul-11	113.0	
		130.6	
		124.4	
	12-Jul-11	110.4	
		107.9	
		119.3	
ASR 3	18-Jul-11	80.0	
		154.9	
		95.2	
	22-Jul-11	147.2	
		100.3	
		116.8	
	28-Jul-11	115.5	
		77.4	



Station	Monitoring Date	Monitoring Result (μg/m³)	Action/Limit Levels (μg/m³)
		137.6	_
	06-Jul-11	131.2	
		101.3	
		117.5	
	12-Jul-11	117.5	
		175.0	
		94.0	
ASR 8	18-Jul-11	53.5	337/500
		138.4	_
		96.6	_
	22-Jul-11	57.4	
		69.2	_
		138.4	_
	28-Jul-11	146.2	_
		75.7	
	06-Jul-11	122.5	329/500
		158.5	
		155.8	
	12-Jul-11	141.2	
		200.4	
		187.0	
		165.4	
ASR 9	18-Jul-11	157.4	
		107.6	
		199.1	
	22-Jul-11	127.8	
		68.6	
		146.6	
	28-Jul-11	135.9	_
		91.5	

Note: Italic indicates the occurrence of exceedance of Action level

Bold indicates the occurrence of exceedance of Limit Level

Table 4-1 Air Quality Monitoring Results

4.1.3 No project related air quality exceedance was recorded in the reporting month.



4.2 Noise

Air Borne Noise Monitoring

4.2.1 The air borne noise monitoring schedule of the reporting period is given in Appendix H. In response to the complaint on construction noise received on 30 June 2011, additional noise measurements were conducted at NSR 6 on 15, 20 and 30 July 2011. Results of measured noise level, in terms of $L_{eq~(30min)}$, during the construction are shown in Table 4-2. All measurements including L_{10} and L_{90} are recorded and presented to the nearest 0.1 dB(A) in this report. Detailed results including weather conditions and graphical presentation are presented in Appendix I.

Station	Monitoring Date	L _{eq (30 min)} dB(A)	Limit Levels dB(A)
	06-Jul-11	63.9	_
	12-Jul-11	64.4	_ 70
	18-Jul-11	65.1	_
	28-Jul-11	64.3	
_	06-Jul-11	63.8	
NSR 3	12-Jul-11	68.1	_
_	18-Jul-11	63.7	_
	28-Jul-11	63.8	_
_	06-Jul-11	60.0	_
	14-Jul-11	67.0	_
	15-Jul-11*	68.9	_
NSR 6	18-Jul-11	65.7	_
	20-Jul-11*	68.1	_
	28-Jul-11	64.9	75
	30-Jul-11*	63.6	
_	06-Jul-11	69.6	_
NSR 8	12-Jul-11	70.3	_
	18-Jul-11	68.1	
	28-Jul-11	68.6	_
	06-Jul-11	67.6	_
NSR 9	12-Jul-11	64.8	_
	18-Jul-11	67.3	_
	28-Jul-11	66.4	

Note: * means additional noise monitoring

Table 4-2 Air Borne Noise Monitoring Results

4.2.2 No exceedance of noise level was recorded in the reporting month.



4.3 Water Quality Monitoring

4.3.1 The water quality monitoring schedule of the reporting period is given in Appendix H. Due to the adverse weather condition (tropical cyclone warning No. 3 was in force), marine water quality monitoring on 29 July 2011 was canalled for safety purpose. Summaries of exceedances for water quality monitoring are provided in Table 4-3 to Table 4-7.

Parameter	Action Level Exceedance	Limit Level Exceedance
DO	Nil	Nil
Turbidity	Nil	One record on 20 Jul 2011
SS	Nil	Two records on 18 and 20 July 2011
Total	0	3

Table 4-3 Summary of Exceedances for I-1

Parameter	Action Level Exceedance	Limit Level Exceedance
DO	Nil	Nil
Turbidity	Nil	One record on 20 Jul 2011
SS	One record on 29 Jul 2011	One record on 20 Jul 2011
Total	1	2

Table 4-4 Summary of Exceedances for I-2

Parameter	Action Level Exceedance	Limit Level Exceedance
DO	Nil	Nil
Turbidity	Nil	Five records on 2, 11, 15, 20 and 22 Jul 2011
SS	Nil	Three records on 11, 15 and 29 Jul 2011
Total	0	8

Table 4-5 Summary of Exceedances for I-3

Parameter	Action Level Exceedance	Limit Level Exceedance
DO	Nil	Six records on 2, 8 and 15 Jul 2011
Turbidity	Nil	Nil
SS	Nil	Three records on 8, 15 and 25 Jul 2011
Total	0	9

Table 4-6 Summary of Exceedances for O-1(FT)



Parameter	Action Level Exceedance	Limit Level Exceedance
DO	Three records on 8, 15 and 25 Jul 2011	Six records on 2, 8, 15 , 20 and 25 Jul 2011
Turbidity	Nil	Nil
SS	Nil	Nil
Total	3	6

Table 4-7 Summary of Exceedances for O-1(ET)

4.3.2 Results of measured water quality parameters during the reporting month are shown in Table 4-8. Detailed results including weather conditions and graphical presentations are enclosed in Appendix I.

River Water Quality Monitoring

4.3.3 Fourteen non-project related exceedances were recorded for the river water quality monitoring within the reporting month.

Exceedances of Turbidity Level

Limit Level at I-1 on 20 July 2011

4.3.4 One exceedance of turbidity limit level was recorded at I-1 on 20 July 2011. The measured turbidity level (16.42 NTU) was higher than the baseline limit level, but lower than the turbidity level of the control station (I-1-C)(18.06 NTU). Only rebar fixing for crest platform, fixing concrete block at stage 3, and installation of propping inside cascade were undertaken during the monitoring day. No direct disturbance was observed from the site. About 15.2 mm rainfall was recorded by the Hong Kong Observatory on the monitoring day. Therefore, the exceedance was considered to be contributed by high turbidity level at upstream location and rainfall. Since the exceedance was non-project related, no further action was required.

Limit Level at I-2 on 20 July 2011

4.3.5 One exceedance of turbidity limit level was recorded at I-2 on 20 July 2011. The measured turbidity level (8.56 NTU) was higher than the baseline limit level, but lower than the turbidity level of the control station (I-2-C)(9.79 NTU). Excavation (drilling holes) at vortex drop shaft, excavation (drilling holes) at man access shaft, excavation for drainage pipe next to catchpit WS1, closed formwork for skin wall construction, skin wall construction (break grouting of H-pile), and excavation for 1500 stepped channel were undertaken during the monitoring day. No direct disturbance was observed from the site. About 15.2 mm rainfall was recorded by the Hong Kong Observatory on the monitoring day. Therefore, the exceedance was considered to be contributed by high turbidity level at upstream location and rainfall. Since the exceedance was non-project related, no further action was required.

Limit Level at I-3 on 2, 11, 15, 20 and 22 July 2011

4.3.6 Five exceedances of turbidity limit level were recorded at I-3 on 2, 11, 15, 20 and 22 July 2011. For 2, 11, 15 and 20 July 2011, the measured turbidity levels (8.90, 22.85, 16.44



and 6.94 NTU, respectively) were higher than the baseline limit level, but lower than the turbidity level of the control station (I-3-C)(9.11, 23.35, 16.55 and 7.06 NTU, respectively). For 22 July 2011, the measured turbidity level (6.48 NTU) was higher than the baseline limit level, but lower than 120% of the turbidity level of the control station (I-3-C)(6.44 NTU). Details of the construction activities conducted on each monitoring days are given in Appendix J. No direct disturbance was observed from the site. The exceedances were considered to be contributed by either high turbidity level at upstream location or rainfall. Since the exceedance was non-project related, no further action was required.

Exceedances of Suspended Solids Level

Action Level at I-2 on 29 July 2011

4.3.7 One exceedance of SS action level was recorded at I-2 on 29 July 2011. The measured SS level (8.05 mg/L) was higher than the baseline action level, but lower than the SS level of the control station (I-2-C) (8.85 mg/L). General site cleaning, housekeeping and temporary traffic arrangement (TTA); excavation and mucking out from de-aeration chamber; preparation work for blasting; cleaning grouting and excavation at Portion G; demobilization at Portion G jacking pit; and formwork for skin wall construction were undertaken during the monitoring day. No direct disturbance was observed from the site. Therefore, the exceedance was considered to be contributed by high SS level at upstream location. Since the exceedance was non-project related, no further action was required.

Limit Level at I-1 on 18 and 20 July 2011

4.3.8 Two exceedances of SS limit levels were recorded at I-1 on 18 and 20 July 2011. For 18 July 2011, the measured SS level (3.10 mg/L) was well below the baseline action/limit level, but higher than 130% of the SS level of the control station (I-1-C)(2.15 mg/L). General site cleaning, drilling hole and installation of rebar on cascade slope, making good formation at spiral ramp central void, bending and installation of rebar at vehicular access and geotechnical instrumentation monitoring were undertaken during the monitoring day. No direct disturbance was observed from the site. Therefore, the exceedance was considered to be contributed by low SS level at upstream location. Since the exceedance was non-project related, no further action was required. For 20 July 2011, the measured SS level (13.90 mg/L) was higher than the baseline limit level and the SS level of the control station (I-1-C)(8.35 mg/L). Only rebar fixing for crest platform, fixing concrete block at stage 3, and installation of propping inside cascade were undertaken during the monitoring day. The Contractor had provided wastewater treatment plant for treating site effluent prior to discharge and erected the sealed concrete block wall to separate the existing stream and site works area. No wastewater directly discharged from the site was observed. Although the SS level at I-1 was about 66% higher than that at I-1-C, no direct sources of impact from the site were identified. As such, no further mitigation measures or actions were recommended.

Limit Level at I-2 on 20 July 2011

4.3.9 One exceedance of SS limit level was recorded at I-2 on 20 July 2011. The measured SS level (5.50 mg/L) was lower than the baseline action/limit level, but slightly higher than 130% of the SS level of the control station (I-2-C) (4.10 mg/L). Excavation (drilling holes) at vortex drop shaft, excavation (drilling holes) at man access shaft, excavation for



drainage pipe next to catchpit WS1, closed formwork for skin wall construction, skin wall construction (break grouting of H-pile), and excavation for 1500 stepped channel were undertaken during the monitoring day. No direct disturbance was observed from the site. About 15.2 mm rainfall was recorded by the Hong Kong Observatory on the monitoring day. Therefore, the exceedance was considered to be contributed by natural variation and rainfall. Since the exceedance was non-project related, no further action was required.

Limit Level at I-3 on 11, 15 and 29 July 2011

4.3.10 Three exceedances of SS limit levels were recorded at I-3 on 11, 15 and 29 July 2011. For 11 and 15 July 2011, the measured SS levels (22.35 and 14.45 mg/L, respectively) were higher than the baseline limit level, but lower than the SS levels of the control station (I-3-C) (24.70 and 15.65 mg/L, respectively). For 29 July 2011, the measured SS level (2.70 mg/L) was well below the baseline action/limit level, but higher than 130% of the SS level of the control station (I-3-C) (<2.00 mg/L). Details of the construction activities conducted on each monitoring days are given in Appendix J. No direct disturbance was observed from the site. The exceedances on 11 and 15 July 2011 were considered to be contributed by high SS level at upstream location and exceedance on 29 July 2011 was considered contributed by natural variation. Since the exceedances were non-project related, no further action was required.

Marine Water Quality Monitoring

4.3.11 Eighteen exceedances were recorded for the marine water quality monitoring within the reporting month.

Exceedances of Dissolved Oxygen Level

Action Level at O-1(ET) (Marine Surface) on 8 and 15 July 2011

4.3.12 Two exceedances of DO action levels were recorded at O-1(ET) (marine surface) on 8 and 15 July 2011. The measured DO levels (6.96 and 6.99 mg/L, respectively) were below the baseline action level, but higher than the DO levels of the corresponding control station (6.94 and 6.91 mg/L, respectively). Details of the construction activities conducted on each monitoring days are given in Appendix J. No direct disturbance was observed from the site. Therefore, the exceedances were considered to be contributed by natural variation and no further action was required.

Action Level at O-1(ET) (Marine Mid-depth) on 25 July 2011

4.3.13 One exceedance of DO action level was recorded at O-1(ET) (marine mid-depth) on 25 July 2011. The measured DO level (6.97 mg/L) at the monitoring station was below the baseline action level and lower than the DO level of the corresponding control station (about 1.4%) (7.07 mg/L). Only placing the fill materials for seawall formation and tamping was undertaken at the Outfall basin (Portion E) on the monitoring day. No other marine works was conducted. No direct disturbance from the site was observed during monitoring. Therefore, the exceedance was considered to be contributed by natural variation and no further action was required.



Limit Level at O-1(FT) (Marine Surface) on 2 and 15 July 2011

Two exceedances of DO limit levels were recorded at O-1(FT) (marine surface) on 2 and 15 July 2011. For 2 July 2011, the measured DO level (6.79 mg/L) was below the baseline limit level, but higher than the DO level of the corresponding control station (6.73 mg/L). For 15 July 2011, the measured DO level (6.59 mg/L) was below the baseline limit level and lower than the DO level of the corresponding control station (about 1.5%) (6.69 mg/L). Details of the construction activities conducted on each monitoring days are given in Appendix J. No direct disturbance was observed from the site. Therefore, the exceedances were considered to be contributed by natural variation and no further action was required.

Limit Level at O-1(FT) (Marine Mid-depth) on 15 July 2011 and at O-1(FT) (Marine Bottom) on 2, 8 and 15 July 2011

4.3.15 Four exceedances of DO limit levels were recorded at O-1(FT) (marine mid-depth) on 15 July 2011 and at O-1(FT)(marine bottom) on 2, 8 and 15 July 2011. The measured DO levels (6.50, 6.87, 6.95 and 6.63 mg/L, respectively) at O-1(FT) (marine mid-depth) on 15 July 2011 and at O-1(FT) (marine bottom) on 2, 8 and 15 July 2011 were lower than the baseline limit level and lower than the DO levels of the corresponding control station (6.64, 6.91, 7.01 and 6.76 mg/L, respectively). Details of the construction activities conducted on each monitoring days are given in Appendix J. No direct disturbance was observed from the site. Therefore, the exceedances were considered to be contributed by natural variation and no further action was required.

Limit Level at O-1(ET) (Marine Surface) on 2, 20 and 25 July 2011

Three exceedances of DO limit levels were recorded at O-1(FT) (marine surface) on 2, 20 and 25 July 2011. For 2 July 2011, the measured DO level (6.84 mg/L) was lower than the baseline limit level, but higher than the DO level of the corresponding control station (6.80 mg/L). For 20 and 25 July 2011, the measured DO levels (6.89 and 6.93 mg/L, respectively) were lower than the baseline limit level and slightly lower than the DO levels of the corresponding control station (7.02 and 6.99 mg/L, respectively). Details of the construction activities conducted on each monitoring days are given in Appendix J. Since no direct disturbance was observed from the site during monitoring, the exceedances were considered non-project related. Therefore, no further action was required.

Limit Level at O-1(ET) (Marine Mid-depth) on 2, 8 and 15 July 2011

4.3.17 Three exceedances of DO limit levels were recorded at O-1(ET) (marine mid-depth) on 2, 8 and 15 July 2011. For 2 July 2011, the measured DO level (6.91 mg/L) was lower than the baseline limit level, but higher than the DO level of the corresponding control station (6.85 mg/L). For 8 and 15 July 2011, the measured DO levels (6.85 and 6.93 mg/L, respectively) were lower than the baseline limit level and slightly lower than the DO levels of the corresponding control station (6.92 and 6.98 mg/L, respectively). Details of the construction activities conducted on each monitoring days are given in Appendix J. Since no direct disturbance was observed from the site during monitoring, the exceedances were considered non-project related. Therefore, no further action was required.



Exceedances of Suspended Solids Level

Limit Level at O-1(FT) on 8, 15 and 25 July 2011

4.3.18 Three exceedances of SS limit levels were recorded at O-1(FT) on 8, 15 and 25 July 2011. The measured SS levels (5.42, 7.50 and 7.23 mg/L, respectively) were well below the baseline action/limit level, but slightly higher than 130% of the SS level of the corresponding control station (3.52, 5.72 and 5.45 mg/L, respectively) Details of the construction activities conducted on each monitoring days are given in Appendix J. Since no direct disturbance was observed from the site during monitoring, the exceedances were considered non-project related. Therefore, no further action was required.



Station	Date	Temperature	DO (mg/L)	Action/Limit Level for DO (mg/L)	pH	Turbidity (NT	J) Action/Limit Level for Turbidity (NTU	SS (mg/L)	Action/Limit Level for SS (mg/L)
I-1	02-Jul-11	28.40	7.36	3.42 / 3.34	8.00	2.52	9.75 / 12.47	<2.00	8.85 / 10.17
	04-Jul-11	31.10	6.99	_	8.21	2.19	_	<2.00	
	06-Jul-11	30.20	7.30	_	7.69	2.29	_	<2.00	_
	08-Jul-11	31.95	6.90	_	8.30	2.49	_	<2.00	_
	11-Jul-11	27.60	7.69		7.95	2.74	_	2.00	
	13-Jul-11	28.65	7.41	_	8.15	2.49	_	<2.00	_
	15-Jul-11	28.65	7.29	_	8.36	4.76	_	2.35	_
	18-Jul-11	26.85	7.05	_	8.18	2.95	_	3.10	_
	20-Jul-11	27.00	7.47	_	8.34	16.42	_	13.90	_
	22-Jul-11	30.05	7.04	_	8.20	3.65	_	2.00	_
	25-Jul-11	32.30	6.94	_	8.33	2.03	_	<2.00	_
	27-Jul-11	31.00	7.12		8.29	3.04	_	<2.00	_
	29-Jul-11	28.45	7.30		7.96	5.31	_	2.20	



Station	Date	Temperature	DO (mg/L)	Action/Limit Level for DO (mg/L)	рН	Turbidity (N7	FU)Action/Limit Level for Turbidity (NTI		Action/Limit Level for SS (mg/L)
I-1-C	02-Jul-11	28.30	7.32	-/-	8.01	2.58	-/-	<2.00	-/-
	04-Jul-11	31.10	7.05	_	8.20	2.26		<2.00	_
	06-Jul-11	30.30	7.39	_	7.69	2.39		<2.00	_
	08-Jul-11	31.85	6.83	_	8.30	2.52		2.00	_
	11-Jul-11	27.50	7.56	_	7.94	2.82		2.80	_
	13-Jul-11	28.70	7.33	_	8.15	2.60		<2.00	_
	15-Jul-11	28.50	7.37	_	8.37	4.88		2.50	_
	18-Jul-11	26.80	7.13	_	8.17	3.00	_	2.15	_
	20-Jul-11	26.80	7.64	_	8.34	18.06		8.35	_
	22-Jul-11	30.00	7.16	_	8.20	3.69		<2.00	_
	25-Jul-11	32.30	6.86	_	8.33	2.09		<2.00	_
	27-Jul-11	31.00	7.06		8.30	3.11		<2.00	_
	29-Jul-11	28.40	7.23		7.97	5.60		<2.00	_



Station	Date	Temperature	DO (mg/L)	Action/Limit Level for DO (mg/L)	рН	Turbidity (NT	U)Action/Limit Level for Turbidity (NTI		Action/Limit Level for SS (mg/L)
I-2	02-Jul-11	28.05	7.30	3.66 / 3.63	8.07	2.04	6.63 / 6.99	3.50	7.68 / 8.34
	04-Jul-11	31.05	6.91		8.32	1.63		<2.00	
	06-Jul-11	30.75	7.11	_	7.74	1.92		<2.00	_
	08-Jul-11	31.90	6.98	_	8.40	4.96	_	2.70	_
	11-Jul-11	27.40	7.50	_	8.00	1.89	_	2.40	_
	13-Jul-11	28.60	7.38	_	8.20	2.60	_	2.75	_
	15-Jul-11	28.50	7.08	_	8.34	4.21	 	<2.00	_
	18-Jul-11	27.00	7.15	_	8.24	2.80		2.15	
	20-Jul-11	27.00	7.28	_	8.25	8.56		5.50	
	22-Jul-11	30.05	7.31	_	7.98	4.57		2.00	_
	25-Jul-11	32.10	6.96		8.08	2.45		<2.00	
	27-Jul-11	31.05	7.06		8.05	2.07		2.05	
	29-Jul-11	28.40	7.22		7.96	2.76		8.05	



Station	Date	Temperature	DO (mg/L)	Action/Limit Level for DO (mg/L)	pН	Turbidity (N	TU)Action/Limit Level for Turbidity (NTI		Action/Limit Level for SS (mg/L)
I-2-C	02-Jul-11	28.10	7.24	-/-	8.07	2.01	-/-	3.85	-/-
	04-Jul-11	31.00	6.83		8.33	1.63		<2.00	
	06-Jul-11	30.80	7.22		7.74	1.92		<2.00	_
	08-Jul-11	31.70	7.07		8.40	4.94		2.55	_
	11-Jul-11	27.30	7.41	<u> </u>	8.00	1.91	_	2.10	_
	13-Jul-11	28.60	7.25	<u> </u>	8.20	2.64	_	3.00	_
	15-Jul-11	28.40	7.01	<u> </u>	8.33	4.26	_	<2.00	_
	18-Jul-11	27.00	7.21		8.24	2.80		<2.00	_
	20-Jul-11	26.90	7.21		8.24	9.79		4.10	_
	22-Jul-11	30.10	7.29		7.98	4.70		2.20	_
	25-Jul-11	32.00	6.89		8.06	2.56	_	<2.00	_
	27-Jul-11	31.15	7.16	<u> </u>	8.05	2.13		2.00	_
	29-Jul-11	28.40	7.24		7.96	2.87		8.85	



Station	Date	Temperature	DO (mg/L)	Action/Limit Level for DO (mg/L)	рН	Turbidity (NT	U)Action/Limit Level for Turbidity (NTU		Action/Limit Level for SS (mg/L)
I-3	02-Jul-11	28.55	7.44	3.65 / 3.51	8.04	8.90	3.99 / 4.18	5.45	6.13 / 7.23
	04-Jul-11	31.20	6.83	<u> </u>	8.20	1.94		<2.00	_
	06-Jul-11	30.40	7.22	<u> </u>	7.82	1.74		<2.00	_
	08-Jul-11	32.00	7.04	<u> </u>	8.35	2.90		<2.00	_
	11-Jul-11	27.40	6.99	<u> </u>	7.92	22.85		22.35	_
	13-Jul-11	28.70	7.44	<u> </u>	8.03	1.46		<2.00	_
	15-Jul-11	28.80	7.37	<u> </u>	8.24	16.44		14.45	_
	18-Jul-11	27.20	6.92	<u> </u>	8.25	2.01		<2.00	_
	20-Jul-11	27.10	7.35	<u> </u>	8.25	6.94		4.35	_
	22-Jul-11	29.85	7.11	<u> </u>	7.90	6.48		<2.00	_
	25-Jul-11	32.60	6.86		8.19	1.85	_	<2.00	_
	27-Jul-11	31.30	7.10		8.00	1.76	_	<2.00	_
	29-Jul-11	28.45	7.41		8.08	1.85	_	2.70	



Station	Date	Temperature	DO (mg/L)	Action/Limit Level for DO (mg/L)	рН		Turbidity (NT	J) Action/Limit Level for Turbidity (NTU)	SS (mg/L)	Action/Limit Level for SS (mg/L)
I-3-C	02-Jul-11	28.60	7.44	-/-	8.0	4	9.11	-/-	5.50	-/-
	04-Jul-11	31.30	6.76		8.2	0	1.99	_	<2.00	
	06-Jul-11	30.35	7.14	<u> </u>	7.8	1	1.70	_	<2.00	_
	08-Jul-11	32.00	7.15	<u> </u>	8.3	3	2.99	_	<2.00	_
	11-Jul-11	27.30	6.84		7.9	2	23.35	_	24.70	_
	13-Jul-11	28.70	7.43		8.0	3	1.46	_	2.05	_
	15-Jul-11	28.80	7.31		8.2	4	16.55	_	15.65	_
	18-Jul-11	27.15	7.00		8.2	5	2.01	_	<2.00	_
	20-Jul-11	27.15	7.20		8.2	5	7.06	_	4.40	_
	22-Jul-11	29.80	7.02		7.9	0	6.44	_	<2.00	_
	25-Jul-11	32.70	6.76		8.1	8	1.89		<2.00	
	27-Jul-11	31.30	7.03		7.9	9	1.83	_	<2.00	
	29-Jul-11	28.50	7.32		8.0	7	1.99		<2.00	



Station	Date	Depth	Temperature (°C) (depth-averaged)	DO (mg/L)	Action / Limit Level for DO (mg/L)	pH (depth- averaged)	Turbidity (NTU) (depth- averaged)	Action / Limit Level for Turbidity (NTU)	SS (mg/L) (depth- averaged)	Action / Limit Level for SS (mg/L)
O-1(FT)	02-Jul-11	Surface		6.79	6 04 / 6 01			10.35 / 13.15		14.10 / 18.08
		Middle	30.88	6.89	6.84 / 6.81	7.96	3.00		2.62	
		Bottom	_	6.87	6.99 / 6.96	_				
•	04-Jul-11	Surface		7.09	6.04 / 6.01			_		_
		Middle	30.18	7.14	6.84 / 6.81	7.90	3.19		2.68	
		Bottom	_	7.21	6.99 / 6.96	_				
	06-Jul-11	Surface		7.13	0.04 / 0.04					_
	-	Middle	31.05	7.22	6.84 / 6.81	7.91	4.54	3.97		
		Bottom		7.18	6.99 / 6.96					
	08-Jul-11	Surface		6.84						_
		Middle	31.63	6.91	6.84 / 6.81	8.00	4.25		5.42	
		Bottom	_	6.95	6.99 / 6.96	_				
	11-Jul-11	Surface		7.09	0.04 / 0.04	_		_		_
		Middle	30.33	7.18	6.84 / 6.81	8.03	3.07		4.38	
		Bottom	_	7.23	6.99 / 6.96	_				
	13-Jul-11	Surface		7.33	0.04 / 0.04					_
		Middle	28.37	7.42	6.84 / 6.81	7.99	7.99 3.43		4.35	
		Bottom	_	7.45	6.99 / 6.96	_				



Station	Date	Depth	Temperature (°C) (depthaveraged)	DO (mg/L)	Action / Limit Level for DO (mg/L)	pH (depth- averaged)	Turbidity (NTU) (depth averaged)	Action / Limit Level for Turbidity (NTU)	SS (mg/L) (depth- averaged)	Action / Limit Level for SS (mg/L)
O-1(FT)	15-Jul-11	Surface		6.59	6.04 / 6.01			10.35 / 13.15		14.10 / 18.08
		Middle	30.02	6.50	6.84 / 6.81	7.87	4.78		7.50	
		Bottom	_	6.63	6.99 / 6.96					
•	18-Jul-11	Surface	27.30	7.10	6.84 / 6.81					_
		Middle		7.04	6.84 / 6.81	7.91	2.70		2.65	
		Bottom	_	7.17	6.99 / 6.96	_				
	20-Jul-11	Surface	29.23	6.90	6.04 / 6.01					_
		Middle		7.17	6.84 / 6.81	7.90	2.33	7.43	7.43	
	-	Bottom		7.28	6.99 / 6.96					
	22-Jul-11	Surface		7.30	0.04/0.04					_
		Middle	30.28	7.22	6.84 / 6.81	7.89	1.71		2.48	
		Bottom		7.29	6.99 / 6.96	_				
	25-Jul-11	Surface		7.07	6.04 / 6.01					_
		Middle	33.00	7.12	6.84 / 6.81	8.40	4.69		7.23	
		Bottom		7.01	6.99 / 6.96	_				
	27-Jul-11	Surface		7.06	6 94 / 6 91					
		Middle	30.50	7.12	6.84 / 6.81	1 8.25	8.25 2.62		4.72	
		Bottom	_	7.22	6.99 / 6.96	_				



Station	Date	Depth	Temperature (°C) (depth-averaged)	DO (mg/L)	Action / Limit Level for DO (mg/L)	pH (depth- averaged)	Turbidity (NTU) (depth- averaged)	Action / Limit Level for Turbidity (NTU)	SS (mg/L) (depth- averaged)	Action / Limit Level for SS (mg/L)
O-1-C(FT)	02-Jul-11	Surface		6.73	/			- / -		- / -
		Middle	30.85	6.79	- / -	7.96	3.05		2.45	
		Bottom	_	6.91	-/-					
_	04-Jul-11	Surface		7.22	,			_		_
		Middle	30.22	7.16	- / -	7.90	3.15		3.10	
		Bottom	_	7.07	-/-	_				
_	06-Jul-11	Surface	31.03	7.23	- /-				3.55	
		Middle		7.25		7.91	4.51			
		Bottom		7.17		_				
_		Surface		6.86						
		Middle	31.67	6.94	- / -	8.00	4.30		3.52	
		Bottom	_	7.01	- / -	_				
_	11-Jul-11	Surface		7.15	1	_				
		Middle	30.35	7.05	- / -	8.03	3.06		8.37	
		Bottom	_	7.08	-/-	=				
	13-Jul-11	Surface		7.21	1			-		_
		Middle	28.40	7.35	- / -	7.99	7.99 3.36		4.17	
		Bottom	_	7.45	- / -	_				



Station	Date	Depth	Temperature (°C) (depthaveraged)	DO (mg/L)	Action / Limit Level for DO (mg/L)	pH (depth- averaged)	Turbidity (NTU) (depth- averaged)	Action / Limit Level for Turbidity (NTU)	SS (mg/L) (depth- averaged)	Action / Limit Level for SS (mg/L)
O-1-C(FT)	15-Jul-11	Surface		6.69	/			- / -		-/-
		Middle	30.08	6.64	- / -	7.86	4.92		5.72	
		Bottom	_	6.76	-/-	_				
_	18-Jul-11	Surface		7.12	,			_		_
		Middle	27.25	6.93	- / -	7.91	2.82		2.52	
		Bottom		6.95	-/-	_				
_	20-Jul-11	Surface	29.22	7.07	- / -				8.58	
	22-Jul-11	Middle		7.13		7.90	2.37			
		Bottom		7.00	-/-					
_		Surface		7.23	1					_
		Middle	30.30	7.27	- / -	7.89	1.88		2.45	
		Bottom		7.20	-/-	_				
_	25-Jul-11	Surface		7.13	1	_				
		Middle	33.05	7.06	- / -	8.40	4.65		5.45	
		Bottom		7.04	-/-	_				
	27-Jul-11	Surface		7.03	1					_
		Middle	30.53	7.10	- / -	8.24	8.24 2.71		5.72	
		Bottom	_	7.16	- / -					



Station	Date	Depth	Temperature (°C) (depthaveraged)	DO (mg/L)	Action / Limit Level for DO (mg/L)	pH (depth- averaged)	Turbidity (NTU) (depth- averaged)	Action / Limit Level for Turbidity (NTU)	SS (mg/L) (depth- averaged)	Action / Limit Level for SS (mg/L)
O-1(ET)	02-Jul-11	Surface		6.84	7.00 / 6.04			11.87/13.44		13.25/14.39
		Middle	31.00	6.91	7.02 / 6.94	7.96	2.88		2.22	
		Bottom	_	6.96	6.7 / 6.48					
-	04-Jul-11	Surface		7.19	7.00 / 6.04			_		_
		Middle	30.27	7.11	7.02 / 6.94	7.88	4.17		4.83	
		Bottom	_	7.15	6.7 / 6.48	_				
-	06-Jul-11	Surface		7.09	7.00 / 0.04			_		_
		Middle	31.10	7.18	7.02 / 6.94	7.96	3.83		4.87	
		Bottom		7.11	6.7 / 6.48	_				
-	08-Jul-11	Surface		6.96	-					
		Middle	32.00	6.85	7.02 / 6.94	7.99	2.70		3.58	
		Bottom	_	7.04	6.7 / 6.48	=				
-	11-Jul-11	Surface		7.21	7.00 / 0.04					_
		Middle	30.10	7.07	7.02 / 6.94	8.04	3.00		6.08	
		Bottom	_	7.02	6.7 / 6.48	=				
-	13-Jul-11	Surface		7.38	7.00 / 0.04			-		_
		Middle	28.22	7.48	7.02 / 6.94	94 8.01	8.01 2.66	3.20	3.20	
		Bottom	_	7.36	6.7 / 6.48	=				



Station	Date	Depth	Temperature (°C) (depth-averaged)	DO (mg/L)	Action / Limit Level for DO (mg/L)	pH (depth- averaged)	Turbidity (NTU) (depth- averaged)	Action / Limit Level for Turbidity (NTU)	SS (mg/L) (depth- averaged)	Action / Limit Level for SS (mg/L)
O-1(ET)	15-Jul-11	Surface		6.99	7.02 / 6.04			11.87/13.44		13.25/14.39
		Middle	29.90	6.93	7.02 / 6.94	7.86	3.67		4.58	
		Bottom	_	6.79	6.7 / 6.48					
-	18-Jul-11	Surface		7.05	7.00 / 6.04					_
		Middle	27.20	7.04	7.02 / 6.94	7.91	2.49		2.83	
		Bottom	_	7.11	6.7 / 6.48	_				
-	20-Jul-11	Surface		6.89	7.00 / 0.04					
		Middle	29.00	7.10	7.02 / 6.94	7.92	2.43	2.13		
	-	Bottom		7.18	6.7 / 6.48					
-	22-Jul-11	Surface		7.19	7.00 / 0.04					_
		Middle	30.10	7.24	7.02 / 6.94	7.90	1.65		2.12	
		Bottom	_	7.30	6.7 / 6.48	_				
-	25-Jul-11	Surface		6.93	7.00 / 0.04					
		Middle	33.00	6.97	7.02 / 6.94	8.30	3.83		4.32	
		Bottom	_	7.07	6.7 / 6.48	_				
-	27-Jul-11	Surface		7.20	7.00 / 0.04					
		Middle	30.03	7.13	7.02 / 6.94	4 8.23	8.23 2.59		3.88	
		Bottom	_	7.23	6.7 / 6.48	_				



Station	Date	Depth	Temperature (°C) (depthaveraged)	DO (mg/L)	Action / Limit Level for DO (mg/L)	pH (depth- averaged)	Turbidity (NTU) (depth- averaged)	Action / Limit Level for Turbidity (NTU)	SS (mg/L) (depth- averaged)	Action / Limit Level for SS (mg/L)
O-1-C(ET)	02-Jul-11	Surface		6.80	,			- / -		-/-
		Middle	30.98	6.85	- / -	7.96	2.95		2.18	
		Bottom	_	6.92	-/-	_				
_	04-Jul-11	Surface		7.09	1					
		Middle	30.30	7.04	- / -	7.89	4.24		5.45	
		Bottom	_	7.19	- / -	_				
_	06-Jul-11	Surface		7.08	1			_		_
		Middle	31.10	7.17	- / -	7.96	3.83		4.57	
		Bottom	_	7.23	-/-	_				
_	08-Jul-11	Surface		6.94	1					
		Middle	32.02	6.92	- / -	7.99	2.65		3.12	
		Bottom	_	6.90	- / -	_				
_	11-Jul-11	Surface		7.01	1					
		Middle	30.10	7.12	- / -	8.04	3.01		7.18	
		Bottom	_	7.09	- / -	_				
_	13-Jul-11	Surface		7.35	1					_
		Middle	28.22	7.42	- / -	8.01	2.72		3.93	
		Bottom	_	7.53	- / -	_				



Station	Date	Depth	Temperature (°C) (depthaveraged)	DO (mg/L)	Action / Limit Level for DO (mg/L)	pH (depth- averaged)	Turbidity (NTU) (depth- averaged)	Action / Limit Level for Turbidity (NTU)	SS (mg/L) (depth- averaged)	Action / Limit Level for SS (mg/L)
O-1-C(ET)	15-Jul-11	Surface		6.91	,			- / -		- / -
		Middle	29.92	6.98	- / -	7.86	3.83		4.25	
		Bottom	_	6.84	-/-					
_	18-Jul-11	Surface		7.15	1			_		_
		Middle	27.10	7.10	- / -	7.92	2.54		3.88	
		Bottom	_	7.00	-/-	=				
_	20-Jul-11	Surface		7.02	,					_
		Middle	29.00	7.12	- / -	7.92	2.46		5.22	
		Bottom	_	6.98	-/-	=				
_	22-Jul-11	Surface		7.10	,					
		Middle	30.12	7.20	- / -	7.90	1.64		2.10	
		Bottom	_	7.26	- / -	_				
_	25-Jul-11	Surface		6.99	,	_		_		_
		Middle	33.07	7.07	- / -	8.30	3.75		4.77	
		Bottom	_	6.92	-/-	=				
_	27-Jul-11	Surface		6.93	,					_
		Middle	30.02	7.10	- / -	8.22	2.63		4.45	
		Bottom	_	7.17	-/-	_				

Table 4-8 Water Quality Monitoring Results



4.4 Summary of Project-Related Exceedances

4.4.1 Table 4-9 summarises the project-related exceedance results recorded in July 2011. Note that exceedances that are considered not related to the construction activities are not included in this table.

Environmental Monitoring	Total No. of Measurement	Action Level Exceedance	% of Action Level Exceedance	Limit Level Exceedance	% of Limit Level Exceedance
Air Quality	60	0	0	0	0
Air Borne Noise	23	0	0	0	0
Water	126	0	0	0	0

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

Table 4-9 Summary of Project-Related Exceedances



5 WASTE MANAGEMENT

5.1.1 The status of waste management is summarised in Table 5-1.

Status of waste management	Quantity
Inert C&D Material Disposed of to Public Fill at Tuen Mun (m³)	3,484.5
Inert C&D Material Reused in this Contract (m³)	1,047.5
Inert C&D Material Reused in other Contracts* (m³)	17,430.0
Metals Generated (kg)	75,025.0
Paper / Cardboard Packaging (kg)	200.0
Plastics (kg)	5.0
Chemical Waste (kg)	1,653.0
General Waste Disposed of to NENT Landfill (m³)	39.0

^{*} Other Contracts include DC/2007/08, DC/2007/17, HY/2007/10, HY/2008/09, YL/2009/01, XRP823A and 823B, XRL825, XRL810B, Tailor Recycle Aggregate and CUHK.

Table 5-1 Waste Generated in July 2011



6 NON-COMPLIANCE AND DEFICIENCY

6.1 Site Audit by ET

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

Inspection Date	Observation	Recommendation	Status
	Tree protection measures next to the temporary workshop were found insufficient at Intake I-1.		The tree protection measures were found enhanced on 9 July 2011. (Closed)
7 July 2011	2. Unused materials and debris scattered at the temporary shelter was observed at Intake I-1.	2. The Contractor was reminded to remove the unused materials and debris and to tidy up the temporary shelter.	 The unused materials and debris were found removed and the temporary shelter was found tidied up on 7 July 2011. (Closed)
	3. Stagnant water accumulated on-site was found at Intake I-1.	 The Contractor was reminded to remove the stagnant water on-site. 	 The stagnant water was removed on 7 July 2011. (Closed)
22 July 2011	Breaker tip was found not wrapped by the sound insulation material properly at Intake I-3	The Contractor was reminded to wrap the breaker tip by the sound insulation material properly.	Breaker tip was then properly wrapped by the sound insulation material on 23 July 2011. (Closed)

Table 6-1 Site Inspection by ET



7 COMPLAINT

- 7.1.1 A complaint hotline at <u>9850 3241</u> of the Contractor has been established for the Project.
- 7.1.2 No environmental complaint was received during the reporting month.
- 7.1.3 EPD had informed ET on 8 July 2011 that one public complaint regarding construction dust and daytime construction noise from the Intake I-3 construction site was received on 30 June 2011. The ET conducted site inspection at Intake I-3 construction site on 8 and 20 July 2011 to review and audit the site setting, mitigation measures implemented on-site and the environmental performance of the Contractor. Additional dust control measures have been implemented at I-3 by the Contractor in early July 2011 to further suppress dust emission. In addition, noise monitoring was increased to twice per week from 11 July to 30 July 2011 and no exceedance was recorded. Since no further complaint was received, the complaint was considered closed. Details of the past complaint investigation and observations can be referred to Appendix K.
- 7.1.4 Cumulative statistics of environmental complaints are shown in Table 7-1.

Complaints Received in the Reporting Month	Cumulative Number of Complaints
0	22

Table 7-1 Cumulative Statistics of Environmental Complaints



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

- 8.1.1 No summons and successful prosecution was received during the reporting month.
- 8.1.2 Cumulative statistics of notification of summons, successful prosecutions and convictions are shown in Table 8-1.

Notification	n of Summons	Successful Prose	cution and conviction
July 2011	Cumulative	July 2011	Cumulative
0	0	0	0

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



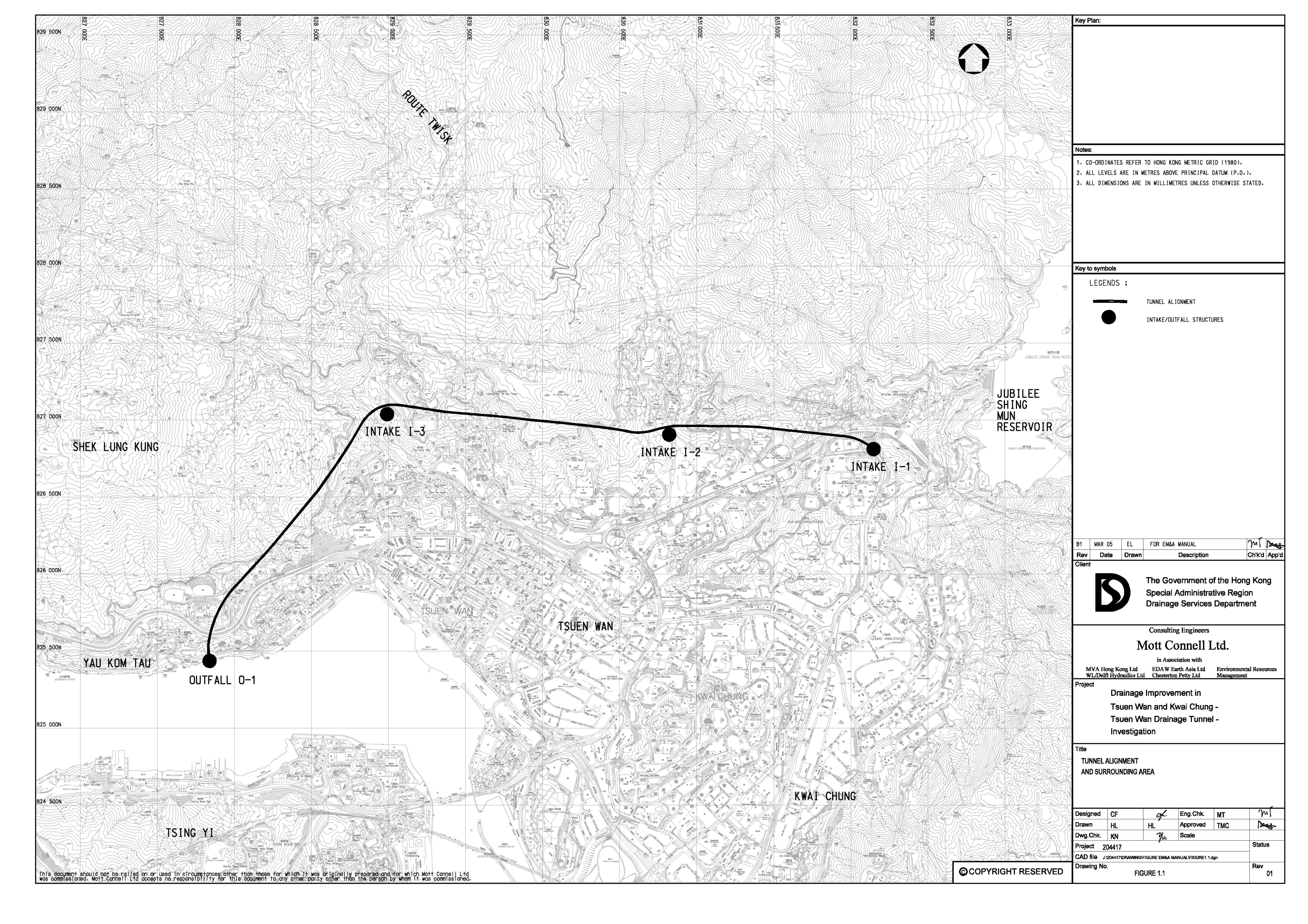
9 FUTURE KEY ISSUE

- 9.1.1 The forecast of construction works for the upcoming three months are:
 - Site cleaning and tidying at Outfall, I-1, I-2 and I-3;
 - TBM drilling of the tunnel and mucking out of tunnel spoil at Outfall;
 - · Construction of spiral ramp structure at Outfall;
 - Construction of box culvert at Outfall;
 - Placing leveling stone and bagged concrete for formation of sea wall at Portion E;
 - Installation of precast seawall blocks and panels for construction of outfall apron at Portion E;
 - Drilling and excavation of vortex shaft at I-3;
 - Backfilling for PB wall at I-3;
 - Construction of approach channel at I-3;
 - Tree establishment works of the transplanted trees at I-3;
 - Drilling, excavation and rock splitting of man access shaft and vortex drop shaft at I-2;
 - Blasting for man access shaft and vortex drop shaft at I-2;
 - Construction of approach channel structure at I-2;
 - Construction of drainage works at Portion G at I-2;
 - Construction of cascade at I-1;
 - Construction of H pile wall along Shing Mun Road at I-1;
 - Construction of crane platform for TBM retrieval at I-1; and
 - Construction of vehicular access at I-1.



Appendix A

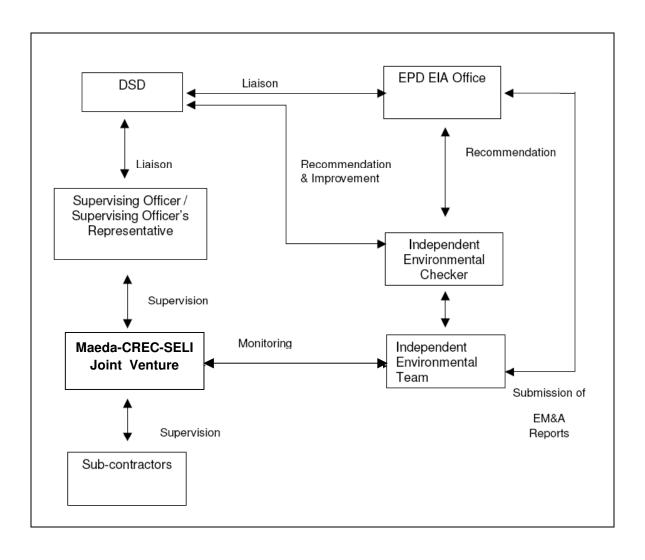
Site Map and Works Area





Appendix B

Organization Chart





Appendix C

Construction Programme

QI		Activity Description	D04 WP3D Dur Dur	MP3D AD04 Dur Start	AD04 Finish	WP3D	WP3D	Ō	Total Float	2808	2009 2010 2011 2012	2013
Preliminaries	S							E				
Project Dates	*		٦					H				
000000000000000000000000000000000000000	4		c			A E OF ILL IN CO.		c				
0180000004	Tender Closing Date	d	0 0	0 050CT07A	N C	05OCT07A		2 0	1	-		
01R0000006	Letter of Acceptance Issued Date	e Issued Date	0			14DEC07A		2	•			
01R0000008	Contract Commencement Date	ement Date	0	1000		28DEC07A		2	•	14 days after LC	ter LØA	
01R0000010	Completion of Section 1 of the Works	on 1 of the Works	0		07DEC12		18JAN13		-462		Contract completion date on 02/09/11	•
01R0000012	Completion of Section 2 of the Works	on 2 of the Works	0	0	22MAR12		22MAR12	0	-239		Con ract completion date on 27/07/11+	
01R0000014	Completion of Section 3 of the Works	on 3 of the Works	0	0	23MAR12		23MAR12	2	-240		Conclude to completion date on 27/07/11◆	
01R0000016	Completion of Section 4 of the Works	on 4 of the Works	0	0	04FEB12		04FEB12	2	-192	0	Contract completion date on 27/07/11	
01R0000018	Completion of Section 5 of the Works	on 5 of the Works	0	0	07DEC12		18JAN13		-485		Contract completion date on 10/08/11	•
01R0000020	Completion of Section 6 of the Works	on 6 of the Works	0	0	27JUL11		27JUL11	2	0	Contract cor	ct completion date on 27/07/11 🔷	
01R0000022	Completion of Section 7 of the Works	on 7 of the Works	0	0	07DEC13		18JAN14	7	-462		Contract completion date on 01/09/12◆	on 01/09/12.
Possession of	of Airea											
01R00A0102	Possession Portion A - 90d of DOC	A - 90d of DOC	0	0 27FEB08A	2	27FEB08A		2	Ť	Permane	Permanent land allocation area was possessed on 19/03/08	3/08
01R00A0104	Handover of Section	Handover of Section 1 of Works at Portion A	0		22MAR12		22MAR12		-239		•	
01R00B0102	Possession of Portion B - 90d of DOC	on B - 90d of DOC	0	0 07MAR08A	0	07MAR08A		N		۵		
01R00B0104	Handover of Portion B	18	0	0	23MAR12		23MAR12	7	-240		•	
01R00C0102	Possession of Portion C - 90d of DOC	on C - 90d of DOC	0	0 26MAR08A	N	26MAR08A		7		•		
01R00C0104	Handover of Portion C	0.0	0	0	04FEB12		04FEB12	2	-192		•	3072
01R00D0102	Possession of Portion D on DOC	on D on DOC	0	0 28DEC07A	2	28DEC07A		2	•	E. o L		
01R00D0104	Handover of Portion D	Q	0	0	07DEC12		18JAN13	2	-485			•
01R00E0102	Possession of Portion E - 650d of DOC	on E - 650d of DOC	0	0 07OCT09	0	07OCT09		2	0		•	
01R00E0104	Handover of Portion E	1 E	0	0	07DEC12		18JAN13	2	-462			•
01R00F0102	Possession of Portion F on DOC	on F on DOC	0	0 28DEC07A	2	28DEC07A		2	•			
01R00F0104	Handover of Portion F	1F	0	0	07DEC12		18JAN13	2	-462			•
01R00G0102	Possession of Portion G	on G - 700d of DOC	0	0 26NOV09	8	26NOV09		2	0		•	
01R00G0104	Handover of Portion G	91	0	0	11MAR11		11MAR11	2	175		•	
01R00I0102	Possession of Portion I on DOC	on Lon DOC	0	0 28DEC07A	[2	28DEC07A		2	•			5
01R00l0104	Handover of Portion I	-	0	0	07DEC12		18JAN13	5	-462			•
01R00J0102	Possession of Portion J	l no	0	0: 15MAR10		15MAR10		5	-268		•	
01R00J0104	Handover of Portion J	P.	0	0	03SEP10		03SEP10	2	0		•	
01R0H10102	Possession of Portion H1 on DOC	on H1 on DOC	0	0 28DEC07A	Ø	28DEC07A		2	•	1606		
01R0H10104	Handover of Portion H1	H	0	0	30DEC13		10FEB14	2	0			•
01R0H20102	Possession of Portic	Possession of Portion H2 - 300d of DOC	0	0 04NOV08A	0	04NOV08A		7		•		
Start Date	70NUL 39		AD04		Maeda-CREC-SELI JV	۷۲ ا	Sheet 1 of 58	28			Addendum to Works Programme "WP04"	
Finish Date	30DEC13				CONTRACT NO. DC/2007/12	2/2002/12					Revision	Approved
Data Date	28MAY09			Desig	Design and Construction of	uction of		10AUG09		orks Program orks Program	Works Program Revision "WP02" Works Program Revision "WP3D"	
Run Date	22OCT09 10:37			Tsuen Addendum t	Tsuen Wan Drainage Tunnel ndum to Works Programme "WP04"	je Tunnel Iramme "W	/P04"	04SEP09	П	P3D-TBM Ha	WP3D-TBM Haift Speed at WSD Tunnel#3	
© Primavera	© Primavera Systems, Inc.	Critical Activity						220CT09	Ш	WP04		

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Handoner of Portion R2 Posteription Duty Duty Duty Duty Duty Duty Duty Duty Duty Duty	0	Activity	AD04	AD04 WP3D	AD04	AD04	WP3D	WP3D	E Co	Total	7006 2009 2010 2017 2012 2018
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Particle	01R0H20104	Handover of Portion HZ	0	0		SUDECTS		TOLED 14	7	2	
Secretary controls in S2-7 13.06 13.08 20DECOTA 13.0N113 2 462 265 265 265 265 20DECOTA 13.0N113 2 462 265 265 265 265 20DECOTA 13.0N113 2 462 265 265 265 20DECOTA 23.0NN12 23.0NN	Section of V	Vorks - DOP to Completion		ŧ	Ì	Section 2	j	ļ	i	Ì	
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Ses devices 36.5 28.6	01R1000204	S1-Maintenance Period (365 days)	365		USDEC12		SLANDS	18JAN14		705-	
Ses desys) Ses desys Ses desys) Ses desys Ses de	01R20A0206	S2-Slope Stabilization works within Portion A	1,247	- 1	27FEB08A		7FEB08A	22MAR12		-239	
sis within Portion B 1,228 1,228 1,238 07MARQBA 23MARTI2 27MARTI2 23MARTI2 2.3MARTI2 2.3MARTI3	01R20A0208	S2-Maintenance Period (365 days)	365	365	23MAR12	-	3MAR12	22MAR13		-202	
365 days) 365 days 367 days	01R30B0210	S3-Slope Stabilization works within Portion B	1,238	1,238	07MAR08A	-1	7MAR08A	23MAR12	2	-240	
ks within Portion C 1,219 2,219 26NAROBA OHEB12 26NARDBA OHEB13 2-192 355 days) 356 356 365 366 365 367 <td>01R30B0212</td> <td>S3-Maintenance Period (365 days)</td> <td>365</td> <td>365</td> <td>24MAR12</td> <td></td> <td>#MAR12</td> <td>23MAR13</td> <td>0011</td> <td>-203</td> <td></td>	01R30B0212	S3-Maintenance Period (365 days)	365	365	24MAR12		#MAR12	23MAR13	0011	-203	
365 days) 365 DaFEB12 05FB13 05FB13 2 -155 54 kwithin Portion D 1,308 1,308 20ECD/TA 07DECT/3 05FB13 2 -155 365 days) 365 DaPECLE COTA 07DECT/3 15JAN14 2 -462 365 days) 365 SB	01R40C0214	S4-Slope Stabilization works within Portion C	1,219		26MAR08A	-	SMAR08A	04FEB12		-192	
ke within Portion D 1,308 1,308 2,80EC07A OTDEC12 28DEC07A 18JAN143 2 488 385 days) 585 586 SENOVOR 27JUL11 28JUL12 2 37 385 days) 586 386 SECOVOR 27JUL11 23JUL12 2 37 385 days) 386 386 23JUL11 28JUL11 28JUL11 23JUL11 23JUL11 <td< td=""><td>01R40C0216</td><td>S4-Maintenance Period (365 days)</td><td>365</td><td>365</td><td>05FEB12</td><td></td><td>SFEB12</td><td>03FEB13</td><td>-200</td><td>-155</td><td></td></td<>	01R40C0216	S4-Maintenance Period (365 days)	365	365	05FEB12		SFEB12	03FEB13	-200	-155	
1585 days 365 385 040 DEC12 070 DEC13 19JAN14 12 462 462 463	01R50D0218	S5-Slope Stabilization works within Portion D	1,308		28DEC07A		3DEC07A	18JAN13	2	-485	
Seed days See See 25NUV09 27JUL11 26NUV09 27JUL11 26NUL12 2 37 37 37 37 37 37 37	01R50D0220	S5-Maintenance Period (365 days)	365	365	08DEC12		9JAN13	18JAN14	2	-462	
1,673 1,673 28DECOTA 28JUL11 28JUL12 2 37 455 53 28JUL11 28JUL11 28JUL12 2 455 53 53 50 50 50 50 50	01R60G0222	S6-Works within Portion G	609	609	26NOV09	-	SNOVO9	27JUL11	5	0	
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modation 7 7 28DECOTA 15JAN08A 22BDECOTA 15JAN08A 2 10 the satisfaction office 35 28DECOTA 15JAN08A 1 15JAN08A 2 10 the satisfaction office 35 28DECOTA 28AUGOBA 128AUGOBA 2 28AUGOBA 2 28AUGOBA 128EPOGA 13BUAN08A 13SEPOGA 1 10 the satisfaction 19MAYOBA 13SEPOGA 1 13SEPOGA 1 10 the satisfaction 19MAYOBA 13SEPOGA 1 13SEPOGA 1 10 the satisfaction 15.339 1.539 1.	01R7000228	S7-Maintenance Period (30 days)	30		01DEC13		2JAN14	10FEB14	2	-455	
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1412 100 19MAYOBA 15MAROBA 28MAROBA 15MAROBA 15MAROBA 13EPOBA 1 11 14 1 1 1 14 1 1	01R0000304	Design the SO's principle office	95	92	28DEC07A	28AUG08A 2	8DEC07A	28AUG08A	2		
SO	01R0000305	Erect Hoarding/Signboard/Gate/Fencing	35	35	28MAR08A		8MAR08A	16MAR09A	-		
SO 64 64 14SEP08A 13JUNO9 14SEP08A 13JUNO9 2 276 90 90 90 28DEC07A 02MAY08A 28DEC07A 02MAY08A 2 CERT 12.4; 3 n	01R0000306	Erect SO's principle office in Portion H1/H2	100	100	19MAY08A		9MAY08A	13SEP08A	-		***
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ce 1,495 1,495 28OCT08A 30NOV13 28OCT08A 11JAN14 2 0 0 1,785 1,785 12JAN08A 30NOV13 12JAN14 2 0 0 ents 30 30 01DEC13 30DEC13 12JAN14 10FEB14 2 0 0 ain office 30 30 01FEB08A 19MAY08A 17JUL08A 1 1 0FEB14 2 0 0 ain office 30 30 01DEC13 30DEC13 12JAN14 10FEB14 2 0 0 ain office 30 30 01DEC13 30DEC13 12JAN14 10FEB14 2 0 0 ain office 30 30 01DEC13 30DEC13 12JAN14 10FEB14 2 0 0 an H1 50° 50° 19MAY08A 17JUL08A 17JUL08A 1 1 0FEB14 2 0 0 12 12 31MAY08A 30MAY08A 31MAY08A 30JUN08A 1 1 12 12 31MAY08A 30JUN08A 31MAY08A 11JUL08A 1 1 13 11AJUL08A 12JUL08A 17JUL08A 17JUL08A 1 1 14JUL08A 17JUL08A 17JUL08A 17JUL08A 1 1 1 14JUL08A 17JUL08A 17JUL08A 17JUL08A 1 1 1 14JUL08A 17JUL08A 17JUL08A 17JUL08A 1 1 1 1 14JUL08A 17JUL08A 17JUL08A 17JUL08A 1 1 1 1 14JUL08A 17JUL08A 17JUL08A 17JUL08A 1 1 1 1 14JUL08A 17JUL08A 17JUL08A 17JUL08A 1 1 1 1 14JUL08A 17JUL08A 17JUL08A 17JUL08A 1 1 1 1 14JUL08A 17JUL08A 17JUL08A 17JUL08A 1 1	01R0000314	Maintain & Service the Principle Office	1,539	1,539	14SEP08A	30NOV13 1	4SEP08A	11JAN14	2	0	
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ain office 30 01FEB08A 19MAY08A 01FEB08A 19MAY08A 2	01R0000372	Demolish & removal of Principle Office	30	30	01DEC13		2JAN14	10FEB14	2	0	
Design Contractor's main office 30 30 01FEB08A 19MAY08A 15MAY08A 2 Maintain & service Contractor's main office 1,597 1,597 18JUL08A 30NOV13 18JUL08A 11JAN14 2 0 Demolish & removal of Contractor's main office 30 30 01DEC13 30DEC13 12JAN14 10FEB14 2 0 Erect Contractor's main office in Portion H1 50* 50* 13MAY08A 17JUL08A 17JUL08A 1 1 Construct base slab Install steel frames 12 12 31MAY08A 2JUN08A 1 1 Install steel frames 12 12 31MAY08A 2JUN08A 1 1 Install wall/roof panels, windows etc 6 6 2JUN08A 12JUL08A 1JUL08A 1 1 Site clearance 1 14JUL08A 17JUL08A 1 1 1	Contractor	s Accommodation as per ER.B		ì	Í		i	1	Ť	á	
Design Contractor's main office 30 30 01FEB08A 19MAY08A 159MAY08A 2 —to the second of contractor's office 1,597 1,597 18JUL08A 30MOV13 18JUL08A 11JAN14 2 0 Demolish & removal of Contractor's main office in Portion H1 50° 50° 13MAY08A 17JUL08A 17JUL08A 17JUL08A 17JUL08A 1 —to the second of contractor's main office in Portion H1 10 10 13MAY08A 17JUL08A 17JUL08A 1 1 —to the second of contractor's main office in Portion H1 10 10 13MAY08A 17JUL08A 1 1 —to the second of contractor's main office in Portion H1 10 10 13MAY08A 17JUL08A 1 1 —to the second of contractor's main office in Portion H1 1											
Maintain & service Contractor's office 1,597 1,597 18JUL08A 300 V10EC13 30NOV13 18JUL08A 11JAN14 2 0 Demolish & removal of Contractor's main office in Portion H1 50° 50° 19MAY08A 17JUL08A 17JUL08A 17JUL08A 1 1 Construct base slab 10	01R0001402	Design Contractor's main office	30	30	01FEB08A	19MAY08A 0	1FEB08A	19MAY08A	01	T	to the satisfaction of SO
Demolish & removal of Contractor's main office in Portion H1 30 30 01DEC13 30DEC13 12JAN14 10FEB14 2 0 Erect Contractor's main office in Portion H1 50° 50° 19MAY08A 17JUL08A 17JUL08A 1 1 17JUL08A 1 1 10 </td <td>01R0001406</td> <td>Maintain & service Contractor's office</td> <td>1,597</td> <td>1,597</td> <td>18JUL08A</td> <td>30NOV13 1</td> <td>BJULOBA</td> <td>11JAN14</td> <td>61</td> <td>0</td> <td></td>	01R0001406	Maintain & service Contractor's office	1,597	1,597	18JUL08A	30NOV13 1	BJULOBA	11JAN14	61	0	
Erect Contractor's main office in Portion H1 50° 50° 19MAY08A 17JUL08A 17JUL08A 17JUL08A 1 Intentation of the construct base slab 10	01R0001408	Demolish & removal of Contractor's main office	30	30	01DEC13	30DEC13 1	2JAN14	10FEB14	2	0	
Construct base slab 10 10 19MAY08A 30MAY08A 19MAY08A 11MAY08A	01R000141	Erect Contractor's main office in Portion H1	-09	-09	19MAY08A	17JUL08A 1	9MAY08A	17JUL08A	•		to the satisfaction of the SO
Install steel frames 12 12 31MAY08A 21JUN08A 21JUN08A 21JUN08A Install wall/roof panels, windows etc 6 6 23JUN08A 30JUN08A 20JUN08A 30JUN08A Install & E& M/ceiling/floor panels 8 8 02JUL08A 12JUL08A 12JUL08A Site clearance 1 1 14JUL08A 14JUL08A 14JUL08A 17JUL08A	01R0001412	Construct base slab	10	10	19MAY08A	30MAY08A 1	9MAY08A	30MAY08A			
Install wall/roof panels, windows etc 6 6 23JUN08A 23JUN08A 23JUN08A 30JUN08A Install & E& M/ceiling/floor panels 8 8 02JUL08A 12JUL08A 12JUL08A Site clearance 1 14JUL08A 17JUL08A 17JUL08A 17JUL08A	01R0001413	Install steel frames	12		31MAY08A		1MAY08A	21JUN08A	7		
Install & E& M/ceiling/floor panels 8 8 02JUL08A 12JUL08A 12JUL08A 12JUL08A 17JUL08A	01R0001414	Install wall/roof panels, windows etc	ω	9	23JUN08A	30JUN08A 2	3JUN08A	30JUN08A	•		
Site clearance 17JUL08A 17JUL08A 14JUL08A 17JUL08A 17JUL08A	01R0001415	Install & E& M/ceiling/floor panels	00	80	02JUL08A	12JUL08A 0	2JUL08A	12JUL08A	•		
	01R0001416	Site clearance	-	-	14JUL08A	17JUL08A 1	4JUL08A	17JUL08A	-		

e & Million fundamental fundam	Install furnitures/internet & move in	2	7	V 00 11 11 7 7								
are/S bare/S bare/S bare/S s apprimit Re				14JULUSA	17JUL08A 14JUL08A		17JUL08A	<u>-</u>				
are/S are/S are/S appr appr Appr Re	Works Programme & Monthly Report as per SCC 27			O CO	į							
revie are/S appr appr nit Re	Prepare/Submit draft Works Programme	7	7	14DEC07A	21DEC07A 14DEC07A	4DEC07A	21DEC07A	7	-			
are/S appr appr nit Re	SO's review/comment on draft Works Programme	41	4	22DEC07A	23JAN08A 2	22DEC07A	23JAN08A	7	-			
apprapprage Report	Prepare/Submit draft Works Programme Rev. 1	28	28	24JAN08A	15FEB08A 24JAN08A	43AN08A	15FEB08A	7	0			
appr iit Re Appr	Prepare/Submit 1st 3-Month Rolling Programme	41	4	14DEC07A	03JAN08A 14DEC07A	4DEC07A	03JAN08A	7	128			
hit Re Appr	SO's approval on draft Works Programme	14	4	16FEB08A	28MAR08A 16FEB08A	6FEB08A	28MAR08A	2	41-	11		
Appr	Submit Revised Works Programme	41	44	28AUG08A	30SEP08A 28AUG08A	28AUG08A	30SEP08A	2		D		
	SO's Approval of Revised Works Programme	4	14 (020CT08A	28FEB09A 02OCT08A	120CT08A	28FEB09A	2		1		
hly U	Monthly Update for all Programme	1,779 1	1,779	18JAN08A	31DEC12 1	18JAN08A	18JAN13	2	364			
ractor	Contractor's Monthly Progress Report	1,775 1,775		22JAN08A	31DEC12 2	22JAN08A	18JAN13	2	364			
S	Safety Plan as per SCC 35											
									h			
nit dra	Submit draft Safety Plan	14	4	14DEC07A	29DEC07A 14DEC07A	4DEC07A	29DEC07A	2	.5	within 14 days of LOA	A	
an ac	Hold an ad hoc meeting with RE on Safety Plan	7	2	31DEC07A	09JAN08A 31DEC07A	31DEC07A	09JAN08A	2	3	within 7 days from the	within 7 days from the submission of DSP	
mit 6	Submit 6 copies of the Safety Plan	35	35	14DEC07A	26FEB08A 14DEC07A	4DEC07A	26FEB08A	2		within 35 days of LOA	OA	210
mit up	Submit updated safety orgainiza. chart monthly	1,747 1	1,747	20MAR08A	31DEC12 2	20MAR08A	18JAN13	7	364			
alle	Fulfill all relevant safety obligation	1,830 1,830		28DEC07A	31DEC12 2	28DEC07A	18JAN13	2	364			H
sur	Contractor's All Insurances		j	1		i						
nit do	Submit documents for all insurances are effected	21	21	14DEC07A	02SEP08A 14DEC07A		02SEP08A	2	_" 	as per SDC9	as per SCC9, SCC10 & SCC45.	
Per	Quality System as per ER 9.3											
			۱					l	ī			
int a	Appoint a Quality Manager	14	4	28DEC07A	02JAN08A 28DEC07A	28DEC07A	02JAN08A	2		as per SCC 74 within 14 days of DOC	14 days of DOC	
nit pr	Submit proposed Quality System for SO's consent	28	78	14DEC07A	22JAN08A 14DEC07A	4DEC07A	22JAN08A	2	11	=within 28 days of LOA	AG.	
nit Q	Submit QSSP for approval of the SO	28	28	28DEC07A	14MAR08A 28DEC07A		14MAR08A	2		within 28 days of DOC	2000	
tain 8	Maintain & update Quality System	1,802 1	1,802	25JAN08A	31DEC12 25JAN08A		18JAN13	2	364			
				j								
inate	Nominate Environmental Officer	14	4	14DEC07A	21DEC07A 14DEC07A	14DEC07A	21DEC07A	2	- a	as per ER B.1 Clause	e 1.74A1(2)	5 2
helish	Establish a billing account for disposal	21	21	14DEC07A	02JAN08A 14DEC07A	14DEC07A	02JAN08A	2	-	per Notes to Tendere	Jereri (AA)	
mit dr	Submit draft EMP	12	21	14DEC07A	02JAN08A 14DEC07A	4DEC07A	02JAN08A	2		SCC69, within 21 day	days of LOA	
ise dra	Revise draft EMP within 7 days of SO's notice	41	4	04JAN08A	21FEB08A 04JAN08A	94JAN08A	21FEB08A	2		as per SCC69		
mit fin	Submit final version of EMP	45	45	14DEC07A	21FEB08A 14DEC07A	14DEC07A	21FEB08A	2	.,	as per SCC69, with	within 45 days of LOA	
iew/up	Review/update/submit EMP monthly	1,769 1	1,769	28JAN08A	31DEC12 2	28JAN08A	18JAN13	2	364			
Employ IET		21	21.	14DEC07A	02JAN08A 14DEC07A	14DEC07A	02JAN08A	2	**	to the approval of the SO	os e	
mit Ba	Submit Baseline Monitoring Plan	21	21	28DEC07A	18JAN08A 28DEC07A	28DEC07A	18JAN08A	2		for approval of the S	e SO & EPD	
k for E	Seek for EPD's Agreement on WQML & schedule	21	21:	18JAN08A	31JAN08A 18JAN08A	18JAN08A	31JAN08A	2				
y out	Carry out baseline monitoring	37	37	11FEB08A	20MAR08A 11FEB08A	11FEB08A	20MAR08A	2		1		
pare/s	Prepare/submit reports for baseline monitoring	20	20 3	21MAR08A	28MAR08A 21MAR08A		28MAR08A	2		for approval o the	the SO	
act mo	Impact monitoring & reporting	1,705 1	1,705 (01APR08A	31DEC12 01APR08A	01APR08A	18JAN13	2	364			

2011 2012 2015					DOC		5.0		7 working days										20	of DOC																			
2009 2010			as per SCC83; within 7 days of LOA		as per ER.B1 1.59; within 7 days of I				ER.B1 1.18A3(1), not less than 17 working days			n	•						as per ER. B1 1.61;	as per ER. B1 1.61; within 30 days of DOC								1											
Total 2038 Float	364		nas per	П	as be	13	D	0	100es EF	•	0	II.	3 1	119		•			d se	as b						n	1	LI,	×							II.	II u	II II	
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WP3D Finish	18JAN13		15JAN08A	29FEB08A	18FEB08A	05APR08A	29FEB08A	08MAR08A	28MAY08A	28MAY08A	20MAY08A	26SEP08A	26SEP08A	20MAY08A	22JUL08A	22JUL08A			19MAR08A	19MAR08A		23APR08A	22SEP08A	20JAN09A		30APR08A	22SEP08A	04FEB09A		26MAR08A	11SEP08A	04FEB09A		29MAR08A		10SEP08A	10SEP08A 09FEB09A	10SEP08A 09FEB09A	10SEP08A 09FEB09A 02JUN08A
WP3D	28DEC07A		15JAN08A 14DEC07A	29FEB08A 16JAN08A	18FEB08A 28DEC07A	05APR08A 29FEB08A	29FEB08A 04JAN08A	08MAR08A 21JAN08A	28MAY08A 10MAR08A		20MAY08A 22APR08A	26SEP08A 23APR08A		20MAY08A 22APR08A	22JUL08A 23APR08A				19MAR08A 28DEC07A	A 28DEC07A		23APR08A 22APR08A	22SEP08A 24APR08A	20JAN09A 31MAY08A		25MAR08A	22SEP08A 24APR08A	04FEB09A 24MAY08A		26MAR08A 25MAR08A	A 26MAR08A	04FEB09A 31MAY08A		29MAR08A 25MAR08A	ANAMADOA	TUSEFURA STIMARURA			
AD04 Finish	31DEC12	H	15JAN08	29FEB08/	18FEB08/	05APR08/	29FEB08/	D8MAR08	28MAY08/	28MAY08A	20MAY08	26SEP08/	26SEP08A	20MAY08	22JUL084	22JUL08A			19MAR08/	19MAR08		23APR08/	22SEP08/	20JAN09/		30APR08/	22SEP08/	04FEB09/		26MAR08	11SEP08A	04FEB09/		29MAR08,	10SEDOR	100	09FEB09/	09FEB09/	09FEB09/ 02JUN08/
AD04 Start	28DEC07A		14DEC07A	16JAN08A	28DEC07A	29FEB08A	21 04JAN08A	21JAN08A	10MAR08A		22APR08A	23APR08A		22APR08A	30 23APR08A				28DEC07A	30 28DEC07A 19MAR08A 28DEC07A		22APR08A	24APR08A	31MAY08A		5 25MAR08A 30APR08A 25MAR08A 30APR08A	60 24APR08A	60 24MAY08A		25MAR08A	60 26MAR08A	60 31MAY08A		25MAR08A	60 31MAR08A		60 27MAY08A 09FEB09A 27MAY08A	27MAY08A	27MAY08A 22APR08A
ADD4 WP3D Dur Dur	1,800 1,800		12	4	7	21	21	7	20	0	۳	30	0	•	30	0			30	30		9	09	09		5	09	09		S	9	9		2	90	100000000000000000000000000000000000000	9	8	90
AD04 Dur	1,800		7	41	7	21	21	7	20	0	-	30	0	•	30	0			30	30		9	9	9		D.	9	9		ın	99	9		ιΩ	9		20	09	20 00
Activity Description	Fulfill all relevant environmental obligation	Excavation Permit/Utilities per SCC 54 & SCC 83	Nominate IIUMS co-ordinator	SO approve IIUMS co-ordinator	Submit brand name of UGS detection equipment	Utilities detection & report to the SO	Liaison with UUs	Apply XP for site entrance construction	HyD process XP for site entrance construction	HyD issue XP for site entrance construction	Apply XP for GI works at I-1 & I-2	HyD process XP for Gl works at I-1 & I-2	HyD issue XP for GI works at I-1 & I-2	Apply XP for trial grout at Fault F1	HyD process XP for trial grout at Fault F1	HyD issue XP for trial grout at Fault F1	Pre-construction Condition Survey		Appoint a Qualified Structural Engineer	Submit nos. & extent of the affected EBS	between I-1 & I-2	Carry out stg 1 PCS between I-1 & I-2	Prepare/submit reports for stg 1 PCS bet I-1&I-2	Review/accept reports for stg 1 PCS bet I-1&I-2	between F2 & F3	Carry out stg 1 PCS between I-2 & I-3	Prepare/submit reports for stg 1 PCS bet I-2&I-3	Review/accept reports for stg 1 PCS bet I-2&I-3	between I-3 & O-1	Carry out stg 1 PCS between I-3 & O-1	Prepare/submit reports for stg 1 PCS bet I-3&O-1	Review/accept reports for stg 1 PCS bet I-3&O-1	at vicinity of 0-1	Carry out stg 1 PCS at vicinity of 0-1	Prepare/submit reports for stg 1 PCS at 0-1		Review/accept reports for stg 1 PCS at 0-1	Review/accept reports for stg 1 PCS at 0-1	Review/accept reports for stg 1 PCS at 0-1 between I-1 & I-2 Carry out stg 2 PCS between I-1 & I-2
9	17R0000902	xcavation	01R0001002	01R0001004	01R0001006	01R0001008	01R0001010	01R0001012	01R0001014	01R0001016	01R0001018	01R0001020	01R0001022	01R0001024	01R0001026	01R0001028	re-constru	Preliminaries	01R0001102	01R0001104	PCS Stage 1 b	01R0001118	01R0001120	01R0001122	PCS Stage 1 b		01R0001132	01R0001134	-	01R0001142	01R0001144	01R0001146	PCS Stage 1 a		01R0001108		1R0001110	N	N

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2008 2006 2510 2011 2012 2013							===								11									11			1					1nd TMLG scheduled on 11/03/081st TMLG was held on 12/02/08		HyD & Police ER.B1 1.15 (9) refers		Ewithin 30 days of LOA	Per SCC 44 (◆Area Wthin Sul Ho Wan Sewage Treatment Works	
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WP3D Finish		07JUN08A	12JUN08A	09FEB09A		13JUN08A	18JUN08A	09FEB09A		06JUN08A	16JUN08A	09FEB09A		10JAN09A	24MAR09A		15JAN09A	10JUN09		03JAN08A	28FEB08A	31JAN08A	01APR08A	19APR08A	19APR08A		12JAN08A	18JAN13			16AUG08A										
WP3D			MAYORA					11						-	-								-					3			4JAN08A		2APR08A	2APR08A		4DEC07A	03JUL08A				
AD04 Finish		07JUN08A 30APR08A	02MAY08A 12JUN08A 02MAY08A	09FEB09A 13JUN08A		13JUN08A 09MAY08A	18JUN08A 04JUN08A	09FEB09A 19JUN08A		01APR08A 06JUN08A 01APR08A	16JUN08A 02JUN08A	09FEB09A 17JUN08A		10JAN09A 28AUG08A	24MAR09A 12JAN09A		15JAN09A 28AUG08A	10JUN09 16JAN09A	1	03JAN08A 14DEC07A	28FEB08A 28DEC07A	31JAN08A 04JAN08A	01APR08A 01FEB08A	19APR08A 02APR08A	19APR08A 02APR08A		4DEC07A 12JAN08A 14DEC07A 12JAN08A	31DEC12 0			16AUG08A	Oboot E of Eo									
AD04 Start		30APR08A 0	MAY08A 1	13JUN08A 0		09MAY08A 1	04JUN08A 1	19JUN08A 0		APRO8A C	02JUN08A 1	17JUN08A 0		28AUG08A 1	2JAN09A 2		28AUG08A 1	2JAN09A 2		28AUG08A 1	2JAN09A 2		,5-4	2JAN09A 2			6JAN09A		14DEC07A 0	28DEC07A 2	04JAN08A 3	01FEB08A 0	02APR08A 1	02APR08A 1		4DEC07A	03JUL08A			-	
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D04 WP3D Dur Dur		ഹ	89	9		S	9	09		12	09	09		28	28		28	28		28	28		28	28		28	28	1	4	7	14	27	14	14	j	90	1,642 1,642	H		0	
Activity Description	PCS Stage 2 between H2 & H3	Carry out stg 2 PCS between I-2 & I-3	Prepare/submit reports for stg 2 PCS bet I-2&I-3	Review/accept reports for stg 2 PCS bet I-2&I-3	PCS Stage 2 between I-3 & O-1	Carry out stg 2 PCS between I-3 & O-1	Prepare/submit reports for stg 2 PCS bet I-3&O-1	Review/accept reports for stg 2 PCS bet I-3&O-1	at Vicinity of 0-1	Carry out stg 2 PCS at vicinity of 0-1	Prepare/submit reports for stg 2 PCS at 0-1	Review/accept reports for stg 2 PCS at 0-1	Pre-const. condition structural survey; I-1	Prepare/submit reports for EBS at I-1	Review/accept reports for EBS at I-1	Pre-const. condition structural survey; I-2	Prepare/submit reports for EBS at I-2	Review/accept reports for EBS at I-2	Pre-const. condition structural survey; I-3	Prepare/submit reports for EBS at I-3	Review/accept reports for EBS at I-3	Pre-const. condition structural survey; 0-1	Prepare/submit reports for EBS at 0-1	Review/accept reports for EBS at O-1	Pre-const. condition structural survey; Tunnel	Prepare/submit reports for EBS along Tunnel alig	Review/accept reports for EBS along Tunnel align	Name of Administration	Appoint Traffic Consultant/Traffic Engineer	Eng's Approval of Traffic Consultant	Prepare/submit TTA Schemes (ingress & egress)	Obtain endorsement of TTA schemes from TMLG	Approval of TTA schemes by the Authorities	Approval of TTA schemes by the Authorities	Management of Sub-contractors as per SCC 44	Submit a Sub-contractor Management Plan	Submit Quarterly the Updated SMP		Sin Ho Wan as a New Tree Transplanting Area	Receive VO28 for new tree transplanting area	
QI	PCS Stage 2 b	01R0001136	01R0001138	01R0001140	PCS Stage 2 b	01R0001148	01R0001150	01R0001152	PCS Stage 2 at	01R0001112	01R0001114	01R0001116	Pre-const. con	01R0001154	01R0001156	Pre-const. con	01R0001158	01R0001160	Pre-const. con	01R0001162	01R0001164	Pre-const. con	01R0001166	01R0001168	Pre-const. con	01R0001170	01R0001172	Traffic	01R0001202	01R0001204	01R0001206	01R0001216	01R0001234	01R0001236	Managemen	01R0001302	01R0001304	Trans	Sin Ho Wan as	V0028-02	

2013												18	1		3/08	27																						2		
2008 2009 2011 2012			0	0	=ERB 26.02A; within 45 dyas of LOA	=ER 1.5.3 (2); within 3 mths from DOC	◆ER 1.53(2) within 3 months from DOC					11			As per ER. B30 30.06(2) SOR.s approval obtained on 13/02/08					awarded to Kin Lee	awarded to VSC Steel Co. Ltd by PR	Geotech Eng Ltd	awarded to Kin Wing		King Shing	awarded to Long Faith		awarded to Soldata			awaded to Seli			awarded to Intelibuild	awarded to Ch Yau	awarded to Ming Kee	awarded to Pilet Electronic	Anderson	awarded to Soldata	=awarded to Lam
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WP3D	UG08A			ANOSA			08SEP08A				ANOSA	- 2				EC07A	EB08A			EC07A	EC07A	EC07A	EC07A	UND8A	UG08A	EC07A	28JUN08A	UL08A	06DEC09	110CT09	EC07A	EC07A	EC07A	EC07A	ANOBA	EC07A	ANDSA	EC07A	AN08A	ANOSA
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Activity	Preparation works for new T.T. area		Appoint Landscape Specialist Contractor	SO's Approval of Landscape Contractor	Nominate competent person to oversee tree works	Obtain Tree Removal Permit by Others	Remove / Transplant Trees start			Appoint Surveyors	SO's Approval of Surveyor	Initial Survey	Maintain & carry out survey works	Smart Card System as per ER B.30	Submit Smart Card Sys for SO's Approval	Install & start Operating Smart-Card System	Operate & Maintain Smart-Card System	Procurement of Sub-contractor	Spoil Disposal	Earthwork for Outfall O-1	Re-bar Supply	Soil Nailing	H-piling Works	Fabrication of Pre-cast Lining	Drainage/Road Works for Access Road at I-3	Temp. steel decking over Shing Mun Nullah at I-1	Design/Install Communication System	Design/Install Flow Monitoring Devices	Procurement & delivery of Communication System	Procurement/delivery of Flow Measurement Devices	Supply TBM/Main Tunnel Construction	Security	Progress PhotoNedio	Webpage/Physical Model/3D Animation	Hoarding/Fencing Erection	Erection of Contractor's Office	Remote Control CCTV	Concrete Supply	Geotechnical Instrumentation	Drilling/Grouting for Geotchnical Instrumentat.
q	VO028-04		01R0001502	01R0001504	01R0001506	01R0001510	01R0001512	Survey		01R0001602	01R0001604	01R0001608	01R0001610	Smart Card	01R0001802	01R0001804	01R0001806	Procuremen	01R0001904	01R0001906	01R0001910	01R0001912	01R0001914	01R0001916	01R0001920	01R0001922	01R0001924	01R0001925	01R0001936	01R0001938	01R0018A02	01R0018A04	01R0018A06	01R0018A08	01R0018A10	01R0018A12	01R0018A14	01R0018A16	01R0018A18	01R0018A20

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Physical Machine & Chine Material Display	<u>a</u>	Activity Description	D04	DO4 WP3D Dur Dur	AD04 Start	AD04 Wi	WP3D WP3D Start Finish		Float	2008 2009 2010 2011 2012 2016
Prepare Sub-fine	Physical Mo	dels & Other Material Display		107 L						
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201 211 211 10MAROBA 19FEBOBA 29DECO7A 09FEBOBA 2	01R0002304	Prepare/submit a 3-D animation model	308	-	15FEB08A	27FEB09A 15FE		_		he acceptance of the SOas per ER's Note
18 18 18 18 18 18 18 18	Internet Web	osite as per ER 4.4.7								
21 211 100AARGA A 1FEEDGA 10MARGA A 1FEEDGA 2										
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TR 2, On providing documents of effected CVM	Schedule of		ł					Ā		
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1R 3: On providing documents of effected PPI 0 0 3JAN08A 0 3JAN08A 2 3JAN08A 2 4P I. Insurance has been effected PPI 4P II. Insurance has been effected PPI 4P III. III. Insurance has been effected PPI 4P III. III.	01R0002502	1R 2: On providing documents of effected CWI	0	o		OSJANOBA	OSJANOSA	H		- Lennin
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IC 0 0 26DEC11 13JAN12 2 735 of all safety & env. obligations 48 mths frm DO0e. MP 0 0 08MAR13 19APR13 2 297 of all safety & env. obligations 3 mths frm DOMexcluding Section 7 MP 0 0 07JUN13 19JUL13 2 206 of all safety & env. obligations 3 mths frm DOMexcluding Section 7 MP 0 0 07JUN13 19OCT13 2 114 of all safety & env. obligations 9 mths frm DOMexcluding Section 7 Report N 0 0 07JEC13 10FEB14 2 0 all safety & env. obligations 9 mths frm DOMexcluding Section 7 Report N 0 0 0 07SEP13 10FEB14 2 0 all safety & env. obligations 9 mths frm DOMexcluding Section 7 Report N 0 0 0 07SEP13 10FEB14 2 0 all safety & env. obligations 9 mths frm DOMexcluding Section 7 1 0 0 0 07SEC07A 14DEC07A 26FEB08A 14DEC07A 26FEB08A 14DEC07A 26FEB08A	17R0003115	17R 15; On complet all wks for 45 mth frm DOC	0	0		26SEP11	140(ST11		
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MP 0 0 07JUN13 2 206 of all safety & env. obligations 6 mths frm DOMexcluding Section MP 0 0 0 07SEP13 19JUL13 2 206 of all safety & env. obligations 9 mths frm DOMexcluding Section Re 0 0 0 07SEP13 10FEB14 2 0 0 all safety & env. obligations 9 mths frm DOMexcluding Section Re 0	17R0003117	17R 17; On complet of all wks for 3 mth frm CMP	0	0		08MAR13	19AF	PR13		of all safety & en
MP 0 0 0 07SEP13 19OCT13 2 114 of all safety & ehv. obligations 9 mths frm DOMexcluding Selections 9 m	17R0003118	17R 18; On complet of all wks for 6 mth fm CMP	0	0		07JUN13	19JU	L13		all safety & env.
te 0 0 0 1 30DEC13 10FEB14 2 0 1	17R0003119	17R 19; On complet of all wks for 9 mth frm CMP	0	0		07SEP13	1900	CT13		of all safety & env. obligations 9 mths frm DOMexcluding Sec
7 7 7 14DEC07A 20DEC07A 14DEC07A 20DEC07A 20DEC07A 2 Image: FR 5.4.1, within 28 28 28 14DEC07A 26FEB08A 14DEC07A 26FEB08A 2 Image: FR 5.4.1, within 28 28 28 27FEB08A 18MAR08A 27FEB08A 18MAR08A 2 Image: FR 5.4.1, within 28 28 28 19MAR08A 21AUG08A 19MAR08A 2 Image: FR 5.4.1, within 28	17R0003120	17R 20; On issuance of maintenance certificate	0	0		30DEC13	10FE	B14		oertificate
7 7 14DEC07A 20DEC07A 14DEC07A 20DEC07A 20DEC07A 2 20DEC07A 2 2 4.1. within 28 28 28 27FEB08A 18MAR08A 27FEB08A 18MAR08A 2 2 28 28 19MAR08A 21AUG08A 19MAR08A 2 2	Design/Des	ign Check for Permanent Works				Ì		ı		
spendent Designer 7 7 14DEC07A 20DEC07A 14DEC07A 20DEC07A	Project -wid	e Packages								
Idependent Designer 7 7 14DEC07A 20DEC07A 14DEC07A 20DEC07A 20DEC07A <t< td=""><td>Project Design</td><td>Plan (PDP)</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	Project Design	Plan (PDP)								
Prepare & submit Project Design Plan (PDP) 28 28 14DEC07A 26FEB08A 14DEC07A 26FEB08A 2 26FEB08A 2 26FEB08A 2 26FEB08A 2 27FEB08A 18MAR08A 2 <t< td=""><td>02L10D0102</td><td>Employ Independent Designer</td><td>7</td><td></td><td>4DEC07A</td><td></td><td>EC07A 20DE</td><td>EC07A</td><td>2</td><td></td></t<>	02L10D0102	Employ Independent Designer	7		4DEC07A		EC07A 20DE	EC07A	2	
SO's review & comment on PDP 28 27 FEB08A 18MAR08A 2 I 8MAR08A 3 I 8MAR0A 3 I 8MAR0A 3 I 8MAR0A	02L10D0104	Prepare & submit Project Design Plan (PDP)	28		4DEC07A	26FEB08A 14D	_	BO8A	2	within 28
Provide further information of (PDP) 28 28 19MAR08A 21AUG08A 19MAR08A 21AUG08A	02L10D0106	SO's review & comment on PDP	28		7FEB08A	18MAR08A 27F		4R08A	2	
	02L10D0108	Provide further information of (PDP)	28		9MAR08A	21AUG08A 19N	IAR08A 21Al	JG08A		

2	Activity Description	Our Dur	Dur	Start	Finish Start	t Finish	-	Float							
02L10D0110	SO approves PDP	4	14	14MAY08A	04SEP08A 14MAY08A 04SEP08A	18A 04SEP0	8A 2								
02L10D0112	Employ Independent Design Checker	4	14 2	8DEC07A	01FEB08A 28DEC07A	17A 01FEB08A	8A 2		n						
02L10D0114	Approval of Design Checker by the SO	28	28 (02FEB08A	28FEB08A 02FEB08A	8A 28FEB08A	8A 2		***						
sign for Corr	Design for Communication System														
02L1FE0102	Design preparation for the AIP submission	15	15	27JUN09	11JUL09 27JUN09	9 11JUL09	9 2	356							
02L1FE0103	Design (AIP) submission for the DC's approval	-	-	13JUL09	13JUL09 13JUL09	9 13JUL09	9 1	288	R (3		
02L1FE0104	Design (AIP) certification by the Design Checker	28	28	14JUL09	10AUG09 14JUL09	9 10AUG09	39 2	356	50						
02L1FE0106	Design (AIP) submission for the SO's approval	-	-	13JUL09	13JUL09 13JUL09	9 13JUL09	1	294	79				3		
02L1FE0108	Design (AIP) review by the SO	09	9	21JUL09	18SEP09 21JUL09	9 18SEP09	9 2	356			10		1.8		
02L1FE0110	AIP submission for rel. authorities' approval	-	-	13JUL09	13JUL09 13JUL09	9 13JUL09	9	321					5-6		
02L1FE0112	Design (AIP) review by the rel. authorities	28	28	21JUL09	17AUG09 21JUL09	9 17AUG09	39 2	387							
02L1FE0114	Obtain rel. authorities's approval for AIP	-	-	18AUG09	18AUG09 18AUG09	18AUG09	1	315							
02L1FE0116	Obtain SO's consent for design (AIP)	0	0		19SEP09	19SEP09	39 2	356			•				
02L1FE0118	Design preparation for the DDA submission	30	30	28AUG09	26SEP09 28AUG09	39 26SEP09	9 2	356							
02L1FE0119	Design (DDA) submission for the DC's approval	-	~	28SEP09	28SEP09 28SEP09	9 28SEP09	1 1	288			-/			200	
02L1FE0120	Design (DDA) certification by the Design Checker	78	28	29SEP09	26OCT09 29SEP09	9 26OCT09	39 2	356			11				
02L1FE0122	Design (DDA) submission for the SO's approval	3	-	28SEP09	28SEP09 28SEP09	9 28SEP09	1	293					2		
02L1FE0124	Design (DDA) review by the SO	09	9	06OCT09	04DEC09 06OCT09	9 04DEC09	39 2	356			B				
02L1FE0126	DDA submission for rel. authorities' approval	*	۳	28SEP09	28SEP09 28SEP09	9 28SEP09	1	319			_				
02L1FE0128	Design (DDA) review by the rel. authorities	28	28	06OCT09	02NOV09 06OCT09	9 02NOV09	09 2	388			83				
02L1FE0130	Obtain rel. authorities's approval for DDA	-	-	03NOV09	03NOV09 03NOV09	99 03NOV09	1 60	316				To-			
02L1FE0132	Obtain SO's consent for design (DDA)	0	0		o5DEC09	05DEC09	39 2	356			•			25	
ign for Flow	Design for Flow Measurement System												17		
02L1FE0202	Design preparation for the AIP submission	0	0		11MAY09A	11MAY09A	09A 2		- 24					(58) A)	
02L1FE0203	Design (AIP) submission for the DC's approval		,-	29MAY09	29MAY09 29MAY09	39 29MAY09	1 60			v			X		
02L1FE0204	Design (AIP) certification by the Design Checker	28	28		26JUN09 30MAY09	26JUN09	39 2	502		51			1111		
02L1FE0206	Design (AIP) submission for the SO's approval	-		12MAY09A	12MAY09A 12MAY09A	39A 12MAY09A	1 A60								
02L1FE0208	Design (AIP) review by the SO	09	. 09	13MAY09A	24JUL09 13MAY09A		9 2	502	64	1					
02L1FE0210	AIP submission for rel. authorities' approval	_	•	29MAY09	Vest I		1	432	-39						
02L1FE0212	Design (AIP) review by the ref. authorities	28	28	60NUC90	60NUL09 06JUL09		9 2	522							
02L1FE0214	Obtain rel. authorities's approval for AIP	5	-	04JUL09	04JUL09 04JUL09		9	427	5-8			17.			
02L1FE0216	Obtain SO's consent for design (AIP)	0	0		25JUL09	25JUL09	9 2	-		*	•				
02L1FE0218	Design preparation for the DDA submission	30	30	03JUL09	01AUG09 03JUL09	9 01AUG09	09 2	502							
02L1FE0219	Design (DDA) submission for the DC's approval	-	۳	03AUG09	03AUG09 03AUG09	39 03AUG09	1 60	410				1.77			
02L1FE0220	Design (DDA) certification by the Design Checker	28	28	04AUG09	31AUG09 04AUG09	31AUG09	09 2	501			111				
02L1FE0222	Design (DDA) submission for the SO's approval	-	,	03AUG09	03AUG09 03AUG09	39 03AUG09	1 60	416						88	
02L1FE0224	Design (DDA) review by the SO	09	09	11AUG09	09OCT09 11AUG09	99 09OCT09	09 2	501			D				
02L1FE0226	DDA submission for rel. authorities' approval	-	-	03AUG09	03AUG09 03AUG09	39 03AUG09	1 60	440						-	
02L1FE0228	Design (DDA) review by the rel. authorities	28	28	11AUG09	07SEP09 11AUG09		2 5	533							
02L1FE0230	Obtain rel. authorities's approval for DDA	-	-	08SEP09	08SEP09 08SEP09	9 08SEP09	1 1	431							
	Object of the SO A special from the SO	c	C		COLOCOF	A DOOL					4		- 1		

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LINISU	į		15MAY08A	26MAY08A	26MAY08A	30JUN08A	30JUN08A		16FEB09A	17FEB09A	17FEB09A	17FEB09A	14MAR09A	03MAR09A	31MAY09	24MAR09A		18JAN10	19JAN10	16FEB10	19JAN10	02MAR10	02MAR10		28FEB09A	02MAR09A	18MAR09A	19MAR09A	20MAR09A	19AUG08A	12NOV08A	12NOV08A	-	12JUN09	13JUN09	11JUL09	13JUN09	18AUG09	20JUN09	18JUL09	2010109	19AUG09
Sigil	j		2FEB08A	SMAY08A	SMAY08A	7MAY08A			2MAY08A	OJULOSA	1JUL08A	2AUG08A	3AUG08A	3FEB09A	4MAR09A			4JAN10*	19JAN10	20JAN10	9JAN10	0JAN10			2JUN08A	2JUL08A	4JUL08A	5JUL08A	6JUL08A	4JUL08A	5JUL08A	3NOV08A		21MAR09A	13JUN09	14JUN09	13JUN09	14JUN09	20JUN09	21JUN09	20JUL09	
Lingin	١		15MAY08A 22FEB08A	26MAY08A 16MAY08A	26MAY08A 26MAY08A	30JUN08A 27MAY08A	30JUN08A		16FEB09A 02MAY08A	17FEB09A 10JUL08A	17FEB09A 11JUL08A	17FEB09A 12AUG08A	14MAR09A 13AUG08A	03MAR09A 03FEB09A	31MAY09 04MAR09A	24MAR09A		18JAN10 04JAN10*	19JAN10 1	16FEB10 2	19JAN10 19JAN10	02MAR10 20JAN10	02MAR10		28FEB09A 02JUN08A	OZMAROSA 12JULOSA	18MAR09A 14JUL08A	19MAR09A 15JUL08A	20MAR09A 16JUL08A	19AUG08A 14JUL08A	12NOV08A 15JUL08A	12NOV08A 03NOV08A	-	12JUN09 2	13JUN09 1	11JUL09 1	13JUN09 1	18AUG09 1	20JUN09 2		20JUL09 2	19AUG09
Start	į			16MAY08A 26		7MAY08A 30	36		02MAY08A 1	OJULO8A 1	11JUL08A 1	12AUG08A 1	13AUG08A 14	03FEB09A 03	04MAR09A 3	22		04JAN10*	19JAN10	20JAN10	19JAN10	20JAN10 0	0		02JUN08A 2	2JUL08A 07		5JUL08A 19	6JUL08A 2	4JUL08A 1	15JUL08A 1	03NOV08A 1:	-	21MAR09A	13JUN09	14JUN09	13JUN09	14JUN09	20JUN09		20JUL09	
Dur	1		14 22	14 16	1 26	21 27	0		158 02	2 10	30 11	2 12	68 13	1 03	28 04	0		15 04	-	28 2	1	42 2	0		30 02	3	243 14	2 16	66 16	1-	28 1	1 03	0	30 21	-	28 1	-	1 99	1 2	28 2	- N	0
o and	١		4	4	-	21	0		158	2	30	2	68	-	28	0		15		28	+	42	0		30	ю	243	2	99	्रक्त	28	. 	0	30	·-	28	-	99		28		0
Description	n Portion A	Shing Mun Nullah	by the Designer	Design certification by the Design Checker	Design submission for the SO's approval	e SO	oval from the SO	ide/Box Culvert	Design preparation for the DDA submission	Design submission for the DC's approval	Design (DDA) certification by the Design Checker	Design (DDA) submission for the SO's approval	w by the SO	SO submit design (DDA) for approval of GEO	Design (DDA) review/approval by the GEO	t for design (DDA)		by the Designer	Design submission for the DC's approval	Design certification by the Design Checker	Design submission for the SO's approval	e SO	oval from the SO	Portion A	Design preparation for the AIP submission	Design (AIP) submission for the DC's approval	Design (AIP) certification by the Design Checker	Design (AIP) submission for the SO's approval	by the SO	AIP submission for rel. authorities' approval	Design (AIP) review by the rel. authorities	Obtain rel. authorities's approval for AIP	nt for design (AIP)	Design preparation for the DDA submission	Design (DDA) submission for the DC's approval	Design (DDA) certification by the Design Checker	Design (DDA) submission for the SO's approval	w by the SO	DDA submission for rel. authorities' approval	Design (DDA) review by the rel. authorities	Obtain rel. authorities's approval for DDA	nt for design (DDA)
	Design Packages for Works in Portion A	Temp. Steel Decking Design Over Shing Mun Nullah	Design preparation by the Designer	Design certification t	Design submission f	Design review by the SO	Obtain design approval from the SO	ELS Design for Spiral Ramp/Cascade/Box Culvert	Design preparation f	Design submission f	Design (DDA) certific	Design (DDA) submi	Design (DDA) review by the SO	SO submit design (L	Design (DDA) reviev	Obtain SO's consent for design (DDA)	Temp. Platform Design for H-Piling	Design preparation by the Designer	Design submission f	Design certification I	Design submission f	Design review by the SO	Obtain design approval from the SO	Cascade & Box Culver Design for Portion A	Design preparation t	Design (AIP) submis	Design (AIP) certific	Design (AIP) submis	Design (AIP) review by the SO	AIP submission for r	Design (AIP) review	Obtain rel. authoritie	Obtain SO's consent for design (AIP)	Design preparation	Design (DDA) subm	Design (DDA) certifi	Design (DDA) subm	Design (DDA) review by the SO	DDA submission for	Design (DDA) reviev	Obtain rel. authoritie	Obtain SO's consent for design (DDA)
	Design Pac	Temp. Steel	02L1AA0102	02L1AA0104	02L1AA0106	02L1AA0108	02L1AA0110	ELS Design	02L1AA0202	02L1AA0203	02L1AA0204	02L1AA0206	02L1AA0208	02L1AA0216	02L1AA0218	02L1AA0238	Temp. Platfo	02L1AA0302	02L1AA0303	02L1AA0304	02L1AA0306	02L1AA0308	02L1AA0310	Cascade & E	02L1AA0402	02L1AA0403	02L1AA0404	02L1AA0406	02L1AA0408	02L1AA0410	02L1AA0412	02L1AA0414	02L1AA0420	02L1AA0422	02L1AA0423	02L1AA0424	02L1AA0426	02L1AA0428	02L1AA0430	02L1AA0432	02L1AA0434	02L1AA0440

Impact Assess	Impact Assessment on WSD Wo YIp Hop V. S. P. H.										
02L1AA0502	Design preparation for the DDA submission	30	30 02MAY08A	ISA 26FEB09A 02MAY08A	100	309A 2					
02L1AA0503	Design (DDA) submission for the DC's approval	-	1 26JUN08A	8A 27FEB09A 26JUN08A	N08A 27FEB09A	309A 1					
02L1AA0504	Design (DDA) certification by the Design Checker	09	60 27JUN08A	8A 11MAR09A 27JUN08A	NOSA 111MAR09A	209A 2		14 18 10 18 10 10 10 10 10 10 10 10 10 10 10 10 10	ICE cert on 02/12/08		
02L1AA0506	Design (DDA) submission for the SO's approval	2	2 14JUL08A	8A 24MAR09A 14JUL08A	-08A 24MAR09A	R09A 1					
02L1AA0508	Design (DDA) review by the SO	99	66 15JUL08A	8A 31MAR09A 15JUL08A	-08A 31MAR09A	R09A 2					
02L1AA0510	DDA submission for rel, authorities' approval	2	2 10JUL08A	8A 14MAR09A 10JUL08A	-08A 14MAR09A	R09A 1					
02L1AA0512	Design (DDA) review by the rel. authorities	28	28 14JUL08A	8A 31MAY09 14JUL08A	-08A 31MAY09	Y09 2	0				
02L1AA0514	Obtain rel. authorities's approval for DDA	-	1 01JUN09	90 01JUN09 01JUN09	90NUL10 60N	109	0				
02L1AA0520	Obtain SO's consent for design (DDA)	0	0	31MAR09A	31MAR09A	R09A 2		•			
Temporary Pla	Temporary Platform for Pipe Pilling							= 7			
02L1AA0602	Design preparation by the Designer	11	11 21JUL08A	8A 23AUG08A 21JUL08A	_08A 23AUG08A	308A 2		13			
02L1AA0603	Design submission for the DC's approval	æ	1 01AUG08A	38A 25AUG08A 01AUG08A	G08A 25AUG08A	308A 1		11			
02L1AA0604	Design certification by the Design Checker	21	21 02AUG08A	38A 26SEP08A 02AUG08A	G08A 26SEP08A	2 A80	000	0			
02L1AA0606	Design submission for the SO's approval	*	1 08AUG08A	38A 27SEP08A 08AUG08A	G08A 27SEP08A	1 1980		11			
02L1AA0608	Design review by the SO	28	28 09AUG08A	17OCT08A 09AUG08A	G08A 170CT08A	T08A 2		D			
02L1AA0610	Obtain design approval from the SO	0	0	170CT08A	17OCT08A	T08A 2		•		8 7	
Temporary Wo	Temporary Works Design for Retrieval of TBM										
02L1AA0702	Design preparation by the Designer	30	30 28FEB09A	19A 22JUN09 28FEB09A	B09A 22JUN09	709 2	139	i			
02L1AA0703	Design submission for the DC's approval	-	1 23JUN09	99 23JUN09 23JUN09	N09 23JUN09	109	115				
02L1AA0704	Design certification by the Design Checker	28	28 24JUND9	21JUL09	N09 21JUL09	2 60	139				100
02L1AA0706	Design submission for the SO's approval	*	1 23JUN09	99 23JUN09 23JUN09	N09 23JUN09	109	115				
02L1AA0708	Design review by the SO	42	42 24JUN09	09 04AUG09 24JUN09	NO9 04AUG09	309 2	139	11			
02L1AA0710	Obtain design approval from the SO	0	0	04AUG09	04AUG09	309 2	139	•			22
Temporary Dr.	Temporary Drainage Management Plan for Portion A						(0)				
02L1AA0802	TDMP preparation by the Designer	208	208 18AUG08A	38A 23MAY09A 18AUG08A	G08A 23MAY09A	Y09A 2					3
02L1AA0804	TDMP submission for the DC's approval	2	2 24SEP08A	38A 25MAY09A 24SEP08A	POBA 25MAY09A	Y09A 1					
02L1AA0806	TDMP certification by the Design Checker	28	28 240CT08A	93JUN09	24OCT08A 03JUN09	709 2	142				(5)
02L1AA0808	TDMP submission for the SO's approval	2	2 05NOV08A	04JUN09	05NOV08A 04JUN09	109	165				
02L1AA0810	TDMP review by the SO	90	90 05NOV08A	16JUL09	05NOV08A 16JUL09	.09 2	192				
02L1AA0812	TDIMP submission for DSD's approval	+	1 04JUN09	04JUN09			119				
02L1AA0814	TDIMP review by the DSD	90	90 05JUN09	02SEP09		P09 2	44			7	
02L1AA0816	Obtain DSD's approval for DDA	*	1 03SEP09	09 03SEP09 03SEP09		-	117			1 1	
02L1AA0818	Obtain SO's consent for TDMP	0	0	03SEP09	03SEP09	P09 2	144		۵		
Geotechnical	Geotechnical Instrumentation Stg 1 for GL Works										20
3DL1AAG102	Design preparation by the Designer	14	14 22FEB08A	38A 28APR08A 22FEB08A		R08A 2				X5	
3DL1AAG104	Design certification by the Design Checker	7	7 29APR08A	38A 16JUN08A 29APR08A		V08A 2		0		1	
3DL1AAG106	Design submission for the SO's approval	*	1 10MAY08A			Y08A 1					
3DL1AAG108	Design review by the SO	14	14 12MAY08A	DBA 28AUG08A 12MAY08A	Y708A 28AUG08A	G08A 2					
3DL1AAG110	Obtain design approval from the SO	0	0	28AUG08A	-	G08A 2		*		00	10
3DL1AAG112	Install Geotechnical Instruments	9	6 26MAY08A	08A 26MAY08A 26MAY08A	Y708A 26MAY08A	Y08A 1					
3DI 1AAG114	Constitution onlesses	17	AN 27MAYORA	DAS 31MAYORA 27MAYORA	YORA 31MAYORA	YORA 2					

OI	Activity	100	P3D	AD04			Cal	Total	200E 800E	2010	1102	2012	2013
	Description	Dur	Dur	Start	Finish Start	t Finish	9	Float					
Geotechnical I	Geotechnical Instrumentation Stg 2 for Deep Exc.												
3DL1AAG202	Design preparation by the Designer	4	14 C	01DEC08A 2	24FEB09A 01DEC08A	08A 24FEB09A	2		0				
3DL1AAG204	Design certification by the Design Checker	7	7 1	7 15DEC08A 2	25FEB09A 15DEC08A	08A 25FEB09A	2		U				
3DL1AAG206	Design submission for the SO's approval		-	07JAN09A	25FEB09A 07JAN09A	19A 25FEB09A			O				18
3DL1AAG208	Design review by the SO	28	28 (08JAN09A 2	24MAR09A 08JAN09A		7 2		11				
3DL1AAG210	Obtain design approval from the SO	0	0	N	24MAR09A	24MAR09A	7		•				
3DL1AAG212	Install Geotechnical Instruments	28	28 (09FEB09A	04JUN09 09FEB09A	99A 04JUN09	-	0	1				535
3DL1AAG214	Baseline Monitoring	9	9	18FEB09A 2	25MAR09A 18FEB09A	39A 25MAR09A	1 2		111			A 8	
3DL1AAG216	Monitor/report Geotechnical Instrumentation	1,643 1,643	-	02JUN08A	04FEB13 02JUN08A	38A 04FEB13	2	0			l		1
Design Pack	Design Packages for Works in Portion B								100				
Piling Platform	Piling Platform to Construct H-pile Wall												
i02L1BB0202	Design preparation by the Designer	15	15 2	4MAR08A C	24MAR08A 09MAY08A 24MAR08A 09MAY08A	08A 09MAY08/	2		п				(18)
02L1BB0204	Design certification by the Design Checker	41	4	10MAY08A	08AUG08A 10MAY08A	08A 08AUG08A	2						0.
02L1BB0206	Design submission for the SO's approval	-	-	1 21MAY08A C	08AUG08A 21MAY08A	08AUG08A	-		11				
02L1BB0208	Design review by the SO	21	21 2	22MAY08A	25SEP08A 22MAY08A	08A 25SEP08A	2					70	
02L1BB0210	Obtain design approval from the SO	0	0		25SEP08A	25SEP08A	2		•				
Temp. Platform	Temp. Platform to Construct Drop Shafts											35	
02L1BB0302	Design preparation by the Designer	22	22 0	4AUG08A	04AUG08A 11DEC08A 04AUG08A	08A 11DEC08A	2						
02L1BB0303	Design submission for the DC's approval	2	2	2 11DEC08A	12FEB09A 11DEC08A	08A 12FEB09A	+		I)				
02L1BB0304	Design certification by the Design Checker	14	4	12DEC08A 2	25FEB09A 12DEC08A	08A 25FEB09A	2	7.0	01		, 5		8
02L1BB0306	Design submission for the SO's approval	2	2	2 12DEC08A 3	25FEB09A 12DEC08A	08A 25FEB09A	-		ij		a		
02L1BB0308	Design review by the SO	21	21	21 13DEC08A 1	11MAR09A 13DEC08A	08A 11MAR09A	1 2		1)				(82)
02L1BB0310	Obtain design approval from the SO	0	0		11MAR09A	11MAR09A	350		•				188
Temporary Dra	Temporary Drainage Management Plan												
02L1BB0402	TDMP preparation by the Designer	313	313	313 05MAY08A 2	21MAR09A 05MAY08A	08A 21MAR09A	7 2						
02L1BB0403	TDMP submission for the DC's approval	2	2	2 05AUG08A 2	23MAR09A 05AUG08A	08A 23MAR09A	-						
02L1BB0404	TDMP certification by the Design Checker	213	213	213 06AUG08A 1	13APR09A 06AUG08A	08A 13APR09A	2	No. of Sec.					10
02L1BB0406	TDMP submission for the SO's approval	2	2	2 24SEP08A 1	14APR09A 24SEP08A	08A 14APR09A	۳.		1			38	
02L1BB0408	TDMP review by the SO	06	90 25	SEP08A	03JUN09 25SEP08A	08A 03JUN09	2	-210					25
02L1BB0410	TDMP submission for DSD's approval	-	1 23	SEP08A	23SEP08A 23SEP08A	08A 23SEP08A	-	-5					
02L1BB0412	TDMP review by the DSD	06	30	24SEP08A		08A 04JUN09	2	-211					
02L1BB0414	Obtain DSD's approval for DDA	-	-	05JUN09	05JUN09 05JUN09		-	-168					(C)
02L1BB0416	Obtain SO's consent for TDMP	0	0		05JUN09	60NUL20	2	-211	•				
Temp. Suppor	Temp. Support Design for MAA/MAS/VDS/DC					I							
02L1BB0502	Design preparation for the AIP submission	272	272 (23UN08A	02JUN08A 19MAR09A 02JUN08A	38A 19MAR09A	4 2					001	000
02L1BB0503	Design (AIP) submission for the DC's approval	8	7	11JUL08A 2	20MAR09A 11JUL08A	BA 20MAR09A	1						33
02L1BB0504	Design (AIP) certification by the Design Checker	09	09	12JUL08A (04APR09A 12JUL08A	SA 04APR09A	2						
02L1BB0506	Design (AIP) submission for the SO's approval	23	2	24JUL08A (06APR09A 24JUL08A	8A 06APR09A	-						
02L1BB0508	Design (AIP) review by the SO	99	99	25JUL08A 1	11MAY09A 25JUL08A	11MAY09A	7						
02L1BB0510	AIP submission for rel. authorities' approval	-	-	12JUL08A	12JUL08A 12JUL08A	12JUL08A	٠					Š	(SS
02L1BB0512	Design (AIP) review by the rel. authorities	28	28	14JUL08A	10NOV08A 14JUL08A	BA 10NOV08A	2		I			8	e 97 i
02L1BB0514	Obtain rel. authorities's approval for AIP	-	÷	11NOV08A	11NOV08A 11NOV08A	08A 11NOV08A	1						
02L1BB0516	SO submit design (AIP) for approval of GEO	-	•	29MAY09	29MAY09 29MAY09	09 29MAY09	١	0				-8-	àya
					Shoot 14 of Eg		¥.						

9	Description	Dur	Dur	Start	Finish S	Start	Finish)	Float			
02L1BB0518	Design (AIP) review/approval by the GEO	28	28	30MAY09	26JUN09 30MAY09		26JUN09	2	0	911		
02L1BB0520	Obtain SO's consent for design (AIP)	0	0		11MAY09A	_	11MAY09A	2		•		
02L1BB0522	Design preparation for the DDA submission	30	30	28MAY09	26JUN09 28MAY09		26JUN09	2	0	30		
02L1BB0523	Design (DDA) submission for the DC's approval	-	-	27JUN09	27JUN09 27JUN09		27JUN09		0			
02L1BB0524	Design (DDA) certification by the Design Checker	28	28	28JUN09	25JUL09 28JUN09		25JUL09	2	-	1181		
02L1BB0526	Design (DDA) submission for the SO's approval	-	-	27JUN09	27JUN09 27JUN09		27JUN09	÷	0		- 3	
02L1BB0528	Design (DDA) review by the SO	99	99	28JUN09	01SEP09 28JUN09		01SEP09	2	0	1		
02L1BB0530	DDA submission for rel. authorities' approval	-	-	04JUL09	04JUL09 04JUL09		04JUL09	•	26			
02L1BB0532	Design (DDA) review by the rel. authorities	28	28	05JUL09	01AUG09 05JUL09		01AUG09	2	31			
02L1BB0534	Obtain rel. authorities's approval for DDA	-	•	03AUG09	03AUG09 03AUG09		03AUG09	-	56			
02L1BB0536	SO submit design (DDA) for approval of GEO	-	-	03AUG09	03AUG09 03AUG09		03AUG09	-	0			
02L1BB0538	Design (DDA) review/approval by the GEO	28	28	04AUG09	31AUG09 04AUG09		31AUG09	2	0	•		
02L1BB0540	Obtain SO's consent for design (DDA)	0	0		02SEP09	Ü	02SEP09	2	0	*		9
emp. Suppor	Temp. Support Design for MA and MA/NIT Connection										0 0	
02L1BB0602	Design preparation for the AIP submission	110	110	09JUN08A	OZJUNO9 09JUN08A		60NNC20	2	0			
02L1BB0603	Design (AIP) submission for the DC's approval	, 	-	18MAY09A	29MAY09 18MAY09A		29MAY09	-	m			
02L1BB0604	Design (AIP) certification by the Design Checker	28	28	19MAY09A	14JUN09 19MA	19MAY09A	14JUN09	2	0	•		34
02L1BB0606	Design (AIP) submission for the SO's approval	-	*	93JUN09	GONULEO GONULEO		60NDC80		0			
02L1BB0608	Design (AIP) review by the SO	99	99	04JUN09	08AUG09 04JUN09		08AUG09	2	0	1		
02L1BB0610	AIP submission for rel. authorities' approval		-	93JUN09	60NULEO 60NULEO		03JUN09	ų.	30			
02L1BB0612	Design (AIP) review by the rel. authorities	28	28	04JUN09	01JUL09 04JUN09	-20	01JUL09	7	36	n		
02L1BB0614	Obtain rel. authorities's approval for AIP	-	-	02JUL09	02JUL09 02JUL09		02JUL09		31			
02L1BB0616	SO submit design (AIP) for approval of GEO		۳	22JUN09	22JUN09 22JUN09	5-50	22JUN09	-	0			
02L1BB0618	Design (AIP) review/approval by the GEO	28	28	23JUN09	20JUL09 23JUN09		20JUL09	7	0			8
02L1BB0620	Obtain SO's consent for design (AIP)	0	0		09AUG09	J	09AUG09	2	0	•		
02L1BB0622	Design preparation for the DDA submission	30	30	18JUL09	16AUG09 18JUL09		16AUG09	7	0			
02L1BB0623	Design (DDA) submission for the DC's approval	-	*	17AUG09	17AUG09 17AUG09		17AUG09	-	0	- /		
02L1BB0624	Design (DDA) certification by the Design Checker	28	28	18AUG09	14SEP09 18AUG09		14SEP09	7	0	•		VS (F
02L1BB0626	Design (DDA) submission for the SO's approval	-	-	17AUG09	17AUG09 17AUG09		17AUG09	-	0		TILV	
02L1BB0628	Design (DDA) review by the SO	99	99	18AUG09			22OCT09	7	0			
02L1BB0630	DDA submission for rel. authorities' approval	-	_	24AUG09	24AUG09 24AUG09		24AUG09		27			1353
02L1BB0632	Design (DDA) review by the rel. authorities	28	28	25AUG09	21SEP09 25AUG09		21SEP09	N	3	13		21
02L1BB0634	Obtain rel, authorities's approval for DDA	-	τ-	22SEP09	22SEP09 22SEP09		22SEP09		52		-3	200
02L1BB0636	SO submit design (DDA) for approval of GEO	-	T	22SEP09			22SEP09	-	0			
02L1BB0638	Design (DDA) review/approval by the GEO	28	28	23SEP09	200CT09 23SEP09		200CT09	7	0	130		
02L1BB0640	Obtain SO's consent for design (DDA)	0	0		23OCT09		23OCT09	2	0	•		NV.
ermanent De	Permanent Design for MAA/MAS/VDS/DC										-	
02L1BB0702	Design preparation for the AIP submission	285	285	02JUN08A	O2JUN09 02JUN08A		02JUN09	01	0			
02L1BB0703	Design submission for the DC's approval	2	2	23JUL08A	03JUN09 23JU	23JUL08A	93JUN09		0			100
02L1BB0704	Design (AIP) certification by the Design Checker	09	9	24JUL08A	19JUN09 24JU	24JUL08A	19JUN09	2	0			
02L1BB0706	Design (AIP) submission for the SO's approval	2	2	04JUL08A	03JUN09 04JU	04JUL08A	60NULE0		-		<u>,</u> °	
02L1BB0708	Design (AIP) review by the SO	99	99	05JUL08A	19JUN09 05JU	05JUL08A	19JUN09	8	•			
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Q	Activity	D04 1	D04 WP3D	AD04 Starf	AD04 WP3D Finish Start	WP3D Finish	Total	2002 2002	2010	1188	2012	2013
02L1BB0906	Design submission for the SO's approval	7-		15AUG09	9 154	15AUG09	1 70					333
02L1BB0908	Design review by the SO	42	42	16AUG09	26SEP09 16AUG09	26SEP09	2 86					tie.
02L1BB0910	Obtain design approval from the SO	0	0		26SEP09	26SEP09	2 86	•				
Platform for R(Platform for RCD Operation (Air Vent Shaft)											
02L1BB1602	Prepare design/method statement	9	6 2	22NOV08A	01DEC08A 22NOV08A	A 01DEC08A						
02L1BB1604	Submit design/method statement to Design Checker	T	1 0	1 02DEC08A	23DEC08A 02DEC08A	A 23DEC08A	-	E11			17	
02L1BB1606	Certify design/m.s. by Design Checker	7	7 0	03DEC08A	24DEC08A 03DEC08A	A 24DEC08A	2					
02L1BB1608	Submit design/m.s. to SO	-	1 2	24DEC08A	24DEC08A 24DEC08A	A 24DEC08A	•					
02L1BB1610	Design/m.s. review by SO	14	14 25	DEC08A	11MAR09A 25DEC08A		2	11				
02L1BB1612	Obtain design/m.s. approval from the SO	0	0		11MAR09A	11MAR09A	-	•				300
Temporary Wo	Temporary Works for Air Vent Shaft Construction											
02L1BB1702	Prepare design/method statement	21	21 0	3NOV08A	03NOV08A 16DEC08A 03NOV08A	4 16DEC08A	-	n				
02L1BB1704	Submit design/method statement to Design Checker	-	1 17	DEC08A	17DEC08A 17DEC08A	4 17DEC08A						
02L1BB1706	Certify design/m.s. by Design Checker	4	14 1	18DEC08A	23JAN09A 18DEC08A	A 23JAN09A	2	B				
02L1BB1708	Submit design/m.s. to SO	-	1 2	23JAN09A	23JAN09A 23JAN09A	A80NAL23	-					
02L1BB1710	Design/m.s. review by SO	7	7 2	24JAN09A	23MAR09A 24JAN09A	23MAR09A	2	n				
02L1BB1712	Obtain design/m.s. approval from the SO	0	0		23MAR09A	23MAR09A	74E	•			000	(AS)
Permanet Desi	Permanet Design for Air Vent Shaft											
02L1BB1802	Prepare design/method statement	56	26 0	5NOV08A	26 05NOV08A 11DEC08A 05NOV08A 11DEC08A	4 11DEC08A		(1)				
02L1BB1804	Submit design/method statement to Design Checker	٦	-	1 12DEC08A	12DEC08A 12DEC08A	4 12DEC08A	: 				- 3	
02L1BB1806	Certify design/m.s. by Design Checker	21	21 1		24MAR09A 13DEC08A		2	1				
02L1BB1808	Submit design/m.s. to SO	-	1	17DEC08A	24MAR09A 17DEC08A	A 24MAR09A		II				2/3
02L1BB1810	Design/m.s. review by SO	42	42 1	18DEC08A	31MAY09 18DEC08A	A 31MAY09	2 150	I				
02L1BB1812	Submit design to rel. authorities	•	1 2	1 25MAR09A	25MAR09A 25MAR09A	A 25MAR09A	-					
02L1BB1814	Obtain design approval from rel. authorities	28	28 01	11MAR09A	28MAY09 01MAR09A	A 28MAY09	2 153					
02L1BB1816	Obtain design/m.s. approval from the SO	0	0		30MAY09	30MAY09	1 125	•				
ELS Design fo	ELS Design for Construction of Vortex Shaft											
02L1BB1902	Design preparation by the Designer	25	25 2	23FEB09A	02JUN09 23FEB09A	A 02JUN09	2 -205	1				
02L1BB1904	Design submission for the DC's approval	-	·-	60NULE0		03JUN09	1 -163					
02L1BB1906	Design certification by the Design Checker	28	28	04JUN09		01JUL09						
02L1BB1908	Design submission for the SO's approval	-		60NULE0		03JUN09	1 -157					
02L1BB1910	Design review by the SO	45	42	11JUN09	15JUL09 11JUN09	15JUL09	2 -205					
02L1BB1912	Obtain design approval from the SO	0	o		15JUL09	15JUL09	2 -205	•				200
Geotechnical	Geotechnical Instrumentation Stg 1 for GL Works	1										
3DL1BBG102	Design preparation by the Designer	4	14		05MAY08A 22FEB08A							
3DL1BBG104	Design certification by the Design Checker	7	7 0		29AUG08A 06MAY08A	A 29AUG08A	01					
3DL1BBG106	Design submission for the SO's approval	٠	·	10MAY08A	10MAY08A 10MAY08A 10MAY08A	A 10MAY08A						
3DL1BBG108	Design review by the SO	14	14	12MAY08A	14JUL08A 12MAY08A	A 14JUL08A	61	n				E
3DL1BBG110	Obtain design approval from the SO	0	0		14JUL08A	14JUL08A	64	•				
3DL1BBG112	Install Geotechnical Instruments	9	9	11JUN08A	19JUL08A 11JUN08A	A 19JUL08A	x= :	8				
3DL1BBG114	Baseline Monitoring	14	14	21JUL08A	26JUL08A 21JUL08A	26JUL08A	63	-				
Geotechnical	Geotechnical Instrumentation Stg 2 for Deep Exc.											
3DL1BBG202	Design preparation by the Designer	40	40 31	11AUG08A	AUG08A 240CT08A 31AUG08A 240CT08A	A 240CT08A	2					

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021 1C:C0326	Design (DDA) surhmission for the SO's approval	-	7	90 IUI.70	60 IUL70 60 IUL70		07.11.11.09	- -	-117					
02L1CC0328	Design (DDA) review by the SO	99	99	08JUL09			11SEP09	2 -1	-146					\$-0 7,
02L1CC0330	DDA submission for rel, authorities' approval	-	-	07JUL09	-	Ī	077UL09	1	-85	_				946
02L1CC0332	Design (DDA) review by the rel. authorities	28	28	15JUL09			11AUG09	2 -1	-116					13.
02L1CC0334	Obtain rel. authorities's approval for DDA	-	-	12AUG09	12AUG09 12AUG09		12AUG09	-	-95					933
02L1CC0336	SO submit design (DDA) for approval of GEO	-	-	12AUG09	12AUG09 12AUG09		12AUG09	•	0					133
02L1CC0338	Design (DDA) review/approval by the GEO	28	28	13AUG09	09SEP09 13AUG09		09SEP09	2	0		_			200
02L1CC0340	Obtain SO's consent for design (DDA)	0	0		12SEP09	12	12SEP09	2 -1	-146		•			7/2
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02L1CC0402	Design preparation for the AIP submission	110	110	18AUG08A	03JUN09 18AUG08A	- 144	60NULEO	2	0	İ				-3
02L1CC0403	Design (AIP) submission for the DC's approval	2	2	05MAY09A	30MAY09 05MAY09A	Y09A 30	30MAY09		0					
02L1CC0404	Design (AIP) certification by the Design Checker	28	28 (28 06MAY09A	15JUN09 06MAY09A		15JUN09	0	0					
02L1CC0406	Design (AIP) submission for the SO's approval	·	-	04JUN09	04JUN09 04JUN09		04JUN09	-	0			× .		
02L1CC0408	Design (AIP) review by the SO	99	99	90NUC30	09AUG09 05JUN09		09AUG09	N	0					
02L1CC0410	AIP submission for rel. authorities' approval		-	04JUN09	04JUN09 04JUN09		04JUN09		30		1 2			\$ (%) (%)
02L1CC0412	Design (AIP) review by the rel. authorities	28	28	95JUN09	02JUL09 05JUN09		02JUL09	8	36		10-			33
02L1CC0414	Obtain rel. authorities's approval for AIP	٠	-	03JUL09	6370L09 03JUL09		03JUL09		31					
02L1CC0416	SO submit design (AIP) for approval of GEO	٠	-	23JUN09	23JUN09 23JUN09		23JUN09	-	0					
02L1CC0418	Design (AIP) review/approval by the GEO	28	28	24JUN09	21JUL09 24JUN09		21JUL09	2	0		, or		4.1	
02L1CC0420	Obtain SO's consent for design (AIP)	0	0		10AUG09	10	10AUG09	2	0					
02L1CC0422	Design preparation for the DDA submission	30	30	19JUL09	17AUG09 19JUL09		17AUG09	2	0					
02L1CC0423	Design submission for the DC's approval	1	7	18AUG09	18AUG09 18AUG09		18AUG09	T-0	0					
02L1CC0424	Design (DDA) certification by the Design Checker	28	28	19AUG09	15SEP09 19AUG09	335	15SEP09	5	0					
02L1CC0426	Design (DDA) submission for the SO's approval	-	-	18AUG09	18AUG09 18AUG09	1	18AUG09		73				0 4	
02L1CC0428	Design (DDA) review by the SO	99	99	19AUG09	23OCT09 19AUG09	13.5	23OCT09	2	88		1			
02L1CC0430	DDA submission for rel. authorities' approval	1	-	25AUG09	25AUG09 25AUG09		25AUG09	-	88				130	
02L1CC0432	Design (DDA) review by the rel. authorities	28	28.	26AUG09	22SEP09 26AUG09		22SEP09	2	118				2 0	
02L1CC0434	Obtain rel. authorities's approval for DDA	-	Έ-	23SEP09	23SEP09 23SEP09		23SEP09		95					
02L1CC0436	SO submit design (DDA) for approval of GEO	-	-	23SEP09	23SEP09 23SEP09		23SEP09		0					
02L1CC0438	Design (DDA) review/approval by the GEO	28	28	24SEP09	210CT09 24SEP09		21OCT09	2	0		186			8/8
02L1CC0440	Obtain SO's consent for design (DDA)	0	0		23OCT09	23	23OCT09	2	88		•			27
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02L1CC0502	Design preparation for the AIP submission	103	103	26JUN08A	04MAY09A 26JUN08A		04MAY09A	7						
02L1CC0503	Design submission for the DC's approval	2	2	110CT08A	05MAY09A 110CT08A		05MAY09A	ंडन		I				
02L1CC0504	Design (AIP) certification by the Design Checker	28	28	130CT08A	19MAY09A 13OCT08A		19MAY09A	2					8 1	- 1
02L1CC0506	Design (AIP) submission for the SO's approval	4	4	05NOV08A	19MAY09A 05NOV08A		19MAY09A	-						
02L1CC0508	Design (AIP) review by the SO	99	99	06NOV08A	16JUN09 06NOV08A		16JUN09	2	0	1				
02L1CC0510	AIP submission for rel. authorities' approval	-	,	28FEB09A	28FEB09A 28FEB09A	63	28FEB09A	-						
02L1CC0512	Design (AIP) review by the rel. authorities	28	28 (01MAR09A	28MAY09 01MAR09A		28MAY09	2	18	11				
02L1CC0514	Obtain rel. authorities's approval for AIP	-		29MAY09	29MAY09 29MAY09		29MAY09	۳	15				NG.	
02L1CC0516	SO submit design (AIP) for approval of GEO	*	•	28FEB09A	28FEB09A 28FEB09A	-	28FEB09A	-						
02L1CC0518	Design (AIP) review/approval by the GEO	28	28 (01MAR09A	28MAY09 01MAR09A		28MAY09	2	19	11				25
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nescribiani	TDMP review by the SO	TDMP submission for DSD's approval	TDMP review by the DSD	Obtain DSD's approval for DDA	Obtain SO's consent for TDMP	ELS for Permanent Approach Channel Construction	Design preparation by the Designer	Design submission for the DC's approval	Design certification by the Design Checker	Design submission for the SO's approval	Design review by the SO	Obtain design approval from the SO	Geotechnical Instrumentation Stg 1 for GL Works	Design preparation by the Designer	Design certification by the Design Checker	Design submission for the SO's approval	Design review by the SO	Obtain design approval from the SO	Install Geotechnical Instruments	Baseline Monitoring	Geotechnical Instrumentation Stg 2 for Deep Exc.	Design preparation by the Designer	Design certification by the Design Checker	Design submission for the SO's approval	Design review by the SO	Obtain design approval from the SO	Install Geotechnical Instruments	Baseline Monitoring	Monitor/report Geotechnical Instrumentation	Design Packages for Works in Portion D	Temp. Access Rd Design at P. D; +14mPD to +69mPD	Design preparation by the Designer	Design certification by the Design Checker	Design submission for the SO's approval	Design review by the SO	Design review by GEO	Obtain design approval from the SO	Boulder Assessment & Design for Stabili. Measure	Boulder Surevey	Prepare/submit boulder surevey report	SO review boulder survey report	Site Formation Design; +69mPD to +40mPD	
A CONTRACTOR OF THE PARTY OF TH	02L1CC0808	02L1CC0810	02L1CC0812	02L1CC0814	02L1CC0816	ELS for Perman	02I 1CC0902	02L1CC0903	02L1CC0904	02L1CC0906	02L1CC0908	02L1CC0910	Geotechnical in	3DL1CCG102	3DL1CCG104	3DL1CCG106	3DL1CCG108	3DL1CCG110	3DL1CCG112	3DL1CCG114	Geotechnical In	3DL1CCG202	3DL1CCG204	3DL1CCG206	3DL1CCG210	3DL1CCG212	3DL1CCG214	3DL1CCG216	3DL1CCG218	Design Packs	Temp. Access	02L1DD0102	02L1DD0104	02L1DD0106	02L1DD0108	02L1DD0110	02L1DD0112	Boulder Assess	02L1DD0302	02L1DD0304	02L1DD0306	Site Formation	0070407

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WP3D	17APR08A	25APR08A	26APR08A			14APR08A	15MAY09A 05MAY08A	16MAY09A 10MAY08A	12MAY08A			23APR09A 28AUG08A	16JAN09A	19JAN09A	02FEB09A	03FEB09A	28MAY09			21APR08A	28JUL08A	21AUG08A	28JUL08A	29JUL08A	28AUG08A 28AUG08A	28FEB09A		28FEB09A	01MAR09A		07MAR09A	90NUL30	90NUL70	06JUN09	90NUL70	13JUN09	14JUN09	13JUL09	13JUL09	14JUL09			26JUN09 28FEB09A
AD04 Finish	14NOV08A 17APR08A	14NOV08A 25APR08A	04DEC08A 26APR08A	04DEC08A		4APR08A 09MAY09A 14APR08A	15MAY09A	16MAY09A	93JUN09	93JUN09		23APR09A	24APR09A 16JAN09A	15MAY09A 19JAN09A	15MAY09A 02FEB09A	18JUN09	24JUN09	18JUN09		11MAY09A 21APR08A	12MAY09A 28JUL08A	13MAY09A 21AUG08A	13MAY09A 28JUL08A	19MAY09A 29JUL08A	28AUG08A	27MAR09A 28FEB09A	19MAY09A	28FEB09A	28MAY09	19MAY09A	05JUN09	90NUL90	04JUL09	90NUL90	11AUG09	13JUN09	11JUL09	13JUL09	13JUL09	10AUG09	12AUG09		
AD04 Start	17APR08A	25APR08A	26APR08A			14APR08A	05MAY08A	10MAY08A	12MAY08A			28AUG08A	16JAN09A	19JAN09A	02FEB09A	03FEB09A	28MAY09			21APR08A	28JUL08A	21AUG08A	28JUL08A	29JUL08A	28AUG08A	28FEB09A		28FEB09A	01MAR09A		07MAR09A	60NUL30	90NUL70	90NUL80	90NUL70	13JUN09	14JUN09	13JUL09	13JUL09	14JUL09			28FEB09A
WP3D	150	2	90	0		120	145	2	90	0		9	2	28	2	63	28	0		381	က	37	ო	280	7	28	0	5	28	0	30	-	28	•	99	7	28	-	-	28	0	8	119
AD04 Dur	150	2	06	0		120	145	2	6	0		09	2	28	2	63	28	0		381	т	37	က	280	*-	28	0	-	28	0	93		28	-	99	-	28	-	-	28	0		118
Activity Description	Design certification by the Design Checker	Design submission for the SO's approval	Design review by the SO	Obtain design approval from the SO	Site Formation Design; +40mPD to +24mPD	Design preparation by the Designer	Design certification by the Design Checker	Design submission for the SO's approval	Design review by the SO	Obtain design approval from the SO	Site Formation Design; +24mPD to 14mPD	Design preparation by the Designer	Design submission for the DC's approval	Design certification by the Design Checker	Design submission for the SO's approval	Design review by the SO	Design review by GEO	Obtain design approval from the SO	ng Chamber Design	Design (AIP) preparation by the Designer	Design (AIP) submission for the DC's approval	Design (AIP) certification by the Design Checker	Design (AIP) submission for the SO's approval	Design (AIP) review by the SO	AIP submission for rel. authorities' approval	Design (AIP) review by the rel. authorities	Obtain rel. authorities's approval for AIP	SO submit Design (AIP) for approval of GEO	Design (AIP) review/approval by the GEO	Obtain SO's consent for design (AIP)	Design preparation for the DDA submission	Design (DDA) submission for the DC's approval	Design (DDA) certification by the Design Checker	Design (DDA) submission for the SO's approval	Design (DDA) review by the SO	DDA submission for rel. authorities' approval	Design (DDA) review by the rel. authorities	Obtain rel. authorities's approval for DDA	SO submit design (DDA) for approval of GEO	Design (DDA) review/approval by the GEO	Obtain SO's consent for design (DDA)		Design preparation by the Designer
0	02L1DD0404	02L1DD0406	02L1DD0408	02L1DD0412	Site Formation	02L1DD0502	02L1DD0504	02L1DD0506	02L1DD0508	02L1DD0512	Site Formation	02L1DD0602	02L1DD0603	02L1DD0604	02L1DD0606	02L1DD0608	02L1DD0610	02L1DD0612	TBM Launching	02L1DD0702	02L1DD0703	02L1DD0704	02L1DD0706	02L1DD0708	02L1DD0710	02L1DD0712	02L1DD0714	02L1DD0716	02L1DD0718	02L1DD0720	02L1DD0722	02L1DD0723	02L1DD0724	02L1DD0726	02L1DD0728	02L1DD0730	02L1DD0732	02L1DD0734	02L1DD0736	02L1DD0738	02L1DD0740	Hopper Design	02L1DD0802

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WP3D	27JUN09	25JUL09	27JUN09	08AUG09	08AUG09		24MAR09A	25MAR09A	60NUL80	60NDC60	21JUL09	21JUL09		14JUN09	15JUN09	13JUL09	15JUN09	27JUL09	27JUL09		26JUN09	27JUN09	25JUL09	27JUN09	01SEP09	04JUL09	01AUG09	03AUG09	03AUG09	31AUG09	02SEP09		26JUL09	27JUL09	24AUG09	27JUL09	01OCT09	03AUG09	31AUG09	01SEP09	01SEP09	29SEP09	020CT09
Start	27JUN09	28JUN09	27JUN09	28JUN09			24MAR09A 02JAN09A	25MAR09A 25MAR09A	26MAR09A	60NDC60	10JUN09			02JAN09A	15JUN09	16JUN09	15JUN09	16JUN09			28MAY09	27JUN09	28JUN09	27JUN09	28JUN09	04JUL09	02JUL09	03AUG09	03AUG09 03AUG09	04AUG09				27JUL09	28JUL09	27JUL09	28JUL09	_	04AUG09	01SEP09	01SEP09	02SEP09	
AD04 Finish	27JUN09	25JUL09	27JUN09	08AUG09	08AUG09		24MAR09,	25MAR09	60NUL80	99UN09	21JUL09	21JUL09		14JUN09	15JUN09	13JUL09	15JUN09	27JUL09	27JUL09		26JUN09	27JUN09	25JUL09	27JUN09	01SEP09	04JUL09	01AUG09	03AUG09	03AUG08	31AUG09	02SEP09		26JUL09	27JUL09	24AUG09	27JUL09	010CT09	03AUG09	31AUG09	01SEP09	01SEP09	29SEP09	02OCT09
AD04 Start	27JUN09	28JUN09	27JUN09	28JUN09			O2JAN09A	25MAR09A	26MAR09A	60NDC60	10JUN09			02JAN09A	15JUND9	16JUN09	15JUN09	16JUN09			28MAY09	27JUN09	28JUN09	27JUN09	28JUN09	04JUL09	05JUL09	03AUG09	03AUG09	04AUG09			27JUN09	27JUL09	28JUL09	27JUL09	28JUL09	03AUG09	04AUG09	01SEP09	01SEP09	02SEP09	
DO4 WP3D	-	28	-	42	0		82	-	28	-	42	0		82	*	28	-	42	Q		30	-	28	-	99	۳	28	-	-	28	0		33	٠	28	*	99	-	28		~	28	0
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Activity Description	Design submission for the DC's approval	Design certification by the Design Checker	Design submission for the SO's approval	Design review by the SO	Obtain design approval from the SO	Design	Design preparation by the Designer	Design submission for the DC's approval	Design certification by the Design Checker	Design submission for the SO's approval	Design review by the SO	Obtain design approval from the SO	Overhead Gantry Support & Noise Enclosure Design	Design preparation by the Designer	Design submission for the DC's approval	Design certification by the Design Checker	Design submission for the SO's approval	Design review by the SO	Obtain design approval from the SO	ELS Design for Spiral Ramp & Vehicular Access	Design preparation for the AIP submission	Design (DDA) submission for the DC's approval	Design (DDA) certification by the Design Checker	Design (DDA) submission for the SO's approval	Design (DDA) review by the SO	DDA submission for rel. authorities' approval	Design (DDA) review by the rel. authorities	Obtain rel. authorities's approval for DDA	SO submit design (DDA) for approval of GEO	Design (DDA) review/approval by the GEO	Obtain SO's consent for design (DDA)	ELS Design for Box Culvert & Open Channel	Design preparation for the AIP submission	Design (DDA) submission for the DC's approval	Design (DDA) certification by the Design Checker	Design (DDA) submission for the SO's approval	Design (DDA) review by the SO	DDA submission for rel. authorities' approval	Design (DDA) review by the rel. authorities	Obtain rel. authorities's approval for DDA	SO submit design (DDA) for approval of GEO	Design (DDA) review/approval by the GEO	Obtain SO's consent for design (DDA)
2	02L1DD0803	02L1DD0804	02L1DD0806	02L1DD0808	02L1DD0810	Steel Platform Design	02L1DD0902	02L1DD0903	02L1DD0904	02L1DD0906	02L1DD0908	02L1DD0910	Overhead Gan	02L1DD1002	02L1DD1003	02L1DD1004	02L1DD1006	02L1DD1008	02L1DD1010	ELS Design fo	02L1DD1102	02L1DD1103	02L1DD1104	02L1DD1106	02L1DD1108	02L1DD1110	02L1DD1112	02L1DD1114	02L1DD1116	02L1DD1118	02L1DD1120	ELS Design fo	02L1DD1202	02L1DD1203	02L1DD1204	02L1DD1206	02L1DD1208	02L1DD1210	02L1DD1212	02L1DD1214	02L1DD1216	02L1DD1218	02L1DD1220

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Total			10	12	16	12		0	0	0		-								195	195	163	195	195	161	195	0			ш				-176				0	0	-176	-176	-138	-176
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WP3D Finish		27MAR09A	29MAY09	60NUL80	60NUL80	04JUL09	17NOV08A	16JUL09	17JUL09	17JUL09		24APR08A	16JUN08A	16JUN08A	14JUL08A	14JUL08A	05JUL08A	09JUL08A		10JUN09	24JUN09	11JUN09	09JUL09	99JUL09	30JUL09	13AUG09	31DEC12			27MAR09A	27MAR09A	27MAR09A	27MAR09A	93JUN09	08JUL08A	05MAR09A	06MAR09A	29MAY09	26JUN09	04JUN09	11JUN09	12JUN09	1030109
WP3D		27MAR09A 05MAY08A	29MAY09 08AUG08A	06JUN09 09AUG08A	08JUN09 08AUG08A	08AUG08A	17NOV08A 17NOV08A	18NOV08A	17JUL09			24APR08A 22FEB08A	16JUN08A 25APR08A	16JUN08A 25APR08A	14JUL08A 26APR08A		05JUL08A 04JUN08A	09JUL08A 18JUN08A		28MAY09*	11JUN09	11JUN09	12JUN09		10JUL09	13AUG09 31JUL09	10JUL08A			27MAR09A 08FEB08A	27MAR09A 02MAY08A	27MAR09A 03MAY08A	27MAR09A 10JUL08A	03JUN09 11JUL08A	OBJULOSA OSJULOSA	OSMAROSA OSJULOSA	DEMARDSA DEMARDSA	29MAY09	30MAY09		04NOV08A	12JUN09	13JUN09
AD04 Finish			-			04JUL09		16JUL09	17JUL09	17JUL09		24APR08/			14JUL08/	14JUL08A	05JUL084			10JUN09	24JUN09	11JUN09	0970L09	09JUL09	30JUL09	13AUG09	31DEC12			27MAR09/			27MAR09/	60NULE0	08701087	05MAR09/		29MAY09	26JUN09	04JUN09	11JUN09	12JUN09	10JUL09
AD04 Start		05MAY08A	08AUG08A	09AUG08A	08AUG08A	08AUG08A	17NOV08A	18NOV08A	17JUL09			22FEB08A	25APR08A	25APR08A	26APR08A		04JUN08A	18JUN08A		28MAY09*	11JUN09	11JUN09	12JUN09		10JUL09	31JUL09	10JUL08A			08FEB08A	2 02MAY08A	28 03MAY08A	10JUL08A	11JUL08A	08JUL08A	09JUL08A	06MAR09A	29MAY09	30MAY09		04NOV08A	12JUN09	13JUN09
ADD4 WP3D Dur Dur		225	7	78	2	06	-	90	-	0		14	7	_	14	0	10	14		14	4	-	28	0	200	14	1,605 1,605			414	2	28	*-	99	-	28	7	-	28	0	30	-	28
AD04		225	2	28	2	06	-	06	-	0		14	7	•	4	0	10	4		14	4	, 5	28	0	8	4	1,605			414	2	28	•	99	5	28			28	0	98	٠	28
Activity Description	Temporary Drainage Management Plan	TDMP preparation by the Designer	TDMP submission for the DC's approval	TDMP certification by the Design Checker	TDMP submission for the SO's approval	TDMP review by the SO	TDMP submission for DSD's approval	TDMP review by the DSD	Obtain DSD's approval for DDA	Obtain SO's consent for TDMP	Geotechnical Instrumentation Stg 1 for GL Works	Design preparation by the Designer	Design certification by the Design Checker	Design submission for the SO's approval	Design review by the SO	Obtain design approval from the SO	Install Geotechnical Instruments	Initial reading	Geotechnical Instrumentation Stg 2 for Deep Exc.	Design preparation by the Designer	Design certification by the Design Checker	Design submission for the SO's approval	Design review by the SO	Obtain design approval from the SO	Install Geotechnical Instruments	Baseline Monitoring	Monitor/report Geotechnical Insturmentatation	Design Packages for Works in Portion F	Jesign	Design preparation for the AIP submission	Design (AIP) submission for the DC's approval	Design (AIP) certification by the Design Checker	Design (AIP) submission for the SO's approval	Design (AIP) review by the SO	AIP submission for rel. authorities' approval	Design (AIP) review by the rel. authorities	Obtain rel. authorities's approval for AIP	SO submit design (AIP) for approval of GEO	Design (AIP) review/approval by the GEO	Obtain SO's consent for design (AIP)	Design preparation for the DDA submission	Design (DDA) submission for the DC's approval	Design (DDA) certification by the Design Checker
QI	Temporary Dra	02L1DD1302	02L1DD1303	02L1DD1304	02L1DD1306	02L1DD1308	02L1DD1310	02L1DD1312	02L1DD1314	02L1DD1316	Geotechnical I	3DL1DDG102	3DL1DDG104	3DL1DDG106	3DL1DDG108	3DL1DDG110	3DL1DDG112	3DL1DDG114	Geotechnical	3DL1DDG202	3DL1DDG204	3DL1DDG206	3DL1DDG208	3DL1DDG210	3DL1DDG212	3DL1DDG214	3DL1DDG216	Design Pack	Main Tunnel Design	02L1FF0102	02L1FF0103	02L1FF0104	02L1FF0106	02L1FF0108	02L1FF0110	02L1FF0112	02L1FF0114	02L1FF0116	02L1FF0118	02L1FF0120	02L1FF0122	02L1FF0123	02L1FF0124

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Finish	12JUN09	10AUG09	19JUN09	17JUL09	18JUL09	13JUL09	10AUG09	11AUG09		30JUN08A	03JUL08A	18MAR09A	18MAR09A	31MAR09A	02APR09A	10JUN09	11JUN09	31MAR09A		27JUN08A	27JUN08A	90NUL80	15JUL08A	13JUL09	10JUL08A	15JUN09	16JUN09	16JUN09	14JUL09	14JUL09		26JUN08A	26JUN08A	02APR09A	03APR09A	60NUL80	14JUL08A	11MAR09A	11MAR09A	29MAY09	26JUN09	97.ILIN09
Start	12JUN09	16JUN09	19JUN09	20JUN09	18JUL09	13JUL09	10AUG09 14JUL09			30JUN08A 29APR08A	03JUL08A 03JUL08A	18MAR09A 04JUL08A	18MAR09A 15JUL08A	31MAR09A 16JUL08A	02APR09A 10JUL08A	10JUN09 11JUL08A	11JUN09 11JUN09			27JUN08A 14APR08A	27JUN08A 27JUN08A	28JUN08A	15JUL08A 15JUL08A	16JUL08A	10JUL08A 10JUL08A	11JUL08A			17JUN09			26JUN08A 28APR08A	26JUN08A 26JUN08A	02APR09A 27JUN08A	03APR09A 15JUL08A	08JUN09 16JUL08A	14JUL08A 14JUL08A	11MAR09A 15JUL08A	11MAR09A 12MAR09A		30MAY09	
Finish	12JUN09	10AUG09	19JUN09	17JUL09	18JUL09	13JUL09	10AUG09	11AUG09		30JUN08A	03JUL08A	18MAR09/	18MAR09/	31MAR09/	02APR09A	10JUN09	11JUN09	31MAR09A		27JUN08A	27JUN08A	60NUC80	15JUL08A	13JUL09	10JUL08A	15JUN09	16JUN09	16JUN09	14JUL09	14JUL09		-	26JUN084	02APR09/	03APR09/	08JUN09	14JUL08A	11MAR09/		29MAY09	26JUN09	27 II INDO
Start	12JUN09	16JUN09	19JUN09	20JUN09	18JUL09	13JUL09	14JUL09			29APR08A	03JUL08A	04JUL08A	15JUL08A	16JUL08A	10JUL08A	11JUL08A	11JUN09			14APR08A	27JUN08A	28JUN08A	15JUL08A	16JUL08A	10JUL08A	11JUL08A	16JUN09	16JUN09	17JUN09			28APR08A	26JUN08A	27JUN08A	15JUL08A	16JUL08A	14JUL08A	15JUL08A	12MAR09A	29MAY09	30MAY09	
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Description	Design (DDA) submission for the SO's approval	Design (DDA) review by the SO	DDA submission for rel. authorities' approval	Design (DDA) review by the rel. authorities	Obtain rel. authorities's approval for DDA	SO submit design (DDA) for approval of GEO	Design (DDA) review/approval by the GEO	Obtain SO's consent for design (DDA)	Impact Assessment on WSD Yau Kam Tau WTW	Design preparation for the DDA submission	Design (DDA) submission for the DC's approval	Design (DDA) certification by the Design Checker	Design (DDA) submission for the SO's approval	Design (DDA) review by the SO	DDA submission for rel. authorities' approval	Design (DDA) review by the rel. authorities	Obtain rel. authorities's approval for DDA	Obtain SO's consent for design (DDA)	Impact Assessment on WSD Tai Lam Chung WT No. 3	Design preparation for the DDA submission	Design submission for the DC's approval	Design (DDA) certification by the Design Checker	Design (DDA) submission for the SO's approval	Design (DDA) review by the SO	DDA submission for rel. authorities' approval	Design (DDA) review by the rel. authorities	Obtain rel. authorities's approval for DDA	SO submit design (DDA) for approval of GEO	Design (DDA) review/approval by the GEO	Obtain SO's consent for design (DDA)	Impact Assessment on KCRC West Rail Tunnel	Design preparation for the DDA submission	Design submission for the DC's approval	Design (DDA) certification by the Design Checker	Design (DDA) submission for the SO's approval	Design (DDA) review by the SO	DDA submission for rel, authorities' approval	Design (DDA) review by the rel. authorities	Obtain rel. authorities's approval for DDA	SO submit design (DDA) for approval of GEO	Design (DDA) review/approval by the GEO	Obtain SO's consent for design (DDA)
	02L1FF0126				02L1FF0134				essme	02L1FF0202	02L1FF0203	02L1FF0204	02L1FF0206	02L1FF0208	02L1FF0210	02L1FF0212	02L1FF0214	02L1FF0220	Impact Assessme	02L1FF0302	02L1FF0303			02L1FF0308	02L1FF0310	02L1FF0312	02L1FF0314	02L1FF0316	02L1FF0318	02L1FF0320	Impact Assessm	02L1FF0402	02L1FF0403	02L1FF0404	02L1FF0406	02L1FF0408	02L1FF0410	02L1FF0412	02L1FF0414	02L1FF0416	02L1FF0418	00171

2008 2003 2010 2011 2052 2013				to be endorsed by All Reservior Panel Engineer						•					•				B	1		1		•	1						11						•							Page 93 of 125
Total						221		226	187	221								-195		-160		-195	-156	-194	-156	-188	-188	ı		182	182	182	186	227	182	227	227		261	211	263	210	261	
E G		2	7	2	-	2	-	2	-	2		2	77	2	2		2	2		2	-	2	-	2		2	7			+	-	-	-	2	-	2	2		2	-	2	-	2	4 -
WP3D Finish		02JUL08A	03JUL08A	01APR09A	01APR09A	16JUN09	10JUL08A	10JUN09	11JUN09	17JUN09		20MAY08A	21MAY08A	17JUL08A	17JUL08A		23JAN09A	10JUN09	26MAR09A	20JUN09	14MAR09A	23JUL09	24JUL09	24JUL09	10NOV09	24NOV09	08MAR13			20JUL09	31AUG09	14SEP09	15SEP09	190CT09	03NOV09	24NOV09	24NOV09		19AUG09	20AUG09	17SEP09	20AUG09	17OCT09	
WP3D		OZJULOSA OSMAYOSA	03JUL08A 03JUL08A	01APR09A 04JUL08A	15JUL08A	16JUN09 16JUL08A	10JUL08A 10JUL08A	11JUL08A	11JUN09			OZMAYOSA ZOMAYOSA OZMAYOSA	21MAY08A 21MAY08A	17JUL08A 22MAY08A			23JAN09A 28AUG08A 23JAN09A	10JUN09 24JAN09A	26MAR09A 24JAN09A	24JAN09A	14MAR09A 14MAR09A	15MAR09A	24JUL09		25JUL09	24NOV09 11NOV09	25NOV09			20JUL09 22JUN09*	21JUL09	01SEP09	15SEP09	22SEP09	200CT09	04NOV09			21JUL09	20AUG09 20AUG09	21AUG09	20AUG09 20AUG09	17OCT09 21AUG09	of 58
AD04 Finish		02JUL08A	03JUL08A	01APR09A	01APR09A 15JUL08A	16JUN09	10JUL08A	10JUN09	11JUN09	17JUN09		20MAY08A		17JUL08A	17JUL08A		23JAN09A	10JUN09	26MAR09A	20JUN09	14MAR09A	2330109	24JUL09	24JUL09	10NOV09	24NOV09	08MAR13			20JUL09	31AUG09	14SEP09	15SEP09	190CT09	03NOV09	24NOV09	24NOV09		19AUG09	20AUG09	17SEP09	20AUG09	17OCT09	Sheet 26 of 58
ADD4		05MAY08A	03JUL08A	04JUL08A	15JUL08A	16JUL08A	10JUL08A	11JUL08A	11JUN09			OZMAYOSA	21MAY08A	22MAY08A			28AUG08A	24JAN09A	24JAN09A	24JAN09A	14MAR09A	15MAR09A	24JUL09		25JUL09	11NOV09	25NOV09			22JUN09*	21JUL09	01SEP09	15SEP09	22SEP09	200CT09	04NOV09			21JUL09	20AUG09	21AUG09	20AUG09	21AUG09	
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Activity Description	Impact Assessment on WSD Tsuen Wan Reservoir G.	Design preparation for the DDA submission	Design submission for the DC's approval	Design (DDA) certification by the Design Checker	Design (DDA) submission for the SO's approval	Design (DDA) review by the SO	DDA submission for rel. authorities' approval	Design (DDA) review by the rel. authorities	Obtain rel. authorities's approval for DDA	Obtain SO's consent for design (DDA)	Foult Zone F1	MS preparation for the DDA submission	Ms (DDA) submission for the SO's approval	MS (DDA) review by the SO	Obtain SO's consent for MS (DDA)	Geotechniucal Instrumentation	Design preparation by the Designer	Design certification by the Design Checker	Design submission for the SO's approval	Design review by the SO	DDA submission for rel. authorities' approval	Design (DDA) review by the rel. authorities	Obtain rel. authorities's approval for DDA	Obtain design approval from the SO	Install geotechnical instrumentsation	Baseline Monitoring	Maintain/monitor geotechnical instrumentation	Design Packages for Works in Portion G	Drainage Impact Assessment	Quatation and award consultant	Prepare preliminary DIA report	Prepare final DIA report	Submission of DIA report to SOR/DSD	SOR/DSD review/comment DIA report	Revise DIA incorporating comments	SOR/DSD review/approve DIA report	Obtain consent from SOR and DSD	Temp. Platform Design for H-Piling at Portion G	Design preparation for the DDA submission	Design (DDA) submission for the DC's approval	Design (DDA) certification by the Design Checker	Design (DDA) submission for the SO's approval	Design (DDA) review by the SO	
Q)	Impact Assess	02L1FF0502	02L1FF0503	02L1FF0504	02L1FF0506	02L1FF0508	02L1FF0510	02L1FF0512	02L1FF0514	02L1FF0520	Grout Trial at Foult Zone F1	02L1FF0602	02L1FF0606	02L1FF0608	02L1FF0620	Geotechniucal	3DL1FFGI02	3DL1FFG104	3DL1FFG106	3DL1FFG108	3DL1FFGI10	3DL1FFGI12	3DL1FFGI14	3DL1FFG116	3DL1FFGI18	3DL1FFGI20	3DL1FT0208	Design Pack	Drainage Impa	02L1GG0105	02L1GG0115	02L1GG0125	02L1GG0135	02L1GG0145	02L1GG0155	02L1GG0165	02L1GG0175	Temp. Platform	02L1GG0202	02L1GG0203	02L1GG0204	02L1GG0206	02L1GG0208	

Description	Dur Dur	I SIGH	T LINEN	Tiene a	FINISH		Float				
DDA submission for rel. authorities' approval	-	1 27AUG09		27AUG09 27AUG09	27AUG09	-	228		7=		
Design (DDA) review by the rel. authorities	28	28 28AUG09		24SEP09 28AUG09	24SEP09	2	284		13		
Obtain rel. authorities's approval for DDA	-	1 25SEP09	P09 25SEP09	09 25SEP09	25SEP09	4	226				
Obtain design (DDA) approval from the SO	0	0	18OCT09	60,	18OCT09	2	261		•		
ELS Design for Pipe Jacking at Portion G											
Design preparation for the DDA submission	τ	15 20AUG09		03SEP09 20AUG09	03SEP09	2	284		£18		
Design (DDA) submission for the DC's approval	÷	1 04SEP09	909 04SEP09	09 04SEP09	04SEP09	+	229				
Design (DDA) certification by the Design Checker	28	28 05SEP09	909 02OCT09	T09 05SEP09	02OCT09	2	286		111		
Design (DDA) submission for the SO's approval	-	1 04SEP09	909 04SEP09	09 04SEP09	04SEP09	-	228				
Design (DDA) review by the SO	58	58 05SEP09	909 01NOV09	05SEP09	01NOV09	2	284		11		27
DDA submission for rel. authorities' approval	-	1 11SEP09	P09 11SEP09	11SEP09	11SEP09	٠	246				
Design (DDA) review by the rel. authorities	28	28 12SEP09		09OCT09 12SEP09	09OCT09	2	307		***		
Obtain rel. authorities's approval for DDA	æ	1 10OCT09	T09 100CT09	F09 10OCT09	10OCT09		248				
Obtain design (DDA) approval from the SO	0	0	OZNOVO9	60/	02NOV09	~	284		*	,0	
Schedule of Milestones for Cost Centre No. 2L											
1; On submission of PDP to the SO	0	0	10JAN08A	78A	10JAN08A	7	•				
2; On acception of PDP by the SO	0	0	04SEP08A	08A	04SEP08A	2		•			
3; On submission of AIP to the SO; Portion A	0	0	12MAY09A	A60	12MAY09A	2			•		ijav
4; On acceptance of AIP by the SO; Portion A	0	0	25JUL09	60.	25JUL09	CN.	1,619		•		jólí
2L 5; On subumission of DDA to the SO; Portion A	0	0	28SEP09	600	28SEP09	C)	1,554		•		
2L 6; On acceptance of DDA by the SO; Portion A	0	0	100CT09	601	100CT09	CA	1,542		•		10019
2L 7; On submission of AIP to the SO; Portion B	0	0	07JUL09	60'	07JUL09	8	1,637		•		
2L 8; On acceptance of AIP by the SO; Portion B	0	0	12AUG09	909	12AUG09	2	1,601		•		N.
2L 9; On submission of DDA to the SO; Portion B	0	0	28SEP09	600	28SEP09	2	1,554		•		SWA
2L 10; On acceptance of DDA by the SO; Portion B	0	0	26OCT09	601	26OCT09	N	1,526		•		
2L 11; On submission of AIP to the SO; Portion C	0	0	25JUL09	60	25JUL09	8	1,619		*		67
2L 12; On acceptance of AIP by the SO; Portion C	0	0	10AUG09	909	10AUG09	0	1,603		*		
2L 13; On submission of DDA to the SO; Portion C	0	0	28SEP09	600	28SEP09	0	1,554		\$		28
2L 14; On acceptance of DDA by the SO; Portion C	0	0	23OCT09	F09	23OCT09	2	1,529		•		
2L 15; On acceptance of AIP by the SO; Portion D	0	0	25JUL09	60	25JUL09	7	1,619		•		1070 1630
2L 16; On acceptance of DDA by the SO; Portion D	0	0	10OCT09	F09	10OCT09	2	1,542		•		
2L 17; On submission of AIP to the SO; Portion F	0	0	13JUL09	60"	13JUL09	2	1,631		\$		
2L 18; On acceptance of AIP by the SO; Portion F	0	0	19SEP09	606	19SEP09	2	1,563		\$		8
19; On submission of DDA to the SO; Portion F	0	0	28SEP09	606	28SEP09	2	1,554		•		
21, 20, On acceptance of DDA by the SO; Portion F	0	0	05DEC09	509	05DEC09	0	1,486				
2L 21; On acceptance of AIP by the SO; Portion G	0	0	27MAY09	r09	27MAY09	2	1,678		•		
2L 22; On acceptance of DDA by the SO; Portion G	0	0	24NOV09	60/	24NOV09	2	1,497		•		
20. On completion of all works under this Co	•		The second		000 101111		107		4		

2013		200		8.							.8"			333																							3			224	
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2009 2010			-8			sign of pre-excavation grouting				27.73(5), within 6 months of DOC								280				=			-		-0		-	-	-	-	- /	-	-				L.		
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WP3D Finish	Ŀ		23.II II 08A	30JUL08A	04AUG08A	13AUG08A	15NOV08A	22NOV08A	04SEP08A	05SEP08A			12JAN08A	28SEP08A	080CT08A	24DEC08A		04AUG09	07AUG09	04SEP09		12SEP09	11SEP09	18SEP09	18SEP09	24SEP09	24SEP09	30SEP09	30SEP09	080CT09	080CT09	14OCT09	140CT09	200CT09	200CT09		02JAN10	04JAN10	05JAN10	06JAN10	07JAN10
ADOM WP3D Finish Start			23.11 II O8A	30JUL08A 24JUL08A	04AUG08A 31JUL08A	13AUG08A 05AUG08A	15NOV08A 14AUG08A	22NOV08A 17NOV08A	11AUG08A 04SEP08A 11AUG08A	5SEP08A 05SEP08A 05SEP08A			12JAN08A 14DEC07A	28SEP08A 21DEC07A	040CT08A 080CT08A 040CT08A	24DEC08A 09OCT08A		04AUG09 06JUL09*	07AUG09 05AUG09	04SEP09 08AUG09		12SEP09 05SEP09	11SEP09 05SEP09	18SEP09 12SEP09	- 1	24SEP09 19SEP09	24SEP09 19SEP09	-	30SEP09 25SEP09	08OCT09 02OCT09	08OCT09 02OCT09	14OCT09 09OCT09		200CT09 150CT09	200CT09 150CT09		02JAN10 02JAN10	04JAN10 04JAN10	05JAN10 05JAN10	06JAN10 06JAN10	07JAN10 07JAN10
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Activity Description	Construction of Main Tunnel	Trial Grout at Fault Zone F1	HVD issues XP	Adavance notice to HyD/Road advice	Trial pit excavation	Scaffolding, mobilize & set up	Drill & test for 2m Arrangement Test	Backfill drilled holes, demobilization & Tidy up	Drill & test for single hole arrangement test	Backfill drilled hole, demobilization & tidy up	FBM Manufacture/Testing/Delivery	of TBM & Back-ups	TBM & Excavation Sys Procurement	TBM design & manufacturing	TBM workshop tests	TBM dismounting & packing		TBM shipment to Hong Kong	TBM arriving Portion I	Destuffing Containers/Cleaning & Iubrication	TBM Pre-assembly/Test & Commis. at Portion I	Cutterhead	Bearing	Backup # 1	Backup #2	Backup # 3	Backup # 4	Baackup # 5	Backup # 6	Backup # 7	Backup # 8	Backup # 9	Backup # 10	Backup #11	Backup # 12	TBM Transport from Portion I to Outfall	Cutterhead	Shield # 1	Shield # 2	Bearing	Erector
Œ	Constructio	Trial Grout a	3AI 1FT0002	3AL1FT0004	3AL1FT0006	3AL1FT0010	3AL1FT0012	3AL1FT0014	3AL1FT0016	3AL1FT0018	TBM Manufa	Manufacture o	3AL1FT0302	3AL1FT0304	3AL1FT0306	3AL1FT0308	Delivery of TBM	3AL1FT0105	3AL1FT0110	3AL1FT0115	TBM Pre-asset	3AL1FT0205	3AL1FT0210	3AL1FT0215	3AL1FT0220	3AL1FT0225	3AL1FT0230	3AL1FT0240	3AL1FT0245	3AL1FT0250	3AL1FT0255	3AL1FT0260	3AL1FT0365	3AL1FT0370	3AL1FT0375	TBM Transpor	3AL1FT0405	3AL1FT0415	3AL1FT0425	3AL1FT0435	3AL1FT0445

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WP3D Finish	01APR10	08APR10	12APR10		31MAR10	13MAR10	13MAR10	31MAR10	17MAR10	19MAR10	20MAR10	25MAR10	29MAR10	31MAR10	01APR10	03SEP10	01APR10	07APR10	08APR10	13APR10	15APR10	17APR10		25JUN10	26JUN10	12JUL10	18AUG10		19AUG10	21AUG10	25AUG10	26AUG10		03SEP10	03SEP10			06JAN10	11JAN10	12JAN10	15JAN10	15 CO. (CO.) (CO.) (CO.) (CO.) (CO.)
AD04 WP3D Finish Start	300	08APR10 07APR10	12APR10 09APR10		31MAR10 27MAR10	13MAR10 13MAR10	13MAR10 11MAR10	31MAR10 30MAR10	17MAR10 15MAR10	19MAR10 18MAR10	20MAR10 20MAR10	25MAR10 22MAR10	29MAR10 26MAR10	31MAR10 30MAR10	01APR10 01APR10	03SEP10 26MAR10	01APR10 01APR10	07APR10 07APR10	08APR10 08APR10	13APR10 09APR10	15APR10 14APR10	17APR10 16APR10		25JUN10 19APR10	26JUN10 26JUN10	12JUL10 28JUN10	18AUG10 13JUL10		19AUG10 19AUG10	21AUG10 20AUG10	25AUG10 23AUG10	26AUG10 26AUG10		03SEP10 27AUG10	03SEP10 03SEP10			06JAN10 04JAN10	11JAN10 07JAN10	12JAN10 12JAN10	15JAN10 13JAN10	STATES AND STATES AND
AD04 Start	9	07APR10 0	09APR10 1		27MAR10 3	13MAR10 1	11MAR10 1	30MAR10 3	15MAR10 1	18MAR10 1	20MAR10 2	22MAR10 2	26MAR10 2	30MAR10 3	01APR10 0	26MAR10 0	01APR10 0	07APR10 0	08APR10 0	09APR10 1	14APR10 1	16APR10 1		19APR10 2	26JUN10 2		13JUL10 1		19AUG10 1	20AUG10 2	23AUG10 2	26AUG10 2		27AUG10 0	03SEP10 0			04JAN10 C	07JAN10	12JAN10 1	13JAN10 1	
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AD04 WP3D	ო	2	6		4	(က	2	က	2	*	4	က	2	-	131	•		*	4	2	2		99	,	12	32		-	2	က			7	-			ю	4	-	ო	
Activity	Connect exhaust fan to valve shaft	Connect new vent pipe to exhaust fan(s)	Test and commission exhaust fan(s)	Preparation Works at Chai Wan Kok Shaft	Install electricity take off, switch board &	Install waste reception/disposal area	Install toilet and shower	Set up generatior, two 2" water pumps	UU detection	Excavate to lower platform apprx. 0.5m-1m	Set out & align sheet pillng	Install sheet piles & excavate to install rails	Excavate to the bottom of DN1200 pipe	Lay conrete blinding to pit	ICE checking	WSD Tunnel Shut Down Period	WSD Tunnel #3 commences shut down	Cut & clean invert and inner face of DN1200	Plug DN1200 pipe at the face near valve house	Fabricate trolly & trial	Install longituditual tensioned wire	Temporary plug main tunnel to form air seal	duct	Install instruments	Inspection	TBM crossing affected 120m section	De-install instruments		Remove trolley system	Remove the plug at Ting Kau	Remove ventilation system, reinstate T.K. valve	Remove temporary portal at junction	Works	Reinstate opening at Chai Wan Kok	WSD Tunnel #3 re-operates	TBM Assembly & Initial Driving; Day Time Work	TBM Assembly/Test & Commiss, at Outfall	Cutterhead	Shield (bottom)	Bearing	Erector & Conveyor Belt	
O)	3AL1WT3B52	3AL1WT3B62	3AL1WT3B72	Preparation Wo	3AL1FTCT02	3AL1FTCT12	3AL1FTCT22	3AL1FTCT32	3AL1FTCW02	3AL1FTCW04	3AL1FTCW06	3AL1FTCW08	3AL1FTCW10	3AL1FTCW12	3AL1FTCW14	3AL1FTCW16	3AL1FTCW18	3AL1FTCW20	3AL1FTCW22	3AL1FTCW24	3AL1FTCW26	3AL1FTCW36	Works In Aqueduct	3AL1FTAD04	3AL1FTAD06	3AL1FTAD08	3AL1FTAD10	Demobilisation	3AL1FTAE04	3AL1FTAE14	3AL1FTAE24	3AL1FTAE34	Reinstatement Works	3AL1FTRS02	3AL1FTRS04	TBM Assemb	TBM Assembly	3AL1FT0605	3AL1FT0615	3AL1FT0625	3AL1FT0635	

3AL1FT0665 Bac 3AL1FT0675 Bac 3AL1FT0695 Bac 3AL1FT0705 Bac 3AL1FT0715 Bac 3AL1FT0735 Bac 3AL1FT0735 Bac 3AL1FT0735 Bac	Backup # 2 Backup # 3 Test & commission stage 1 Backup # 4 Backup # 5 Backup # 6 Backup # 6			25JAN10 2		OT LANIAD	2	240				
	mission stage	ი ო			27 IAN10 25 IAN10	77 1AN1111		17.0				
	kup # 3 st & commission stage 1 ckup # 4 ckup # 5 ckup # 6 ckup # 6	m (t		01110017	t	2 6				
	st & commission stage 1 ckup # 4 ckup # 5 ckup # 5 ckup # 6 ckup # 7	(+		30JAN10	1	-219				
	okup # 4 okup # 5 okup # 6 okup # 7	9	6 01F	01FEB10 C	06FEB10 01FEB10	06FEB10	2	-219		uc:		
	ckup # 5 ckup # 6 ckup # 7	ო	3 24F	24FEB10 2	26FEB10 24FEB10	26FEB10	<u>د</u>	-199			V	
	okup#6 okup#7	ო	3 27F	27FEB10 0	02MAR10 27FEB10	02MAR10	-	-199		-		
	ckup # 7	ო	3 031	03MAR10 0	05MAR10 03MAR10	05MAR10	+	-199				
		ო	3 29N	29MAR10 3	31MAR10 29MAR10	31MAR10	-	-218				200
	Backup # 8	m	3 01A	01APR10 C	08APR10 01APR10	08APR10	T.	-218				
	Backup # 9	ю	3 09A	09APR10 1	12APR10 09APR10	12APR10	-	-218				2000
	Backup # 10	m	3 13A	3APR10 1	15APR10 13APR10	15APR10	+	-218		-		
3AL1FT0765 Ba	Backup # 11	m	3 16A	6APR10 1	19APR10 16APR10	19APR10	÷.	-218				200
3AL1FT0775 Ba	Backup # 12	ო	3 20A	20APR10 2	22APR10 20APR10	22APR10	1	-218		-		
3AL1FT0785 Tes	Test & commission stage 2	12	12 23A	23APR10 0	07MAY10 23APR10	07MAY10	-	-218				
TBM Initial Advacing; Day Time Work	3; Day Time Work										100	ne:
3AL1FT0704 TB	TBM advancing; Ch. 5098 to Ch. 5084	φ	6 08F	08FEB10 1	17FEB10 08FEB10	17FEB10	₽	-219		-		
3AL1FT0708 TB	TBM advances; CH5084-4963	25	54 18F	8FEB10 2	26APR10 18FEB10	26APR10	-	-219				
3AL1FT0720 TB	TBM stop to install rem, items	10	10 27A	27APR10 0	08MAY10 27APR10	08MAY10	-	-219				
Main Tunnel Wor	Main Tunnel Works; Day & Night Work		Ì	i							- 140	
TBM Advancing upt	TBM Advancing upto Crossing WSD Tunnel # 3								=			
3AI 1FT0816 TB	TBM advances: CH4963-4415 (to WSD Tunnel # 3)	40	40 10N	10MAY10 2	26JUN10 10MAY10	26JUN10	4	-219				
	TBM crossing WSD Tunnel # 3; CH4415- 4295	12	12 28J	1	12JUL10 28JUN10	12JUL10	-	-219		-	1000	
TBM Advancing upt	upto Breakthrough							202				
1	TBM advances; CH4295-4250	ß	5 13	13JUL10	17JUL10 13JUL10	17JUL10	F	-219		-		200
3AL1FT0820 TB	TBM advances; P6 CH4250-4220	2	2 19J	19JUL10 ;	20JUL10 19JUL10	20JUL10	1 -	-219		-		18/1
3AL1FT0822 TB	TBM advances; CH4220-3940	14	14 21J	21JUL10 C	05AUG10 21JUL10	05AUG10	-	-219		Incriterion 1		9,53
3AL1FT0824 TB	TBM advances; CH3940-3560	24	24 06A	DEAUG10 (02SEP10 06AUG10	02SEP10	1	-219		P5 (5m)■KCRC WRTL Tunnel Protection Area ch39	RTL Tunnel Protect	tion Area ch3
3AL1FT0826 TB	TBM advances CH3560-2970	40	40 038	33SEP10 2	22OCT10 03SEP10	22OCT10	-	-219	Intake I-2 (Intake I-2 (Ch3160-3100) PP4 (10m) & P3 (50m)	n) & P3 (50m)	1000
3AL1FT0828 TB	TBM advances; WSD WS Reservior CH2970-2860	13	13 23C	230CT10 C	06NOV10 23OCT10	06NOV10	-	-219				
3AL1FT0830 TB	TBM advances; CH2860-1250	83	83 08N	. 01/VON80	18FEB11 08NOV10	18FEB11	-	-219	Intake 1-3	Intake I-3 (CH1370-1250)	F5 (20m), F4(50m), F3(20m)	(20m)
3AL1FT0832 TB	TBM advances; CH1250-0	91	91 19F	19FEB11	11JUN11 19FEB11	11JUN11	-	-219		•	F2(20m), P2(25m), P1(10m) & F	.P1(10m) & F
3AL1FT0890 De	Desembly & demobilization of TBM	20	50 13J	13JUN11 1	10AUG11 13JUN11	10AUG11	· -	-114				
3AL1FT0892 Ba	Back grouting (daytime); CH5100-00	382	382 04N		18JUN11 04MAR10	18JUN11	·-	-20			1.79m3/m, W/C=44%, W=590kg	4%; W=590kg
3AL 1FT0894 Co	Complete maintennce access & dry weather channel	09	60 11A	11AUG11 2	220CT11 11AUG11	220CT11	~	-64			•	500
3AL1FT0896 Ins	Installation of communication system (Daytime)	09	60 11A	11AUG11 2	220CT11 11AUG11	220CT11	-	-64			1	
3AL1FT0898 Te	Testing & Commissioning; daytime	28	28 10N	ONOV12 0	07DEC12 22DEC12	18JAN13	2	-462				
3AL1FT0902 Co	Contractor serve notice for Works completion	7	7 08E)8DEC12	14DEC12 19JAN13	25JAN13	2	0				
3AL1FT0904 Ha	Handover of Portion F	0	0		07DEC12	18JAN13	-	-375				
3AL1FT0906 SC	SO issues completion certificate	21	21 15D	5DEC12 (04JAN13 26JAN13	15FEB13	2	0				
Schedule of Mile	Schedule of Milestones for Cost Centre No. 6aR	1		i			Ť					
	6aR 1; On completion of grouting at P7	0	0	.,	31MAR10	31MAR10		1,370		•		
6AR1FT0904 6al	6aR 2; On completion of grouting at F6c	0	0	_	19MAY10	19MAY10	2 1,	1,321		•		

	Description	Die	- Dina	Start									
6AR1FT0906	6aR 3: On completion of arouting at F6b	0			0	27	H				•		
6AR1FT0908	grouting	0	0		15JUN10	15JUN10	+		3 3		•		100
6AR1FT0910	grouting	0	0		17JUL10	17JUL10		1,262			•		
6AR1FT0912	6aR 6; On completion of 20% grout by Ith at P6	0	0		17JUL10	17JUL10	10 2	1,262			•		
6AR1FT0914	6aR 7; On completion of 40% grout by Ith at P6	0	o		23JUL10	23JUL10	10 2	1,256	- 5		•		W.S.
6AR1FT0916	6aR 8; On completion of 60% grout by Ith at P6	0	0		29JUL10	29JUL10		2 1,250			•		
6AR1FT0918	6aR 9; On completion of 80% grout by Ith at P6	0	0		17JUL10	17JUL10	10 2	1,262	=		•		
6AR1FT0920	6aR 10, On completion of grouting works at P6	0	0		20JUL10	20JUL10	10 2	1,259			•		
6AR1FT0922	6aR 11; On completion of grouting wks at P5	0	0		06AUG10	06AUG10	310 2	1,242			•		
6AR1FT0924	6aR 12; On completion of grouting wks at P4	0	0		04SEP10	04SEP10	10 2	1,213			•		
6AR1FT0926	6aR 13; On completion of grouting wks at P3	0	0		07OCT10	07OCT10		2 1,180			•		1889
6AR1FT0928	6aR 14; On completion of grouting wks at WSD's	0	0		06NOV10	06NOV10	/10 2	1,150		CH 2865-2970	•	Tsuen Wan West Service Reservior G	ae Reservior G
6AR1FT0930	6aR 15; On completion of grouting wks at F5	0	0		13NOV10	13NOV10	/10 2	1,143					
6AR1FT0932	6aR 16; On completion of grouting wks at F4	0	0		26NOV10	26NOV10	710 2	1,130			•	3 14	
6AR1FT0934		0	0		22DEC10	22DEC10	200				•		
6AR1FT0936	6aR 18; On completion of grouting wks at F2	0	0		21FEB11	21FEB11	H	1,043			•		
6AR1FT0938	6aR 19; On completion of grouting wks at P2	0	0		31MAR11	31MAR11	311 2	1,005			•		
6AR1FT0940	6aR 20; On completion of grouting wks at P1	0	0		27APR11	27APR11	2 2	978					
6AR1FT0942	6aR 21; On completion of 10% grout by Ith at F1	0	0		21MAY11	21MAY11	711 2	954				•	
6AR1FT0944	6aR 22; On completion of 20% grout by Ith at F1	0	0		23MAY11	23MAY11	711 2	952				•	
6AR1FT0946	6aR 23; On completion of 30% grout by Ith at F1	0	0		24MAY11	24MAY11	711 2	951				•	
6AR1FT0948	6aR 24; On completion of 40% grout by Ith at F1	0	0		25MAY11	25MAY11	711 2	950				•	
6AR1FT0950	6aR 25; On completion of 50% grout by Ith at F1	0	0		26MAY11	26MAY11	711 2	949				•	
6AR1FT0952	6aR 26; On completion of 60% grout by Ith at F1	0	0		27MAY11	27MAY11	711 2	948	in the			•	
6AR1FT0954	6aR 27; On completion of 70% grout by Ith at F1	0	0		28MAY11	28MAY11	711 2	947				•	
6AR1FT0956	6aR 28; On completion of 80% grout by 1th at F1	0	0		30MAY11	30MAY11	(11 2	945				•	27
6AR1FT0958	6aR 29; On completion of 90% grout by Ith at F1	0	0		31MAY11	31MAY11	711 2	944				•	U-A-1
6AR1FT0960	6aR 30; On completion of grouting works at F1	0	0		01JUN11	01JUN11	111 2	943	U			•	328
6AR1FT0970	6aR 31; On completion of all works under this CC	0	0		18JUN11	18JUN11	111 2	926				Under this Cost Centre	entre
Schedule of	Schedule of Milestones for Cost Centre No. 3aL							H					
3AL1FT1002	3aL 1: On providing evidence of procuring TBM	0	0		19JAN08A	19JAN08A	08A 2		•			300	
3AL1FT1004	3aL 2; On providing evidence of TBM Factory Test	0	0		080CT08A	080CT08A			•				355
3AL1FT1006	3aL 3; On delivery of all parts of TBM to the Si	0	0		07AUG09	07AUG09	-	1,606		*			
3AL1FT1008	3aL 4; On completion of site comm. & test. of TB	0	0		07MAY10	07MAY10					•		
3AL1FT1010	3aL 5; On completion of 5% perm. tunnel lining	0	0		18MAY10	18MAY10	710 2	1,322			•		-33
3AL1FT1012	3aL 6; On completion of 10% perm, tunnel lining	0	0		05/NUL60	01NUL60	10 2	1,300			•	12	
3AL1FT1014	3aL 7; On completion of 15% perm. tunnel lining	0	0		02JUL10	02JUL10	10 2	1,277			*		2726
3AL1FT1016	3aL 8; On completion of 20% perm, tunnel lining	0	0		28JUL10	28JUL10	10 2	1,251	2		•		
3AL1FT1018	3aL 9; On completion of 25% perm. tunnel lining	0	0		13AUG10	13AUG10	310 2	1,235			•		
3AL1FT1020	3al. 10; On completion of 30% perm. tunnel lining	0	0		02SEP10	02SEP10	10 2	1,215			•		235
3AL1FT1022	3al. 11; On completion of 35% perm. tunnel lining	0	0		22SEP10	22SEP10	10 2	1,195			•		
3AL1FT1024	3at 12: On completion of 40% nerm tunnel lining	c	c			The same	4	1400			*		

Aut FT1026 384, 13. On completion of \$45% perm, turned lining 0 0 0 0 0 0 0 0 0			San	10NOV10 25NOV10 10DEC10 29DEC10 14JAN11 28JAN11 17FEB11 10MAR11 22OCT11 22OCT11 11JUN11 12OCT11 11JUN11 12OCT11 12ONOV09 27DEC08A	2 1,146 2 1,146 2 1,1097 2 1,087 2 1,086 2 1,066 2 1,026 2 1,026 2 954 2 977 2 933 2 800 2 800 2 1,511	dry weather flow channel
etion of 45% perm. turnel lining 0 0 100EC10 etion of 55% perm. turnel lining 0 0 100EC10 etion of 55% perm. turnel lining 0 0 100EC10 etion of 65% perm. turnel lining 0 0 0 29DEC10 etion of 65% perm. turnel lining 0 0 0 14JaN11 etion of 70% perm. turnel lining 0 0 0 14JaN11 etion of 70% perm. turnel lining 0 0 0 14JaN11 etion of 70% perm. turnel lining 0 0 0 14JaN11 etion of 85% perm. turnel lining 0 0 0 14JaN11 etion of 96% perm. turnel lining 0 0 0 14JaN11 etion of 96% perm. turnel lining 0 0 0 14JaN11 etion of 96% perm. turnel lining 0 0 0 14JaN11 etion of 96% perm. turnel lining 0 0 0 28APR11 etion of 96% perm. turnel lining 0 0 0 28APR11 etion of 96% perm. turnel lining 0 0 0 28APR11 etion of 96% perm. turnel lining 0 0 0 28APR11 etion of 96% perm. turnel lining 0 0 0 28APR11 etion of 96% perm. turnel lining 0 0 0 28APR11 etion of 96% perm. turnel lining 0 0 0 28APR11 etion of 96% perm. turnel lining 0 0 0 28APR11 etion of 96% perm. turnel lining 0 0 0 28APR11 etion of Maint. & cocass/flow chan 0 0 28APR11 etion of Maint. & monit. of 960. 0 28APR11 etion of maint. & monit. of 960. 0 0 28APR11 etion of FMD at Portion A 0 0 0 28APR12 etion of maint. & monit. of FMD 0 0 0 28APR13 etion of FMD at Portion C 0 0 0 28APR13 etion of FMD at Portion C 0 0 0 28APR13 etion of FMD at Portion C 0 0 0 28APR13 etion of FMD at Portion C 0 0 0 19APR08 etion of maint. & monit. of FMD 0 0 0 19APR08 etion of maint. & monit of FMD 0 0 19APR08 etion of maint. & monit of FMD 0 19APR08A 19A		251 293 294 177 177 222 222 227 227 227 227 227 227		4	<u> </u>	Y 等
etion of 50% perm. turnel lining 0 0 0 10EC10 etion of 55% perm. turnel lining 0 0 0 14JAN11 etion of 70% perm. turnel lining 0 0 0 29JAN11 etion of 70% perm. turnel lining 0 0 0 14JAN11 etion of 70% perm. turnel lining 0 0 0 0 29JAN11 etion of 70% perm. turnel lining 0 0 0 0 10APR11 etion of 70% perm. turnel lining 0 0 0 0 10APR11 etion of 80% perm. turnel lining 0 0 0 0 10APR11 etion of 80% perm. turnel lining 0 0 0 0 10APR11 etion of 80% perm. turnel lining 0 0 0 0 10APR11 etion of 90% perm. turnel lining 0 0 0 0 10APR11 etion of 90% perm. turnel lining 0 0 0 0 10APR11 etion of 90% perm. turnel lining 0 0 0 0 10APR11 etion of 90% perm. turnel lining 0 0 0 10APR11 etion of 90% perm. turnel lining 0 0 0 10APR11 etion of 90% perm. turnel lining 0 0 0 10APR11 etion of 90% perm. turnel lining 0 0 0 10APR11 etion of 90% perm. turnel lining 0 0 0 10APR11 etion of		291 292 293 294 111 111 111 222 222 227 227 277 266 266 276 266 276 27				至
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etion of 65% perm. tunnel lining 0 0 0 14JaN11 28JaN11 etion of 70% perm. tunnel lining 0 0 0 17FB11 etion of 70% perm. tunnel lining 0 0 0 17FB11 etion of 50% perm. tunnel lining 0 0 0 17FB11 etion of 50% perm. tunnel lining 0 0 0 17FB11 etion of 95% perm. tunnel lining 0 0 0 17FB11 etion of 95% perm. tunnel lining 0 0 0 17FB11 etion of 95% perm. tunnel lining 0 0 0 17FB11 etion of 95% perm. tunnel lining 0 0 0 17FB11 etion of 95% perm. tunnel lining 0 0 0 17FB11 etion of 95% perm. tunnel lining 0 0 0 17FB11 etion of 95% perm. tunnel lining 0 0 0 17FB11 etion of maint access/flow chan 0 0 0 0 17FB11 etion of maint access/flow chan 1 0 0 0 17FB11 etion of maint access/flow chan 1 0 0 0 17FB11 etion of maint 2 month of 60 0 0 17FB11 etion of maint 3 etion of maint 3 etion of maint 4 etion of maint 5 etion 6 etio		29.2 29.1 11.1 11.1 22.2 22.2 22.2 27.7 27.7 26.7 26.7 27.7 27		29JAN11 17FEB11 10MAR11 10MAR11 28APR11 21MAY11 11JUN11 22OCT11 22OCT11 18JAN13 10NOV09 27DEC08A		The state of the s
etion of 70% perm. tunnel lining 0 0 0 175Eb11 17FEb11 1 17FEb11 1 17FEb11 1 10MAR11 1		292 201 111 111 222 222 222 222 223 223 234 24 26 26 26 26 27 27 27 27 27 27 27 27 27 27 27 27 27		29JAN11 17FEB11 10MAR11 10APR11 28APR11 22DCT11 11JUN11 22CCT11 12DNOV09 27DEC08A		至
etion of 75% perm. tunnel lining 6 0 0 0 175K perm. tunnel lining 6 0 0 0 10MAR11 10MAR1		22.2.2.2.2.1.1.1.1.1.1.1.1.1.1.1.1.1.1.		17FEB11 10MAR11 01APR11 28APR11 11JUN11 22OCT11 22OCT11 18JAN13 10NOV09 27DEC08A		至
etion of 80% perm. tunnel lining		22.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2 2.		10MAR11 01APR11 28APR11 21MAY11 11JUN11 22OCT11 22OCT11 18JAN13 18JAN13 27DEC08A		至
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tion of FMD at Portion C 0 0 28JAN12 ation of FMD at Portion D 0 0 17APR12 letion of maint. & monit. of FMD 0 0 07DEC13 letion of all works under this CC 0 0 07DEC13 Letion of all works under this CC 0 0 07DEC13 Letion of all works under this CC 0 0 07DEC13 Letion of all works under this CC 0 0 07DEC13 Letion of all works under this CC 0 0 07DEC13 Letion of all works under this CC 0 0 07DEC13 Letion of all works under this CC 0 0 07DEC13 Letion of all works under this CC 0 0 0 07DEC13 Letion of all works under this CC 0 0 0 07DEC13 Letion of all works under this CC 0 0 0 07DEC13 Letion of all works under this CC 0 0 0 07DEC13 Letion of all works under this CC 0 0 0	0000	20	FEB12	20FEB12	2 679	flow measurement devices for Portion B.
etion of FMD at Portion D 0 0 17APR12 letion of maint. & monit. of FMD 0 0 07DEC13 letion of all works under this CC 0 0 07DEC13 Letion of all works under this CC 0 0 07DEC13 Letion of all works under this CC 0 0 07DEC13 Letion of all works under this CC 0 0 07DEC13 Letion of all works under this CC 0 0 0 07DEC13 Letion of all works under this CC 0 0 0 07DEC13 00MAY08A Letion of all works under this CC 0 0 0 0 0 0 Letion of all works under this CC 0 0 0 0 0 0 0 Letion of all works under this CC 0	000	28	JAN12	28JAN12	2 702	flow measurement devices for Portion C❖
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Page 2019 Page	0	07	DEC13	18JAN14	-	flow monitoring to issue of Maint. Certificate
F1 19MAY08A 19MAY08A 19MAY08A 19MAY08A 11AUG08A 20MAY08A 19MAR08A 19MA		0.2	DEC13	18JAN14	2 23	under this Cost Centre
carding at L-1 o 0 0 19MAY08A ure/prepare/install transparent hoarding 70 70 20MAY08A 11AUG08A 20MAY08A ession of site 0 19MAR08A 19MAR08A 19MAR08A in TTA (ingress & egress) approval 0 0 19APR08A 19APR08A						
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Possession of site 0 19MAR08A Obtain TTA (ingress & egress) approval 0 0 19APR08A	02	0MAY08A 11/	AUG08A 20MAY08A	11AUG08A	-	8
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30 30 21APR08A 26MAY08A 21APR08A	30		JAY08A 21APR08A	26MAY08A	_	
01R1AI1108 Obtain tree 6 6 13MAY08A 31JUL08A 13MAY08A 31JUL	9		JULOBA 13MAY08A	31JUL08A	_	
rection enclosing the Site 18 23MAY08A 11AUG08A 23MAY08A	1,8		AUG08A 23MAY08A	11AUG08A	_	
01R1AI1112 Site entrance construction 6 6 23JUN08A 25JUL08A 23JUN08A 25JU	9		JULOBA 23JUNOBA	25JUL08A	_	
01R1AI114 Install wheel wahing facilities 7 7 03JUN08A 07JUN08A 07JUN08A 07JUN08A 07JUN08A	7		JUNOSA 03JUNOSA	07JUN08A	-	

Q	Activity	AD04 WP3D	WP3D AD04	ADD4 WP3D	GE-WW-3D	Cal Total	2008	2006	Ser.	2012	2013
	Description	Dur	Dur Start	_	_	ID Float					
.01R1AI1116	Erect SOR's secondary site office	9	6 28AUG08A	A 03SEP08A 28AUG08A	08A 03SEP08A	-					
01R1AI1118	Footing for temp. bridge span over Shing M. Nul.	26	26 10JUN08A	4 16JUL08A 10JUN08A	38A 16JUL08A	÷	13				
01R1AI1120	Decking for temp. bridge span over Shing M. Nul.	5	13 17JUL08A	N 01AUG08A 17JUL08A	18A 01AUG08A	•	e e				200
01R1AI1122	Install remote control CCTV as per ER 4.4.10	12	12 04SEP08A	A 18SEP08A 04SEP08A	08A 18SEP08A	٠	•				
16R1AI1101	Tree Identification & Report	4	14 14MAR08A	4 01APR08A 14MAR08A	08A 01APR08A	2					
16R7Al1102	1st tree pruning for small 3 nos. trees	-	1 03JUN08A	A 03JUN08A 03JUN08A	DBA 03JUNDBA	-					
16R7AI1104	2nd tree pruning for small 3 nos. trees		1 04JUL08A	A 04JUL08A 04JUL08A	18A 04JUL08A	-					
16R7AI1106	Final pruning & uplifting of 3 nos. small trees	2	2 08SEP08A	A 09SEP08A 08SEP08A	08A 09SEP08A	·-					
16R7AI1108	Confirm location for trees to be transplanted	54	51 02APR08A	A 27AUG08A 02APR08A	08A 27AUG08A	*					
16R7AI1114	One stg transplant for big 4 nos. big trees	o	9 11FEB09A	4 19FEB09A 11FEB09A	39A 19FEB09A	,					
Permanent S	Permanent Soil Nailing Works										
11R2AI1302	Erect working platform & mobilization	00	8 17MAY08A	A 24MAY08A 17MAY08A	08A 24MAY08A						
11R2AI1304	Install test nails & proof loading test, 2 nos.	00	8 24JUN08A	A 08JUL08A 24JUN08A	DBA OBJULOBA		23				ini
11R2AI1306	Soil nailing for A to C rows; 69 nos.	9	16 02JUL08A	4 14JUL08A 02JUL08A	14JUL08A	·					
11R2Al1308	Soil nailing for D to F rows, 71 nos.	29	29 15JUL08A	4 05SEP08A 15JUL08A	18A 05SEP08A		D				
11R2AI1310	Constrcut soil nail heads; 140 nos.	22	22 19JUL08A	A 06SEP08A 19JUL08A	38A 06SEP08A		8			133	
11R2Al1312	Demobilization	m	3 08SEP08A	4 10SEP08A 08SEP08A	08A 10SEP08A	-				8	
Construction	Construction of Spiral Ramp & Cascade										
Additional GI W	Additional GI Woks to Fnalize Design										002
AGIA-02	Drill for 5 nos, additional GI works	21	21 09SEP08A	SEP08A 04OCT08A 09SEP08A	08A 04OCT08A	1					
Temp. Pipe-pile cofferdam	e cofferdam						2				3%
04L1AI1202	Erect piling platform	43	43 220CT08A	4 24DEC08A 22OCT08A	08A 24DEC08A	·					
04L1AI1203	Mobilization & set up piling rig	က	3 300CT08A	4 01NOV08A 30OCT08A	08A 01NOV08A	-				3	
04L1AI1204	Install 273 mm dia. temp. pipe piles; 144 nos.	43	43 08NOV08A	08NOV08A 05JAN09A 08NOV08A		-	13			33	616
04L1AI1226	Demobilize all plant and materials	9	6 06JAN09A	A 13JAN09A 06JAN09A	39A 13JAN09A						100
Excavate +104.	Excavate +104.0 to +100.5mPD; Row 7						200				
04L1AI1402	Mobilization		1 23FEB09A	A 23FEB09A 23FEB09A	09A 23FEB09A	1				500	
04L1AI1404	Bulk excavation; soil (155m3)	4	4 24FEB09A	A 27FEB09A 24FEB09A	09A 27FEB09A	1					
04L1AI1406	Install test tie-back & proof load test	4	4 28FEB09A	A 04MAR09A 28FEB09A	09A 04MAR09A	·					83
04L1AI1408	Install tie backs/wailing & shortcrete	4	4 03MAR09A	A DEMARDSA D3MARDSA	09A DEMAROSA	÷					
Excavate +100.	Excavate +100.5 to +99.0mPD; Rows 1 & 8										
04L1AI1410	Bulk excavation; soil (219m3)	2	2 07MAR09A	A D9MAR09A 07MAR09A		1					
04L1AI1412	Install tie backs/wailing & shorcrete	9	6 10MAR09/	10MAR09A 16MAR09A 10MAR09A	16MAR09A	1				1	
Excavate +99.0) to +96.5mPD; Rows 2, 9 & 18										
04L1Al1414	Bulk excavation; soil (710m3)	က	3 17MAR09/	17MAR09A 19MAR09A 17MAR09A	19MAR09A	1					
04L1AI1416	Install test tie-back & proof load test	4	4 26MAR09/	26MAR09A 01APR09A 26MAR09A 01APR09A	09A 01APR09A	•				UH	
04L1Al1418	Install tie backs/wailing & shortcrete	9	6 23MAR09/	23MAR09A 28MAR09A 23MAR09A	109A 28MAR09A	i i			-		
Excavate +96.5	Excavate +96.5 to +95.0mPD; Rows3, 10 & 19									0.0	
04L1AI1420	Bulk excavation; soil (721m3)	က	3 30MAR09/	30MAR09A 04APR09A 30MAR09A 04APR09A	09A 04APR09A	T					
04L1AI1422	Install tie backs/wailing & shortcrete	4	4 02APR09A	4 20APR09A 02APR09A 20APR09A	09A 20APR09A	-		216			

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Page 102 of 125	PS			Sheet 35 of 58				
		-22	09OCT10 1	09OCT10 17SEP10	18 17SEP10	. 2	Cast roof slabs	04L1AI1478
		-22	16SEP10 1	16SEP10 27AUG10	18 27AUG10	81	Cast walls 2nd lift, 200mm down from soffit	04L1AI1476
				26AUG10 06AUG10		60	Cast walls 1st lift	04L1AI1474
		200	05011640	05A11C40 03 II II 40	42 22 1 40	Ç	of Cascade Structure	Construction
		103	24AUG10 1	24AUG10 07AUG10	15 07AUG10	15	Construct RC spiral ramp top	07R1AI1420
	@ 5m3/5minutes	+		06AUG10 23JUL10	_	13	Backfill spiral ramp; 2496m3 @ 200m3/day	07R1AI1418
		+	22JUL10 1	22JUL10 06JUL10	15 06JUL10	15	Cast ramp up to +102,31mPD	07R1AI1416
			05JUL10 1	05JUL10 17JUN10	15 17JUN10	15	Cast ramp up to 98.01mPD	07R1AI1414
		-22	15JUN10 1	15JUN10 29MAY10	15 29MAY10	15	Cast ramp up to 93.71mPD	07R1AI1412
	100	-22	28MAY10 1	28MAY10 11MAY10	15 11MAY10	15	Cast ramp up to 89.41mPD	07R1AI1410
	•	-52	10MAY10 1	10MAY10 22APR10	15: 22APR10	15	Cast ramp up to +85.10mPD	07R1AI1408
	*	-22	21APR10 1	21APR10 31MAR10	15 31MAR10	15	Cast ramp up to +80.81mPD	07R1AI1406
	18	-22	30MAR10 1	30MAR10 13MAR10	15 13MAR10	15	Cast ramp up to +76.51mPD	07R1AI1404
	-	-52	12MAR10 1	12MAR10 27FEB10	12 27FEB10	12	Cast base slab	07R1AI1402
							of Spiral Ramp Structure	Construction of
2	•	-22	26FEB10 1	26FEB10 10FEB10	12 10FEB10	12	Cast roof slab	04L1AI1456
	-		09FEB10 1	09FEB10 27JAN10	12 27JAN10	12	Cast walls	04L1AI1454
		-22	26JAN10 1	26JAN10 20JAN10	6 20JAN10	9	Cast base slab	04L1AI1452
							of Vehiucular Access	Construcion of
#15,089m3 rock@90m3/day with 2 work fronts	371m3 sal ====15,089m3 rock@9	-22	19JAN10 1	19JAN10 30JUN09	168 30JUN09	168 1	Rock excavation/mucking out/temp. support	07R1AI1444
	4	-22	29JUN09 1	29JUN09 20JUN09	8 20JUN09	ω	Set up for dewatering	07R1AI1442
							Excavate +88.5 to 71.5mPD: Rows 27 to 31	Excavate +88.5
		-22	19JUN09 1	19JUN09 17JUN09	3 17JUN09	m	Install tie backs/wailing & shorcrete	04L1Al1450
		-22	16JUN09 1	16JUN09 06JUN09	60NUL30 6	o	Bulk excavation; soil (269m3) & rock (690m3)	04L1AI1448
							5 to 88.5mPD; Rows 15 & 26	Excavate +89.5
		-22	1 60NUC30	05JUN09 02JUN09	4 02JUN09	4	Install tie backs/wailing & shorcrete	04L1AI1446
		-22		4	ار	12	Bulk excavation; soil (724m3) & rock (811m3)	04L1AI1444
							1 to 89.5mPD; Rows 14, 17 & 25	Excavate +91.1
			27MAY09A 1	27MAY09A 18MAY09A	4 18MAY09A	4	Install tie backs/wailing & shorcrete	04L1AI1442
			25MAY09A 1	25MAY09A 08MAY09A	4 08MAY09A 2	4	Install test tie-back & proof load test	04L1AI1440
			23MAY09A 1	06MAY09A 23MAY09A 06MAY09A	8 OGMAYO9A	80	Bulk excavation; soil (1002m3) & rock (342m3)	04L1AI1438
30,00							5 to 91.1mPD; Rows 6,13,16,17823	Excavate +92.5
			27MAY09A 1	19MAY09A 27MAY09A 19MAY09A 27MAY09A	2 19MAY09A	2	Install tie backs/wailing & shorcrete	04L1AI1436
			18MAY09A 1	04MAY09A 18MAY09A 04MAY09A 18MAY09A	3 04MAY09A	က	Bulk excavation; soil (423m3) & rock (52m3)	04L1AI1434
						8	Excavate +93.0 to +92.5mPD; Row 22	Excavate +93.0
	EA	7	16MAY09A 1	16MAY09A 21APR09A	5 21APR09A	υ Ω	Install tie backs/wailing & shorcrete	04L1AI1432
			16MAY09A 1	16MAY09A 21APR09A	4 21APR09A	4	Install test tie-back & proof load test	04L1AI1430
			27APR09A 1		4 20APR09A	4	Bulk excavation; soil (818m3)	04L1AI1428
			2				Excavate +94.0 to + 93.0mPD; Rows 5,12,16,21&24	Excavate +94.0
	32		30APR09A 1	03APR09A 30APR09A 03APR09A 30APR09A	5 03APR09A (ĸ	Install tie backs/wailing & shorcrete	04L1AI1426
	***		18APR09A 1	6APR09A 18APR09A 06APR09A		m	Bulk excavation; soil (701m3)	04L1AI1424
							Excavate +95.0 to +94.0 mPD; Rows 4, 11 & 20	Excavate +95.0
		Float	Finish			Dur Dur	Description	3
3 2012 2013	2006 2009 2010	Total	WP3D	AD04 WP3D	3D AD04	D04 WP3D	Activity	(III)

Description	Dar		-	The second secon		The second secon			
Dismantle & Removal of TBM									
Backfill & form cranage platform	24	24 1100	110CT10	08NOV10 11OCT10	08NOV10	1 -22			
TBM break through	0	0		11JUN11*	11JUN11*	1 -195		•	
Dissembly & demobilization of TBM	20	50 13JUN11		10AUG11 13JUN11	10AUG11	1 -195			34
Cast lower base slab	12	12 06JL	06JUL10	19JUL10 06JUL10	19JUL10	1-19		before TBM retrieval	
Construction of Box Culvert Structure				- 1					9)8
Cast upper base	9	6 11Al	11AUG11	17AUG11 11AUG11	17AUG11	1 -195			
Cast walls 1st lift	18	18 18AUG11	1011	07SEP11 18AUG11	07SEP11	1 -195	after retrieval of TBM & gantry crane	gantry crane	
Cast walls 2nd lift, 200mm down from soffit	18	18 08SF	08SEP11	29SEP11 08SEP11	29SEP11	1 -195			Š
Cast roof slabs	18	18 30SI	30SEP11	220CT11 30SEP11	220CT11	1 -195			
Backfill & compaction above box culvert; ~13m	22	22 240	240CT11	17NOV11 240CT11	17NOV11	1 -195			
Modification of Existing Channel in Dry Season									Y.
Channel Modification (Varied)Works (Civil Works)									
Break wall & slab at pipe pile location	00	8 02NC	*80VONZO	10NOV09 02NOV09*	10NOV09	1 70			
Set up pipe pile rig	6	3 11N	11NOV09	13NOV09 11NOV09	13NOV09	1 70			
Install pipe piles (30n*12m)	10	10 14N(14NOV09	25NOV09 14NOV09	25NOV09	1 70	-		
Break existing masonry wall	4	4 26N(26NOV09	30NOV09 26NOV09	30NOV09	1 70			
PC blcok/sand back bund wall for water diversion	2	2 01D	01DEC09	02DEC09 01DEC09	02DEC09	1 70			
Cut existing slab	•	1 03D	03DEC09	03DEC09 03DEC09	03DEC09	1 70			
Demolish Wo Yi Hop Nullah wall & slab	ø	6 04D	04DEC09	10DEC09 04DEC09	10DEC09	1 70			
Construct WYH Nullah wall below slab	9	6 11D	11DEC09	17DEC09 11DEC09	17DEC09	1 70	N**		
Backfill & SRT behind wall below slab	18	18 18D	18DEC09	11JAN10 18DEC09	11JAN10	1 70	·		
Demolish Shing Mun Nullah wall with struts	9	6 12J	12JAN10	18JAN10 12JAN10	18JAN10	1 70			
Demolish Shing Mun Nullah slab	4	4 19.	19JAN10		22JAN10	1 70			
Construct slab	ω	8 23J	23JAN10		01FEB10				
Construct wall for WYH Nullah	10	10 02F	02FEB10	12FEB10 02FEB10	12FEB10				33
Constrtuct wall for SM Nullah	10	10 17F	17FEB10	27FEB10 17FEB10	27FEB10		13		
Assoc. RC works for trash grill & stop slogs	18	18 01M	01MAR10	20MAR10 01MAR10	20MAR10	1 70			
Mass concrete infill	ო	3 22M	22MAR10		24MAR10	1 70			
PC block & san bag bund wall	n	3 25M	25MAR10	27MAR10 25MAR10	27MAR10	1 70			, i d
Channel Modification Works (Steel Works)									
Install steelworks, Phase 3	36	36 01NC	01NOV11*	12DEC11 01NOV11*	12DEC11	1 -143		10	634
						1			
Piing Works Along Crest Plarform									
Erect piling platform for upper piles	12	12 228	22SEP10	07OCT10 22SEP10	07OCT10	1 103		•	
Mobilize piling rig & set up	ဖ	6 080	080CT10	14OCT10 08OCT10	14OCT10	1 103			
350mm dia. pre-bored H-piles (upper); 36 nos.	36	36 150	150CT10	26NOV10 15OCT10	26NOV10	1 103		■@ 1no/day	
Demobilize piling rig	စ	6 27N	27NOV10	03DEC10 27NOV10	03DEC10	1 103		-2	
Crest Platform						H			,10
Excavate & hack off grout	8	8 04D	04DEC10	13DEC10 04DEC10	13DEC10				SV.
Construct skin wall	12	12 14D	14DEC10	29DEC10 14DEC10	29DEC10	1 103		===	
Construct capping hearn	C	000	0.01	CACTOOC ALLANIO	1711	-			8

2008 2009 2510 2011 2012 2013				- 4	■@ 1no/day													150nos. climber, 200nos. woodland#63nos. trees, 2072nos.					◆for Cascade at Intake I-1	♦for Cascade at Intake I-1	◆ for Cascade at Intake I-1	◆for Cascade at Intake I-1	♦for Cascade at Intake I-1	◆at Intake I-1	◆box culvert at Intake I-1	within this Cost Centre				spiral allipat intake I-I	◆spiral ramp at Intake I-1	♦spiral ramp at Intake I-1	♦for spiral ramp at Intake I-1	♦spiral ramp at Intake I-1	♦ spiral ramp at Intake I-1	♦spiral ramp at Intake I-1
Total 2	103	103		195	-195	-195		-195	-195	-195	-195	-195	i	-195	-195	0	0	-183	-181	-143	-118	1	1,645	1,441	1,403	1,222	1,178	800	800	648	9	740	, ()	C40,L	1,557	1,489	1,441	1,349	1,307	1,266
0 5	<u>-</u> چ	1		1	2	2 1		2 1	2 1	2 1	2 1	12 1		12 1	12 1	12 2	2 2	12 1	13 2	-	12 2		19 2	-	0 2	10 2	10 2	11 2		12 2	Ţ	, c	+	+	+	+		10 2	10 2	0 2
WP3D Finish	13JAN11	27 JAN11		24NOV11	02JAN12	09JAN12		16JAN12	02FEB12	11FEB12	16FEB12	01MAR12	À	15MAR12	22MAR12	29MAR12	19APR12	01MAR12	01MAR13	29DEC11	28DEC12	i	29JUN09	19JAN10	26FEB10	26AUG10	09OCT10	220CT11	220CT11	22MAR12		420EC44	משות שו	SONOFES	25SEP09	02DEC09	19JAN10	21APR10	02JUN10	13JUL10
WP3D	10JAN11	4JAN11		18NOV11	25NOV11	03JAN12		10JAN12	17JAN12	03FEB12	13FEB12	7FEB12		03FEB12	17FEB12	23MAR12	30MAR12	27JAN12	02MAR12	13DEC11	30DEC11										Ì									
AD04 Finish	13JAN11 1	27JAN11 14JAN11		24NOV11	02JAN12 2	09JAN12 C		16JAN12	02FEB12 1	11FEB12 (16FEB12 '	01MAR12 17FEB12		15MAR12 (22MAR12	29MAR12 2	19APR12	_	01MAR13 (28DEC12	i	29JUN09	19JAN10	26FEB10	26AUG10	090CT10	220CT11	220CT11	22MAR12	j	40000	IZDECIII	29JUN09	25SEP09	02DEC09	19JAN10	21APR10	02JUN10	13JUL10
AD04 Start	10JAN11	14JAN11		1BNOV11 2	25NOV11 (03JAN12 (10JAN12	17JAN12 (03FEB12 ·	13FEB12	17FEB12 (03FEB12 1	17FEB12 2	23MAR12 2	30MAR12	27JAN12 (02MAR12 (30DEC11	j									ı						×_			
WP3D Dur	4 10	12 14		6 18	29 25	6 03		6 10	12 17	8 03	4 13	12 17		36 03	30 17	7 23	21 30	30 27	365 02		365 30		0	0	0	0	0	0	0	0	ì	C	o (0	0	0	0	0	0	0
DO4 W	4	12		9	29	9		9	12	ω	4	12		36	30	7	21	30	365	12	365		0	0	0	0	0	0	0	0	1		0	0	0	0	0	0	0	0
Activity	Backfill & construct U-channel	Fix rebar/ erect fwk/concrete ramp	Piling Works Above Inclined Access Ramp	Mobilize piling rig & set up	350mm dia. pre-bored H-piles (lower); 29 nos.	Demobilize piling rig	Inclined Access Ramp	Excavate & hack off grout	Construct skin wall	Construct capping beam	Backfill & construct U-channel	Fix rebar/erect fwk/concrete ramp	Remaining Works Prior to Handover	Finishing & reinstatement works; Portion A	Pre-handover inspections and remedial works	Contractor serve notice for Works completion	SO issues completion certificate	Landscaping works at Portion A	Establishment Works at Portion A	Install flow measurement devices at Intake I-1	Maintain & monitor flow monitoring	Schedule of Milestones for Cost Center No. 4L	4L 1; On completion of 50% excavation	4L 2; On completion of excavation	4L 3; On completion of 25% concreting	4L 4; On completion of 50% concreting	4L 5; On completion of 75% concreting	4L 6; On completion of Cascade	4L 7; On completion of connecting BC	4L 8; On completion of all works under this CC	of Milestones for Cost Centre No. 7R		/R 1; On completion of trash grills	7R 2, On completion of 25% excavation	7R 3; On completion of 50% excavation	7R 4; On completion of 75% excavation	7R 5; On completion of all excavation	7R 6; On completion of spiral ramp to +80mPD	7R 7, On completion of spiral ramp to +90mPD	7R 8; On completion of spiral ramp to +100mPD
9	11R2AI1216	11R2AI1218	Piling Works A	11R2AI1220	11R2Al1222	11R2AI1224	Skin Wall & Inc	11R2AI1226	11R2AI1228	11R2AI1230	11R2AI1232	11R2AI1234	Remaining V	07R1AI1606	07R1AI1608	07R1AI1610	07R1AI1612	16R7AI1602	16R7AI1604	3DL1AI1602	3DL1AI1604	Schedule of	04L1AI1802	04L1AI1804	04L1AI1806	04L1AI1808	04L1AI1B10	04L1AI1812	04L1AI1814	04L1AI1816	Schedule of		07R1AI1902	07R1AI1904	07R1AI1906	07R1AI1908	07R1AI1910	07R1AI1912	07R1AI1914	07R1AI1916

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	◆at Intake I-1	under this Cost Centre		♦at Intake I-1	wall at platform at Intake I-1	wall at branch access at Intake I-1 ❖	◆under this Cost Centre																																		
				♦ at							-	0	n		B		П	-	0	- 3		•					•	10		•	1	•	4	. [•
Float	1,224	648			1,130	728	1,123																					5/47			3							ilis			200
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FIMISI	24AUG10	22MAR12	1	06SEP08A	26NOV10	02JAN12	03DEC10				16SEP08A	D3NOV08A	24NOV08A		170CT08A		05DEC08A	03OCT08A	04NOV08A	07NOV08A	18NOV08A	19NOV08A	21NOV08A		05DEC08A		14JUL08A	13SEP08A		16SEP08A	17NOV08A			TSAPRUSA	USSEPURA	16MAR09A	13MAR09A	23APR09A			10JUL08A
Signi											16SEP08A 12SEP08A	03NOV08A 17SEP08A	11NOV08A		02SEP08A 17OCT08A 02SEP08A 17OCT08A		03OCT08A	03OCT08A	04NOV08A 04OCT08A	07NOV08A 05NOV08A	18NOV08A 08NOV08A		21NOV08A 20NOV08A	22NOV08A	26NOV08A 05DEC08A 26NOV08A			13SEP08A 15JUL08A			17SEP08A	26MAR08A	-	200747400	05SEP08A 02MAY08A	16MAR09A 05JUN08A	13MAR09A 28FEB09A	23APR09A 10DEC08A			
Little Control	24AUG10	22MAR12	İ	06SEP08A	26NOV10	02JAN12	03DEC10	ı				03NOV08A	11NOV08A 24NOV08A 11NOV08A		170CT08A		03OCT08A 05DEC08A 03OCT08A	03OCT08A 03OCT08A 03OCT08A	04NOV08A	07NOV08A		19NOV08A	21NOV08A	ZZNOV08A Z5NOV08A ZZNOV08A	05DEC08A					16SEP08A	17SEP08A 17NOV08A 17SEP08A	-	1	-	-		-	-			10JUL08A
Oldi L		0		0	0	0	0				3 12SEP08A	17SEP08A	127				150	1 03OCT08A	S 04OCT08A	3 05NOV08A	2 08NOV08A	0	2 20NOV08A	3.50	202			15JUL08A		0		0 26MAR08A			Trees.		2 28FEB09A	2 10DEC08A			0
8	0	Ĺ		9							***	22	12		30		64.		26		A SE		**		10			51			51			1	-			72			
	0	0		0	0	0	0				ო	22	12		30		-64	-	26	e	7	0	2	n	10		0	51		0	51	C	1	0 8	8	8	12	72			0
Description	7R 9; On completion of spiral access ramp	7R 10; On completion of all works under this CC	Schedule of Milestones for Cost Centre No. 11R	11R 1; On completion of soil nailing works	11R 2; On completion of piling at platform	11R 3; On completion of piling at branch access	11R 4; On completion of all works under this CC	Construction of Intake I-2	Works	Additional GI Works to Finalize Design	Erect platform/mibilization & set up GI rig	Drill 3 nos. Gl holes for Intake Structures	Drill 1 hole for Intersection with Main Tunnel	Diversion of CLP Overhead Cable	Temporary diversion of CLP overhead cable	Dievrsion of 100mm Watermain	Temporary Diversion of 100mm dia. Watermain	Issue VO35 for temp. diversion	Preparation works	Install steel support	Lay new watermain	Obtain ICE certificate for temp. support	Pressure test	Sterilise new pipe & take water sample	Watermain connection by WSD	VO #11; Transperant Hoarding at I-2	Receive VO11 for transparent hoarding	Procure/prepare/install transparent hoarding	VO#32; Replace Hoarding by Chain Link Fence	Receive VO-32 for replacing hoarding by CLF	Procure/prepare/install transparent hoarding	Presession of Portion B - 904 of DOC		Obtain 11A (ingress & egress) approval	Site clearance	Erect hoarding	Install remote contorl CCTV as per ER 4.4.10	Tree transplanting; 1 no.	Stream Diversion/Approach Channel/H-Pile Wall	Revised Layout of Pile Wall at I-2	Received VO22 for revised layout of pile wall
	07R1AI1918	07R1AI1920	Schedule of	11R2AI1R02	11R2AI1R04	11R2Al1R06	11R2Al1R08	Constructio	Preliminary Works	Additional GI V	AGIB-02	AGIB-04	AGIB-06	Diversion of C	01R1BU0102	Dievrsion of 10	01R1BU0202	01R1BU0204	01R1BU0206	01R1BU0208	01R1BU0210	01R1BU0212	01R1BU0214	01R1BU0216	01R1BU0218	VO #11; Trans	VO011-02	VO011-04	VO#32; Replac	V0032-I202	VO032-1204	0181812102	701710	01R1BI2104	01R1BI2108	01R1BI2112	01R1BI2116	16R7BI2002	Stream Dive	Revised Layor	VO022-02

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VO022-04	SOR confirmed to demolish exit ret. wall	38	œ	11JUL08A	21AUG08A 11JUL08A	21,	-		8			
VO022-06	Demolish existing retaining wall	-	۳	13SEP08A	13SEP08A 13SEP08A	13SEP08A	-		=			KE.
VO022-16	Reinstate piling platform	2	2	16SEP08A	17SEP08A 16SEP08A	17SEP08A	-		-			78
Phase 1: Cons	Phase 1: Construct 550 dia. H-pile Wall							7				
12R3BI2202	Form temp, access ramp along west side of stream	44	44	10JUN08A	31JUL08A 10JUN08A	A 31JUL08A	1		n			
12R3BI2204	Additional SI & engineering works	26	26	25AUG08A	24SEP08A 25AUG08A	3A 24SEP08A	٦		0			
12R3BI2206	Mobilize piling rig & set up	2	2	25SEP08A	30SEP08A 25SEP08A	SA 30SEP08A						
12R3BI2208	Construct piles 1 to 18	13	13 (020CT08A	170CT08A 020CT08A	3A 17OCT08A	ν-		0			
12R3BI2210	Piling works stopped by the SOR	80	80	180CT08A	270CT08A 180CT08A	3A 270CT08A			-			
12R3BI2212	Construct piles 19-58	28	28	280CT08A	26NOV08A 28OCT08A	3A 26NOV08A			n			
12R3Bl2214	SOR's instruction to delet pile 59	0	0		02DEC08A	02DEC08A	. -		•			
12R3Bl2216	Demobilize piling rig	4	4	03DEC08A	06DEC08A 03DEC08A	3A 06DEC08A	+					
12R3BI2218	Construct skin wall/caping beam/u-channel	_* 02	*07	25JUN09	15SEP09 25JUN09	15SEP09	-	80		==58 nos; @ 750mm c/c	nm c/c	830
12R3BI2220	Excavate for skin wall; 4 bays	130	18	25JUN09	16JUL09 25JUN09	16JUL09	-	80		11		
12R3BI2222	Construct for skin wall; 4 bays	24	24	17JUL09	13AUG09 17JUL09	13AUG09	-	80		11		
12R3BI2224	Construct capping beam; 4 bays	16	16	14AUG09	01SEP09 14AUG09	9 01SEP09	-	80				
12R3BI2226	Construct drainage; 4 bays	12	12	02SEP09	15SEP09 02SEP09	9 15SEP09		80		E34		
Phase 1; Cons	Phase 1: Construct Dry Weather Flow Channel											
08R1BI2202	Excavate for new low flow channel	9	9	27MAR09A	03APR09A 27MAR09A		-					
08R1BI2204	Construct new low flow channel	9	9	11JUN09	17JUN09 11JUN09	17JUN09	•	-196				
08R3BI2208	Remove blcock wall/excavate for gantry footing	12	12	18JUN09	02JUL09 18JUN09	02JUL09		-196			- 9	
08R3BI2212	Construct PC bund wall to protect gantry footing	9	9	0370109	6070L09 03JUL09	607NF60	•	-196		_		
Phase 2: Cons	Phase 2: Construct Approach Channel West											
08R1B12218	Construct temp, concrete block bund	12	12	*60VON20	14NOV09 02NOV09*	9* 14NOV09	e	43		provision of water pump	ater pump	
08R1BI2220	Excavate for western portion guide wall & slab	12	12	16NOV09	28NOV09 16NOV09	9 28NOV09		43				
08R1BI2222	Construct western portion of guide wall & slab	20	20	30NOV09	29JAN10 30NOV09	9 29JAN10	-	43		(1		2
08R1BI2224	Remove concrete block bund	9	9	30JAN10	05FEB10 30JAN10) 05FEB10	-	43		-		
Phase 3; Cons	Phase 3; Construct Approach Channel North											
08R1BI2226	Construct temp. concrete block bund	9	9	01NOV10*	06NOV10 01NOV10*		-	22		Ď.	provision of water pump	9
08R1BI2228	Excavate for L-shaped retaining wall	12	12	08NOV10	20NOV10 08NOV10	0 20NOV10	-	22				
08R1BI2230	Construct L-shaped retaining wall	18	18	22NOV10	11DEC10 22NOV10	0 11DEC10		22				55
08R1BI2232	Excavate eastern portion of guide wall & slab	12	12	13DEC10	28DEC10 13DEC10		.	22				
08R1BI2234	Construction of boulder traps; 7nos.	24	24	29DEC10	26JAN11 29DEC10	0 26JAN11		22				88
08R1BI2236	Construct eastern portion of guide wall & slab	24	24	27JAN11	26FEB11 27JAN11	26FEB11	•	22			0	
08R1BI2240	Remove temp. concrete blook bund	9	ω	28FEB11	05MAR11 28FEB11	1 05MAR11		22			-	
Phase 4 - Con	Phase 4 - Construct Remaining Appr. Channel	c										
08R1BI2242	Remove gantry crane & steel deck	18	18	16DEC11	10JAN12 16DEC11	1 10JAN12	•	-196				
08R1BI2244	Excavation for remaining approach channel	12	12	11JAN12	27JAN12 11JAN12	27JAN12		-196				
08R1BI2246	Construct remaining approach channel	24	24	28JAN12	24FEB12 28JAN12	24FEB12		-196			100	
08R1BI2248	Close out last section of guide wall	12	12	25FEB12	09MAR12 25FEB12	2 09MAR12		-196				-0.1
08R1BI2250	Construct trash orill	42	CF	25FFR12	COMMENT SEEERS	O NOMAR12		106				

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24 24 24 20 ANNORA 21FEBGAA 201ANDGA 1 1 1 1 2 1 2 1 2 1 2 1 2 2 2 2 2 2 2		the state of the s								
Construct of some mining of some m	Excavate &	Construct Vortex/Drop Smail		l				ı		
Construction of locating plates and construction plates and construction plates and construction of locating plates and construction plates and construction plates and cons	Steel Deck of	Gantry Cranerinoise Enclosure	70		ANDOA	24EEBOOA 20 IANOGA	21EEROOD	,	1	III Wan Ke
Description of footneying each state of the control of footneying and the control of footneying each state of footneying each each state of footneying each each state of footneying each each state of footneying each each state of footneying each each each state of footneying each each each each each each each each	05L 1BI2300	Construct o nos, min piles Freet timber platform for mini piling	2 4		SFEB09A	26FEB09A 23FEB09A		-	Ī	
Construction for case in services 12 12 12 13 14 15 15 14 15 15 15 15	05I 1BI2302	Construct 6 nos. mini piles	12		1	12MAR09A 27FEB09A	-	-		b. a
Construction of footing-pie capes Construction of footing-pie capes Construct footing for gashry crane Final granty crane & noise enclosure 12 SAMANOBA STAND Sating you was constructed in the stand of the standard of	051 1812303	Excavation for footing/pile caps	12			26MAR09A 13MAR09A	-			
The contract of contracts of	05L1BI2304	Construction of footing/pile caps	12			18APR09A 27MAR09A		-		KS.
Construct footing for gantry crave 12 12 25AUGOB CYEEPOB 25OCTOB 1-156	05L1BI2305	Install steel deck	25		4MAY09A				175	1
Problem & Forester & Robert Politics 11,01L09 11,	05L1BI2316	Construct footing for gantry crane	12		5AUG09		07SEP09		196	
Senting variety Shaft Samurane Samuran	05L1BI2318	Install gantry crane & noise enclosure	45		98SEP09	29OCT09 08SEP09	29OCT09		196	
Setting up Set	Ground Treat	ment Works for Vortex Shaft								
Probing & curian ground sheft 37 37 13JULO9 24AUG09 13JULO9 24AUG09 1 196	05L1BI2306	Setting up	2	2	10JUL09	11JUL09 10JUL09	11JUL09		196	following chanell diversion to west
Percentance Construction of Vortex Shaft	05L1BI2308	Probing & curtain grouting around shaft	37	37	13JUL09	24AUG09 13JUL09	24AUG09	Ĭ	196	***
School Standard Shaft + SemPD to +65mPD (39m) 118 118 300CT09 23MAR10 1 196	Excavation at	nd Construction of Vortex Shaft								
Set up for lining construction 6 6 11NOV11 17NOV11 17NOV11 1-196	05L1BI2320	Excavate shaft; +99mPD to +65mPD (30m)	118		300CT09	23MAR10 300CT09	23MAR10		196	1
Construct Air Vent Shaft 30 11NOV11 15DEC11 1 - 196 Construct Air Vent Shaft Figure Air Vent Shaft Figure Air Vent Shaft Figure Air Vent Shaft Enhance the platform for RCD operation 15 15 16 20 DEC08A 27DEC08A 17 AIANDBA 27DEC08A 1 AIANDBA 27DEC08A 1 AIANDBA	05L1BI2321	Set up for lining construction	ဖ		11NOV11	17NOV11 11NOV11	17NOV11		196	
Construct Air Vent Shaft	05L1BI2322	Construct permanent lining; 30m @ 4m/ 4days	30		11NOV11	15DEC11 11NOV11	15DEC11		196	10
15 15 08DECO8A 27DECO8A 08DECO8A 1 1 1 1 1 1 1 1 1			1	H			ŀ		4	
15 15 15 15 15 15 15 15					110					
## 6 6 29DECO8A G6JAN09A 13MAR09A 13MAR09A 1 pirov sion off T	05L1BI2418	Enlarge the platform for RCD operation	15			27DEC08A 08DEC08A		-		
## 54 54 07JAN09A 13MAR09A 13MAR09A 1 19MAR09A 1 1 2 19MAR09A 28APR09A 28APR09A 28APR09A 1 -196 1 1 2 19MAR09A 28APR09A 28APR09A 1 -196 1 1 2 19MAR09A 04JUN09 24JUN09 24JUN09 24JUN09 03JUL09 24JUN09 03JUL09 1 -196 1 1 1 2 25JUN09 03JUL09 25JUN09 03JUL09 1 -196 1 1 1 1 2 25JUN09 03JUL09 25JUN09 03JUL09 1 1 -196 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	05L1BI2420	Mobilize & set up RCD for excavation	മ			06JAN09A 29DEC08A	-	-		
5 5 14MARO9A 19MARO9A 14MARO9A 1 1 1 21MARO9A 14MARO9A 23MARO9A 21MARO9A 1 1 1 21MARO9A 23MARO9A 23MARO9A 21MARO9A 1 1 1 21MARO9A 25APRO9A 1 1 1 21MARO9A 25APRO9A 1 1 1 1 21MARO9A 25APRO9A 1 1 1 1 21MARO9A 25APRO9A 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	05L1BI2422	Bore shaft with RCD; 37.5m @1m/day	54		7JAN09A	13MAR09A 07JAN09A	13MAR09A	F		n
## 3 20MAR09A 23MAR09A 23MAR09A 1 ## 5 20MAR09A 25APR09A 1 ## 1 21MAR09A 25APR09A 1	05L1BI2424	Demobilize RCD rig	ĸ		4MAR09A	19MAR09A 14MAR09A	19MAR09A	-		
1 1 21MAR09A 25APR09A 1 1 25APR09A 1 1 25APR09A 25APR09A 1 1 1 25APR09A 1 1 25APR09A 1 1 25APR09A 1 1 25APR09A 1 1 25APR09A 1 1 25APR09A 25APR09A 25APR09B 1 1 1 1 1 1 25APR09A 25APR09B 25APR09B 1 1 1 1 1 1 25APR09B 25APR09B 25APR09B 1 1 1 1 1 1 25APR09B 25APR09B 25APR09B 1 1 1 1 1 1 1 1 1	05L1BI2426	Install permanent steel liner	m		-	23MAR09A 20MAR09A	7.2	-		
1	05L1BI2427	Preparation works for casting concrete				25APR09A 21MAR09A	21	-		6
17 17 05JUN09 27APRO9A 04JUN09 1 -196 1 1 1 1 1 1 1 1 1	05L1BI2428	Damage found on installed steel liner	0	0		25APR09A	25APR09A	-	TÉ:	
17 17 05JUN09 25JUN09 24JUN09 1 -196 1 1	05L1BI2429	Removal of steel liner	31		7APR09A		-		136	
12 12 25JUNO9 09JULO9 1 -196 1-196 1 -196	05L1BI2430	Remove RCD platform	17	17	90NUC30		24JUN09		196	
12 12 09JULO9 09JULO9 1 -196 1 1 1 1 1 1 1 1 1	05L1BI2432	Construct PC bund wall	12		25JUN09		607NF60		196	
12 12 12 12 12 14 14 15 15 15 15 15 15	05L1BI2434	Divert channel to West	0	0		6070160	607NF60		196	•
36 36 16NOV09 29DEC09 16NOV09 29DEC09 1 -96 6 6 30DEC09 06JAN10 30DEC09 06JAN10 1 -96 3 3 22FEB10 27FEB10 27FEB10 1 -96 3 3 22FEB10 27FEB10 27FEB10 1 -96 3 3 25FEB10 27FEB10 27FEB10 1 -96 3 3 25FEB10 27FEB10 27FEB10 1 -96 3 4 24 01MAR10 27MAR10 01MAR10 27MAR10 1 -96 144UG09 10JUL09 14AUG09 15AUG09 1 -50 15 12 15AUG09 28AUG09 15AUG09 1 -50 16 16 16 16 16 16 16 16 16 16 16 16 16 1	05L1BI2436	Footing for gantry crane	12	10.1	2NOV09*	14NOV09 02NOV09*	14NOV09		96-	
6 6 8 30DEC09 06JAN10 20FEB10 1 -96 36 36 07JAN10 20FEB10 1 -96 3 3 22FEB10 24FEB10 27FEB10 1 -96 3 3 25FEB10 27FEB10 27FEB10 1 -96 24 24 01MAR10 27MAR10 01MAR10 27MAR10 1 -96 aft 31 31 10JUL09 14AUG09 10JUL09 1 4AUG09 1 -50 flootings 12 12 15AUG09 28AUG09 15AUG09 1 -50	05L1BI2438	Erection of gantry crane	36	36	60/ON91	29DEC09 16NOV09	29DEC09		-36	
36 36 07JAN10 20FEB10 27FEB10 1 -96 3 3 22FEB10 24FEB10 24FEB10 1 -96 3 3 25FEB10 24FEB10 24FEB10 1 -96 3 2 3 25FEB10 24FEB10 27FEB10 1 -96 24 24 01MAR10* 27MAR10 01MAR10* 27MAR10 1 -96 aft 31 31 10JUL09 14AUG09 10JUL09 14AUG09 1 -50 flootings 12 12 15AUG09 28AUG09 15AUG09 1 -50	05L1BI2440	Set up sliding system	9		30DEC09		06JAN10	-	96-	
3 3 22FEB10 24FEB10 24FEB10 1 -96 3 3 25FEB10 27FEB10 27FEB10 1 -96 24 24 01MAR10* 27MAR10 01MAR10* 27MAR10 1 -96 aft 31 31 10JUL09 14AUG09 10JUL09 14AUG09 1 -50 flootings 12 12 15AUG09 28AUG09 15AUG09 1 -50	05L1BI2446	Install steel casing	98	36	07JAN10		20FEB10	-	96-	
3 3 25FEB10 27FEB10 1 -96 24 24 01MAR10* 27MAR10 01MAR10* 27MAR10 1 -96 aft 31 10JUL09 14AUG09 10JUL09 14AUG09 1 -50 footings 12 12 15AUG09 28AUG09 15AUG09 1 -50	05L1BI2448	Survey checking & capping concrete	က	ო	22FEB10	24FEB10 22FEB10	24FEB10	÷	96-	
24 24 24 24 01MAR10* 27MAR10 01MAR10* 27MAR10 1 -96 naft 31 31 10JUL09 14AUG09 10JUL09 14AUG09 1 -50 Image: Cootings 1	05L1BI2450	Preparation & concreting	m	ო	25FEB10	27FEB10 25FEB10	27FEB10	-	-98	Ifollowing consent from the SOR
naft 31 31 10JUL09 14AUG09 10JUL09 14AUG09 1 -50 footings 12 15 15AUG09 28AUG09 15AUG09 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	05L1BI2452	Construct upstand wall	24		11MAR10*	27MAR10 01MAR10*		1	96-	
Shaft 31 31 10JUL09 14AUG09 10JUL09 14AUG09 1 -50 S. gantry footings 12 12 15AUG09 28AUG09 15AUG09	Excavate &	Construct Man Access Shaft								
Shaft 31 31 10JUL09 14AUG09 10JUL09 14AUG09 1 4AUG09	Ground Treat	tment for Man Access Shaft								
ine & Noise Enclosure at M. A. Shaft Excavate & construct 4 nos. gantry footings 12 12 15AUG09 28AUG09 15AUG09 15AUG09 1 -50	05L1BI2502	Probing & curtain grouting around shaft	31	31	10JUL09	14AUG09 10JUL09	14AUG09	-	-50	***
Excavate & construct 4 nos. gantry footings 12 12 15AUG09 28AUG09 15AUG09 28AUG09 1 -50	Gantry Crane	& Noise Enclosure at M. A. Shaft								
	05L1BI2504	Excavate & construct 4 nos. gantry footings	12	12	15AUG09	28AUG09 15AUG09	28AUG09	-	-20	lincluding 1 wk concrete strength

Gj	Activity	DO4 WP3D	MP3D	AD04	AD04 WP3D	WP3D	Total	2008	2008 2010 2011 2012 2013
051 1B12505	Install gaptiv crane & noise enclosure		36	29AUG09	9 29/	12	1 -50		■provision of TTA
El S and Excav	El S and Excavation unto Rock Head Level at M.A.		<u> </u>						
05L1BI2503	Install sheet piles	9	9	15AUG09	21AUG09 15AUG09	21AUG09	1 -44		
05L1BI2506	Excavation to rock head level	60	18	130CT09	03NOV09 13OCT09	03NOV09	1 -50		
_	& Construction of Man Access Shaft								
05L1BI2508	Excavation/muck out/temporoary support	127	127	04NOV09	12APR10 04NOV09	12APR10	1 -50		
05L1BI2522	Construct base	4	4	15MAR11	18MAR11 15MAR11	18MAR11	1 -50		after construction of man access adit
05L1BI2524	Set up for 37m shaft construction (wall only)	9	9	19MAR11	25MAR11 19MAR11	25MAR11	1 -50		•
05L1BI2526	Construct wall/stair, 25 landings @ 3 days/land	75	75	26MAR11	28JUN11 26MAR11	28JUN11	1 -50		1
05L1BI2528	Removal of gantry crane	12	12	29JUN11	13JUL11 29JUN11	13JUL11	1 -50		
05L1BI2530	Construct wall above ground level	00	œ	14JUL11	22JUL11 14JUL11	22JUL11	1 -50		
05L1BI2532	Construct shaft roof	12	12	23JUL11	05AUG11 23JUL11	05AUG11	1 -50		-
Excavate & C	Excavate & Construct Deseration Chamber						Ì		
05L1BI2602	Probing/grout/excavate/muckout/temp.support	72	72	24MAR10	23JUN10 24MAR10	23JUN10	1 -196	top heading	4m deep=17m, @0.2m/day = 72
05L1BI2604	Drill/excavate/muckout/temp. support for bench	20	20	24JUN10	21AUG10 24JUN10	21AUG10	1 -196		4.5m deep=22*4.5*9=891m3, 17.8m3/day
05L1BI2607	Drill/excavate/muckout/temp. support for bottom	20	20	23AUG10	220CT10 23AUG10	22OCT10	1 -196		4.5m deep=22*4.5*9=891m3, 17.8m3/day
05L1BI2608	Set up for lining construction	12	12	26AUG11	08SEP11 26AUG11	08SEP11	1 -196		
05L1BI2610	Construct base; 3 bays	o	o	09SEP11	20SEP11 09SEP11	20SEP11	1 -196		
05L1BI2612	Construct walls 2 lifts; 3 bays	24	24	21SEP11	200CT11 21SEP11	200CT11	1 -196		•
05L1BI2614	Const. crown/underpin. of air vent & drop shafts	18	18	210CT11	10NOV11 210CT11	10NOV11	1 -196	.0	
Excavate & C	Construct Main Adit Tunnel	Ì	I	į			1	1.4	
3BL1BI2102	Probing/grout/temp. support/excavation/muck out	200	200	230CT10	27JUN11 23OCT10		1 -196	-5	56m @ 4m/11 days
3BL1BI2104	Construct permanent lining	20	20	28JUN11	25AUG11 28JUN11	25AUG11	1 -196		including 5 days for setup of mould
Excavate & C	Excavate & Construct Man Access Adit							No.	
Upper Horizontal Section	tal Section								
05L1BI2806	Probing/gorut/excavate/muckout/temporary support	90	90	13APR10	30JUL10 13APR10	30JUL10	1 -50		■26m, @ 4 m/9 day
05L1Bl2830	Set up for 23m upper adit construction	9	ø	26JAN11	01FEB11 26JAN11	01FEB11	1 -50		im:
05L1Bl2834	Construction of permanent lining	32	32	02FEB11	14MAR11 02FEB11	14MAR11	1 -50		J.D.
Vertical Section	u								
05L1BI2807	Probing & curtain grouting around shaft	24	54	31JUL10	27AUG10 31JUL10				
05L1BI2808	Set up for 7.2m raise (shaft) excavation	5	7	28AUG10	30AUG10 28AUG10		1 -50		1000
05L1BI2810	Excavate/removal of rock/temporary support	24	24	31AUG10	28SEP10 31AUG10		5		■@ 0.3m/day & night
05L1BI2822	Construct base of raise shaft	4	4	09DEC10	13DEC10 09DEC10		1 -50		
05L1BI2824	Set up for 9m raise stairway const. (wall only)	9	ő	14DEC10	20DEC10 14DEC10		1 -50		-
05L1BI2826	Construct wall & stair, 7 landings @4days/landin	28	28	21DEC10	25JAN11 21DEC10	25JAN11	1 -50	0	
Lower Horizontal Section	ital Section								
05L1BI2812	Set up for 9.3m lower adit excavation	2	2	29SEP10	30SEP10 29SEP10	30SEP10	1 -50		
05L1BI2814	Excavate/removal of rock/temporary support	31	33	020CT10	08NOV10 02OCT10		1 -50		■@0.3m/day & night
05L1BI2816	Set up for 7m lower adit construction	9	ω	09NOV10	15NOV10 09NOV10		1 -50		
05L1BI2818	Construction of permanent lining for lower adit	20	20	16NOV10	08DEC10 16NOV10	08DEC10	1 -50	0	

Junction Between Main Tunnel & Adit Tunnel								
			Ì.			1		
Temp. support & excavation breakthrough	48	48 2	26AUG11	240CT11 26AUG11	240CT11	-	-127	
Construct collar between MT & AT	48	48 2	250CT11	19DEC11 250CT11	19DEC11	-	-127	
Remaining Works Prior to Handover		ā	į					
Finishing & reinstatement works; Portion B	98	36 0	04FEB12	16MAR12 04FEB12	16MAR12	-	-196	100
Pre-handover inspections and remedial works	30	30	18FEB12	23MAR12 18FEB12	23MAR12	, ·	-196	
Contractor serve notice for Works completion	2	7 2	24MAR12	30MAR12 24MAR12	30MAR12	2	0	
SO issues completion certificate	21	21 3	31MAR12	20APR12 31MAR12	20APR12	2	0	•
Landscaping works at Portion B	72	72 1	16DEC11	16MAR12 16DEC11	16MAR12	-	-158	
Establishment Works at Portion B	-	365 1	7MAR12	16MAR13 17MAR12	16MAR13	2 -	-196	
Install flow measurement devices at Intake I-2	12	12 0	07FEB12	20FEB12 07FEB12	20FEB12	1	-184	
Maintain & monitor flow monitoring	365	365 2	21FEB12	19FEB13 21FEB12	19FEB13	2	0	
Schedule of Milestones for Cost Centre No. 3bL								
3bL 1; On establishing tunnelling equipments	0	0		220CT10	220CT10	2 1,	1,165	equipment for tunnelling at Intake I-2
3bL 2; On completion of 12,5% perm. tunnel linin	0	0		18NOV10	18NOV10	2 1,	1,138	◆for Adit Tunnel at Intake I-2
3bL 3; On completion of 25% perm. tunnel lining	0	0		16DEC10	16DEC10	2 1.	1,110	♦for Adit Tunnel at Intake I-2
3bL 4; On completion of 37.5% perm. tunnel linin	0	0		15JAN11	15JAN11	2 1,0	1,080	◆for Adit Tunnel at Intake I-2
3bL 5; On completion of 50% perm. tunnel lining	0	0		15FEB11	15FEB11	2 1,0	1,049	◆for Adit Tunnel at Intake I-2
3bL 6; On completion of 62.5% perm. tunnel linin	0	0		15MAR11	15MAR11	2 1,0	1,021	offor Adit Tunnel at Intake I-2
3bL 7; On completion of 75% perm. tunnel lining	0	0		12APR11	12APR11	N	993	♦for Adit Tunnel at Intake I-2
3bL 8; On completion of 87.5% perm. tunnel linin	0	0		09JUL11	09JUL11	2	905	◆for Adit Tunnel at Intake I-2
3bL 9; On completion of perm. tunnel lining	0	0		25AUG11	25AUG11	2	858	♦for Adit Tunnel at Intake I-2
3bL 10; On completion of all works under this CC	0	0		19DEC11	19DEC11	2	742	◆under this Cost Centre
Schedule of Milestones for Cost Centre No. 5L						1		
5L 1: On completion of 25% of excavation	0	0		08DEC09	08DEC09	2 1,4	1,483	♦ below G.L except for Adit at Intake I-2
5L 2; On completion of 50% of excavation	0	0		12APR10	12APR10	2 1,	1,358	Delow G.L. except for Adit at Intake I-2
5L 3; On completion of 75% of excavation	0	0		23JUN10	23JUN10	2 1,	1,286	♦belowe G.L. except for Adit at Intake I-2
5L 4; On completion of all excavation	0	0		220CT10	220CT10	2 1.	1,165	◆below G.L. except for Adit Intake I-2
5L 5; On completion of drop shaft & vortex shaft	0	0		15DEC11	15DEC11	5	746	◆vortex shaft at Intake I-2
5L 6; On completion of de-aeration chamber	0	0		10NOV11	10NOV11	. 2	781	◆chamber at Intake I-2
5L 7; On completion of air vent shaft	0	0		27MAR10	27MAR10	2 1,	1,374	♦shaft at Intake I-2
5L 8; On completion of man access shaft	0	0		05AUG11	05AUG11	2	878	◆shaft at Intake I-2
5L 9; On completion of man access adit	0	0		14MAR11	14MAR11	2 1,	1,022	adit at Intake I-2
5L 10; On completion of all works under this CC	0	0		23MAR12	23MAR12	2	647	under this Cost Centre
Schedule of Milestones for Cost Centre No. 8R		ı				ŧ		
		ł				H		
8R 1; On completion of approach channel	0	0		09MAR12	09MAR12	-		channel and assiciated decking at Intake I-2
8R 2; On completion of trash grill	0	c		0000000	0.40 0.40	c		クー 0 c n + n + n + n + n + n + n + n + n + n

al zoos 2010 2011 2012 2013 at	47 under this Cost Centre.◆		◆wall at Intake I-2	◆wall at Intake I-2	0.	underthi							•	1								153	J						0		17	17	14	12					B	
Total	2 647	ķ	2	2	2 1,069	2 647	1			-	-		-	_		7 ,	- ,	- ,		ı	ı	2	-	4-	-	-	-	-	-	-	-	_	-	-			-	_	-	-
WP3D Finish	23MAR12		06NOV08A	26NOV08A	26JAN11	23MAR12				05NOV08A	19NOV08A		16SEP08A	06MAR09A			20SEP08A	SUJULUSA	USJULUBA 10NOVOBA	ABOVONO		26APR08A	13SEP08A	21JUN08A	04JUL08A	13SEP08A	OSMAROSA	15JUL08A	12SEP08A	09MAR09A	30JAN10	16NOV09	18DEC09	30JAN10			16AUG08A	28AUG08A		26NOV08A
AD04 WP3D Finish : Start	23MAR12		06NOV08A	26NOV08A	26JAN11	23MAR12				03NOV08A 05NOV08A 03NOV08A 05NOV08A	06NOV08A 19NOV08A 06NOV08A 19NOV08A		16SEP08A	06MAR09A 17SEP08A		ZOWARUGA	20SEP08A 22APR08A	SUJULUSA USJUNUSA	JONOVORA SUJUNUSA	10140V08A 2000108A		26APR08A 01APR08A	13SEP08A 04JUN08A	21JUN08A 04JUN08A	04JUL08A 04JUL08A	13SEP08A 08SEP08A	09MAR09A 21JUN08A	15JUL08A 21JUN08A	12SEP08A 15JUL08A	09MAR09A 28FEB09A	30JAN10 12NOV09	16NOV09 12NOV09	18DEC09 15DEC09	30JAN10 20JAN10			AUG08A 16AUG08A 11AUG08A	28AUG08A 18AUG08A		26NOVO8A 26NOVO8A
5 AD64 Start	0	i	0	0	0	0				3 03NOV08A			0	0: 17SEP08A		U ZBIVIARUOA			SUSUINUSA SUSUINUSA	_		7 01APR08A	6	2 04JUN08A	2 04JUL08A	6 08SEP08A	* 21JUN08A	3 21JUN08A	3 15JUL08A	8: 28FEB09A	_	4 12NOV09	4 15DEC09	20JAN10			6 11AUG08A	1 18AUG08A	1 29AUG08A	1 26NOV08A
Dur Dur	L		L				ŀ				12			80		+	+	4	-	ı		H	*86*				1* 214*				* 66*			10			v			ľ
Dow	0	Ĭ	0	0	0	0	ŀ			က	12		0	80		D 9	04	5	2 0	7		7	*98	2	2	9	214*	ю	ю	00	*99	4	4	10			9	-	-	-
Activity Description	8R 3; On completion of all works under this CC	Schedule of Milestones for Cost Centre No. 12R	12R 1; On completion of 50% pile retain. wall	12R 2; On completion of pile retain. wall	12R 3; On completion of boulder traps	12R 4; On completion of all works under this CC	Construction of Intake I-3	Works	Additional GI Works To Finalize Design	Erect platform/mibilization & set up GI rig	Drill 3 nos. GI holes for Intake Structures	VO#32; Replace Hoarding by Chain ∐nk Fence	Received VO-32 for replacing hoarding by CLF	Procure/prepare/install transparent hoarding		Possession of Potton C-900 of DOC	Site clearance	haording at slope crest	bet-up wheel washing lacintes	install remote control oct v as per EN 4:4:10	Tree Transplanting Works	Tree inspection & report	Tree transplant for upper parts; 8 nos.	1st stg tree pruning	2nd stg tree pruning	Final stg. tree pruning & tree uplifting	Tree transplanting at Ch250-Ch200); 20 nos.	1st stg tree pruning	2nd stg tree pruning	Final stg tree pruning & tree uplifting	Tree transplanting at Ch100-Ch0	1st stg tree pruning	2nd stg tree pruning	Final stg tree pruning & tree uplifting	H-Pile Retaining Wall for Wall A		Mobilize & set up piling rig	Drill 28 nos. grout (partially) 11 nos. piles	Piling stopped due to accessive grout loss	Piling resumed date
Ω	08R1BI2R06	Schedule of	12R3BI2S02	12R3BI2S04	12R3BI2S06	12R3BI2S08	Constructio	Preliminary Works	Additional GIV	AGIC-02	AGIC-04	VO#32; Replac	VO032-I302	V0032-I304	0000	0181013102	01R1CI3104	0181013100	01R1CI3110	BILICINIO	Tree Transp	16R7CI3202	16R7CI3204	16R7CI3206	16R7CI3208	16R7CI3210	16R7Cl3212	16R7CI3214	16R7Cl3216	16R7Cl3218	16R7Cl3220	16R7CI3222	16R7CI3224	16R7Cl3226	H-Pile Retair	Piling Works	13R4Cl3400	13R4Cl3401	13R4CI3402	13R4CI3403

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10	<u>Q</u>	Activity	AD04 WP3D Dur Dur		AD04 Start	AD04 WP3D Finish Start	WP3D Finish	Cal Total	980	884	Nice		2607
Comparison of the control of the c	13R4CI3405	Complete all H-piles, Wall A; 347nos.	02	_		1JAN09A 18AUG08A			l I	0			
Control of the cont	Skin Wall											5 =	982
If you can be supposed to the benchmark of the benchmark	13R4CI3406	Excavate for skin wall construction; 2130m3	09			ZMAR09A 14JAN09A	02MAR09A	-		0			23
Truct Control of Jeanneys	13R4CI3408	Hack off piles; piles 1 to 347	48			2APR09A 04FEB09A	02APR09A	-	- 41				You
Variation Area Vari	13R4Cl3410	Construct skin wall;	9	CA.		MAY09A 28FEB09A	19MAY09A	-		11			253
Second Particle Comparison	13R4Cl3414	Construct for capping beams;	24		-	14APR09A				IV.			
Second Augustion Augus	13R4CI3416	Construct U-channels	37	37 06N		BJUN09 06MAY09A		-		0			
Abea Tile GASEPOBA 280CTOBA 178 PREPARA 1 CALONIA CALONIA 1 CALONIA	Soil Nailing	Works											3-1-1 3-1-1
minor soil nailing thinks the factorial plants the	Soil Nailing Oc	utside Excavation Area											200
Charles Colore Colored Color	13R1Cl3502	Scaffolding platform for soil nailing	18			BOCT08A 08SEP08A		-	0	11-04			
Color Colo	13R1Cl3504	Mobilize & set up drilling & grouting plants	4			7SEP08A 12SEP08A		-	-			123	
Ch. 270-210 In mails Ch. 130-210 In mails Ch. 140-210 3R1Cl3506	Install & grout soil nails; 193 nos. + 8 Test N.	69			9DEC08A 18SEP08A		-				200	33	
Chicago	Soil Nailing W	Vithin Excavation; Ch. 270-210											
Ch. 210-130 1177 1178 1177 1178 1177 1178	13R1Cl3508	Install & grout soil nails	58*			36OCT09 29JUL09	06OCT09						
Inails Cit.130-0	Soil Nailing W	fthin Excavation; Ch. 210-130											99
Inteliar	13R1Cl3510	Install & grout soil nails	117*		EC08A 1	1MAY09A 12DEC08A		-					
Parish P		Vithin Excavation; Ch.130-0											
### Property of Part Control	13R1Cl3512	Install & grout soil nails	267*		-1	22SEP10 30OCT09	22SEP10	-		11			88
Inalis, 261 no.s + 3 Test N, 100 100 240CT09 230CT09 10 CSFEB10 1 235 100CT09 10 CSFEB10 1 235 10 CSFEB10 1 235	Rem. Soil Nail	ing Outside Excavation											
Inalis, 261 no.s + 3 Test N, 100 100 24OCT09 25FEB10 24OCT09 25FEB10 1 235	13R1CI3522	Scoffolding platform for soil nailing	12	_		23OCT09 10OCT09	23OCT09			•		-111	
Solid Color Colo	13R1CI3532	Install & grout soil nails; 261 no.s + 3 Test N,	100			25FEB10 24OCT09	25FEB10	-			1		
y Works for Works included VO#643 Year Scriptor Works included VO#643 Perceive VO for revising design Perceive VO for Revising Laborators of the VOWAGAS Perceive VO for Revising Laborators of Laborators on Concrete Revision To February Concrete R	Access Roa	d Construction					i						
Recieve VO for revising design	Preliminary W	orks for Works included VO#043											21
Procurement of lean mix concrete 12 12 06MAY09A 14MAY09A 14MAY09A 14MAY09A 1 1566	VO043-010	Receive VO for revising design	0	0	0	2FEB09A	02FEB09A	-		•			
to Procurement of lean mix concrete 12 12 06MAY09A 14MAY09A 14MAY09A 14MAY09A 1 156 1 to Protect Retained Trees; VO #043 1 <td>VO043-020</td> <td>Recieve amendment to VO#043</td> <td>0</td> <td>0</td> <td>0</td> <td>5MAY09A</td> <td>05MAY09A</td> <td>2</td> <td></td> <td>•</td> <td></td> <td></td> <td></td>	VO043-020	Recieve amendment to VO#043	0	0	0	5MAY09A	05MAY09A	2		•			
to Protect Retained Trees; VO #043 18 18 15MAY09A 65UNNO9 15MAY09A 1-156 Setting out at site Setting out at site 69 03FEB09A 28APR09A 28APR09A 1-156 Excavate & muck out manually; 50m @ 4m/day 2 2 29APR09A 29APR09A 29APR09A 29APR09A 1-156 Set up for conneting 2 2 2 08MAY09A 09MAY09A 09MAY09A 11MAY09A 1	VO043-030	Procurement of lean mix concrete	12			4MAY09A 06MAY09A			COL	-			S
to Protect Retained Trees; VO #043 Setting out at site Excavate & muck out manually, 50m @ 4m/day	VO043-040	Testing & approval of lean mix concrete	18			DEJUND9 15MAY09A				•			
Setting out at site	Mass Wall to F	Protect Retained Trees; VO #043											
Erect formwork; 70m2 @ 14m2/day 5 5 04MaY09A 30APR09A 29APR09A 30APR09A 1 1 1 1 1 1 1 1 1	VO043-120	Setting out at site	69		- 3	SAPRO9A 03FEB09A			57.	1			
Set up for connetting Set up for connecting Set	VO043-130	Excavate & muck out manually, 50m @ 4m/day	2			OAPROSA 29APROSA		-	0				80
S70; VC# 043 Pour concete & removal of formwork 2 2 0 8MAY09A 0 8MAY09A 1 MAY09A 1 1 1 370; VC# 043 370; VC# 043 1 MAY09A	VO043-140	Erect formwork; 70m2 @ 14m2/day	Ω			8MAY09A 04MAY09A		-	- 5				0.1
370; VO# 043 Pour concrete & removal of formwork 2 2 0 9MAY09A 11MAY09A 11M	VO043-150	Set up for conreting	2	1		9МАҮ09А 08МАҮ09А		-					
370; VO# 043 Bulk excavation for benching; 1061 @ 45m3/day 12 12 29MAY09 11JUN09 29MAY09 11JUN09 28JUL09 1 - 160 Ch. 270; VO #043 Fill & compaction; 39 layers @ 1 day/layer 39 39 12JUN09 28JUL09 12JUN09 28JUL09 1 - 160 Excavation for access road Ch. 370 to 310 4 4 29JUL09 01AUG09 29JUL09 01AUG09 1 - 160 Bulk excavation for benching; Ch. 310 to 270 5 5 03AUG09 07AUG09 07AUG09 1 - 160 Fill & compaction lean mix concerete; 15 layers 15 15 08AUG09 25AUG09 1 - 160 Above Access Road; Ch. 460-270 16 16 26AUG09 12SEP09 1 - 150	VO043-160	Pour concrete & removal of formwork	2			1MAY09A 09MAY09A		-					X.
Bulk excavation for benching;1061 @ 45m3/day 12 29MaY09 11JUN09 29MaY09 11JUN09 1 -160 Fill & compaction; 39 layers @ 1 day/layer 39 12JUN09 28JUL09 12JUN09 12JUN09 1 -160 Ch. 270; VO #043 Excavation for access road Ch. 370 to 310 4 4 29JUL09 01AUG09 29JUL09 01AUG09 1 -160 Bulk excavation for benching; Ch. 310 to 270 5 5 03AUG09 03AUG09 03AUG09 1 -160 Fill & compaction lear mix concerete; 15 layers 15 15 08AUG09 25AUG09 25AUG09 1 -160	Ch.460 to 370;	VO# 043										195	
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h. 270; VO #043 h. 270; VO #043 4 4 29JUL09 01AUG09 1 1 1 25JUL09 07AUG09 1 1 1 1 25JUL09 07AUG09 1 1 1 1 25JUL09 07AUG09 1 1 1 25JUL09 07AUG09 07AUG09 1 1 1 25JUL09 07AUG09 1 1 1 25JUL09 07AUG09 1 1 1 25AUG09 1 25AUG09 1 1 1 25AUG09 1 1 1 25AUG09 1 25AUG09 1 1 1 25AUG09 1 25AUG09 1 25AUG09 1 25AUG09 1 25AUG09 1 25AUG09	VO043-070	Fill & compaction; 39 layers @ 1 day/layer	39			28JUL09 12JUN09	28JUL09				ix)		
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Fill & compaction lean mix concerete; 15 layers 15 n8AUG09 25AUG09 08AUG09 25AUG09 1 Above Access Road; Ch. 460-270 16 n8 26AUG09 15 seaugner 16 seaugner <t< td=""><td>VO043-100</td><td>Bulk excavation for benching; Ch. 310 to 270</td><td>2</td><td></td><td></td><td>37AUG09 03AUG09</td><td>07AUG09</td><td></td><td></td><td></td><td>30</td><td></td><td></td></t<>	VO043-100	Bulk excavation for benching; Ch. 310 to 270	2			37AUG09 03AUG09	07AUG09				30		
Above Access Road; Ch. 460-270 16 26AUG09 12SEP09 12SEP09 1	VO043-110	Fill & compaction lean mix concerete; 15 layers	15			25AUG09 08AUG09	25AUG09			-			
Temporary concrete paving & curing 16 16 26AUG09 12SEP09 26AUG09 12SEP09 1	Works On & A	bove Access Road; Ch. 460-270											
	09R1CI3610	Temporary concrete paving & curing	16		AUG09	12SEP09 26AUG09	12SEP09		200	-			8.5

2013				31.	23	X	100	X .					YEY		0 Å		3.7	3		S.	23	88	88									23		301	3		2					
9 2010 2011 2012	=10,513m3 @ 225m3/day							N/a								11			u	1)			3		•						150mm thick	-	3				5%					=2 nos. pile/rig
2009									•	•																																
Total Float	321		-160	-160	-160			22			-79	55	-160	-160		17	17		17	17	17		-160	-157	-157	-157	-157		-160	-137	-125	-125		-160	-160	-160	-160			17	17	17
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WP3D	10NOV09		29SEP09	09OCT09	210CT09		11MAY09A	26NOV09			25JUN09	12NOV09	06OCT09	17MAY11		13JAN10	30JAN10		22SEP10	11NOV10	19NOV10		05AUG11	29AUG11	17SEP11	080CT11	05AUG11		28JUN11	13JUL11	27JUL11	10AUG11		14SEP11	27SEP11	120CT11	250CT11			17FEB10	24FEB10	03MAY10
WP3D Start	10NOV09 14SEP09		29JUL09	09OCT09 07OCT09	210CT09 100CT09		11MAY09A 12DEC08A	26NOV09 13NOV09	12MAY09A	16MAY09A	16MAY09A	9 220CT09	30SEP09	26APR11		13JAN10 30OCT09	30JAN10 14JAN10		22SEP10 06AUG10	24SEP10	19NOV10 12NOV10		1 29JUN11	_	30AUG11	19SEP11	05AUG11 09JUL11		18MAY11	29JUN11		1 28JUL11				1 28SEP11	1 130CT11	K		17FEB10 01FEB10	24FEB10 18FEB10	0 25FEB10
AD04 Finish	10NOV08		29SEP09	09OCT08	210CT08		11MAY09	26NOV0			25JUN09	12NOV09	06OCT09	17MAY11		13JAN10	30JAN10		22SEP1(11NOV10	19NOV1		05AUG11	29AUG11	17SEP11	080CT11	05AUG1		28JUN11	13JUL11	27JUL11	10AUG11		14SEP11	27SEP11	120CT11	250CT11	i		17FEB1	24FEB1	D3MAY10
AD04 Start	14SEP09		29JUL09	07OCT09	100CT09		12DEC08A	13NOV09	12MAY09A	16MAY09A	16MAY09A	22OCT09	30SEP09	26APR11		300CT09	14JAN10		06AUG10	24SEP10	12NOV10		29JUN11	06AUG11	30AUG11	19SEP11	09JUL11		18MAY11	29JUN11	14JUL11	28JUL11		06AUG11	15SEP11	28SEP11	130CT11			01FEB10	18FEB10	25FEB10
Do4 WP3D Dur Dur	47		24	e	10		48	12	0	0	34	18	4	18		62	15		41	40	7		32	20	16	16	24		35	12	12	12		33	11	F	+			12	ω	53
Dour	47		25	က	10		48	12	0	0	35	18	4	6		62	15		44	40	7		32	20	16	16	24		35	12	12	12		33	1	F	F		ı	12	ဖ	53
Activity Description	Excavation of slope batter above access road	. 210	Excavation & soil nailing	Backfill (grade 200) & compaction	Temporary concrete paving & curing	. 130	Excavation as per conforming design	Temporary concrete paving & curing	VO#084 revising the design received	Works resumed as per VO #084	Excavate slope profile as per VO#084	Remove excavated material off site; 6000m3	Soil nailing at Ch. 198 to 210	Excavate to access road formation	Ch. 130 to Ch. 0: up to +74.5mPD	Excavation & soil nailing	Temporary concrete paving & curing	Ch. 130 to Ch. 0; below +74.5mPD	Excavate & soil nailing (+74.5 to 88.5mPD)	Excavate rock (88.5 to 63mPD; 3239m3 @ 80m3/day	Backfill (grade 200) & compaction	Road Paving; Ch. 460 to Ch. 270	Construct drainage as per VO#090; 190m @ 5m/day	Road formation; 190m @ 12m/day	Lay sub-bse and kerb; 190m @ 12m/day	Concrete paving; 190m @ 12m/day	Green slope arrangement as per VO# 095	Drainage & Road Paving; Ch. 270 to Ch. 130	Construct drainage; 140m @ 4m/day	Backfill trench & road formation; 140m @ 12m/day	Lay sub-base and kerb; 140m @12m/day	Concrete paving; 140m @ 12m/day	Drainage & Road paving: Ch. 130 to Ch. 0	Construct drainage; 130m @ 4m/day	Backfill trench & road formation; 130m @ 12m/day	Lay sub-base & kerb; 130m @12m/day	Concrete paving; 130m @ 12m/day	H-Pile Retaining Wall for Wall B		Form piling platform for Wall B	Mobilize & set up piling rig	350mm dia. pre-bored H-piles, Wall B, 98 nos.
Q	09R1Cl3620	Ch. 270 to Ch. 210	09R1CI3624	09R1CI3626	09R1CI3628	Ch. 210 to Ch.	09R1CI3630	09R1CI3632	VO-084-02	VO-084-12	VO-084-22	VO-084-26	VO-084-32	VO-084-42	Ch. 130 to Ch.	09R1CI3634	09R1Cl3636	Ch. 130 to Ch.	09R1CI3638	09R1CI3640	09R1CI3642	Drainage & R		09R1Cl3674	09R1CI3684	09R1CI3694	VO-095-02	Drainage & R	09R1Cl3644	09R1CI3646	09R1CI3648	09R1CI3654	Drainage & R	09R1Cl3704	09R1Cl3714	09R1Cl3724	09R1CI3734	H-Pile Retai	Piling Works	13R4CI3701	13R4CI3702	13R4Cl3704

Skin Wall 13R4Cl3705 Demobilize piling rig Skin Wall 13R4Cl3706 Excavate for skin wall; 48m3 13R4Cl3710 Construct skin wall; 6 bays 13R4Cl3712 Excavate for capping beams; 13R4Cl3714 Construct for capping beams; 13R4Cl3714 Construct U-channels Channel Modification Works (Dry Season) River Diversion for Underground Works 09R1Cl3802 Form a temporay plant access to stream 09R1Cl3804 Break boulders 09R1Cl3806 Concrete bedding for bund wall (gabion) 09R1Cl3806 Concrete bedding for bund wall (gabion) 09R1Cl3810 Divert channel to south west Channel Modification Works 09R1Cl3814 Excavation of the stream bed & make go 09R1Cl3814 Excavation for dearmour 09R1Cl3816 Construct bund wall for approch channel 09R1Cl3818 Construct bund wall for approch channel 09R1Cl3818 Excavation for AVSNVS/DC/IMAS/IMAA Open Excavation for AVSNVS/DC/IMAS/IMAA Open Excavation for Underground Structures 06L1Cl3908 Excavation of Mobilize drilling rig, backhoes 06L1Cl3908 Excavation of Mobilize drilling rig, backhoes	Description Demobilize piling rig Excavate for skin wall; 48m3 Hack off piles; piles 1 to 98 Construct skin wall; 6 bays Excavate for capping beams; Construct for capping beams; Construct U-channels ication Works (Dry Season) or Underground Works Form a temporay plant access to stream Break boulders Concrete bedding for bund wall (gabion) Construct bund wall (gabion) Divert channel to south west ation Works Breaking of large boulders Excavation of the stream bed & make good Laying of rock armour Construct bund wall for approch channel const.	6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	6 04MAY10 18 11MAY10 24 26MAY10 24 26MAY10 12 02JUL10 18 09JUL10 18 16JUL10 32 05FEB09A	10MAY10 01JUN10 23JUN10 08JUL10 15JUL10		10 Float 1 17 1 17			
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13R4Cl3706 Excavate for skin wall 13R4Cl3718 Hack off piles; piles 1 13R4Cl3712 Excavate for capping 13R4Cl3714 Construct skin wall; 6 13R4Cl3714 Construct by capping 13R4Cl3714 Construct U-channels Channel Modification Works (River Diversion for Underground WORTCl3802 Form a temporary plan 09R1Cl3802 Form a temporary plan 09R1Cl3806 Construct bund wall (09R1Cl3818 Construct bund wall (09R1Cl3818 Breaking of large bou 09R1Cl3818 Excavation of the stra 09R1Cl3818 Construct bund wall (09R1Cl3818 Construct bund wall to 09R1Cl3818 Excavation for Underground 09R1Cl3818 Construct bund wall to 09R1Cl3818 Excavation for Underground 09R1Cl3808 Excavation for Underground 06L1Cl3908 Excavate/mucking of Excavation of Excavate/mucking of Excavation of Excavatio	all; 48m3 1 to 98 6 bays 19 beams; 19 beams; 19 sason) Norks ant access to stream outh west tream bed & make good our	84 24 27 12 12 27 12 13 8 8 8 8 7 12 12 12 12 12 12 12 12 12 12 12 12 12	18 11MAY10 24 26MAY10 12 09JUN10 12 02JUL10 18 09JUL10 18 16JUL10 32 05FEB09						
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13R4Cl3712 Excavate for capping 13R4Cl3714 Construct for capping 13R4Cl3716 Construct U-channels Channel Modification Works (River Diversion for Underground WogR1Cl3802 Form a temporay plan 09R1Cl3804 Break boulders Concrete bedding for 09R1Cl3806 Concrete bedding for 09R1Cl3810 Divert channel to sou Channel Modification Works (09R1Cl3812 Breaking of large bou 09R1Cl3814 Excavation of the strin 09R1Cl3816 Laying of rock armou 09R1Cl3816 Construct bund wall 1 09R1Cl3816 Construct bund wall 1 09R1Cl3816 Construct bund wall 1 09R1Cl3818 Construct bund wall 1 09R1Cl3818 Construct bund wall 1 09R1Cl3818 Construct bund wall 1 09R1Cl3818 Construct bund wall 1 09R1Cl3820 Divert channel to sou Excavation for ANSNS/DC/IM Open Excavation for Underground 1 06L1Cl3908 Mobilize drilling rig, b 06L1Cl3908 Excavate/mucking of Excavation of Excava	ig beams; lig beams; lis (Dry Season) Vorks ant access to stream outh west unders ream bed & make good our	12 14 18 8 8 9 0 25 12 25 0 0 25 25 25 25 25 25 25 25 25 25 25 25 25	12 02JUL10 18 09JUL10 18 16JUL10 60 12DEC08 32 05FEB09		110 08JUL10	1 17			
13R4Cl3714 Construct for capping 13R4Cl3716 Construct U-channels Channel Modification Works (River Diversion for Underground W 09R1Cl3802 Form a temporay plan 09R1Cl3804 Break boulders Concrete bedding for 09R1Cl3819 Construct bund wall (09R1Cl3810 Divert channel to sou Channel Modification Works 09R1Cl3812 Breaking of large bou 09R1Cl3814 Excavation of the struct 09R1Cl3816 Laying of rock armou 09R1Cl3818 Construct bund wall to 09R1Cl3818 Construct bund wall to 09R1Cl3820 Divert channel to sou Excavation for ANSNS/DC/IM Open Excavation for ANSNS/DC/IM Open Excavation for Underground 06L1Cl3906 Mobilize drilling rig, b 06L1Cl3908 Excavate/mucking of Excavation of Ex	ig beams; sls Vorks ant access to stream or bund wall (gabion) (gabion) outh west unders ream bed & make good our	18 8 9 0 0 22 1 22 0 0 24 24 25 30 0 0 25 42 25 30 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	18 09JUL10 18 16JUL10 60 12DEC08, 32 05FEB09/	П	.10 15JUL10	1 17		**	
Channel Modification Works (River Diversion for Underground W 09R1Cl3802 Form a temporay plan 09R1Cl3804 Break boulders 09R1Cl3804 Concrete bedding for 09R1Cl3806 Construct bund wall (09R1Cl3810 Diver channel to sou Channel Modification Works 09R1Cl3812 Breaking of large bou 09R1Cl3814 Excavation of the struct 09R1Cl3814 Excavation of the struct 09R1Cl3816 Laying of rock armou 09R1Cl3816 Construct bund wall for 09R1Cl3820 Divert channel to sou Excavation for ANS/NS/DC/IM Open Excavation for ANS/NS/DC/IM Open Excavation for Underground 06L1Cl3906 Mobilize drilling rig, b 06L1Cl3906 Mobilize drilling rig, b 06L1Cl3908 Excavate/mucking of Excavate/mucking of Excavate/mucking of Excavation of Exca	Vorks Vorks ant access to stream or bund wall (gabion) (gabion) outh west unders ream bed & make good our	8 60 82 12 33 0 24 24 25 33 0 0 85 42	18 16JUL10 60 12DEC08, 32 05FEB09	29JUL10 09JUL10	.10 29JUL10	1 17			
Channel Modification Works River Diversion for Underground W 09R1C13802 Form a temporay plat 09R1C13804 Break boulders 09R1C13806 Concrete bedding for 09R1C13810 Divert channel to sou Channel Modification Works 09R1C13812 Breaking of large bou 09R1C13814 Excavation of the strategies of the strate	Vorks Avorks ant access to stream or bund wall (gabion) (gabion) uth west oulders tream bed & make good our	0 22 11 22 0 0 22 24 25 25 25 25 25 25 25 25 25 25 25 25 25	60 12DEC08, 32 05FEB09/	05AUG10 16JUL10	.10 05AUG10	1 17			
River Diversion for Underground W 09R1Cl3802 Form a temporay plan 09R1Cl3804 Break boulders 09R1Cl3806 Concrete bedding for 09R1Cl3819 Construct bund wall (09R1Cl3812 Breaking of large bou 09R1Cl3814 Excavation of the stra 09R1Cl3816 Construct bund wall to 09R1Cl3818 Construct bund wall to 09R1Cl3818 Construct bund wall to 09R1Cl3818 Construct bund wall to 09R1Cl3818 Construct bund wall to 09R1Cl3818 Construct bund wall to 09R1Cl3818 Construct bund wall to 09R1Cl3818 Construct bund wall to 09R1Cl3818 Construct bund wall to 09R1Cl3818 Construct bund wall to 09R1Cl3808 Mobilize drilling rig, b 06L1Cl3908 Excavate/mucking of Excavation & Construction of	Vorks ant access to stream or bund wall (gabion) (gabion) outh west oulders ream bed & make good our	22 11 32 0 0 22 22 22 24 24 24 24 24 24 24 24 24 24	60 12DEC08, 32 05FEB09/						Č.
09R1Cl3802 Form a temporay plan 09R1Cl3804 Break boulders 09R1Cl3806 Concrete bedding for 09R1Cl3808 Construct bund wall (09R1Cl3812 Breaking of large bou 09R1Cl3814 Excavation of the str 09R1Cl3816 Construct bund wall for 09R1Cl3818 Construct bund wall for 09R1Cl3818 Construct bund wall for 09R1Cl3820 Divert channel to sou Excavation for AVS/VS/DC/M Open Excavation for AVS/VS/DC/M Oben Excavation for AVS/VS/DC/M Oben Excavation for AVS/VS/DC/M Oben Excavation for AVS/VS/DC/M Oben Excavation for AVS/VS/DC/M Oben Excavation for AVS/VS/DC/M Oben Excavation for Underground Oben Excavation for Underground Oben Excavation for AVS/VS/DC/M Excavation of Excav	ant access to stream or bund wall (gabion) (gabion) outh west sulders tream bed & make good our	24 29 0 22 11 33 60 24 24 24 24 24 24 24 24 24 24 24 24 24	60 12DEC08, 32 05FEB09/						3
09R1Cl3806 Concrete bedding for 09R1Cl3808 Construct bund wall (09R1Cl3812 Divert channel to sou Channel Modification Works (09R1Cl3812 Breaking of large bou 09R1Cl3816 Excavation of the stra 09R1Cl3816 Construct bund wall for Construction of Excavation & Construction of Excavation of Construction bund wall (gabion) (gabion) outh west sulders ream bed & make good our	24 2 2 3 3 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	32 05FEB09/	1 04FEB09A 12DEC08A	308A 04FEB09A	-	U			
09R1Cl3806 Concrete bedding for 09R1Cl3808 Construct bund wall (09R1Cl3810 Divert channel to sou Channel Modification Works 09R1Cl3812 Breaking of large bou 09R1Cl3814 Excavation of the stre 09R1Cl3816 Laying of rock armou 09R1Cl3820 Construct bund wall f 09R1Cl3820 Divert channel to sou Excavation for ANS/NS/DC/IM Open Excavation for Underground of 06L1Cl3906 Mobilize drilling rig, b 06L1Cl3908 Excavate/mucking or Excavation & Construction of Excavation & Construction of Excavation & Construction of Excavation & Construction of Excavation o	or bund wall (gabion) (gabion) buth west ulders tream bed & make good our	22 0 22 24 25 25 24 25 25 25 25 25 25 25 25 25 25 25 25 25	THE RESERVE THE PERSON NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED I	24FEB09A 05FEB09A	309A 24FEB09A		**		
O9R1CI3808 Construct bund wall (O9R1CI3810 Divert channel to soun Channel Modification Works O9R1CI3812 Breaking of large boun O9R1CI3814 Excavation of the stree O9R1CI3816 Laying of rock armoun O9R1CI3820 Divert channel to soun Excavation for AVS/VS/DC/INI Open Excavation for AVS/VS/DC/INI Open Excavation for Mobilize drilling rig, both CI3908 Excavate/mucking or Excavation & Construction of Excavation & Construction of	(gabion) outh west oulders cream bed & make good our	22 0 8 72 73	11 25FEB09A	09MAR09A 25FEB09A	309A 09MAR09A	T.	459		+716/1
Channel Modification Works Ghannel Modification Works OBR1CI3812 Breaking of large bou o9R1CI3814 Excavation of the stree o9R1CI3816 Construct bund wall to o9R1CI3820 Divert channel to sou Excavation for AVS/VS/DC/IM. Open Excavation for AVS/VS/DC/IM. Open Excavation for AVS/VS/DC/IM. OBL1CI3906 Mobilize drilling rig, both channel in sour	outh west oulders tream bed & make good our	0 0 27 72	22 10MAR09A	A 30APR09A 10MAR09A	RO9A 30APR09A		II .		
Channel Modification Works 09R1Cl3812 Breaking of large bou 09R1Cl3814 Excavation of the stre 09R1Cl3816 Construct bund well f 09R1Cl3820 Divert channel to sou Excavation for AVS/VS/DC/M Open Excavation for Underground 06L1Cl3906 Mobilize drilling rig, b 06L1Cl3908 Excavation & Construction of Excavation & Construction of	oulders rream bed & make good our for approch channel const.	30	0	30APR09A	30APR09A	-	•	•	
09R1Cl3812 Breaking of large bou 09R1Cl3814 Excavation of the stre 09R1Cl3816 Laying of rock armou 09R1Cl3818 Construct bund wall f 09R1Cl3820 Divert channel to sou Excavation for AVS/VS/DC/M Open Excavation for Underground 06L1Cl3906 Mobilize drilling rig, b 06L1Cl3908 Excavate/mucking of Excavation & Construction of	oulders tream bed & make good our for approch channel const.	30 24 24					S S		90
09R1Cl3814 Excavation of the stre 09R1Cl3816 Laying of rock armou 09R1Cl3818 Construct bund wall f 09R1Cl3820 Divert channel to sou Excavation for AVS/VS/DC/M Open Excavation for Underground 06L1Cl3908 Mobilize drilling rig, b 06L1Cl3908 Excavate/mucking or Excavation & Construction of	ream bed & make good our for approch channel const.	24	30 02NOV09*	05DEC09 02NOV09*	V09* 05DEC09	1 21		n	
09R1Cl3816 Laying of rock armou 09R1Cl3820 Construct band wall f 09R1Cl3820 Diver channel to sou Excavation for AVS/VS/DC/INI Open Excavation for Underground Open Excavation for Underground Obcl1Cl3906 Mobilize drilling rig, b 06L1Cl3908 Excavate/mucking or Excavation & Construction of	our for approch channel const.	24	24 07DEC09	06JAN10 07DEC09	C09 06JAN10	1 21			
09R1Cl3818 Construct band well five construct band well for construct band well for construct band well for construction of construction of excavation & Construction of Excavation & Construction of construc	for approah channel const.		24 07JAN10	03FEB10 07JAN10	110 03FEB10	1 21	51	n	
Open Excavation for AVS/VS/DC/IM, Open Excavation for Underground on the control of the control		24	24 04FEB10	06MAR10 04FEB10	310 06MAR10	1 21		11	
Excavation for AVS/VS/BC/M/Open Excavation for Underground 606.1013906 Mobilize drilling rig, b 06.1013908 Excavate/mucking or Excavation & Construction of	outh west	Q	0	06MAR10	06MAR10	1 21		•	
Open Excavation for Underground (06L1Cl3906 Mobilize drilling rig, b 06L1Cl3908 Excavate/mucking or Excavation & Construction of	MAS/MAA	i							
06L1Cl3906 Mobilize drilling rig, b 06L1Cl3908 Excavate/mucking or Excavation & Construction of	Structures								
06L1Cl3908 Excavate/mucking ou Excavation & Construction of	backhoes	-	1 300CT09	300CT09 300CT09	T09 300CT09	1 -160			
Excavation & Construction of	Excavate/mucking out/temporary support	200	200 31OCT09	07JUL10 31OCT09	T09 07JUL10	1 -160		6000m3, 30m3/day = 200	
	f Main Adit								
3CL1Cl3102 Excavation/mucking	Excavation/mucking out/temporary support	9	40 08JUL10	23AUG10 08JUL10	.10 23AUG10	1 -134		■10m, @0.3m/day	
3CL1Cl3104 Construction of permanent lining	manent lining	24	24 24AUG10	20SEP10 24AUG10	310 20SEP10	1 -134		18	
Construction of Man Access Adit (MAA)	Adit (MAA)								
				-					
06L1Cl3112 Cast invert; 1 bay		7		-1					
06L1Cl3114 Cast walls		12							
06L1Cl3116 Cast crown		12	12 09OCT10	230CT10 090CT10	T10 230CT10	1 -160			
Construction of Man Access Shaft (MAS)	Shaft (MAS)	ı				I			3/2
							×8:		
06L1Cl3122 Cast base		m	3 08JUL10	- 17					1
		ဖ	6 12JUL10	17JUL10 12JUL10	.10 17JUL10	1 -160			
	Construct wall/stair; 14 landings @ 6 days/land.	28	84 19JUL10	27OCT10		1 -160	0	4 days/ landing 22m & 14 landings	
06L1Cl3128 Construct wall above ground level	re ground level	ω	6 31MAR11	07APR11 31MAR11	R11 07APR11	t 6-		and the second	
06L1Cl3129 Construct shaft roof		12	12 08APR11	21APR11 08APR11	311 21APR11	-69		•	

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O)	Activity Description	D04 WP3D Dur Dur	MP3D Dur	AD04 Start	AD04 WP3D. Finish Start	D WP3D t Finish	•	Total 2008 Float	2009 2010 2011 2012 2015
Construction	Construction of Deaerarion Chamber (DC)							W	
06L1Cl3132	Construct base	თ	6	250CT10	03NOV10 25OCT10	10 03NOV10	~	-160	
06L1Cl3134	Construct walls 2 lifts	12	12	04NOV10	17NOV10 04NOV10	17NOV10	7	-160	
06L1Cl3136	Const. crown/underpin of air vent & drop shafts	18	18	18NOV10	08DEC10 18NOV10	10 08DEC10	-	-160	
Construction	Construction of Vortex Shaft (VS)								
06L1Cl3142	Set up formworks	9	ω	17DEC10	23DEC10 17DEC10	10 23DEC10	-	-160	
06L1Cl3144	Construction of drop shaft; 4m high	9	9	24DEC10			-	160	I@4m/4days
06L1CI3146	Construction of vortex structure	24	24	04JAN11	31JAN11 04JAN11		+	-160	
06L1Cl3148	Construct remaining of the vortex	18	18	31MAR11	21APR11 31MAR11	11 21APR11	-	-160	
Construction	Construction of Air Vent Shaft Shaft (AVS)	j	H				1		
06L1Cl3152	Set up formworks	9	φ	01FEB11	10FEB11 01FEB11	1 10FEB11	1	-160	_
06L1Cl3514	Cast 15m high circular wall	15	15	11FEB11	28FEB11 11FEB11	1 28FEB11	-	-160	_
06L1Cl3516	Construct upstand wall	12	12	01MAR11	14MAR11 01MAR11	11 14MAR11	-	-160	-
Backfill Arou	Backfill Around Structure								
06L1Cl3162	Granular fill up to +54mPD; 623m3	7	7	09DEC10	16DEC10 09DEC10	16DEC10	-	-160	
06L1Cl3164	Granular fill above +54mPD; 1400m3	41	4	15MAR11	30MAR11 15MAR11	11 30MAR11	-	-160	
Construction		7					i.		
09R1CI3172	Excavation for Approach Channel	09	9	01NOV10*	12JAN11 01NOV10*	10* 12JAN11	-	00	1
09R1CI3174	Construction of Approach Channel; upstream	82	82	20DEC10	31MAR11 20DEC10	10 31MAR11	-	80	1
09R1CI3176	Construction of boulder trap; 7 nos.	24	24	01NOV11*	28NOV11 01NOV11*	11* 28NOV11	-	-165	
09R1Cl3177	Construction of Approach Channel; downstream	40	40	01NOV11	16DEC11 01NOV11	11 16DEC11	1	-165	10
09R1Cl3178	Construction of trash grill	12	12	17DEC11	04JAN12 17DEC11	11 04JAN12	-	-165	
09R1Cl3179	Removal of concrete bolck bund	9	9	05JAN12	11JAN12 05JAN12	2 11JAN12	-	-165	
Junction Be	Junction Between Main Tunnel & Adit Tunnel								
3CL1Cl3106	Temp. support & excavation breakthrough	48	48	19JUL11	12SEP11 19JUL11		-	-94	•
3CL1Cl3108	Construct collar between MT & AT	48	48	14SEP11	10NOV11 14SEP11	11 10NOV11	۳-	-94	
Remaining V	Works Prior to Handover to Client								
09R1CI3142	Finishing & reinstatement works; Portion C	36	36	10DEC11	28JAN12 10DEC11	11 28JAN12	+	-155	A
09R1CI3143	Pre-handover inspections and remedial works	30	30	28DEC11	04FEB12 28DEC11	11 04FEB12	τ.	-155	
09R1CI3144	Contractor serve notice for Works completion	7	7	05FEB12	11FEB12 05FEB12	2 11FEB12	7	299	
09R1Cl3146	SO issues completion certificate	21	21	12FEB12	03MAR12 12FEB12	2 03MAR12	2	299	
16R7CI3142	Landscaping works at Portion C	120	120	31AUG11	28JAN12 31AUG11		-	-117	
16R7CI3144	Establishment Works at Portion C	365	365	29JAN12	27JAN13 29JAN12	2 27JAN13	2	-148	
3DL1Cl3141	Install flow measurement devices at Intake I-3	12	12	12JAN12	28JAN12 12JAN12	2 28JAN12	77	-165	
					Sheet 47 of 58				

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115
Page

		(Sheet 48 of 58			(
dt II lake 1-5		7	18DECU8A	18DECU8A		٥	0	13R 6; On completion of 30% piles by number	13R4Cl3S06
◆at Irrake -3	1	2	13DEC08A	13DEC08A		0	0	13R 5; On completion of 20% piles by number	13R4Cl3S05
◆atimake I-3		2	05DEC08A	05DEC08A		0	0	13R 4; On completion of 10% piles by number	13R4Cl3S04
◆at Intake I-3	1,195		22SEP10	22SEP10		0	0	13R 3; On completion of all soil naing works	13R4CI3S03
♦at Intake I-3	1,404		25FEB10	25FEB10		0	0	13R 2; On completion of 60% soil nailing	13R4CI3S02
♦at intake I-3	1,553	2	29SEP09	29SEP09		0	0	13R 1; On completion of 30% soil nailing	13R4CI3S01
	V	Ī				1	i	Schedule of Milestones for Cost Centre No. 13R	Schedule of
◆under this Cost Centre	695	2	04FEB12	04FEB12		٥	0	9R 9; On completion of all works under this CC	09R1CI3R18
• at Intake I-3	726	7	04JAN12	04JAN12		0	0	9R 8; On completion of trash grill	09R1CI3R16
Channel and associated decking at	1,005		31MAR11	31MAR11		٥	0	9R 7; On completion of approach channel	09R1CI3R14
◆channel at Intake I-3	1,042		22FEB11	22FEB11		0	0	9R 6; On completion of 50% of approach channel	09R1CI3R12
◆at G.L. at Intake I-3	1,083		12JAN11	12JAN11		0	0	9R 5; On completion of excavation at G.L.	09R1CI3R10
◆at Intake I-3	1.447		13JAN10	13JAN10		0	0	9R 4; On completion of 75% of excavation at G.L	09R1CI3R08
◆at Intake I-3	1,612		01AUG09	01AUG09		0	0	9R 3; On completion of 50% of excavation at G.L.	09R1CI3R06
rt Intake I-3	1,663		11JUN09	11JUN09		0	0	9R 2; On completion of 25% of excavation at G.L.	09R1CI3R04
◆at Intake I-3	797		250CT11	250CT11		0	0	9R 1; On completion of access road	09R1CI3R02
						1			Schedule
		ı						Caladula of Milastone for Cast Contro No OD	Cohoduland
◆under this Cost Centre	984		21APR11	21APR11		10	0	6L 8: On completion of all works under this CC	06L1Cl3M18
♦adit at Intake I-3	1,164		230CT10	230CT10		0	0	6L 7: On completion of man access adit	06L1CI3M16
♦shaft at Intake I-3	984	2	21APR11	21APR11		0	0	6L 6: On completion of man access shaft	06L1CI3M14
◆at Intake I-3	1,022	2 1	14MAR11	14MAR11		0	0	61 5: On completion of vent shaft	061 1C13M12
♦chamber at Intake I-3	1,118		08DEC10	08DEC10		0	0	6L 4: On completion of de-aeration chamber	06L1CI3M10
◆at Intake I-3	984	7	21APR11	21APR11		0	c	St. 3: On completion of vortex shaft	ORI 4CISMOS
◆belowe G.L. escept for Adit Tunnel at Intake	1,272	2	07JUL10	07JUL10		0	0	6L 2; On completion of excavation works	06L1Cl3M04
♦below G.L. except for Adit Tunnel at Intake I-3	1,403	2	26FEB10	26FEB10		0	0	6L 1: On completion of 50% of excavation	06L1CI3M02
		1				ŧ.	١	Schedule of Milestones for Cost Centre No. 6L	Schedule of
• Aunder this Cost Centre	781	2	10NOV11	10NOV11		0	0	3cL 10; On completion of all works under this CC	3CL1CI3A20
◆Adit Tunnel at Intake I-3	781	2	10NOV11	10NOV11		0	0	3cL 9; On completion of perm. tunnel lining	3CL1Cl3A18
♦ Adit Tunnel at Intake I-3	1,197	2	20SEP10	20SEP10		0	o	3cL 8; On completion of 87.5% perm. tunnel linin	3CL1Cl3A16
◆Adit Tunnel at Intake I-3	1,209		08SEP10	08SEP10		0	0	3cL 7; On completion of 75% perm, tunnel lining	3CL1Cl3A14
♦ Adit Tunnel at Intake I-3	1,218	2 1	30AUG10	30AUG10		0	0	3cL 6; On completion of 62.5% perm. tunnel linin	3CL1Cl3A12
♦ Adit Tunnel at Intake I-3	1,228	2	20AUG10	20AUG10		0	0	3cL 5; On completion of 50% perm. tunnel lining	3CL1CI3A10
♦ Adit Tunnel at Intake I-3	1,237	2 1	11AUG10	11AUG10		0	0	3cL 4; On completion of 37.5 perm. tunnel lining	3CL1CI3A08
◆Adit Tunnel at Intake I-3	1,246	2	02AUG10	02AUG10		0	0	3cL 3; On completion of 25% perm. tunnel lining	3CL1Cl3A06
◆Adit Tunnel at Intake I-3	1,256	2	23JUL10	23JUL10		0	0	3cL 2; On completion of 12.5% perm. tunnel linin	3CL1Cl3A04
♦euipment for tunnelling at Intake I-3	1,265	2 1	14JUL10	14JUL10		0	0	3cL 1; On establishing tunnelling equipments	3CL1Cl3A02
						Н			
						K		Schedule of Milestones for Cost Centre No. 3cL	Schedule of
	-148	5	27JAN13	27 JAN13 29 JAN12	29JAN12	365	365	Maintain & monitor flow monitoring	3DL1Cl3143
	Float	100	Finish			Dur	Dur	Description)
2058 2010 2011 2012 2013	Total		WP3D	Ė		AD04 WP3D	ADD4	Activity	GI .

	Description											
13R4CI3S07	13R 7; On completion of 40% piles by number	0	0		23DEC08A	23DEC08A	2		♦at Int	take I-3		
13R4Cl3S08	13R 8; On completion of 50% piles by number	0	0		02JAN09A	02JAN09A	0		♦at Int	take I-3		
13R4CI3S09	13R 9; On completion of 60% piles by number	0	0		DOJANOSA	09JAN09A	2		♦at In	ntake I-3		
13R4Cl3S10	13R 10; On completion of 70% piles by number	0	0		16JAN09A	16JAN09A	2		o o at m	ntake I-3		
13R4Cl3S11	13R 11; On completion of 80% piles by number	0	0		21JAN09A	21JAN09A	7	000	♦at m	ntake I-3		
13R4CI3S12	13R 12; On completion of 90% piles by number	0	0		17MAR10	17MAR10	2 1,	1,384		♦at Intake I-3		
13R4Cl3S13	13R 13; On completion of all piling works	0	0		03MAY10	03MAY10	2 1,	1,337		♦at Intake I-3		
13R4CI3S14	13R 14; On completion of boulder traps	0	0		28NOV11	28NOV11	2	763			traps at Intake I-3	
13R4Cl3S15	13R 15; On completion of all work under this CC	0	0		28NOV11	28NOV11	2	763			♦under this Cost Centre	entre
nstruction	Construction of Outfall 0-1											
Preliminary Works	Vorks											
# 06: Trans	VO # 06: Transperant Hoarding at Outfall											
01R1D00106	Receive VO6 for transperant hoarding	0	o		16APR08A	16APR08A	-		•			
01R1D00108	Procurement for transperent hoarding	21	21	17APR08A	20MAY08A 17APR08A	ZOMAYOBA	-		13			
01R1D00110	Erect hoarding	80	8	21APR08A	02JUL08A 21APR08A	02JUL08A	_		n			
#16; Chain	VO #16; Chain Link Fence at 0-1											
V01602	Issue VO16 for chain link fence	0	0		02JUL08A	02JUL08A	-					
V01612	Preparation works for chain link fence	-	T	03JUL08A	18AUG08A 03JUL08A	18AUG08A	s .		n			Ī
V01622	Erect chain link fence; 460m	38	38	19AUG08A	19SEP08A 19AUG08A	19SEP08A		9	n			
Temporary CLP	P Power Supply for TBM Operation											
01R1DCLP02	Application/approval for temp. CLP Power Supply	200	200	07MAR08A	01AUG08A 07MAR08A	01AUG08A	2		1			
01R1DCLP14	Appoint sub-contractor for design & build TX Rm	67	29	14JUL08A	07NOV08A 14JUL08A	07NOV08A	-		1			
01R1DCLP24	Design for transformer room	24	24	08NOV08A	11MAR09A 08NOV08A		-					Ī
01R1DCLP34	Constuct transformer room	9	9	12MAR09A			3 77		11			Ī
01R1DCLP44	CLP inspection & defect rectification	14	14	15MAY09A	10JUN09 15MAY09A	- 1	877	-181				
01R1DCLP54	CLP cabling to TX room & commissioning	32	32	11JUN09	18JUL09 11JUN09	18JUL09		-18				
01R1DCLP74	CLPE cabling from TX room to 24mPD platform	18	8	19SEP09	12OCT09 19SEP09	120CT09	-	-165				
VO#25; Revised	d Fencig Details at O-1 Next to GVT											
V025-02	Receive VO16 for revised details next to GVT	0	0		17SEP08A	17SEP08A	3 70					Ī
V025-12	Preparation works	24	24	22JAN09A	07FEB09A 22JAN09A	07FEB09A	•	Ť				Ī
V025-22	Erect proposed transparent hoarding	4	4	09FEB09A	OZMAR09A 09FEB09A	02MAR09A	-	i	Holo Holo	owing transplanting of T160/T293/T140	0/T293/T140	
V055-02	Receive VO#55 in lieu of VO#25	0	0		21JAN09A	21JAN09A	-		•			
						700.046.000			,			
01R1DO0102	Obtain TTA (ingress & egress) approval	0	0		18APR08A		2	Ī	•			Ī
01R1D00103	Implment TTA for diverting footpath	-	•	19APR08A	19APR08A 19APR08A		•	1		i i		
01R1D00104	Obtain excavation permit	0	0		29MAY08A	-	2	ì	•			
01R1D00112	Erect catch fencing	10		26MAY08A		- 1	-		o			
01R1D00114	Site establishment	30	30	21APR08A	15JUL08A 21APR08A	15JUL08A	-	מ	faci Re-align footpath,	otpath, erect hoarding/catchfence	tchfence,	
01R1D00116	Site clearance	30	30	21APR08A			-	T	1			
01R1D00118	Install remote contorl CCTV as per ER 4.4.10	12	12	280CT08A	10NOV08A 28OCT08A	10NOV08A		٦	•			
077000		1	•	ACCALACA	ACCURATION ACCURATION ACCURATION	ASSAADOOA	•		-			

2012 2013						Mday							e a				160		183		3		(0)																		33,	No.	
2008 20310 2031	1	u	1	I	I	soii 450m3/day & rock 185m3/day			•			1				1	•		•	-	•	18			•	•							10				=				130	18	
2008																						3 1											1 11		-	0.70							1
Float	-219		-219	-219	-219	-219	-219	-219	-219		-212	-219	-219	-217		-181	-172	-172	-172	-172	-172	-181		-219	-219	-219		-181	-157	-157	-207		-159			-181	-181		-120			-195	-195
	*	1 1	_	_	-	***	***	-	-		-	-	-	*		7		_	**	-	-				T	_		-		-			-	-	_				1	_	_		
WP3D Finish	13AUG09	27MAY09A	17AUG09	24AUG09	04SEP09	080CT09	16SEP09	21SEP09	05OCT09		28SEP09	22DEC09	22DEC09	29DEC09		20AUG09	*e0NUL90	20JUN09	20JUN09	08JUL09	08JUL09	20AUG09		22DEC09	31DEC09			29AUG09	10SEP09	11SEP09	24APR12		04AUG09	12SEP09	28OCT09	11NOV09	14NOV09		10AUG09	08OCT09	300CT09	24FEB10	27FEB10
WP3D	13AUG09 20APR09A	27MAY09A 21APR09A	11MAY09A	21MAY09A	12MAY09A	27MAY09A	16SEP09 05SEP09	02SEP09	22SEP09		18SEP09	22DEC09 09OCT09	22DEC09 09DEC09	29DEC09 23DEC09		60NUL80		90NUL80		22JUN09		20JUL09		22DEC09 16DEC09	31DEC09 16DEC09	02JAN10		29AUG09 21AUG09	10SEP09 08SEP09	11SEP09	24APR12 11APR12		04AUG09 18JUN09*	12SEP09 31AUG09	14SEP09	290CT09	14NOV09 12NOV09		10AUG09 22JUN09*	23SEP09		27JAN10	25FEB10
AD04 Finish	13AUG09	27MAY09A	17AUG09	24AUG09	04SEP09	08OCT09	16SEP09	21SEP09 02SEP09	05OCT09 22SEP09		28SEP09	22DEC09	22DEC09	29DEC09		20AUG09 08JUN09	*60NUC90	20JUN09	20JUN09	08JUL09	08JUL09	20AUG09		22DEC09	31DEC09			29AUG09	10SEP09	11SEP09	24APR12		04AUG09	12SEP09	28OCT09	11NOV09	14NOV09		10AUG09	08OCT09	300CT09	24FEB10	27FEB10
AD04 Start	20APR09A	21APR09A	11MAY09A	21MAY09A	12MAY09A	27MAY09A	05SEP09	02SEP09	22SEP09		18SEP09	09OCT09	09DEC09	23DEC09		60NUL80		60NUL80		22JUN09		20JUL09		16DEC09		02JAN10					11APR12		200	1111		29OCT09	12NOV09		22JUN09*	23SEP09	32.4	27JAN10	25FEB10
DO4 WP3D	43	30	22	12	13	95	10	17	10		o	63	12	4		63*	0	12	0	14	0	28		9	12	0		00	8	*	12		40	12	36	12	m		42	12	18	22	m
Og on	43	30	22	12	13	92	10	17	10		o	63	12	4		63*	0	12	0	14	0	28		9	12	0		∞	ო	7	12		40	12	36	12	ю		42	12	14	22	ဗ
Activity Description	Excavation; 40 to 30mPD; soil 8291m3/rock 2778m3	Reinstate temp, access	Erect working platfrom for rows Q to U	Test nails for P6, P7, P8 & P11	Drill/install/grout Q1 to U10; 99 nos.	Excavation; 30 to 24mPD; soil 4197m3/rock 7592m3	Drill/install/grout V1 to X14; 37 nos.	Construct nail heads/remove platform; row V to X	Erosion mat, wire mesh & hydroseed; rows V to X	Chamber	Pipe pile roof support	Excavate/construct TBM launching chamber	Form launching chamber cradle	Ground treatment prior to TBM commence boring	TBM Access Road; +24 to +14mPD	+24 to +14mPD	Relocate sedimentation tank	Form access for big breaker	Mobilization of big breaker	Form new TBM access +14mPD to +24mPD	Divert access to new TBM access	Demolish masonry & ret. wall at +14mPD	Area at +24mPD	Construct temporary draiange	Concrete slab	Commence TBM initial assembly		Foundation	Erection	Test & commissioning	Removal of tower crane & reinstatement		Pre-fabrication	Foundation	Erect steel framework	Install platform	ICE certification		Pre-fabrication	Foundation	Erect steel framework	Cladding	ICE certification
9	10R1DO131	10R1DO132	10R1DO133	10R1DO134	10R1DO135	10R1DO136	10R1DO137	10R1DO138	10R1DO139	TBM Launching	10R1DO1305	10R1DO1310	10R1DO1315	10R1DO1325	Slope Cut & TBI		10R1DO240	10R1DO250	10R1DO260	10R1DO270	10R1D0280	10R1D0290	TBM Assembly Area at +24mPD	10R1DO185	10R1DO195	3AL1D00314	Tower Crane	3AL1D02005	3AL1DO2010	3AL1D02015	3AL1D02025	TBM Platform	3AL1D02505	3AL1D02515	3AL1D02525	3AL1D02535	3AL1D02545	Noise Enclosure	3AL1D03005	3AL1D03015	3AL1DO3025	3AL1D03035	3AL1DO3045

Q	Activity	AD04 WP3D	3D AD04	AD04 WP3D Finish Start	WP3D Finish	Cal Total	2006 2008 2010 2011 2512	
3AL1FT0802	Apply to EPD for CNP for 24 hrs. tunnel work		<u>~</u>	27FEB10 11F	27FEB10			258
3AL1FT0804	EPD process/approve CNP application	36	36 28FEB10	0 04APR10 28FEB10	04APR10	2 -237		e de la composition della composition della comp
105 Ton Gantry	Crane							£
3AL1D03505	Manufacture	66	99 29MAY09	22SEP09	22SEP09	1 -159		
3AL1D03515	Shipping to Hong Kong	9	6 23SEP09	29SEP09	29SEP09	1 -159		
3AL1D03525	Assembly	œ	8 30SEP09	9 10OCT09 30SEP09	10OCT09	1 -159		
3AL1D03535	Install rails	4	4 230CT09	9 28OCT09 23OCT09	28OCT09	1 -169		N 6
3AL1D03545	Test & commission	က	3 29OCT09	9 31OCT09 29OCT09	31OCT09	1 -169		15/28
3AL1DO3555	Receive initial segments and stock	ധ	6 02JAN10	0 08JAN10 02JAN10	08JAN10	1 -209		
Muck Hopper								.0
3AL1DO4005	Pre-fabrication	75	75 22JUN09*	3* 17SEP09 22JUN09*	17SEP09	1 -83	1	989
3AL1D04015	Foundation	82	18 14SEP09	9 06OCT09 14SEP09	06OCT09	1 -97		.8
3AL1DO4025	Erect steelwork	18	18 12NOV09	9 02DEC09 12NOV09	02DEC09	1 -127		
3AL1DO4035	Erect hopper	18	18 03DEC09	9 23DEC09 03DEC09	23DEC09	1 -127		
3AL1D04045	Install transfer conveyor	4	4 24DEC09	9 30DEC09 24DEC09	30DEC09	1 -127		
3AL1DO4055	M&E works	9	6 31DEC09	9 07JAN10 31DEC09	07JAN10	1 -127		išš
3AL1DO4065	Test & commissioning	က	3 08JAN10	0 11JAN10 08JAN10	11JAN10	1 -127		
Marti Conveyor								
3AL1DO4505	Engineering	20	50 29MAY09	9 27JUL09 29MAY09	27JUL09	1 -105		
3AL1D04515	Pre-fabrication	9	60 28JUL09	9 07OCT09 28JUL09	07OCT09	1 -105		
3AL1DO4525	Delivery to Hong Kong	22	25 23SEP09	230CT09	23OCT09	1 -105		pi is
3AL1D04535	Pre-assembly at Portion I	9	6 240CT09	9 31OCT09 24OCT09	31OCT09	1 -105		
3AL1D04545	Foundation	က	3 02JAN10	0 05JAN10 02JAN10	05JAN10	1 -155		128)
3AL1D04555	Install belt conveyor stage 1	24	24 06JAN10		02FEB10	1 -155	•	
3AL1D04565	Install transfer conveyor		1 03FEB10	0 03FEB10 03FEB10	03FEB10	1 -155		(3)
3AL1DO4575	Install belt conveyor stage 2	9	6 27APR10		04MAY10	1 -218		35
3AL1DO4585	M&E works	2	2 05MAY10	0 06MAY10 05MAY10	06MAY10	1 -218		
3AL1DO4595	Test & commission	*	1 07MAY10	0 07MAY10 07MAY10	07MAY10	1 -218		
LV Station								9.4
3AL1DO5005	Delivery & install containers 1/2/3	4		-9.5	16SEP09	1 -157		
3AL1DO5015	M&E works	12	12 17SEP09	9 30SEP09 17SEP09	30SEP09	1 -157		
3AL1DO5025	Test & commission	12	12 13OCT09	9 270CT09 130CT09	27OCT09	1 -165		83
Cooling Water System	System							
3AL1D05505	Pre-fabrication	53	53 09JUL09		08SEP09	1 -129		
3AL1D05515	Foundation			19SEP09	19SEP09	1 -129		284
3AL1D05525	Erect cooling system	12	12 21SEP09	9 06OCT09 21SEP09	06OCT09	1 -129		100
3AL1D05535	M&E works	4	4 07OCT09	9 10OCT09 07OCT09	100CT09	1 -129		
3AL1D05545	Test & commission	2	2 12OCT09	9 13OCT09 12OCT09	13OCT09	1 -129		
Grout System								
3AL1DO6005	Pre-fabrication	06	90 22JUN09*	07OCT09	07OCT09	1 -134		
3AL1D06015	Erect system	9	6 16NOV09	21NOV09	21NOV09	1 -166		37
3AL1D06025	M&E works	e	3 23NOV09	25NOV09	25NOV09	1-166		- 33
3AL1DO6035	Test & commission		1 26NOV09	9 26NOV09 26NOV09	26NOV09	1 -166		

(II)	Activity Description	DO4 WP3D Our Dur	MP3D Dur	AD04 Start	AD04 Finish	WP3D Start	WP3D	0	Total 2	2006	3008	2010	2011	2012	2013
Pea Gravel Plant	nt													57	
3AL1D07505	Pre-fabrication	36	38	22JUN09	03AUG09 22.	22JUN09 (03AUG09	*	-82						
3AL1D07515	Install hopper	4		06OCT09	09OCT09 06OCT09		09OCT09	-	-134				0		
3AL1D07525	Erect conveyor	2	2	100CT09	12OCT09 10OCT09		12OCT09	*-	-134		~		A		
3AL1DO7535	M&E works	4		130CT09	16OCT09 13OCT09		16OCT09	-	-134						
3AL1D07545	Test & commission	2	7	17OCT09	19OCT09 170		19OCT09	***	-134				D		
3AL1D07555	Install conveyor connecting to TBM	4	4	27APR10	30APR10 27/	27APR10	30APR10		-213		-			-8	
Ventilation System	tem														
3AL1DO8005	Pre-fabrication	72	72	29MAY09			21AUG09	-	41-					(CII)	
3AL1DO8015	Erect system	2	8	27APR10	28APR10 27/	27APR10	28APR10	-	-213		-				
3AL1DO8025	M&E works	•	**	29APR10		29APR10	29APR10	-	-213						
3AL1DO8035	Test & commission	5	*	30APR10	30APR10 30/	30APR10	30APR10		-213				3.		
Micsellaneous															
3AL1DO8502	Install transformer & hormonic filter	2	8	27APR10	28APR10 27	27APR10	28APR10	- -	-218		-			28	
3AL1D08512	Remove invert segments; 19 nos.	2		27APR10	28APR10 27/	27APR10	28APR10	~	-218		-				
3AL1D08522	Make good slab	က	m	28APR10	30APR10 28/	28APR10	30APR10		-218		-				
3AL1D08532	Install rail switch	F	-	03MAY10	03MAY10 03F	03MAY10 (03MAY10	-	-214						
VO#49 & 53; A	VO # 49 & 53; Additional Drainage & Stairway										7				
VO-04910	Received Variation orders	0	0		26FEB09A		26FEB09A	**	5.,	*					
VO-04920	Preparation works for varied works	14	14 2	7FEB09A	14MAR09A 27FEB09A		14MAR09A	*-		N.W.					
VO-04930	Construct u-channel & stairway; +71mPD to +55mPD	09	1 09	16MAR09A	29MAY09 16I	16MAR09A	29MAY09	*	-179	*					
VO-04940	Construct u-channel & stairway;+55mPD to +47mPD	27	27	05JUN09	07JUL09 05JUN09		07JUL09	-	-184						
VO-04950	Construct u-channel & stairway; +47mPD to +41mPD	49	40	08JUL09	22AUG09 08JUL09		22AUG09	-	-184						
VO-04960	Construct u-channel & stairway; +41 to +24 mPD	09	09	060CT09	15DEC09 06OCT09		15DEC09	-	-219		1		//		
VO #88; Revise	VO #88; Revised Slope Profile with Add. Supports														
VO-088000	Received VO #088	0	O		27MAY09A	Lu.	27MAY09A			×					
VO-088005	Excavate from 38.5mPD to 36.5mPD	9	9	29MAY09	04JUN09 29f	29MAY09 (04JUN09	*	-218						
VO-088010	Procure and prepare materials	6	0	29MAY09	08JUN09 29R	29MAY09 (60NUL80		-219						
VO-088015	SOR confirm soil nails location	2	2	60NUL20	06JUN09 05.	05JUN09	60NDC90	-	-218				c.w.e		
VO-088020	Drill/install/grout soil nails; rows AA-AB	7	7	60NNC60	16JUN09 09JUN09		16JUN09		-219						
VO-088025	Install wire mesh & shorcrete 150mm	က	ĺλ	17JUN09	19JUN09 17JUN09		1930/009		-219						
VO-088030	Excavate from +36.5 mPD to 34.5mPD	9	9	20JUN09	26JUN09 20,	20JUN09	26JUN09	-	-219				2-3		
VO-088035	SOR confirm soil nails location	2	2	27JUN09	29JUN09 27,		29JUN09	-	-219						
VO-088040	Drill/install/grout soil nails; rows AC-AD	7		30JUN09	08JUL09 30.	30JUN09	08JUL09	-	-219		_				
VO-088045	Install wire mesh & shorcrete 150mm	ന	ო	607NF60	11JUL09 09.	. 6070L60	11JUL09	-	-219		-		5.00		
VO-088050	Excavate from +34.5 mPD to 32.5mPD	9	ø	13JUL09	18JUL09 13,	13JUL09	18JUL09	τ-	-219		_				
VO-088055	SOR confirm soil nails location	2	7	20JUL09	21JUL09 20.	20JUL09	21JUL09	-	-219						
VO-088060	Drill/install/grout soil nails; rows AE-AF		7	22JUL09	29JUL09 22.	22JUL09	29JUL09	-	-219		-				
VO-088065	Install wire mesh & shorcrete 150mm	က	m	307NL09	01AUG09 30.	3070109	01AUG09		-219					120	
VO-088070	Excavate from +34.5 mPD to 32.5mPD	9	9	03AUG09	08AUG09 03/	03AUG09 (08AUG09		-219		-				
VO-088075	SOR confirm soil nails location	2	2	10AUG09	11AUG09 10AUG09		11AUG09	-	-219		_				
VO-088080	Drill/install/grout soil nails; row AG	2	ιΩ	12AUG09	17AUG09 12/		17AUG09	γ-	-219						
VO-088085	Install wire mesh & shorcrete 150mm	ო	m	18AUG09	20AUG09 18AUG09		20AUG09	-	-219		-			-0	
			l					l							

Suspension of rock drilling & breaking	•		20JUN09*	20JUN09 20JUN09*		-	-219	
Erection of noise bearriers	က	ო	22JUN09	24JUN09 22JUN09	34JUN09	-	-219	
Construct Spiral Ramp & Associ. Vehicular Access							h	
Install 273mm dia. temp. pipe piles; 40 nos.	12	12	08MAY10	22MAY10 08MAY10	0 22MAY10		-938M	-93 M starts operating day & nightl40 nos.*13m long
Soil excavation & install wailing & tie backs	24	24	24MAY10	21JUN10 24MAY10	0 21JUN10	*	-93	432m3 soil■including temp. supports mesures
Rock excavation for spiral ramp; 4629m3	202	70	22JUN10	11SEP10 22JUN10	11SEP10	.	-63	4000m3 rock—including temp. supports mesures
Construct base of spiral ramp; Outfall O-1	12	12	13SEP10	27SEP10 13SEP10	27SEP10	-	-93	-
Cast sprial ramp up to +6.73mPD	15	15	28SEP10	15OCT10 28SEP10	15OCT10		-93	
Cast sprial ramp up to +11.58mPD	15	15	18OCT10	03NOV10 18OCT10	03NOV10		-93	
Cast sprial ramp up to +16.00mPD	15	15	04NOV10	20NOV10 04NOV10	0 20NOV10	-	-93	
Cast sprial ramp up to +20.00mPD	15	15	22NOV10	08DEC10 22NOV10	0 08DEC10	-	-93	
Cast sprial ramp up to +24.23mPD	5	15	09DEC10	28DEC10 09DEC10	D 28DEC10	-	-93	
Backfill spiral ramp; 1700m3	4	4	29DEC10	03JAN11 29DEC10	03JAN11		-93	@ 5m3/5minutesl480m3/day
Construct spiral ramp top; Outfall O-1	20	20	04JAN11	26JAN11 04JAN11	26JAN11	•	-93	1980
Construct vehicular access bet, tunnel & s. ramp	10	10	12JUL11	22JUL11 12JUL11	22JUL11	-	-5	
Commission of Spiral Ramp	9	9	27JAN11	02FEB11 27JAN11	02FEB11	-	-93	•
Install 40 nos. roof piles # 375mm c/c	54	24	110CT10	08NOV10 02NOV10	0 29NOV10		-128	11
Excavation for vehicular access underneath CPR	202	20	09NOV10	01FEB11 30NOV10		-	-128 st	sheet pile roofing & lagging ~180m2=soil 450m3 + rock 50m3
Construct base for vehicular access	12	12	02FEB11	18FEB11 26FEB11	11MAR11	-	-128	
Construct wall & roof for vehicular access	24	24	19FEB11	18MAR11 12MAR11	1 09APR11	<u>.</u>	-128	AL .
Box Culvert/Open Channel By Mining			H					
Site possession of Portion E-650d of DOC	0	0	080CT09	080CT09	0	2	453	•
Divert exist, outfall "W" under CPR arch bridge	36	36	60AON60	19DEC09 30NOV09		-	-395	
Remove rock armour & form platform @+2.3mPD	36	36	21DEC09	03FEB10 14JAN10		-	-395	=9 40m3
Install temp, pile for pipe roofing	96	96	04FEB10	05JUN10 01MAR10	0 28JUN10	-	-395	cells; 210 nos.
Excavate for box-culvert, 2 cells	44	44	07JUN10	29JUL10 29JUN10	19AUG10	•	-395	■soil 2900m3
Construct base slabs of box culvert; 2 cells	20	20	30JUL10	21AUG10 20AUG10	0 11SEP10	٠	-395	Concete 160m3
Construt wall & roof of box culvert; 2 cells	40	40	23AUG10	09OCT10 13SEP10	01NOV10	٠	-395	Econcrete 390m3
Excavate for box-culvert, 2 cells	44	44	110CT10	01DEC10 02NOV10	0 22DEC10	-	-395	Soil 2900m3
Construct base slabs of box culvert; 2 cells	20	20	02DEC10	24DEC10 23DEC10	18JAN11	•	-395	Concete 160m3
Construt wall & roof of box culvert; 2 cells	49	40	28DEC10	16FEB11 19JAN11	1 09MAR11	٠	-395	Econcrete 390m3
Excavate for open channel	24	24	17FEB11	16MAR11 10MAR11	1 07APR11	•	-395	
Construct open channel at 2.3 mPD	24	24	17MAR11	14APR11 08APR11	1 09MAY11	-	-395	
Reinstate existing outfall "W"	9	9	08APR11	14APR11 03MAY11	1 09MAY11	•	-395	
Construct Portal Head & Associated Strutures							h	
Excavate tapered open channel/ upper cascade	24	24	12JUL11			.	-219	•
Consistence to an an absorber 10 manual control of	0.0			TYCHOO TYLOCOC	TY-ECCOO	,	707	1

Description		40	47MONAS			LANIAG	TOOL A		
Dismantle & removal of tower crahe Dismantle/remove TBM backup system	27 25	27 22	13.IUN11	30NOV12 28DEC12		11.JAN13	1 -395		Fincliding cantry craps
	24	24	09AUG11	1		05SEP11			
Cascade & Upper Part Box Culvert by Mining					4				
	18	18	12JUL11	01AUG11 12JUL11		01AUG11	1 -219	Following removal of TBM & TBM facilities	facilities
	09	09	02AUG11	130CT11 02AUG11		130CT11	1 -219		
	24	24	140CT11	10NOV11 14OCT11		10NOV11	1 -219		
	6 0	18	11NOV11	01DEC11 11NOV11		01DEC11	1 -219	7	
	24	24	02DEC11	03JAN12 02DEC11		03JAN12	1 -219		a
	12	12	04JAN12	17JAN12 04JAN12		17JAN12	1 -219		
	9	ဖ	16JAN12	21JAN12 16JAN12		21JAN12	1 -219		
	13	13	26JAN12	09FEB12 26JAN12		09FEB12	1 -219		
	48	48	10FEB12	_		10APR12	1 -219		10
	48	48	10FEB12	10APR12 10FEB12		10APR12	1 -207		1
I		h			1				
	0	0		*eoNULos	æ	-60NDC08	1 -395	•	
	09	9	02JUL09	09SEP09 02JUL09		09SEP09	1 -395	1	
	9	9	10SEP09	16SEP09 08OCT09		14OCT09	1 -395	4	
Prepare/submit drwgs./report of sounding survey	9	9	17SEP09	23SEP09 15OCT09		21OCT09	1 -395	•	
SOR approves drwgs. Ireport of sounding survey	9	9	24SEP09	30SEP09 22OCT09		29OCT09	1 -395		
SOR issue Supplm. Environmental Review Report	30	30	02JUL09	05AUG09 02JUL09		05AUG09	1 -59		
Apply for Variation Environmental Permit (VEP)	ω	9	06AUG09	12AUG09 06AUG09		12AUG09	1 -59		
	30	30	13AUG09	16SEP09 13AUG09		16SEP09	1 -59		
ET	30	30	17SEP09	23OCT09 17SEP09		23OCT09	1 -59		
	12	12	24OCT09	07NOV09 24OCT09		07NOV09	1 -59	181	
	9	9	60/VON90	14NOV09 09NOV09		14NOV09	1 -59		
	28	28	16NOV09	17DEC09 16NOV09		17DEC09	1 -59		
	12	12	18DEC09	04JAN10 18DEC09		04JAN10	1 -59		
	12	12	05JAN10	18JAN10 05JAN10		18JAN10	1 -59		
	30	30	19JAN10	25FEB10 19JAN10		25FEB10	1 -59		
	09	09	02JUL09	09SEP09 02JUL09		09SEP09	1 -377	1	
	30	30	02OCT09	07NOV09 10SEP09		16OCT09	1 -395		
	12	12	60/ON60	21NOV09 17OCT09		31OCT09	1 -7		
	24	24	23NOV09	19DEC09 02NOV09		28NOV09	1 -7		
	9	9	90VON90	14NOV09 30NOV09		05DEC09	-395		500
Revew/issue marine notice by Marine Department	30	30	16NOV09	19DEC09 07DEC09		13JAN10	1 -395	1	
	9	9	60/ON60	14NOV09 30NOV09		05DEC09	1 -37	011	5
	09	9	16NOV09	27JAN10 07DEC09		20FEB10	1 -37	1	
	0	0	15APR11	11MAY11	Y11		1 -395		following construction of box cult
					l				

								•	E81			=		for seawall type 5, 2B, 4, & 1A (M):	•	•	7		for seawall type 6, 3 & 2A (F)	**	•			•			9	100					•	*	•		1			•			
									3						201											7.					000		-		T.		l a	(va					
Float	200	285-	-395	-395	-395	-395	-395	-395	-395	-395	-395	-250	-250	-345	-251	-251	-251	-251	-395	-395	-395	-287	-287	-395	-395	-395	-287	-250	-244	-250	-244	-250	-250	-287	-395		-395	-395	0	0	-369	-455	-219
3 5	,			•	•	57°	-	7	-	-	-	-	-	-	-	-	-	•	•	•	•	37	377	•	•	۳	•	-	•	-	•	-	-	•	-	ij.	_	-	2	2		2	-
Finish	04 A LO 44	U4AUG11	18AUG11	29AUG11	02SEP11	09SEP11	100CT11	240CT11	10NOV11	15NOV11	22NOV11	08DEC11	03JAN12	24SEP11	110CT11	09DEC11	28JAN12	09FEB12	20DEC11	07JAN12	27FEB12	13APR12	25APR12	02MAY12	11DEC12	27DEC12	25MAY12	17JAN12	03FEB12	03FEB12	17FEB12	24FEB12	16MAR12	22JUN12	27DEC12		11JAN13	18JAN13	25JAN13	15FEB13	11JAN13	11JAN14	17APR12
MP3D	00 II IN14.4	Zaudnii	16SEP11 05AUG11	12AUG11	30AUG11	03SEP11	10SEP11	110CT11	250CT11	20DEC11 11NOV11	16NOV11	23NOV11	09DEC11	10SEP11	26SEP11	120CT11	10DEC11	30JAN12	23NOV11	21DEC11	09JAN12	28FEB12	14APR12	28FEB12	13MAR12	27MAR12	26APR12	04JAN12	09MAR12 18JAN12		04FEB12	04FEB12	25FEB12	26MAY12		į	28NOV12	12DEC12	19JAN13	26JAN13	18AUG12		30MAR12
AD04	PEALICA	25AUG11	16SEP11	060CT11	110CT11	180CT11	14NOV11	28NOV11	15DEC11	20DEC11	30DEC11	17JAN12	10FEB12	290CT11	12NOV11	16JAN12	01MAR12	13MAR12	11JAN12	28JAN12	13MAR12	30APR12	12MAY12	30MAR12	02NOV12	16NOV12	09JUN12	24FEB12	09MAR12	09MAR12	23MAR12	30MAR12	25APR12	10JUL12	16NOV12	ı	30NOV12	07DEC12	14DEC12	04JAN13	30NOV12	30NOV13	17APR12
ADB4	SIBIR 07 II INI44	27JUN11	26AUG11	17SEP11	07OCT11	120CT11	190CT11	15NOV11	29NOV11	16DEC11	21DEC11	02JAN12	18JAN12	190CT11	310CT11	14NOV11	17JAN12	02MAR12	02JAN12	12JAN12	30JAN12	14MAR12	02MAY12	14MAR12	31MAR12	19APR12	14MAY12	11FEB12	25FEB12	25FEB12	10MAR12	10MAR12	31MAR12	11JUN12		į	190CT12	03NOV12	08DEC12	15DEC12	11JUL12	01DEC12	30MAR12
MP3D		36	12	15	4	9	23	12	15	4	ဖ	14	60	12	12	51	36	9	24	12	4	36	9	20	224	224	24	12	12	12	12	18	49	24	0	3	36	30	2	27	120	365	12
AD04 WP3D	unc :	25	18	15	4	9	23	12	15	4	9	44	80	9	12	51	36	9	o	12	38	36	9	15	175	175	24	12	12	12	12	13	18	24	0		36	30	7	21	120	365	12
Activity	Description	Dredge in rock armour to -3.75mPD	Place grade 400 rockfill & levelling layer	Form seawall type 2(W)	Construct detail Y	Construct mass concrete	Form seawall type 1	Construct mass concrete	Form seawall type 2 (E)	Construct detail X	Construct mass concrete	Construct coping	Place infill blocks M1 & M4	Dredge in sea bed to -3.75mPD for seawall (W)	Place grade 400 rockfill & levelling layer	Form seawall type 5, 2B, 4 & 1A (W)	Backfill sea walls west & north (half)	Place type 2 armour	Dredge in sea bed to -3.75mPD for seawall (E)	Place grade 400 rockfill & levelling layer	Form seawall type 6, 3 & 2A (E)	Backfill sea walls east & north (half)	Place type 2 armour	Dredge in sea bed for stepped blocks	Place levelling layer	Place stepped blocks	Place type 2 armour to reinstate exist. seawall	Form ground beam (W)	Form ground beam (E)	Form invert slab (W)	Form invert slab (E)	Form end wall (W)	Form end wall (E)	Reinstate rock armour	Complete basin	Remaining Works Prior to Handover	Finishing & reinstatement works; Portion D	Pre-handover inspections and remedial works	Contractor serve notice for Works completion	SO issues completion certificate	Landscaping works at Portion D	Establishment Works at Portion D	Install flow measurement devices at Outfall O-1
Q		VO61-055	VO61-060	VO61-065	VO61-070	VO61-075	VO61-080	VO61-085	VO61-090	VO61-095	VO61-100	VO61-105	VO61-110	VO61-115	VO61-120	V061-125	V061-130	V061-135	VO61-140	V061-145	VO61-150	VO61-155	VO61-160	VO61-165	VO61-170	VO61-175	VO61-180	VO61-185	VO61-190	VO61-195	VO61-200	VO61-205	VO61-210	V061-215	VO61-220	Remaining V	10R1D00904	10R1D00906	10R1D00908	10R1D00910	16R7D00902	16R7D00904	3DL1D00902

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2010 2001 2010 2013				◆ Dutfil O-1	♦Outfall O-1	◆Outfall O-1	♦Outfall 0-1	◆at Outfall O-1	◆at Outfall O-1	◆at Ouffall O-1	♦at Outfall 0-1	and open channel underneath CPR❖	protection works at Outfall O-1	under this Cost Centre		Cilletti O de amounte				◆under this Cost Centre			•	•	•		•				•					=45m, @ 1,3m/day	M.O.	63	≣35m, @ 1,3m/day
Total 2	-219	0			1,600	1,544	1,206	069	629	1,136	1,062	713	409	388		07	2	0	996,1	919			181	0	0	165	0	0	0		209	165	165	165	165	165	165	165	165
	<u>ب</u>	7		2	2 1,6	2 1,5	2 1,	2	2	2 1,	2 1,0	2		2		,	H			7		Ę	-	2	2	·	7	-	-	Ą	-	-	·-	·	-		-	-	
WP3D Finish	10MAY12	10MAY13		09APR09A	13AUG09	080CT09	11SEP10	09FEB12	10APR12	20NOV10	02FEB11	03JAN12	27DEC12	18JAN13	1	22 II IN14	020000	U/AFRUSA	IDSEPUS	22JUN11			24NOV09	25NOV09		02JAN10	25NOV09	09DEC09	29DEC12		17OCT09	12DEC09	03MAY10	06MAY10	18JUN10	30JUL10	22JUN10	24JUL10	25AUG10
WP3D Start	2 02APR12	10MAY13 11MAY12		٥		6			-	0			01	21	1			1						6	26NOV09	26NOV09	6	26NOV09	10DEC09	Ì		12DEC09 10DEC09	14DEC09	06MAY10 04MAY10	07MAY10	19JUN10	19JUN10	23JUN10	26JUL10
AD04 Finish	10MAY12	10MAY13		09APR09A	13AUG09	080CT09	11SEP10	09FEB12	10APR12	20NOV10	02FEB11	17JAN12	16NOV12	07DEC12	ł	25 II IN14	400000470	100FFRUSA	מאבורים!	25JUN11			24NOV09	25NOV09		02JAN10	25NOV09	09DEC09	29DEC12	I	17OCT09	12DEC09	03MAY10	06MAY10	18JUN10	30JUL10	22JUN10	24JUL10	25AUG10
AD04 Start	02APR12	11MAY12	i												i										26NOV09	26NOV09		26NOV09	10DEC09	į		10DEC09	14DEC09	04MAY10	07MAY10	19JUN10	19JUN10	23JUN10	26JUL10
Dur Dur	28	365		0	0	0	0	0	0	0	0	0	0	0	ď	c	0	5 6	o (o			0	0	0	30	0	12	904		0	m	110	ო	35	35	က	27	27
Dur Dur	28	365	Ī	0	0	0	0	0	0	0	0	0	0	0		c	0	0	0	0			٥	0	0	30	0	12	904	1	0	m	110	ო	35	35	ო	27	27
Activity Description	T & C for flow measurement system	Maintain & monitor flow monitoring	Schedule of Milestones for Cost Centre No. 10R	10R 1; On completion of 20% excavation works	10R 2; On completion of 40% excavation works	10R 3; On completion of 60% excavation works	10R 4; On completion of 80% excavation works	10R 5; On completion all excavation works	10R 6; On completion of cascade structure	10R 7; On completion of spiral ramp to +16mPD	10R 8; On completion of spiral access ramp	10R 9; On completion box-culvert & open channel	10R 10; On completion of seabed protection wks	10R 11; On completion of all works under this CC	Schedule of Milestones for Cost Centre No. 14R	148 1: On complet of remove exist rock armour	#40 0: On complete of 500/ coil poiling by market	14K Z, Ort complet, of 50% soil natified by number	14K S, On completion all solling works	14R 4; On completion of all works under this CC	Drainage Improvement Works at Portion G	Works	SO consent Drainage Impact Assessment Report.	Obtain TTA (ingress & egress) approval	Possession of Portion G -700d of DOC	Site clearance/Site Establishment	Obtain approval for Geotechnical Instrumentation	Installation of Geotechnical Instrumentation	Monitor/report Geotechnical Instrumentation		Obtain SO's consent for temp, works design	Mibilization & set up for temp. platform	Construct steel working platform for H-piling	Mibilization & set up for H-piling; Wall 1	52 nos. 600mm dia. H-piles; Wall 1 @1.5 nr/day	Excavate & construct skin wall 1 at Portion G	Mibilization & set up for H-piling; Wall 2	40 nos. 600mm dia. H-piles; Wall 2 @1.5 nr/day	Excavate & construct skin wall 2 at Portion G
Q	3DL1D00903	3DL1D00904	Schedule of	10R1DO1002	10R1DO1004	10R1DO1006	10R1DO1008	10R1DO1010	10R1DO1012	10R1DO1014	10R1DO1016	10R1DO1018	10R1DO1020	10R1DO1022	Schedule of	1485001100	44BED04464	14R5DO 1104	14K5DO1106	14R5DO1108	Drainage Im	Preliminary Works	01R6GG0102	01R6GG0112	01R6GG0114	01R6GG0116	3DL6GG0104	3DL6GG0106	3DL6GG0108	Piling Works	15R6GG0200	15R6GG0202	15R6GG0204	15R6GG0206	15R6GG0208	15R6GG0210	15R6GG0212	15R6GG0214	15R6GG0216

Q)	Activity Description	AD04 WP3D Dur Dur	WP3D Dur	AD04 Start	AD04 Finish	WP3D	WP3D Finish	3 ₽	Total Float					2
Drainage Imp	Drainage Improvement Works												NE G	30-1
15R6GG0301	Obtain approval of ELS design package incl MS	0	0		02NOV09		02NOV09	2	284	•	as per ER.	328.08, 4 w	eeks prior to v	as per ER.B28.08, 4 weeks prior to work commence
15R6GG0302	Install ELS & construct shaft for pipe jacking	8	06	04JAN10	26APR10 04JAN10	JAN10	26APR10	-	180		1			200
15R6GG0304	Construct 1.5m dia. drainage by pipe jacking	85	85	27APR10	07AUG10 27APR10	'APR10	07AUG10		180		82	==85m, @1m/day	_	Į GRĄ
15R6GG0306	Construct 1.5m dia. drainage by open trenching	24	24 (01NOV10*	27NOV10 01NOV10*	NOV10*	27NOV10	-	111			72m, @3m/day	/day	9.83
15R6GG0308	Construct .75m & 1.5m U and Stepped Channel	12	12	29NOV10	11DEC10 29NOV10	NOV10	11DEC10		111			\$56m, @5m/day	n/day	88
15R6GG0310	Construct 3 nos. manhole & 2 nos. catchpit	32	35	13DEC10	25JAN11 13DEC10	(DEC10	25JAN11		111			a@1nr/week	*	333
Remaining V	Remaining Works Prior to Handover to Client							1						
													-	788
15R6GG0312	Reinstate carriageway & footway	24	24	26JAN11	25FEB11 26JAN11	JAN11	25FEB11	-	111	EII-O		■72m, @3m/day	3m/day	
15R6GG0402	Pre-handover inspections and remedial works	12	12	26FEB11	11MAR11 26FEB11	FEB11	11MAR11		111			fincludir	fincluding CCTV inspection	ction
15R6GG0404	Contractor serve notice for Works completion	7	1	12MAR11	18MAR11 12MAR11	MAR11	18MAR11	2	266			212		
15R6GG0408	SO issues completion certificate	21	21	19MAR11	08APR11 19MAR11	MAR11	08APR11	2	266					
Schedule of	Schedule of Milestones for Cost Centre No. 15R		8											780
15R6GG0502	15R 1: On completion of all temp. works	0	0		26APR10		26APR10	2	1,344		•prior	to commen	Prior to commence pipe jacking at Portion G	at Portion G
15R6GG0504	15R 2; On completion of 25% of pipejacking	0	0		06MAY10		06MAY10	2	1,334		◆pipe	jacking met	pipe jacking method at Portion G	o_
15R6GG0506	15R 3; On completion of 50% of pipejacking	0	0		14MAY10		14MAY10	67	1,326		♦ pipe	jacking met	pipe jacking method at Portion G	9
15R6GG0508	15R 4; On completion of 75% of pipejacking	0	0		25MAY10		25MAY10	2	1,315		♦ pipe	jacking me	pipe jacking method at Portion G	9
15R6GG0510	15R 5; On completion of all pipejacking	0	0		07AUG10		07AUG10	2	1,241		♦ d	pe jacking r	pipe jacking method at Portion G	ion G
15R6GG0512	15R 6; On completion of all wks under this CC	0	0		11MAR11		11MAR11	2	1,025			♦ nnder	under this Cost Centre	ng.



Appendix D

Implementation Status of Environmental Mitigation Measures

IMPLEMENTATION SCHEDULE July 2011

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

Appendix D

EIA Ref.	Recommended Mitigation Measures	Who to implement the measure ?	Location of the measure	What requirements or standards for the measure to achieve ?	Status
3.6.1	• the area where vehicle washing takes place and the section of the road between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores;	DSD's Contractor	Construction Work Sites	Air Pollution Control (Construction Dust) Regulation	✓
	• where a site boundary adjoins a road, street or other area accessible to the public, hoarding of not less than 2.4m high from ground level should be provided along the entire length except for a site entrance or exit;				✓
	• every main haul road should be scaled with concrete and kept clear of dusty materials or sprayed with water so as to maintain the entire road surface wet;				✓
	• the portion of road leading only to a construction site that is within 30m of a designated vehicle entrance or exit should be kept clear of dusty materials;				✓
	• stockpile of dusty materials should be either covered entirely by impervious sheeting, placed in an area sheltered on the top and the 3 sides; or sprayed with water so as to maintain the entire surface wet;				✓
	all dusty materials should be sprayed with water prior to any loading, unloading or transfer operation so as to maintain the dusty material wet;				✓
	vehicle speed should be limited to 10 kph except on completed access roads;				\checkmark
	• every vehicle should be washed to remove any dusty materials from its body and wheels before leaving the construction sites;				✓
	the load of dusty materials carried by vehicle leaving a construction site should be covered entirely by clean impervious sheeting to ensure that the dusty materials do not leak from the vehicle; and				✓
	• the working area of excavation should be sprayed with water immediately before, during and immediately after the operations so as to maintain the entire surface wet.				✓
Noise		Dab'		DM 0/00 M : C	
4.6.1	Appropriate mitigation measures such as the use of quiet equipment and movable barriers will be developed to ensure that noise can be reduced to acceptable levels without causing programme delays	DSD's Contractor	Construction Work Sites	PN 2/93 Noise from Construction Activities & EIAO	✓
	Good Site Practice Good site practice and noise management can significantly reduce the impact of construction site activities on nearby NSRs. The following package of measures should be followed during construction:				
	 only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction works; 				✓
	machines and plant that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum;				✓

Appendix D

EIA Ref.	Recommended Mitigation Measures	Who to implement the measure ?	Location of the measure	What requirements or standards for the measure to achieve?	Status
4.6.1	• plant known to emit noise strongly in one direction should, where possible, be orientated to direct noise away from the NSRs;	DSD's Contractor	Construction Work	PN 2/93 Noise from Construction Activities &	✓
	mobile plant should be sited as far away from NSRs as possible; and		Sites	EIAO	\checkmark
	• material stockpiles and other structures should be effectively utilised, where practicable, to screen noise from on-site construction activities.				✓
	 For Drill and Blast Works Charge mass per delay should be decreased by minimising the number of blastholes firing on each delay. 				N/A
	Smaller blasthole patterns and longer delays should be used between dependent charges.				N/A
	Times of blasting should be established to suit the situation and firing blasts when neighbours are busy with their daily tasks (and at a regular time such as lunch time). The transfer The tr				N/A
	 For TBM Tunnelling For the tunnel excavation, it is anticipated that beyond the initial length (say within 30m), excavation will be carried out well within the tunnel and door should be provided to further minimize the noise nuisance to the nearby receivers. 				N/A
4.6.2	During Operation Good site practice and noise management can significantly reduce the impact of maintenance activities on nearby NSRs. The following package of measures should be followed during construction	DSD's Contractor	Project Area	NCO & EIAO	
	only well-maintained plant should be operated on-site;				N/A
	machines and plant that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum; and				N/A
	plant known to emit noise strongly in one direction should, where possible, be orientated to direct noise away from the NSRs.				N/A
	Quality		.		
5.9.1	During Construction Mitigation measures and a spill control and response plan have been prepared for works at	DSD's Contractor	Construction Work Sites	Practice Note for Professional Persons with regard to site drainage	✓
	the intakes and work sites.			(ProPECC PN 1/94) and	
	Precautions to be taken at any time of year when rainstorms are likely:			WQO	\checkmark
	 Temporarily exposed surfaces should be covered e.g. by tarpaulin. Temporary access roads should be protected by crushed stone or gravel. 				✓
	Trenches should be dug and backfilled in short sections. Measures should be taken to minimize the ingress of rainwater into trenches.	_			✓
	Actions to be taken when a rainstorm is imminent or forecast: • Silt removal facilities, should be checked to ensure that they can function properly.				✓

EIA Ref.	Recommended Mitigation Measures	Who to implement the measure ?	Location of the measure	What requirements or standards for the measure to achieve ?	Status
5.9.1	 Open stockpiles of construction materials on site should be covered with tarpaulin or similar fabric. 	DSD's Contractor	Construction Work Sites	WQO	✓
	All temporary covers to slopes and stockpiles should be secured.				✓
	 Actions to be taken during or after rainstorms: Silt removal facilities should be checked and maintained to ensure satisfactory working conditions. 				✓
	Spill Control and Response Plan				
	1 Prevention and Precaution Measures				
	General PrecautionsNo discharge of silty water into watercourses.				✓
	 All materials to be used during construction and operation shall be identified and their hazard potential evaluated. 				✓
	 Maintenance of vehicles and equipment involving activities with potential for leakage and spillage shall only be undertaken with the areas appropriately equipped to control these discharges. 				✓
	 Any soil contaminated with chemicals/oils shall be removed from site and the void created shall be filled with suitable materials. 			✓	
	 Any construction plant which causes pollution to catchwaters or water gathering ground due to leakage of oil or fuel shall be removed off-site immediately. 				✓
	Suitable containers shall be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport				✓
	Chemical waste containers shall be suitably labelled to notify and warn the personnel who are handling the wastes to avoid accidents.	_			✓
	Storage areas shall be selected at safe locations on site and adequate space shall be allocated to the storage area.				✓
	Prevent obstructions and tripping hazards.				✓
	 Storage Precautions All chemical storage containers shall be correctly labelled. 				✓
	Solid and impermeable enclosure walls or storage shelves shall be used.				✓
	Only compatible chemical wastes shall be stored in the same storage area.				\checkmark
	The storage areas shall be inspected to detect any leakages or defective containers on a regular basis.				✓
	• Suitable notices warning of hazards, emergency response plans, telephone numbers etc shall be posted around the site, including storage areas.				✓
	Large and heavy containers shall be stored at ground level.				✓

EIA Ref.	Recommended Mitigation Measures	Who to implement the measure ?	Location of the measure	What requirements or standards for the measure to achieve ?	Status
	Chemical waste containers shall be stored below eye level.				✓
5.9.1	Adequate space for handling of the containers shall be provided	DSD's	Construction	WQO	✓
	• Spill response kits shall be located adjacent/near to the storage areas.	Contractor	Work Sites		\checkmark
	A log of chemical wastes shall be maintained.				✓
	Incompatible chemicals shall be stored separately.				✓
	2 Responses/Action Plan				
	All Workers shall be made aware of emergency telephone numbers and the location of all relevant pollution control equipment. Training be given in emergency response/action plans. The action include the following steps:				✓
	• Only trained personnel who are equipped with protective clothing and equipment shall be allowed to enter the spillage area for clean up.				✓
	• Spills shall be transferred appropriate back into containers using suitable equipment.				✓
	 Absorbent materials shall be used to clean up the spills and shall be disposed of as chemical wastes. 				✓
	 Where appropriate suitable solvents may be used to clean the contaminated area after removal of all contaminated materials. 				✓
	• All necessary protective devices, safety equipment, containers and clean up materials for emergency use shall be maintained to a high standard.				✓
	3 Spill Clean Up and Disposal				
	Effect the response plan.				\checkmark
	Control the leakage and absorb the spillage using suitably absorbent materials.				\checkmark
	Provide safety equipment and personal protective equipment for handling of chemical wastes would be similar to that for handling of chemicals.				\checkmark
	Safety equipment includes but is not limited to: • Fire extinguishers.				\checkmark
	• Spades, brushes, dustpan, mop and bucket (or similar readily available on site).				\checkmark
	• Absorbent material such as dry sand, tissues and toweling (all materials readily available on-site).				\checkmark
	Containers including plaster bags, drums, etc.				✓
	Absorbing materials.]			✓
	• Pumps.	1			✓
	Personal protective equipment includes as appropriate: • First-aid kits.]			\checkmark
	Safety helmet and goggles.	1			✓
	Gloves which can resist chemical reaction.	1			✓

Updated on 30 July 2011 5

EIA Ref.	Recommended Mitigation Measures	Who to implement the measure?	Location of the measure	What requirements or standards for the measure to achieve ?	Status
	Protective boot and clothing.	DSD's	Construction	WQO	✓
5.9.1	Respirators and gas masks.	Contractor	Work Sites		✓
	Face visor and masks.				✓
5.9.2	Emergency Responses to Spillages				
	Emergency plans and clean up procedures will need to be provided by the Contractor recognising his specific working methods and construction programme, activities and sequences. Agreement must be sought prior to commencement of the construction work but the following principles should be considered.				
	The emergency plans should include the procedures for:				✓
	spill prevention and precaution;	_			
	response actions; and				✓
	spill clean up and disposal.				✓
	Spill prevention and precaution embraces good site practice and covers:				✓
	good housekeeping practices;	4			
	chemical storage requirements; and				✓
	chemical transfer and transport.				✓
5.9.3	During Operation	DSD's Contractor	Project Area		
	Regular inspection of the tunnels is essential to monitor the structural integrity and proper functioning of the drainage tunnel, which allows repairing of structural deterioration when it begins to develop. It is recommended that routine inspection shall be carried out at least two times per year for the drainage tunnel at the beginning and end of wet season from April to September.				N/A
Waste	Management				
6.5.1	During Construction	DSD's Contractor	Construction Work	Waste Disposal Ordinance (Cap.354); Waste Disposal (Chemical Wastes)	√
	Vegetation Removed from Site Clearance Wastes generated from site clearance shall be sorted and excavated topsoil segregated from roots for re-use in landscaping works, thus eliminating the need for off-site disposal.		Sites	(General) Regulation (Cap 354) and ETWBTC No.	V
	Construction and Demolition Materials The Contractor should reuse any C&D material on-site. C&D waste should be segregated and stored in different containers to other wastes to encourage the re-use or recycling of materials and their proper disposal. The use of wooden hoardings shall not be allowed. An alternative material, which can be reused or recycled, for example, metal (aluminium, alloy, etc) shall be used.			15/2003, Waste anagement on Construction Site	√

EIA Ref.	Recommended Mitigation Measures	Who to implement the measure ?	Location of the measure	What requirements or standards for the measure to achieve ?	Status
6.5.1	As referred to the section 6.4.1, the 317,936m3 of inert surplus material generated by the project is suitable for public fill. The public fill reception facility at Tuen Mun Area 38 provides a suitable facility for the reuse of surplus inert C&D material generated from the project.	DSD's Contractor	Construction Work Sites	WDO (Cap.354), ETWBTC No. 15/2003, ETWBTC No. 12/2002 and ETWBTC No. 31/2004	
	Under the contract, the contractor will be required to minimise the generation of C&D material and reuse it on site through the following:				
	(a) to plan in the design and construction, methods to minimise the generation of C&D material;				✓
	(b) to submit a Waste Management Plan (WMP) in accordance with Environment Transport and Works Bureau Technical Circular (ETWBTC) No. 15/2003 or any superseding circular(s);				✓
	(c) to reuse recycled aggregates in accordance with ETWBTC No. 12/2002 or any superseding circular(s);				✓
	(d) to observe the requirements of the Trip-Ticket System, stipulated in ETWBTC No. 31/2004 or any superceding circular(s), for disposal of C&D material;				✓
	(e) to incorporate a Waste Management System into the WMP for effective management and control of C&D materials to avoid/reduce/minimise the generation of C&D material during construction.				✓
	The contractor will be required to properly sort into inert C&D materials, metals, timber and other non-inert C&D material in the workplace to prevent cross-contamination.				\checkmark
	In addition, DSD will conduct site inspection to monitor the contractors' performance in the implementation of the WMP and other relevant specified requirements.	DSD	Construction Work Sites	WDO (Cap.354) and ETWBTC No. 15/2003	√
	Excavated Materials Excavated materials should be segregated from other wastes to avoid contamination thereby ensuring acceptability at public filling areas and avoiding the need for disposal at landfill. Municipal Waste	DSD's Contractor	Construction Work Sites	WDO (Cap.354) and ETWBTC No. 15/2003	V
	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.				\checkmark
6.5.1	Waste Management Plan A Waste Management Plan (WMP) for the construction of the Project should be prepared as part of the contractors submission. It will provide recommendations for appropriate recycling or disposal route and should include method statement for stockpiling and transportation of the excavated material and other construction wastes should also be included in the WMP and approved before the commencement of construction. All mitigation measures arising from the approved WMP shall be fully implemented.	DSD's Contractor	Construction Work Sites	WDO (Cap.354), ETWBTC No. 15/2003 and ETWBTC No. 33/2002	√

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

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

EIA Ref.	Recommended Mitigation Measures	Who to implement the measure ?	Location of the measure	What requirements or standards for the measure to achieve ?	Status
Cultura	Heritage				
8.6	As no impacts on recorded archaeological sites or area with archaeological potential were identified within the Study Area, no mitigation measure for archaeological resources is considered necessary.				N/A
	The construction methods to be employed should seek to avoid potential vibration impacts to Kuen Yuen Tung Monastery at Lo Wai, the Western Monastery, Yuen Yuen Home for the Aged, Hong Hoi Chee Hong Temple, Chiu Yum Tsing Yuen, Tse's Grave, Wan Lin Bridge and Sam Dip Tam Rock Carving in Sam Dip Tam and the Tin Hau Temple, Yam Kom Tau Village Rural Committee and the Yeung's Ancestral Hall in Yau Kom Tau as these sites fall within 50 m of the Preferred Option of the drainage tunnel alignment or associated Intakes/Outfall construction activities. Construction works that generates excessive vibration in close proximity to these sites should be restricted to protect the building from adverse vibration impacts and to ensure that the building structures will not be damaged as a result of these impacts.	DSD's Contractor	Construction Work Sites	EIAO	√
	In order to ensure that no structural or superficial damage will be caused by the construction activities, a precautionary approach involving a pre-construction condition survey and establishment of appropriate vibration limits for the potentially impacted structures should be adopted. Protection measures for the potentially impacted structures, if considered necessary from the pre-construction condition survey, should be implemented prior to the commencement of construction works. Vibration monitoring during the construction phase should be undertaken as part of the EM&A programme.	Qualified archaeologist/ built heritage specialist	Construction Work Sites	EIAO	√
Fisherie		•			
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. Compliance of mitigation measure				N/A

Remarks:

Compliance of mitigation measure

× Non-compliance of mitigation measure

N/A Not applicable

Updated on 30 July 2011 10



Appendix E

Status of License and Permit







Updated Status of Environmental Permit & Licence

Application Date	Environmental Permit / Licence	Issued Date	Ref No.	Account No.	Permit / Licence No.	Permit / Licence Validity Date	Remarks
2 Jan 2008	Registration as a Waste Producer	3 Jan 2008	001026707				Valid
2 Jan 2008	Waste Disposal (Chemical Waste) (General) - Chemical Waste Producer	26 Feb 2008		5111-324- M2703-01			Valid
2 Jan 2008	Waste Disposal (Charges for Disposal of Construction Waste) Regulation - Billing Account	17 Jan 2008		7006574			Valid
10 Jan 2008	Notification Pursuant to Section 3(1) of the Air Pollution Control (Construction Dust) Regulation	10 Jan 2008	001026901				Valid
25 Feb 2008	Water Discharge Licence – Outfall O-1	7 Aug 2008	001028154		EP760/323/012997I	7 Aug 2008 - 31 Aug 2013	Valid
18 Apr 2008	Water Discharge Licence – Intake I-1	19 Jun 2008	001029978		EP760/327/013315I	19 Jun 2008 - 30 Jun 2013	Valid
18 Apr 2008	Water Discharge Licence – Intake I-2	2 Jul 2008	001029959		EP760/321/013020I	2 Jul 2008 - 31 Jul 2013	Valid
18 Apr 2008	Water Discharge Licence – Intake I-3	5 Aug 2008	001029960		EP760/323/013324I	5 Aug 2008 - 31 Aug 2013	Valid
18 Apr 2008	Water Discharge Licence – Portion I	26 Jun 2008	001029974		EP760/350/013334I	26 Jun 2008 - 30 Jun 2013	Valid
23 Jul 2008	Water Discharge Licence – Intake I-1 (Intersection of Wo Yi Hop Lane and Ho Fung College)	27 Aug 2008	001031974		EP760/325/013536I	27 Aug 2008 - 31 Aug 2013	Valid
2 Sep 2008	Variation of Environmental Permit	25 Sep 2008	VEP-271/2008		EP-275/2007/B		Valid
29 Apr 2009	Water Discharge Licence – Intake I-3 (Additional Discharge Point)	25 Mar 2010	305058		WT00005917-2010	25 Mar 2010 - 31 Mar 2015	Valid
5 Oct 2009	Further Environmental Permit	27 Oct 2009	FEP-096/2009		FEP-01/275/2007/B		Valid
4 Sep 2010	Water Discharge Licence – Portion G	28 Oct 2010	321337		WT00007685-2010	28 Oct 2010 - 31 Oct 2015	Valid







Updated Status of Environmental Permit & Licence

Application Date	Environmental Permit / Licence	Issued Date	Ref No.	Account No.	Permit / Licence No.	Permit / Licence Validity Date	Remarks
15 Dec 2010	Water Discharge Licence – Outfall O-1 (Additional Discharge Point)						Submission made on 15 Dec 2010 and acknowledge received by EPD on 15 Dec 2010.
12 Jan 2011	Construction Noise Permit - Portion G - (Water Pump)	27 Jan 2011	325763		GW-RW0049-11	09 Feb 2011 - 08 Aug 2011	Valid
1 Mar 2011	Application for a Permit to Dump Material at Sea - Dredged / Excavated Sediment Requiring Type 1 - Open Sea Disposal	16 Mar 2011			EP/MD/11-156	02 Apr 2011 - 01 Oct 2011	Valid
15 Mar 2011	Construction Noise Permit - Intake 2	29 Mar 2011	327938		GW-RW0219-11	15 May 2011 - 14 Nov 2011	Valid
18 Mar 2011	Construction Noise Permit - Outfall (For Mining Works and Probe Drilling to 24hrs, Additional AquaSeq added)	29 Mar 2011	328153		GW-RW0212-11	30 Apr 2011 - 29 Oct 2011	Valid
30 Mar 2011	Application for Vessel Chits for Disposal of Construction Waste for Existing Account Holder (Billing Account)	21 Apr 2011		7011131		21 Apr 2011 - 30 Sep 2011	Valid
8 Apr 2011	Construction Noise Permit - Intake I-1	20 Apr 2011	328892		GW-RW0279-11	04 Jun 2011 - 02 Dec 2011	Valid
25 May 2011	Construction Noise Permit - Intake I-3	07 Jun 2011	330437		GW-RW0376-11	07 Jun 2011 - 06 Dec 2011	Valid
21 Jul 2011	Licence To Posses Category 1 Dangerous Goods		12976		A002007		Valid
21 Jul 2011	Permit To Use Category 1 Dangerours Goods		12976		A006406		Valid



Appendix F

Calibration Certificates

Project Title:

Design and Construction of Tsuen Wan Drainage Tunnel

Monitoring Location:

Ho Fung College (ASR 1)

Calibration Date: Calibration Due Date 16-May-11 15-Jul-11

Time:

08:00

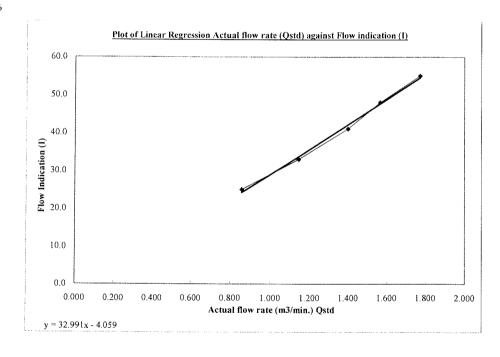
Sampler Model:	BM2000HX
Serial No.:	4994
Calibrator Orifice no.:	1785
Slope (m):	2.00506
Intercept (b):	-0.02062
Correction coeff. (r)	0.99998

Flow(corrected)
$$\sqrt{11 \times \frac{Pa}{Pstd} \times \frac{Tstd}{Ta}}$$

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

Sample no.	Pressure Drop (H), inch	Flow (correted), m ³ /min	Actual flow rate (Ostd), m ³ /min	Flow indication (I), arbitrary
1	12.6	3.537	1.774	55.0
2	9.8	3.119	1.566	48.0
3	7.8	2.783	1.398	41,0
4	5.2	2.272	1.143	33.0
5	2.9	1.697	0.857	25.0

Correlation Coefficient: 0.9976



Remark 1HPa = 0.750062 mmHg

Calibrated by:

Arthur Chiu

Date: 16 May 2011

Checked by:

F.C. Tsang

Date: 16 MAY 2011

Project Title: Design and Construction of Tsuen Wan Drainage Tunnel

Monitoring Location: Heng Hoi Chi Hong Ship Temple (ASR 3)

Calibration Date: 16-May-11
Calibration Due Date 15-Jul-11
Time: 08:15

Sampler Model:	BM2000HX
Serial No.:	5875
Calibrator Orifice no.:	1785
Slope (m):	2.00506
Intercept (b):	-0.02062
Correction coeff. (r)	0.99998

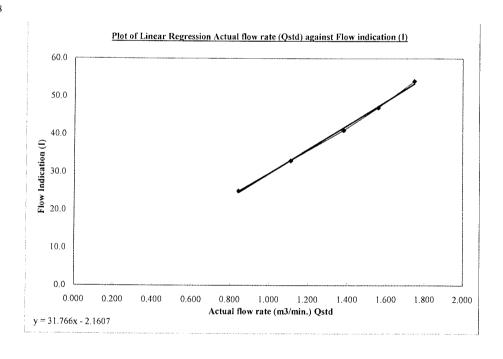
Standard pressure (mmHg) Pstd:	763.9
Standard temp. (K) Tstd:	290,8
Calibration pressure (mmHg) Pa:	759.6
Calibration temp. (K) Ta:	298.5

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

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

Sample no.	Pressure Drop (H), inch	Flow (correted), m ³ /min	Actual flow rate (Ostd), m ³ /min	Flow indication (I), arbitrary
l	12.2	3.480	1.746	54,0
2	9.7	3.103	1.558	47.0
3	7.6	2.747	1.380	41.0
4	4.9	2.206	1.110	33.0
5	2.8	1,667	0.842	25.0

Correlation Coefficient: 0.9988



Remark 1HPa = 0.750062 mmHg

Calibrated by: Arthur Chi

Arthur Chiu

Date: 16 May 2011

Checked by:

F.C. Tsang

Date: 16 MAY 2011

Project Title:

Design and Construction of Tsuen Wan Drainage Tunnel

Monitoring Location:

Long Beach Gardan (ASR 8)

Calibration Date: Calibration Due Date

16-May-11 15-Jul-11

Time:

08:30

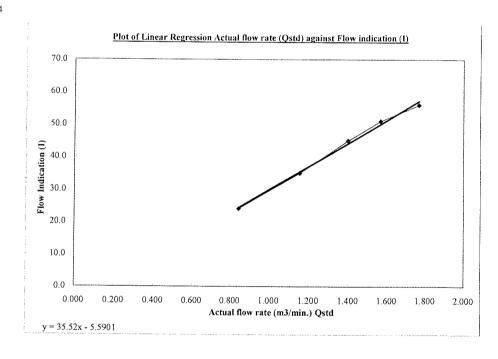
Sampler Model:	TE5005X
Serial No.:	1059
Calibrator Orifice no.:	1785
Slope (m):	2.00506
Intercept (b):	-0.02062
Correction coeff. (r)	0.99998

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

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

Sample no.	Pressure Drop (H), inch	Flow (corrcted), m ³ /min	Actual flow rate (Qstd), m³/min	Flow indication (I), arbitrary
l	12.5	3.523	1.767	56.0
2	9.8	3.119	1.566	51.0
3	7.8	2.783	1.398	45.0
4	5.3	2.294	1.154	35.0
5	2.8	1.667	0.842	24.0

Correlation Coefficient: 0.9974



Remark 1HPa = 0.750062 mmHg

Calibrated by:

Arthur Chiu

Date: 16 May 2011

Checked by:

F.C. Tsang
(Lay Janbary)

Date: 16 MAY 2011

Project Title:

Design and Construction of Tsuen Wan Drainage Tunnel

Monitoring Location:

Greenview Terrance (ASR 9)

Calibration Date: Calibration Due Date 16-May-11 15-Jul-11

Time:

08:45

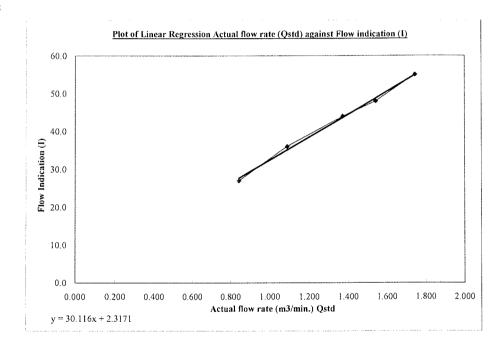
Sampler Model:	TE5005X
Serial No.:	1713
Calibrator Orifice no.:	1785
Slope (m):	2.00506
Intercept (b):	-0.02062
Correction coeff. (r)	0.9998

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

01	1	Ju	Pa	Tstd	4.4
Osta	= — ×	V''	$\times \frac{Pa}{Pstd} \times$	Ta	-0)

Sample no.	Pressure Drop (H), inch	Flow (correted), m3/min	Actual flow rate (Qstd), m ³ /min	Flow indication (I), arbitrary
1	12.2	3.480	1.746	55.0
2	9,5	3.071	1,542	48.0
3	7.5	2.729	1.371	44.0
4	4.7	2.160	1.088	36.0
5	2.8	1.667	0.842	27.0

Correlation Coefficient: 0.9978



Remark 1HPa = 0.750062 mmHg

Calibrated by:

Arthur Chiu

Date: 16 May 2011

Checked by:

F.C. Tsang

Date: 16 MAY 2011

(Toroffa Deon

Project Title:

Design and Construction of Tsuen Wan Drainage Tunnel

Monitoring Location:

Ho Fung College (ASR 1)

Calibration Date: Calibration Due Date 12-Jul-11 11-Sep-11

Time:

08:00

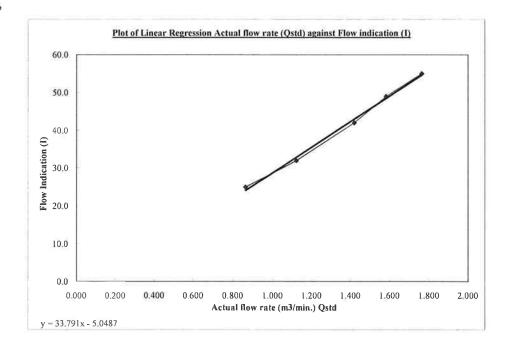
Sampler Model:	BM2000HX		
Serial No.:	4994		
Calibrator Orifice no.:	1785		
Slope (m):	2,00506		
Intercept (b):	-0.02062		
Correction coeff. (r)	0.99998		

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

Qsid =	1 -×(,	JH ×	Pa_×	Tsid	– b)
	m	V	Pstd	Ta	

Sample no.	Pressure Drop (H), inch	Flow (correted), m ³ /min	Actual flow rate (Qstd), m ³ /min	Flow indication (I), arbitrary
1	12.7	3.519	1.765	55.0
2	10.2	3.154	1.583	49.0
3	8.2	2.828	1.420	42.0
4	5.1	2.230	1.122	32.0
5	3.0	1,710	0.863	25.0

Correlation Coefficient: 0.9976



Remark 1HPa = 0.750062 inmHg

Calibrated by:

Arthur Chiu

Date: 12/07/2011

Checked by:

F.C. Tsang (TS'ANG, F.C.

Project Title:

Design and Construction of Tsuen Wan Drainage Tunnel

Monitoring Location:

Heng Hoi Chi Hong Ship Temple (ASR 3)

Calibration Date: Calibration Due Date 12-Jul-11 11-Sep-11

Time:

08:15

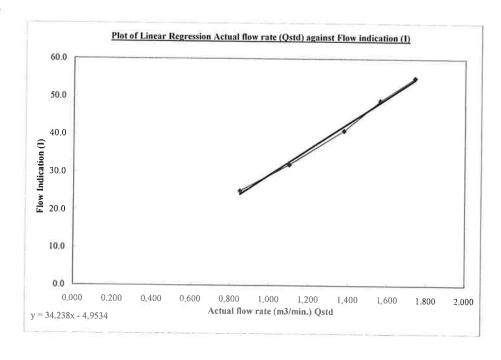
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Serial No.:	5875		
Calibrator Orifice no :	1785		
Slope (in):	2.00506		
Intercept (b):	-0.02062		
Correction coeff. (r)	0.99998		

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

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

Sample no.	Pressure Drop (H), inch	Flow (correted), m ³ /min	Actual flow rate (Qstd), m3/min	Flow indication (I), arbitrary
)A	12.3	3.463	1.737	55.0
2	9.9	3.107	1.560	49.0
3	7_7	2.740	1.377	47.0
4	4.9	2.186	1.100	41.0
5	2.9	1.682	0.849	25.0

Correlation Coefficient: 0.9973



Remark

IHPa = 0.750062 mmHg

Calibrated by:

Arthur Chiu

Date: 12/07/2011

Checked by:

F.C. Tsang
(Lafte Alson)

Project Title:

Design and Construction of Tsuen Wan Drainage Tunnel

Monitoring Location:

Long Beach Gardan (ASR 8)

Calibration Date: **Calibration Due Date**

Standard pressure (mmHg) Pstd: Standard temp. (K) Tstd:

Calibration pressure (mmHg) Pa

Calibration temp. (K) Ta:

12-Jul-11 11-Sep-11 08:30

Time:

763.9

290.8

751.3

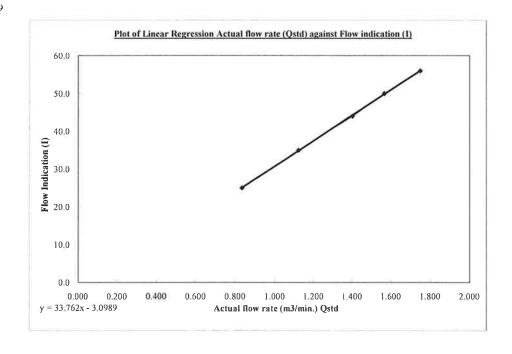
300.6

Sampler Model:	TE5005X
Serial No.:	1059
Calibrator Orifice no.:	1785
Slope (m):	2.00506
Intercept (b):	-0.02062
Correction coeff. (r)	0.99998

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

Sample no.	Pressure Drop (H), inch	Flow (correted), m3/min	Actual flow rate (Qstd), m ³ /min	Flow indication (1), arbitrary
l	12.5	3.491	1.751	56.0
2	10.0	3.122	1.568	50.0
3	8.0	2,793	1.403	44.0
4	5,1	2,230	1.122	35.0
5	2.8	1.652	0.834	25.0

Correlation Coefficient: 0.9999



Remark

1HPa = 0.750062 mmHg

Calibrated by:

Date: 12/07/2011

Checked by:

F.C. Tsang (Lary Farthey)

Project Title:

Design and Construction of Tsuen Wan Drainage Tunnel

Monitoring Location:

Greenview Terrance (ASR 9)

Calibration Date: **Calibration Due Date** 12-Jul-11 11-Sep-11

Time:

08:45

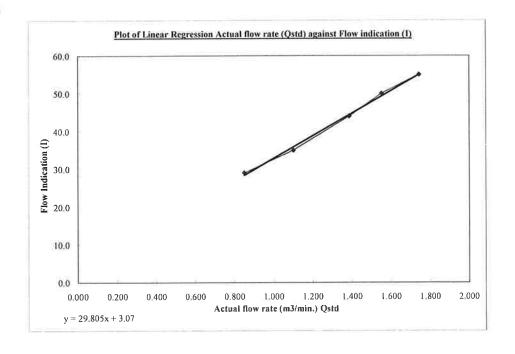
Sampler Model:	TE5005X		
Serial No.:	1713		
Calibrator Orifice no.:	1785		
Slope (m):	2.00506		
Intercept (b):	-0.02062		
Correction coeff. (r)	0.99998		

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

1.		Pa	720	Tstd	- 6.0
$Qstd = \frac{1}{m} \times (\sqrt{\frac{1}{m}})$	n×	Pstd	×	Ta	- 6)

Sample no.	Pressure Drop (H), inch	Flow (correted), m ³ /min	Actual flow rate (Qstd), m3/min	Flow indication (I), arbitrary
i	12.4	3,477	1.744	55.0
2	9.8	3,091	1.552	50.0
3	7.8	2,758	1.386	44.0
4	4.9	2.186	1.100	35,0
5	2.9	1,682	0.849	29.0

Correlation Coefficient: 0.9981



1HPa = 0.750062 mmHg

Calibrated by:

Arthur Chiu

Date: 12/07/2011

Checked by:

F.C. Tsang
(Harffartheorf)



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

AIR POLLUTION MONITORING EQUIPMENT

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

					METER	ORFICE
PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	DIFF TIME (min)	DIFF Hg (mm)	DIFF H2O (in.)
1	NA	NA	1.00	1.3870	3.2	2.0
2	NA	NA	1.00	0.9830	6.4	4.0
3	NA	NA	1.00	0.8780	7.9	5.0
4	NA	NA	1.00	0.8350	8.9	5.5
5	NA	NA	1.00	0.6900	12.9	8.0

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)		Va	(x axis) Qa	(y axis)
0.9917 0.9873 0.9853 0.9841 0.9787	0.7150 1.0044 1.1222 1.1785 1.4184	1.4113 1.9959 2.2315 2.3405 2.8227		0.9957 0.9913 0.9893 0.9881 0.9827	0.7179 1.0085 1.1268 1.1833 1.4242	0.8874 1.2549 1.4030 1.4715 1.7747
Qstd slc intercep coeffici	ot (b) = .ent (r) =	2.00506 -0.02062 0.99998	Ta) 1	Qa slop intercep coeffici	t (b) =	1.25553 -0.01297 0.99998

CALCULATIONS

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

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

For subsequent flow rate calculations:

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

Certificate No.: C113270

Certificate of Calibration

This is to certify that the equipment

Description: Sound Level Meter

Manufacturer: Rion

Model No.: NL-31

Serial No.: 00410224

has been calibrated for the specific items and ranges. The results are shown in the Calibration Report No. C113270.

The equipment is supplied by

Co. Name: Envirotech Services Co.

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

Date of Issue: 10 June 2011

Certified by: Un An Chan

Certificate No.: C106297

Certificate of Calibration

This is to certify that the equipment

Description: Integrating Sound Level Meter

Manufacturer: Bruel & Kjaer

Model No.: 2238

Serial No.: 2448529

has been calibrated for the specific items and ranges. The results are shown in the Calibration Report No. C106297.

The equipment is supplied by

Co. Name: Hyder Consulting Limited

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

Date of Issue: 16 November 2010

Certified by:



Certificate No. 07436

Page 1 of 3 Pages

Customer: Hyder Consulting Limited

Address: 47/F., Hopewell Centre, 183 Queens Road East, Wanchai, Hong Kong

Order No.: Q02884 Date of receipt: 28-Dec-10

Item Tested

Description : Sound Level Meter

Manufacturer: B&K

Model : 2238 Serial No. : 2562782

Test Conditions

Date of Test: 29-Dec-10 Supply Voltage : --

Ambient Temperature : $(23 \pm 3)^{\circ}$ C Relative Humidity : (50 ± 25) %

Test Specifications

Calibration check.

Ref. Document/Procedure: Z01.

Test Results

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

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

Main Test equipment used:

Equipment No.DescriptionCert. No.Traceable toS017AMulti-Function Generator07279SCL-HKSAR

S024 Sound Level Calibrator 04062 NIM-PRC & SCL-HKSAR

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

The test equipment used for calibration are traceable to International System of Units (SI).

The test results apply to the above Unit-Under-Test only

Calibrated by :

P. F. Wong

Approved by :

30-Dec-10

Dorothy Cheuk

This Certificate is issued by:

Hong Kong Calibration Ltd.

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

Tel: 2425 8801 Fax: 2425 8646

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Certificate No. 07436 Page 2 of 3 Pages

Results:

1. SPL Accuracy

UUT Setting			Applied Value	UUT Reading	
Range	Freq. Wgt.	Bandwith	Center Freq.	(dB)	(dB)
20 ~ 100	A	BB/F		94.0	94.1
	A	BB/S			94.1
	C	BB/F			94.0
40 ~ 120	A	BB/F		94.0	94.1
	A	BB/F		114.0	113.9

IEC 651 Type 1 Spec. : \pm 0.7 dB

Uncertainty: $\pm 0.1 \text{ dB}$

2. Level Stability: 0.0 dB

IEC 651 Type 1 Spec. : ± 0.3 dB

Uncertainty: ± 0.01 dB

3. Linearity

3.1 Level Linearity

UUT Range	Applied	UUT Reading	Variation	IEC 651 Type 1 Spec.
(dB)	Value (dB)	(dB)	(dB)	(Primary Indicator Range)
140	114.0	114.3	+0.2	± 0.7 dB
130	104.0	104.3	+0.2	
120	94.0	94.1 (Ref.)		
110	84.0	83.9	-0.2	
100	74.0	73.9	-0.2	
90	64.0	63.9	-0.2	
80	54.0	54.2	+0.1	

Uncertainty: ± 0.1 dB



Certificate No. 07436

Page 3 of 3 Pages

3.2 Differential level linearity

UUT Range (dB)	Applied Value (dB)	UUT Reading (dB)	Variation (dB)	IEC 651 Type 1 Spec.
120	84.0	83.9	-0.2	± 0.4 dB
	94.0	94.1 (Ref.)	1.0	
A 4	95.0	95.1	0.0	± 0.2 dB

Uncertainty: ± 0.1 dB

4. Frequency Weighting

A weighting

Frequency	Attenuat	ion (dB)	IEC 651 Type 1 Spec.
31.5 H	z -40	0.0	$-39.4 \text{ dB}, \pm 1.5 \text{ dB}$
63 Hz	-26	5.7	- 26.2 dB, ± 1.5 dB
125 Hz	z -16	5.6	- 16.1 dB, ± 1 dB
250 Hz	z -9	.1	- 8.6 dB, ± 1 dB
500 H:	-3	.5	- 3.2 dB, ± 1 dB
1 kH	z 0	.0 (Ref)	$0 \text{ dB}, \pm 1 \text{ dB}$
2 kH:	z +1	.5	+ 1.2 dB, ± 1 dB
4 kH:	z +1	.3	+ 1.0 dB, ± 1 dB
8 kH:	z -0	.7	- 1.1 dB , + $1.5 \text{ dB} \sim -3 \text{ dB}$
16 kH:	z -6	.3	- $6.6 \text{ dB}, +3 \text{ dB} \sim -\infty$

Uncertainty: ± 0.1 dB

5. Time Averaging

Applied Burst duty Factor	Applied Leq Value (dB)	UUT Reading (dB)	IEC 804 Type 1 Spec.
continuous	40.0	40.0	
1/10	40.0	39.9	± 0.5 dB
$1/10^2$	40.0	40.0	
$1/10^3$	40.0	40.5	± 1.0 dB
$1/10^4$	40.0	41.0	

Uncertainty: ± 0.1 dB

Remarks: 1. UUT: Unit-Under-Test

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

3. Atmospheric pressure: 1 012 hPa.



Certificate No. 07437

Page 1 of 2 Pages

Customer: Hyder Consulting Limited

Address: 47/F., Hopewell Centre, 183 Queens Road East, Wanchai, Hong Kong

Order No.: Q02884 Date of receipt :

Item Tested

Description : Sound Level Calibrator

Manufacturer: B&K

Model: Type 4231

Serial No.

: 2699361

28-Dec-10

Test Conditions

Date of Test: 29-Dec-10

Supply Voltage : --

Ambient Temperature:

(23 ± 3)°C

Relative Humidity: (50 ± 25) %

Test Specifications

Calibration check.

Ref. Document/Procedure: F21, Z02.

Test Results

All results were within the IEC 942 Class 1 specification.

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

Main Test equipment used:

Equipment No	. <u>Description</u>	Cert. No.	Traceable to
S014	Spectrum Analyzer	03926	NIM-PRC & SCL-HKSAR
S024	Sound Level Calibrator	04062	NIM-PRC & SCL-HKSAR
S041	Universal Counter	04461	SCL-HKSAR
S206	Sound Level Meter	04462	SCL-HKSAR

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

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

Calibrated by :

P. F. Wong

Approved by:

30-Dec-10

Dorothy Cheuk

This Certificate is issued by:

Hong Kong Calibration Ltd.

Date:

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



Certificate No. 07437

Page 2 of 2 Pages

Results:

1. Level Accuracy

UUT Nominal Value (dB)	Measured Value (dB)	IEC 942 Class 1 Spec.
94	94.02	± 0.3 dB
114	114.10	

Uncertainty: $\pm 0.1 \text{ dB}$

2. Frequency

UUT Nominal Value	Measured Value	IEC 942 Class 1 Spec.
1 kHz	1.000 kHz	± 2 %

Uncertainty: $\pm 3.6 \times 10^{-6}$

3. Level Stability: 0.0 dB

IEC 942 Class 1 Spec. : ± 0.1 dB

Uncertainty: ± 0.01 dB

4. Total Harmonic Distortion : < 0.5 %

IEC 942 Class 1 Spec. : < 3 % Uncertainty : ± 2.3 % of reading

Remark: 1. UUT: Unit-Under-Test

- 2. The above measured values are the mean of 3 measurement.
- 3. The uncertainty claimed is for a confidence probability of not less than 95%.
- 4. Atmospheric Pressure: 1012 hPa.

----- END -----

Work Order:

HK1111927

Date of Issue:

27/05/2011

Client:

HYDER CONSULTING LTD



Description:

Hand - Held pH Meter

Brand Name: Model No.: DKK-TOA HM20P

Serial No.:

641485

Equipment No.: Date of Calibration:

26 May, 2011

Date of next Calibration:

26 August, 2011

Parameters:

pH Value

Method Ref: APHA (21st edition), 4500H:B

Expected Reading (pH Unit)	Displayed Reading (pH Unit)	Tolerance (pH unit)
4.00	3.87	-0.13
7.00	7.10	0.10
10.00	9.93	-0.07
	Tolerance Limit (±unit)	0.20

Temperature

Method Ref: Section 6 of International Accreditation New Zealand Technical

Guide No. 3 Second edition March 2008: Working Thermometer Calibration Procedure.

Reading of Ref. thermometer (°C)	Displayed Reading (°C)	Tolerance (°C)
12.0	11.6	-0.4
26.0	25.0	-1.0
41.0	40.1	-0.9
	Tolerance Limit (°C)	2.0

Mr. Fung Lim Chee, Richard General Manager –

Greater China & Hong Kong

Work Order: HK1113227
Date of Issue: 14/06/2011

Client: HYDER CONSULTING LTD



Description: DO Meter Brand Name: YSI Model No.: 55/12 Serial No.: 95J38390

Equipment No.: --

Date of Calibration: 14 June, 2011 Date of next Calibration: 14 September, 2011

Parameters:

Dissolved Oxygen Method Ref: APHA (21st edition), 4500O: G

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)
1.72	1.91	0.19
4.39	4.34	-0.05
5.52	5.32	-0.20
7.89	7.89	0.00
	Tolerance Limit (±mg/L)	0.20

Temperature Method Ref: Section 6 of International Accreditation New Zealand Technical

Guide No. 3 Second edition March 2008: Working Thermometer Calibration Procedure.

Reading of Ref. thermometer (°C)	Displayed Reading (°C)	Tolerance (°C)
14.0	13.3	-0.7
24.0	23.3	-0.7
34.0	33.3	-0.7
	Tolerance Limit (°C)	2.0

Mr Chan Kwok Fai, Godfrey Laboratory Manager - Hong Kong

Work Order: Date of Issue: HK1113457 17/06/2011

Client:

HYDER CONSULTING LTD



Description: Brand Name: Turbidity Meter Eutech Instruments

Model No.:

TN-100 215619

Serial No.: Equipment No.:

Date of Calibration:

17 June, 2011

Date of next Calibration:

17 September, 2011

Parameters:

Turbidity

Method Ref: ALPHA 21st Ed. 2130B

Expected Reading (NTU)	Displayed Reading (NTU)	Tolerance (%)
0.00	0.16	-22
4.00	4.28	7.0
40.0	36.5	-8.8
80.0	73.4	-8.2
400	419	4.8
800	736	-8.0
	Tolerance Limit (±%)	10.0

Mr Chan Kwok Fal, Godfrey Laboratory Manager – Hong Kong

Work Order:

HK1116490

Date of Issue:

19/07/2011

Client:

HYDER CONSULTING LTD



Description:

pH Meter

Brand Name:

Hanna

Model No.: Serial No.:

Hanna HI-8014 SN 08345212

Equipment No.:

N/A

Date of Calibration: 19 July, 2011

Date of next Calibration:

19 October, 2011

Parameters:

pH Value

Method Ref: APHA (21st edition), 4500H:B

Expected Reading (pH Unit)	Displayed Reading (pH Unit)	Tolerance (pH unit)
	2.22	0.04
4.00	3.99	-0.01
7.00	7.06	0.06
10.00	9.96	-0.04
× 12	Tolerance Limit (±unit)	0.20

Mr Chan Kwok Fail Godfrey Laboratory Manager - Hong Kong

ALS Technichem (HK) Pty Ltd **ALS Environmental**



Appendix G

Monitoring Locations

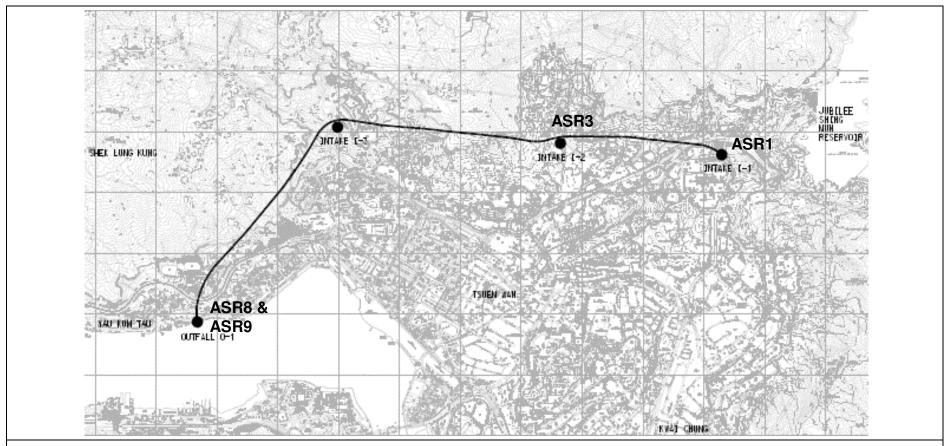


Figure 1 Air Quality Monitoring Stations

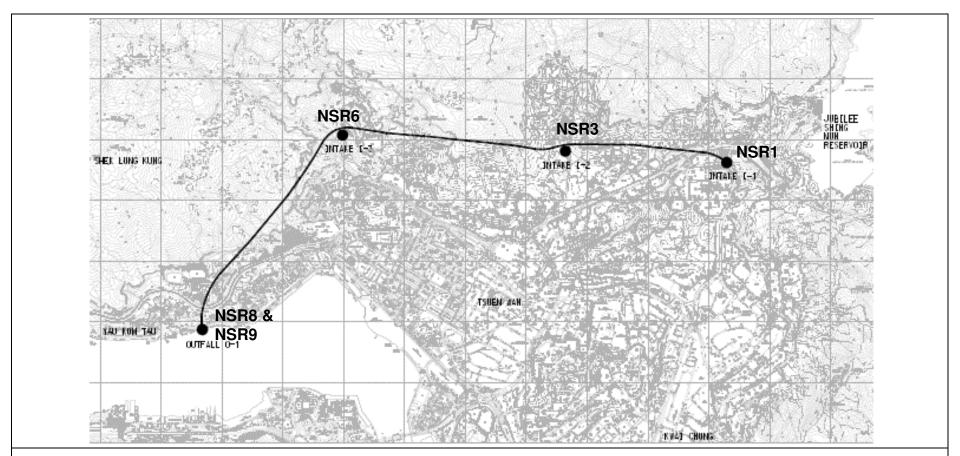


Figure 2 Noise Monitoring Stations

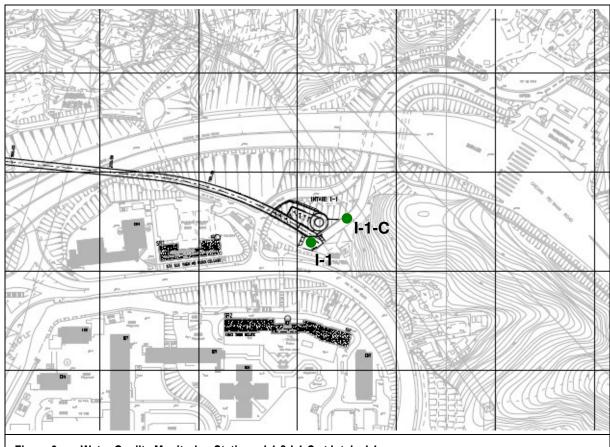
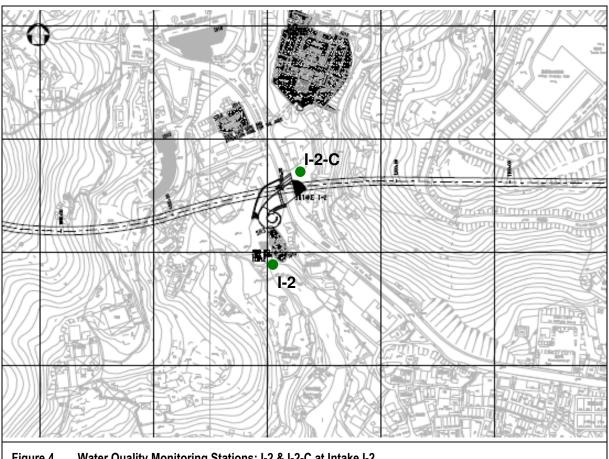
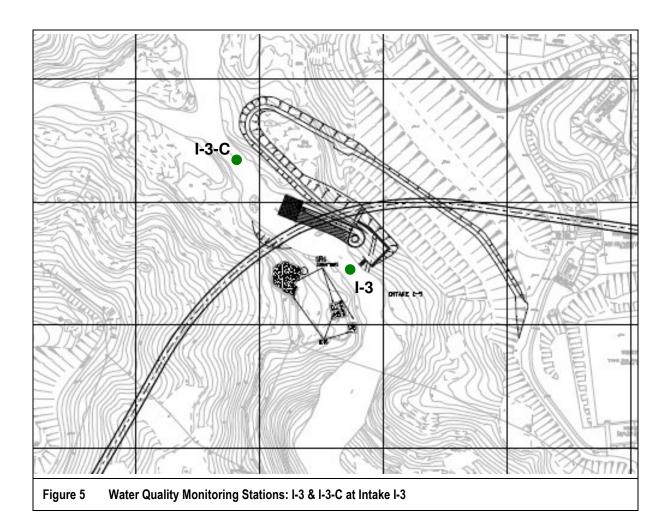


Figure 3 Water Quality Monitoring Stations: I-1 & I-1-C at Intake I-1



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



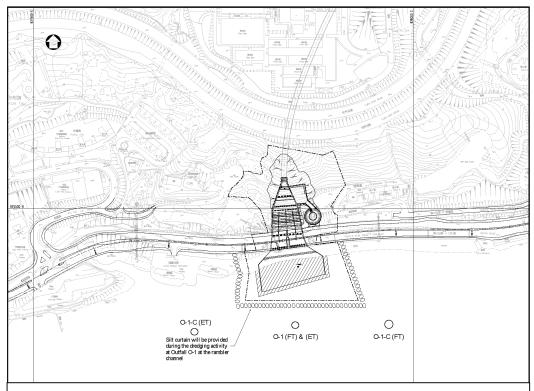
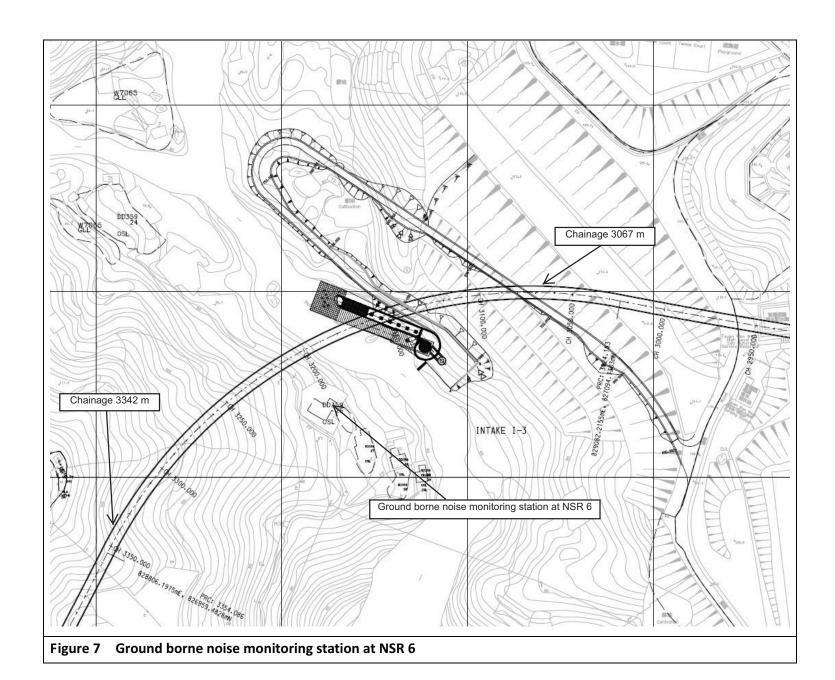


Figure 6 Water Quality Monitoring Stations: O-1 (FT) & (ET), O-1-C(FT) & O-1-C(FT) at Outfall O-1



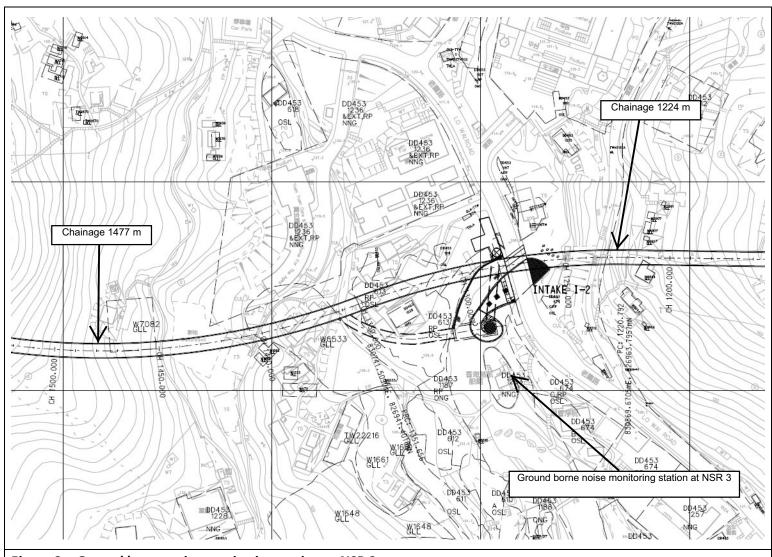


Figure 8 Ground borne noise monitoring station at NSR 3



Appendix H

EM&A Schedule

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

Impact Monitoring Programme - July 11

Date		Air	Noise	Water
01-Jul-11	Fri			
02-Jul-11	Sat			✓
03-Jul-11	Sun			
04-Jul-11	Mon			✓
05-Jul-11	Tue			
06-Jul-11	Wed	✓	✓	✓
07-Jul-11	Thu			
08-Jul-11	Fri			✓
09-Jul-11	Sat			
10-Jul-11	Sun			
11-Jul-11	Mon			✓
12-Jul-11	Tue	✓	✓(NSR 1, 3, 8, 9) [@]	
13-Jul-11	Wed			✓
14-Jul-11	Thu		√(NSR 6) [@]	
15-Jul-11	Fri		√(NSR 6)^	✓
16-Jul-11	Sat			
17-Jul-11	Sun			
18-Jul-11	Mon	✓	✓	✓
19-Jul-11	Tue			
20-Jul-11	Wed		√(NSR 6)^	✓
21-Jul-11	Thu			
22-Jul-11	Fri	✓		✓
23-Jul-11	Sat			
24-Jul-11	Sun			
25-Jul-11	Mon			✓
26-Jul-11	Tue			
27-Jul-11	Wed			✓
28-Jul-11	Thu	✓	✓	
29-Jul-11	Fri			√ #
30-Jul-11	Sat		√(NSR 6)^	
31-Jul-11	Sun			

Note:

Shaded area indicates public holiday.

Air – Monitoring 1-hour TSP is undertaken three times per every six days

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

Water -Water quality monitoring is undertaken three times per week

- # Marine water quality monitoring was cancelled due to the adverse weather condition (tropical cyclone warning No. 3)
- @ Noise Monitoring at NSR 6 on 12 July 2011 was re-scheduled on 14 July 2011 due to rainfall.

^{^ -} Additional Noise Monitoring

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

Impact Monitoring Programme – August 11 (Tentative)

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

Note:

Shaded area indicates public holiday.

Air – Monitoring 1-hour TSP is undertaken three times per every six days

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

Water -Water quality monitoring is undertaken three times per week

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

Impact Monitoring Programme – September 11 (Tentative)

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

Note:

Shaded area indicates public holiday.

Air – Monitoring 1-hour TSP is undertaken three times per every six days

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

Water -Water quality monitoring is undertaken three times per week

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

Impact Monitoring Programme – October 11 (Tentative)

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

Shaded area indicates public holiday.

Air – Monitoring 1-hour TSP is undertaken three times per every six days

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

Water -Water quality monitoring is undertaken three times per week

k:\eb000364 tsuen wan drainage tunnel\f-reports\monitoring schedule\monitoring_schedule jul11-oct11.docx



Appendix I

Monitoring Results

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

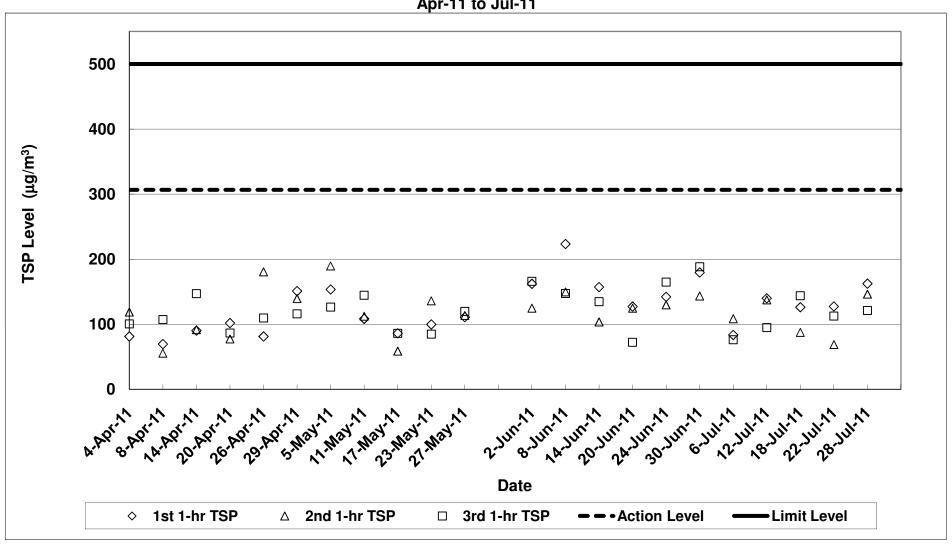
Air Quality Impact Monitoring Results (1-Hour TSP)

Location	Monitoring Date	Weather Conditions	Wind Speed with Direction (m/s)	Temp (°C)	Timer-I	Timer-F	Time (mins)	Flow-I (CFM)	Flow-F (CFM)	Flow-I (m³/min)	Flow-F (m³/min)	Flow-avg (m³/min)	Volume (m³)	Weight-I (g)	Weight-f (g)	Weight-diff. (g)	1-hr TSP (µg/m³)	Average 1-Hr TSP (µg/m³)	Action/Limit Levels	Observation / Site Condition	Other possible dust sources
		Sunny	0.3W	31	616642	616742	60.0	40	40	1.34	1.34	1.34	80.13	3.0620	3.0687	0.0067	83.6		(Jasjiii)		
	06-Jul-11	Sunny	0.3W	31	616742	616842	60.0	40	40	1.34	1.34	1.34	80.13	3.0396	3.0483	0.0087	108.6	89.4		Crane operation and rock breaking	Vehicles
		Sunny	0.3W	31	616842	616942	60.0	40	40	1.34	1.34	1.34	80.13	3.0611	3.0672	0.0061	76.1				
	12-Jul-11	Rainy Rainy	0.3W 0.3W	28 28	616942 617042	617042 617142	60.0 60.0	40 40	40 40	1.33	1.33	1.33	79.99 79.99	2.8237	2.8349 2.8140	0.0112 0.0110	140.0 137.5	124.2		Crane operation and concrete works	Vehicles
		Rainy	0.3W	28	617142	617242	60.0	40	40	1.33	1.33	1.33	79.99	2.7896	2.7972	0.0076	95.0				
		Cloudy	0.3E	29	617242	617342	60.0	40	40	1.33	1.33	1.33	79.99	2.7750	2.7851	0.0101	126.3				
	18-Jul-11	Cloudy	0.3E	29	617342	617442	60.0	40	40	1.33	1.33	1.33	79.99	2.7745	2.7815	0.0070	87.5	119.2		Crane operation and concrete works	Vehicles
Sik Sik Yuen Ho Fung College - Intake (ASR1)		Cloudy	0.3E 0.3W	29 30	617442 617542	617542 617642	60.0	40	40	1.33	1.33	1.33	79.99 79.99	2.7715	2.7830	0.0115	143.8 127.5		306.6/500		
	22-Jul-11	Sunny	0.3W	30	617642	617742	60.0	40	40	1.33	1.33	1.33	79.99	2.7999	2.8054	0.0055	68.8	102.9		Crane operation and concrete works	Vehicles
		Sunny	0.3W	30	617742	617842	60.0	40	40	1.33	1.33	1.33	79.99	2.8210	2.8300	0.0090	112.5				
		Sunny	0.3E	32	617842	617942	60.0	40	40	1.33	1.33	1.33	79.99	2.7930	2.8060	0.0130	162.5				
	28-Jul-11	Sunny	0.3E 0.3E	32 32	617942 618042	618042 618142	60.0	40 40	40 40	1.33	1.33	1.33	79.99 79.99	2.8186	2.8303 2.7946	0.0117	146.3 121.3	143.4		Crane operation and concrete works	Vehicles
		Suriny	0.3E	32	010042	010142	60.0	40	40	1.33	1.33	1.33	79.99	2.7649	2.7946	0.0097	121.3				
	-	-	-	-	-	-	-	-	-	-		-	-	-		-		-			
		-	-	-	-			-	-		-	-	-		-	-					
		Sunny	0.3W	31	585190	585290	60.0	40	40	1.33	1.33	1.33	79.63	3.0486	3.0576	0.0090	113.0	440.0		D 11 1 11 11 11 11 11 11 11 11 11 11 11	
	06-Jul-11	Sunny	0.3W 0.3W	31	585290 585390	585390 585490	60.0	40	40	1.33	1.33	1.33	79.63 79.63	3.0441	3.0531	0.0090	113.0 130.6	118.9		Rocking breaking and drilling	Vehicles
		Rainy	0.2W	28	585490	585590	60.0	40	40	1.31	1.31	1.31	78.78	2.7985	2.8083	0.0098	124.4				
	12-Jul-11	Rainy	0.2W	28	585590	585690	60.0	40	40	1.31	1.31	1.31	78.78	2.8003	2.8090	0.0087	110.4	114.2		Crane operation and drilling	Vehicles
		Rainy	0.2W	28	585690	585790	60.0	40	40	1.31	1.31	1.31	78.78	2.8025	2.8110	0.0085	107.9				
	18-Jul-11	Cloudy	0.2E	29	585790	585890	60.0	40	40	1.31	1.31	1.31	78.78	2.7935	2.8029	0.0094	119.3	118.1		Rock breaking and drilling	Vehicles
Hong Hoi Chee Hong	10-Jul-11	Cloudy	0.2E 0.2E	29 29	585890 585990	585990 586090	60.0	40 40	40	1.31	1.31	1.31	78.78 78.78	2.7692 2.7720	2.7755 2.7842	0.0063 0.0122	80.0 154.9	110.1		nock breaking and drilling	Verilcles
Temple - Intake (ASR3)		Sunny	0.3W	30	586090	586190	60.0	40	40	1.31	1.31	1.31	78.78	2.8032	2.8107	0.0075	95.2		327.4/500		
	22-Jul-11	Sunny	0.3W	30	586190	586290	60.0	40	40	1.31	1.31	1.31	78.78	2.8044	2.8160	0.0116	147.2	114.2		Crane operation and drilling	Vehicles
		Sunny	0.3W	30	586290	586390	60.0	40	40	1.31	1.31	1.31	78.78	2.8188	2.8267	0.0079	100.3				
	28-Jul-11	Sunny	0.2E 0.2E	32 32	586390 586490	586490 586590	60.0 60.0	40	40	1.31	1.31	1.31	78.78 78.78	2.7955	2.8047 2.8200	0.0092	116.8 115.5	103.2			Vehicles
	20-Jul-11	Sunny	0.2E	32	586590	586690	60.0	40	40	1.31	1.31	1.31	78.78	2.8109	2.8200	0.0091	77.4	103.2		Crane operation and drilling	Verlicies
		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
	-	-	-	-		-	-	-	-		-			-	-	-					
		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
	06-Jul-11	Sunny	0.5W 0.5W	31	579334 579434	579434 579534	60.0	40 40	40 40	1.28	1.28	1.28	77.01 77.01	3.0556 3.0387	3.0662	0.0106	137.6 131.2	123.4		Crane operation and rock breaking	Vehicles
	00-301-11	Sunny	0.5W	31	579534	579534	60.0	40	40	1.28	1.28	1.28	77.01	3.0387	3.0488	0.0101	101.3	123.4		Craile operation and rock breaking	
		Rainy	0.3W	28	579634	579734	60.0	40	40	1.28	1.28	1.28	76.59	3.0355	3.0445	0.0090	117.5				
	12-Jul-11	Rainy	0.3W	28	579734	579834	60.0	40	40	1.28	1.28	1.28	76.59	2.8070	2.8160	0.0090	117.5	136.7		Crane operation and excavator	Vehicles
		Rainy	0.3W	28	579834	579934	60.0	40	40	1.28	1.28	1.28	76.59	2.8090	2.8224	0.0134	175.0				
	18-Jul-11	Cloudy	0.3E 0.3E	29 29	579934 580034	580034 580134	60.0	40 40	40 40	1.28	1.28	1.28	76.59 76.59	2.8231	2.8303 2.8220	0.0072	94.0 53.5	95.3		Crane operation and excavator	Vehicles
Long Beach Gardens -	10 001 11	Cloudy	0.3E	29	580134	580234	60.0	40	40	1.28	1.28	1.28	76.59	2.8060	2.8166	0.0106	138.4	55.5	000 01500	Grand operation and excurvator	Cinolog
Outfall (ASR8)		Sunny	0.3W	30	580234	580334	60.0	40	40	1.28	1.28	1.28	76.59	2.8056	2.8130	0.0074	96.6		336.6/500		
	22-Jul-11	Sunny	03W	30	580334	580434	60.0	40	40	1.28	1.28	1.28	76.59	2.7916	2.7960	0.0044	57.4	74.4		Crane operation and excavator	Vehicles
		Sunny	0.3W 0.5E	30	580434 580534	580534 580634	60.0	40	40	1.28	1.28	1.28	76.59 76.59	2.8057	2.8110 2.7967	0.0053 0.0106	69.2 138.4				
	28-Jul-11	Sunny	0.5E	32 32	580534	580534	60.0	40	40	1.28	1.28	1.28	76.59	2.7861 2.7769	2.7967	0.0106	138.4	120.1		Crane operation and excavator	Vehicles
		Sunny	0.5E	32	580734	580834	60.0	40	40	1.28	1.28	1.28	76.59	2.7737	2.7795	0.0058	75.7				
		-	-	-	-	-					-				-	-					
	-	-	-	-	-	-	-	-	-	-	-		-		-	ļ	1	-			
 		Sunny	0.5W	31	572180	572280	60.0	40	40	1.25	1.25	1.25	75.08	3.0677	3.0769	0.0092	122.5				
	06-Jul-11	Sunny	0.5W	31	572280	572380	60.0	40	40	1.25	1.25	1.25	75.08	3.0527	3.0646	0.0119	158.5	145.6		Crane operation and rock breaking	Vehicles
		Sunny	0.5W	31	572380	572480	60.0	40	40	1.25	1.25	1.25	75.08	3.0473	3.0590	0.0117	155.8				
	12-Jul-11	Rainy	0.3W	28	572480	572580	60.0	40	40	1.24	1.24	1.24	74.34	3.0552	3.0657	0.0105	141.2	176.2		C	Vehicles
	12-301-11	Rainy Rainy	0.3W 0.3W	28	572580 572680	572680 572780	60.0	40	40	1.24	1.24	1.24	74.34 74.34	3.0376 3.0451	3.0525	0.0149	200.4 187.0	170.2		Crane operation and excavator	YOURGO
		Cloudy	0.3E	29	572780	572880	60.0	40	40	1.24	1.24	1.24	74.34	2.7962	2.8085	0.0123	165.4				
	18-Jul-11	Cloudy	0.3E	29	572880	572980	60.0	40	40	1.24	1.24	1.24	74.34	2.8045	2.8162	0.0117	157.4	143.5		Crane operation and excavator	Vehicles
Greenview Terrance -		Cloudy	0.3E	29	572980	573080	60.0	40	40	1.24	1.24	1.24	74.34	2.8048	2.8128	0.0080	107.6		329.2/500		
Outfall (ASR9)	22-Jul-11	Sunny	0.3W	30	573080	573180	60.0	40	40	1.24	1.24	1.24	74.34 74.34	2.7903	2.8051	0.0148	199.1	131.8		Crane eneration and eventurity	Vahiolon
	22-JUI-11	Sunny	0.3W 0.3W	30	573180 573280	573280 573380	60.0	40	40	1.24	1.24	1.24	74.34	2.7973	2.8068	0.0095 0.0051	127.8 68.6	131.0		Crane operation and excavator Vehicles	YOURGO
		Sunny	0.5E	32	573380	573480	60.0	40	40	1.24	1.24	1.24	74.34	2.7753	2.7962	0.0109	146.6		_		
	28-Jul-11	Sunny	0.5E	32	573480	573580	60.0	40	40	1.24	1.24	1.24	74.34	2.8072	2.8173	0.0101	135.9	124.6		Crane operation and excavator	Vehicles
		Sunny	0.5E	32	573580	573680	60.0	40	40	1.24	1.24	1.24	74.34	2.7795	2.7863	0.0068	91.5				
		-	-	-	-	-		-			-	-			-	-	-				
								-				-						-			
								•													

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

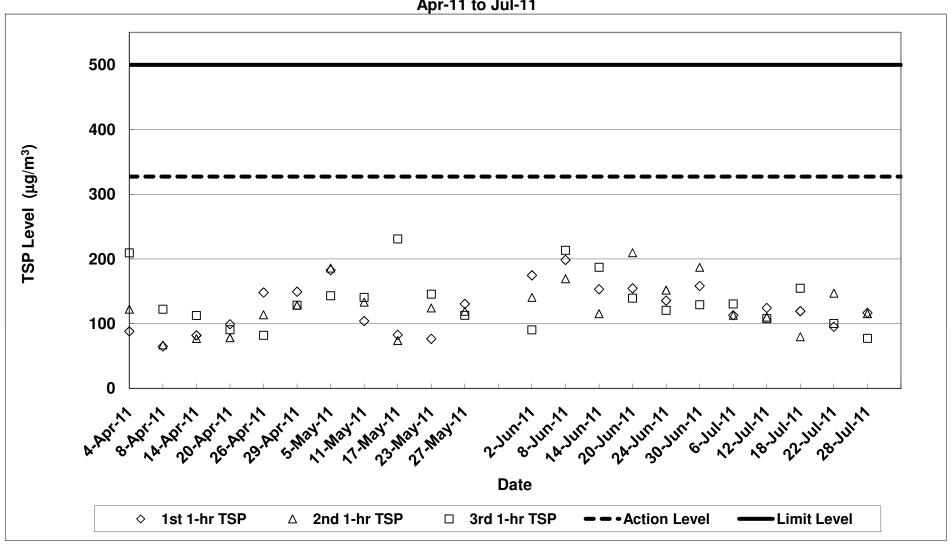
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel Air Quality Monitoring (1-hr TSP) Results at Sik Sik Yuen Ho Fung College - Intake (ASR1)

Apr-11 to Jul-11



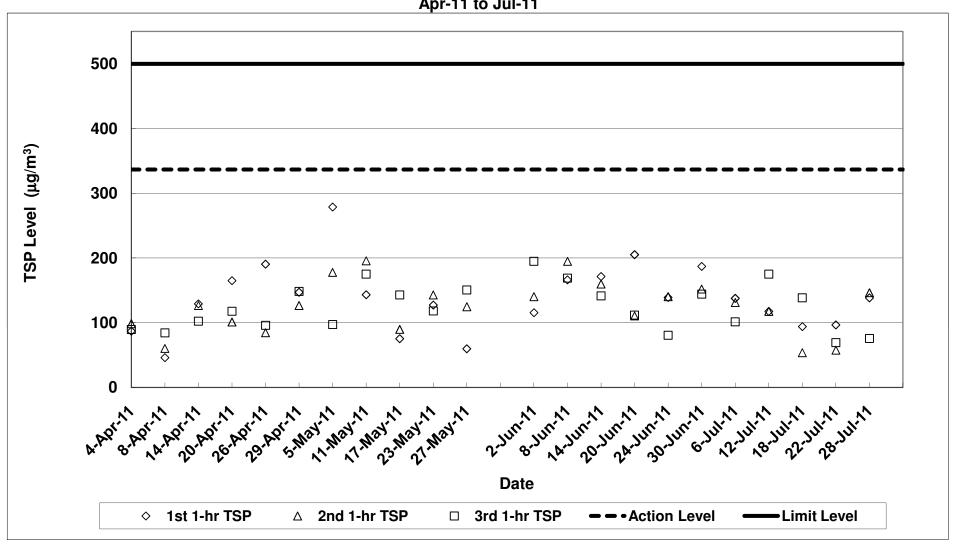
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel Air Quality Monitoring (1-hr TSP) Results at Hong Hoi Chee Hong Temple - Intake (ASR3)

Apr-11 to Jul-11



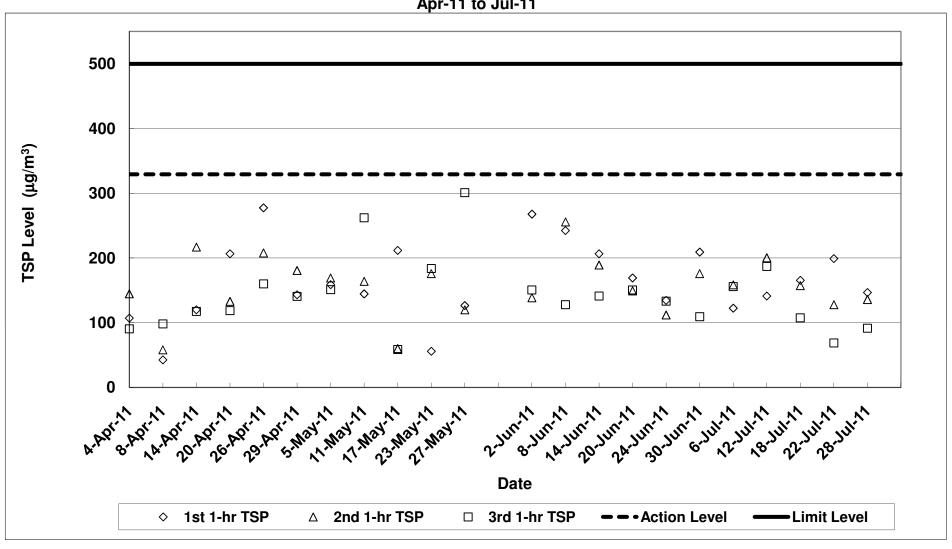
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel Air Quality Monitoring (1-hr TSP) Results at Long Beach Gardens - Outfall (ASR8)

Apr-11 to Jul-11



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)

Apr-11 to Jul-11



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

Noise Impact Monitoring Results

Monitoring Locations	Date	Weather	Temperature	Wind Speed	Wind	Start Time	End Time	BL ¹	LL ²	L _{eq(30min)}	L _{10(30min)}	L _{90(30min)}	CNL ³	Observation /	Other Noise Sources
		Conditions	(°C)	(m/s)	Direction			dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	Site Condition	
Sik Sik Yuen Ho Fung College	06-Jul-11	Sunny	31	0.3	W	17:04	17:34		70	63.9	66.5	59.1	-	Crane operation and rock breaking	Traffic noise and aircraft noise
NSR 1	12-Jul-11	Rainy#	28	0.3	W	16:13	16:43		70	64.4	66.6	61.1	-	Crane operation and concrete works	Traffic noise
	18-Jul-11	Cloudy	29	0.3	E	16:50	17:20	66.1	70	65.1	67.9	60.2	-	Crane operation and concrete works	Traffic noise and aircraft noise
	28-Jul-11	Sunny	32	0.3	Е	15:10	15:40		70	64.3	66.6	59.8	-	Crane operation and concrete works	Traffic noise and aircraft noise
	-	-	-	-	-	-	-		70		-	-	-		
Hong Hoi Chee Hong Temple	06-Jul-11	Sunny	31	0.3	W	16:25	16:55		75	63.8	65.4	59.7	-	Rock breaking and drilling	Traffic noise and aircraft noise
NSR 3	12-Jul-11	Rainy#	28	0.2	W	15:35	16:05		75	68.1	69.4	63.0	-	Crane operation and drilling	Traffic noise
	18-Jul-11	Cloudy	29	0.2	E	16:10	16:40	57.9	75	63.7	65.8	60.2	-	Drilling and rock breaking	Traffic noise and aircraft noise
	28-Jul-11	Sunny	32	0.2	E	14:28	14:58		75	63.8	66.3	59.5	-	Crane operation and drilling	Traffic noise and aircraft noise
	-	-	-	-	-	-	-		75		-	-	-		
Squatters	06-Jul-11	Sunny	31	0.2	W	11:17	11:47		75	60.0	62.5	55.7	-	Crane operation	Aircraft noise
NSR 6	14-Jul-11	Cloudy	27	0.3	E	16:00	16:30		75	67.0	69.4	59.7	-	Drilling and rock breaking	Aircraft noise
	*15-Jul-11	Rainy#	27	0.3	E	17:00	17:30	75	68.9	71.3	65.4	-	Drilling and rock breaking	Aircraft noise	
	18-Jul-11	Cloudy	29	0.2	E	13:30	14:00	61.2	75	65.7	67.9	60.3	-	Drilling and crane operation	Aircraft noise
	*20-Jul-11	Rainy#	27	0.3	E	13:10	13:40		75	68.1	70.2	64.9	-	Drilling and rock breaking	Aircraft noise
	28-Jul-11	Sunny	32	0.2	E	13:35	14:05		75	64.9	67.9	59.5	-	Drilling and excavation	Aircraft noise
	*30-Jul-11	Cloudy	28	0.5	E	09:10	09:40		75	63.6	66.0	59.6	-	Drilling and crane operation	Aircraft noise
Long Beach Gardens	06-Jul-11	Sunny	31	0.5	W	15:00	15:30		75	69.6	71.8	65.8	-	Crane operation and rock breaking	Traffic noise and aircraft noise
NSR 8	12-Jul-11	Rainy#	28	0.3	W	13:55	14:25		75	70.3	73.6	65.0	-	Crane operation and excavator	Traffic noise
	18-Jul-11	Cloudy	29	0.3	E	14:02	14:32	60.9	75	68.1	71.4	62.5	-	Crane operation and excavator	Traffic noise and aircraft noise
	28-Jul-11	Sunny	32	0.5	E	10:57	11:27		75	68.6	71.3	62.1	-	Crane operation and excavator	Traffic noise and aircraft noise
	-	-	-	-	-	-	-		75		-	-	-		
Greenview Terrace	06-Jul-11	Sunny	31	0.5	W	15:40	16:10		75	67.6	70.1	63.3	-	Crane operation and rock breaking	Traffic noise and aircraft noise
NSR 9	12-Jul-11	Rainy#	28	0.3	W	11:15	11:45		75	64.8	66.9	62.5	-	Crane operation and excavator	Traffic noise
	18-Jul-11	Cloudy	29	0.5	E	15:20	15:50	59.7	75	67.3	70.3	63.7	-	Crane operation and excavator	Traffic noise and aircraft noise
	28-Jul-11	Sunny	32	0.5	Е	10:10	10:40		75	66.4	67.4	63.9	-	Crane operation and excavator	Traffic noise and aircraft noise
	-	-	-	-	-	-	-		75	-	-	-	-		

^{1:} Baseline Noise Level
2: Limit Level
3: Corrected Noise Level

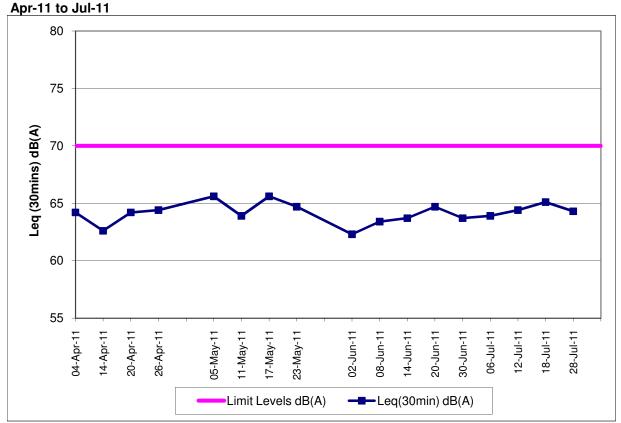
The limit level of NSR1 is 65dB(A) during school examination period.

Red Bold Indicates an exceedance of Limit Level

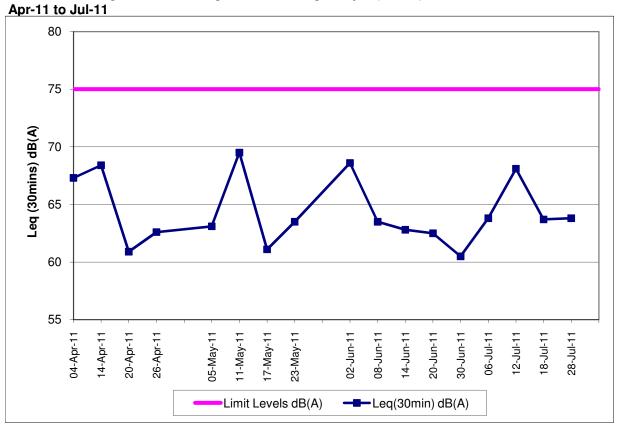
* means additional noise monitoring

Measurements were conducted during there was no rainfall

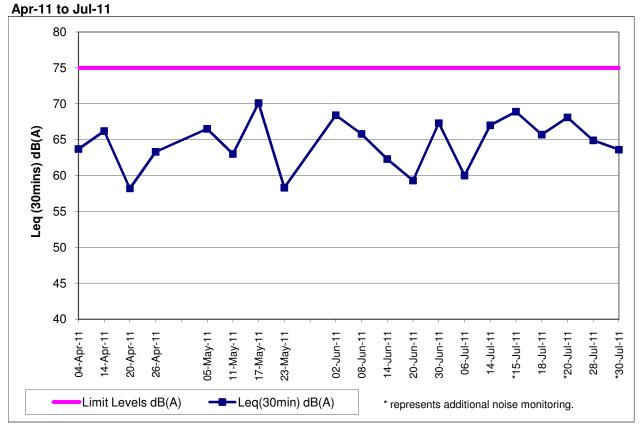
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel Noise Monitoring Results at Sik Sik Yuen Ho Fung College (NSR 1)



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

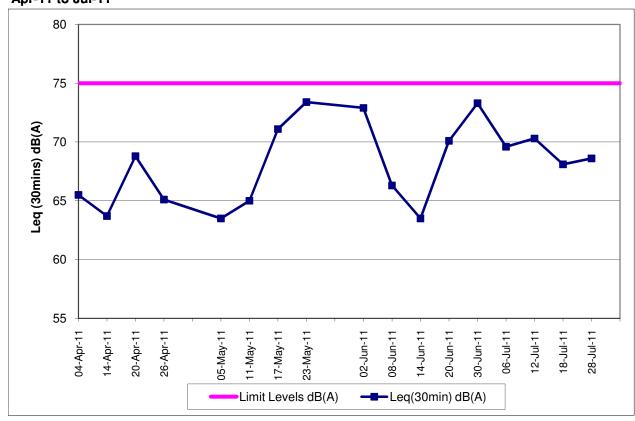


Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel Noise Monitoring Results at Squatters (NSR 6)

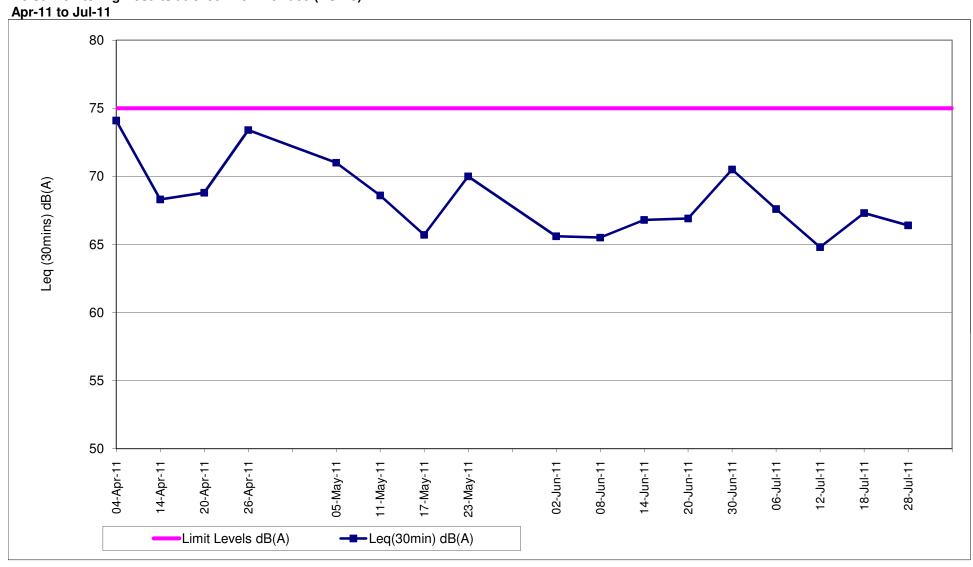


Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel Noise Monitoring Results at Long Beach Gardens (NSR 8)

Apr-11 to Jul-11



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



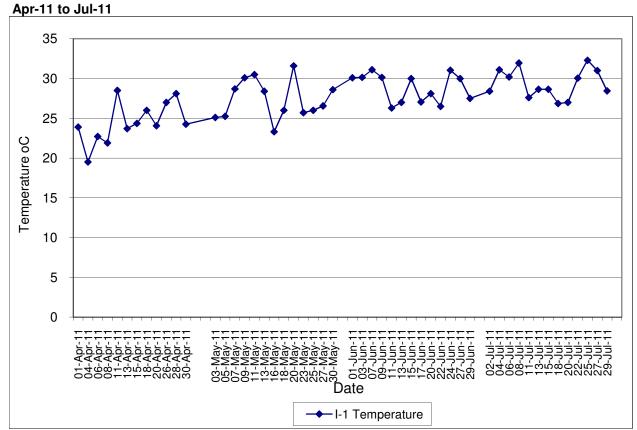
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel

Water Quality Impact Monitoring Results

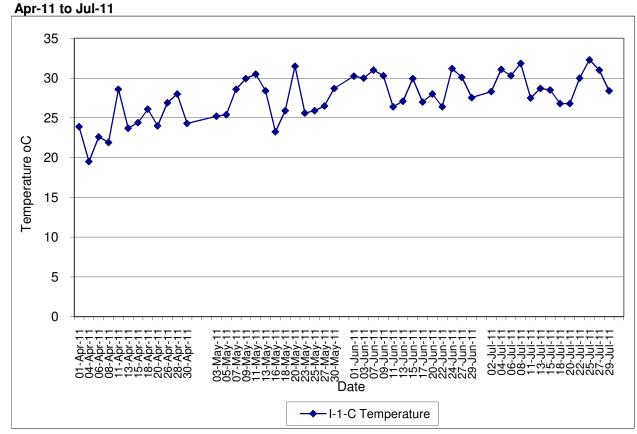
Monitoring Locations	Date	Sta		ther V			Temp			DO(mg/L		Action/Limit		pН			bidity(NTU		Action/Limit		SS (mg/L)		Action/Limit	Remarks:	Action to be taken
		Tin			Depth(m)			Avg				Level of DO(mg/L)		2					Level of Tby	1			Level of SS(mg/L)		
Sik Sik Yuen Ho Fung College	02-Jul-11				<1			28.40									2.55		L	<2.00	<2.00			Crane operation	Nil
I-1	04-Jul-11				<1			31.10					8.20			2.17		2.19	_	<2.00		<2.00		Crane operation	Nil
	06-Jul-11				<1			30.20 31.95						7.69			2.30		-	<2.00		<2.00		Crane operation and rock breaking	NII NEI
	08-Jul-11 11-Jul-11				<1 <1			27.60									2.46	2.49		<2.00 <2.00	<2.00 2.00	<2.00 2.00		Crane operation Crane operation	Nii
	13-Jul-11				<1			28.65		7.42			8.15					2.49		<2.00		<2.00		Crane operation	Nil
	15-Jul-11	10:	36 Rai		<1			28.65			7.29		8.36				4.74			2.70		2.35		Crane operation	Nil
	18-Jul-11	17:			<1			26.85				3.42 / 3.34		8.17			2.90		9.75 / 12.47	3.70		3.10	8.85 / 10.17	Crane operation and concrete works	Nil
	20-Jul-11				<1			27.00								16.43		16.42		13.00		13.90		Crane operation and concrete works	Nil
	22-Jul-11				<1			30.05						8.20		3.68	3.62	3.65		2.00		2.00		Crane operation and concrete works	Nil
	25-Jul-11	10:	20 Sur	nny	<1	32.30	32.30	32.30	6.91	6.96	6.94		8.33	8.33	8.33	2.04	2.02	2.03		<2.00	<2.00	<2.00		Crane operation and concrete works	Nil
	27-Jul-11				<1			31.00					8.29			3.02		3.04		<2.00		<2.00		Crane operation and concrete works	Nil
	29-Jul-11	10:	48 Clou	udy	<1	28.50	28.40	28.45	7.31	7.28	7.30		7.95	7.96	7.96	5.28	5.33	5.31		2.40	<2.00	2.20		Crane operation	Nil
	-	-	-			-	-	-						-	-		-	-		-	-	-			
Sik Sik Yuen Ho Fung College	02-Jul-11				<1			28.30						8.00		2.53		2.58		<2.00		<2.00		Nil	Nil
I-1-C	04-Jul-11				<1			31.10					8.20			2.33		2.26		<2.00	<2.00	<2.00		NII	NII
	06-Jul-11 08-Jul-11				<1 <1			30.30 31.85	7.40		7.39		7.69	8.30			2.41		-	<2.00 2.00		<2.00 2.00		NII NII	Nii
	11-Jul-11				<1			27.50						7.94		2.48		2.82	-	3.40		2.80		NII NII	Nii
	13-Jul-11				<1			28.70						8.14		2.61		2.60	H	<2.00		<2.00		Nil	Nil
	15-Jul-11				<1			28.50			7.37		8.37				4.86	4.88		2.00	3.00	2.50		Nil	Nil
	18-Jul-11				<1			26.80				- /-	8.16					3.00	- /-	2.30		2.15	- /-	Nil	Nil
	20-Jul-11				<1			26.80				1		8.34			18.02		l l	7.40		8.35		Nil	Nil
	22-Jul-11				<1	30.00	30.00	30.00	7.14	7.17	7.16	1		8.20		3.70		3.69		<2.00	<2.00	<2.00		Nil	Nil
	25-Jul-11				<1	32.30	32.30	32.30	6.83	6.89	6.86		8.33	8.33	8.33	2.07	2.10	2.09	l l	<2.00	<2.00	<2.00		Nil	Nil
	27-Jul-11				<1	31.00	31.00	31.00	7.04	7.07	7.06					3.08		3.11		<2.00		<2.00		Nil	Nil
	29-Jul-11	10:	35 Clou	udy	<1	28.40	28.40	28.40	7.22	7.24	7.23]	7.97	7.97	7.97	5.67	5.53	5.60		<2.00	<2.00	<2.00		Nil	Nil
	-	-	-		-	-	-	-	-	-	-		-	-	-	-	-	-		-	-	-			
Hong Hoi Chee Hong Temple	02-Jul-11				<1			28.05						8.07			2.01			5.00	<2.00			Crane operation and drilling	Nil
1-2	04-Jul-11							31.05				1					1.62			<2.00	<2.00			Crane operation and drilling	NII
	06-Jul-11				<1			30.75		7.10	7.11	ł					1.97	1.92		<2.00	<2.00	<2.00		Rock breaking and drilling	NII
	08-Jul-11				<1			31.90						8.40		5.02 1.90		4.96		2.50 <2.00	2.90 2.80	2.70		Orang operation and drilling	NII Nii
	11-Jul-11 13-Jul-11				<1 <1			27.40 28.60										1.89 2.60				2.40		Crane operation and drilling	Nii
	15-Jul-11				<1			28.50						8.20		4.18		4.21	-	2.70 <2.00		2.75 <2.00		Crane operation and drilling Crane operation and drilling	Nii
	18-Jul-11				<1			27.00				3.66 / 3.63	8.24					2.80	6.63 / 6.99	<2.00		2.15	7.68 / 8.34	Drilling and rock breaking	Nil
	20-Jul-11				<1			27.00						8.25			8.62			5.80		5.50		Crane operation and drilling	Nil
	22-Jul-11				<1			30.05									4.61			2.00		2.00		Crane operation and drilling	Nil
	25-Jul-11				<1			32.10						8.08		2.40		2.45		<2.00		<2.00		Crane operation and drilling	Nil
	27-Jul-11				<1			31.05									2.10	2.07		2.10		2.05		Crane operation and drilling	Nil
	29-Jul-11	10:	02 Clou	udy	<1	28.40	28.40	28.40	7.22	7.21	7.22		7.95	7.96	7.96	2.78	2.73	2.76		8.00	8.10	8.05		Crane operation and drilling	Nil
	-	-	-		-	-	-	-	-	-	-		-	-	-	-	-	-		-	-	-			
Hong Hoi Chee Hong Temple	02-Jul-11				<1			28.10		7.22				8.06				2.01		5.70		3.85		Nil	Nil
I-2-C	04-Jul-11				<1			31.00									1.66	1.63		<2.00		<2.00		Nil	Nil
	06-Jul-11				<1			30.80					7.74			1.90		1.92		<2.00	<2.00			Nil	Nil
	08-Jul-11				<1			31.70		7.04				8.40		4.90		4.94	_	3.10		2.55		NII	Nil
	11-Jul-11 13-Jul-11				<1			27.30 28.60						8.00		1.88 2.60		1.91 2.64	-	2.10 3.10		2.10 3.00		NII NII	NII Nii
	15-Jul-11				<1			28.40						8.20 8.33			4.27		-	<2.00		<2.00		NII NII	Nii
	18-Jul-11				<1			27.00				- /-		8.24				2.80	- /-	<2.00		<2.00	- /-	Nil	Nil
	20-Jul-11				<1			26.90						8.24				9.79		3.50		4.10		Nil	Nil
	22-Jul-11				<1			30.10									4.73			2.20	2.20	2.20		Nil	Nil
	25-Jul-11				<1			32.00					8.06	8.06			2.52			<2.00		<2.00		Nil	Nil
	27-Jul-11	11:	50 Sur	nny	<1	31.20	31.10	31.15	7.13	7.18	7.16		8.05		8.05	2.07	2.18	2.13		<2.00	2.00	2.00		Nil	Nil
	29-Jul-11	09:	45 Clou	udy	<1	28.40	28.40	28.40	7.21	7.26	7.24]	7.96	7.96	7.96	2.89	2.85	2.87		8.90	8.80	8.85		Nil	Nil
	-	-	-		-	-	-	-	-	-	-		- 1	-	-	-	-	-]		-	-	- 7			
Squatters	02-Jul-11				<1			28.55		7.40						8.86		8.90	<u> </u>	6.60	4.30	5.45		Crane operation and drilling	Nil
1-3	04-Jul-11				<1			31.20				ł		8.20			1.92			<2.00	<2.00			Crane operation and drilling	NII
	06-Jul-11 08-Jul-11				<1 <1			30.40									1.75 2.86			<2.00 <2.00	<2.00 <2.00	<2.00		Crane operation and drilling Crane operation and drilling	INII Nii
	11-Jul-11				<1			27.40				1				22.80		22.85		19.70	25.00	22.35		Crane operation and drilling Crane operation and drilling	Nil
	13-Jul-11				<1			28.70				1	8.03					1.46		<2.00	<2.00	<2.00		Crane operation and drilling Crane operation and drilling	Nil
I	15-Jul-11											0.05/55/				16.47		16.44				14.45	0.40.4===	Breaker and drilling	Nil
	18-Jul-11											3.65 / 3.51				1.99		2.01	3.99 / 4.18	<2.00	<2.00	<2.00	6.13 / 7.23	Drilling and breaker	Nil
	20-Jul-11	11:	00 Rai	iny	<1	27.10	27.10	27.10	7.31	7.38	7.35]					6.98				4.20			Crane operation and drilling	Nil
	22-Jul-11	14:	33 Sur	nny	<1	29.80	29.90	29.85	7.10	7.12	7.11		7.90	7.90	7.90	6.52	6.44	6.48	l l	<2.00	<2.00	<2.00		Crane operation and drilling	Nil
	25-Jul-11																1.88				<2.00			Crane operation and drilling	Nil
	27-Jul-11																1.77		[<2.00			Crane operation and drilling	Nil
1	29-Jul-11	08:	53 Clou	udy	<1					7.41	7.41		8.07	8.08		1.84	1.86	1.85		3.20	2.20	2.70		Crane operation and drilling	Nil
	-	-			-	-				-				-		-	-	-				-			
Squatters	02-Jul-11																9.07				6.50			Nil	Nil
I-3-C	04-Jul-11											1					1.98				<2.00			NII	NII
	06-Jul-11																1.74				<2.00			NII NEI	NII
	08-Jul-11																2.90				<2.00			IVII	NII Nii
	11-Jul-11 13-Jul-11	13:	10 Rai	iny	<1	27.30	27.30	27.30	5.81	5.87	5.84		7.92	7.92	7.92	23.40	23.30 1.52	23.35		23.60	25.80 2.10			IVII	NII Nii
	13-Jul-11 15-Jul-11																1.52							Nii	Nii
	15-Jul-11 18-Jul-11												8.25	8.25	8 25	1 98	2.04	2 01	- /-		16.20 <2.00		- /-	Nil	Nil
	20-Jul-11											1					7.09				3.90			Nil	Nil
	22-Jul-11											1					6.40				<2.00			Nil	Nil
	25-Jul-11	11:	33 Sur	nny	<1	32.70	32.70	32.70	6.77	6.74	6.76	1	8.18	8.18	8.18	1.90	1.87	1.89			<2.00			Nil	Nil
	27-Jul-11	13:	20 Sur	nny	<1	31.30	31.30	31.30	7.02	7.04	7.03	1	7.99	7.99	7.99	1.86	1.80	1.83			<2.00			Nil	Nil
	29-Jul-11					28.50	28.50	28.50	7.32	7.31							1.95				<2.00			Nil	Nil
	-				-			-					-	-	-	-	-	-		-	-	-			

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

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

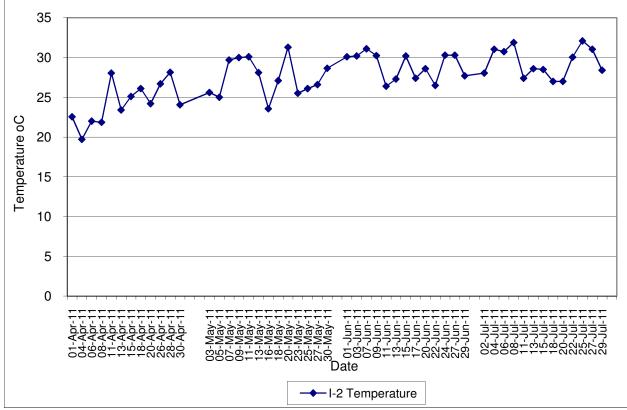


Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel Water Quality Results at Sik Sik Yuen Ho Fung College (I-1-C)

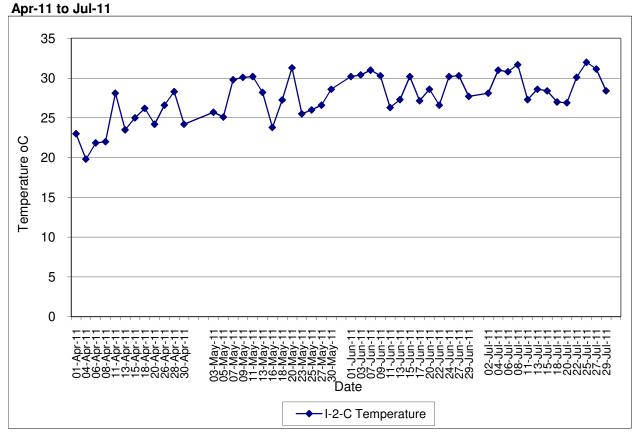


Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel Water Quality Results at Hong Hoi Chee Hong Temple (I-2)

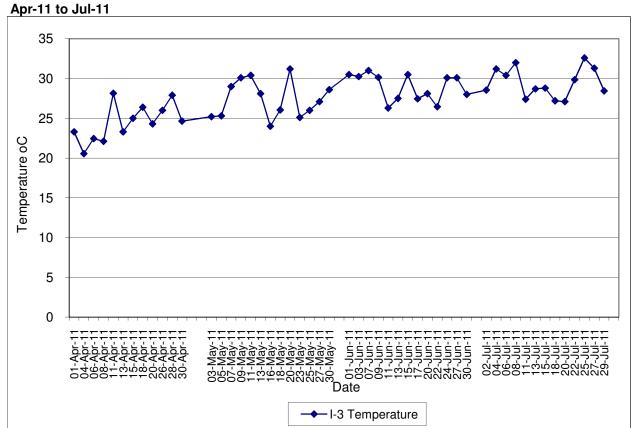




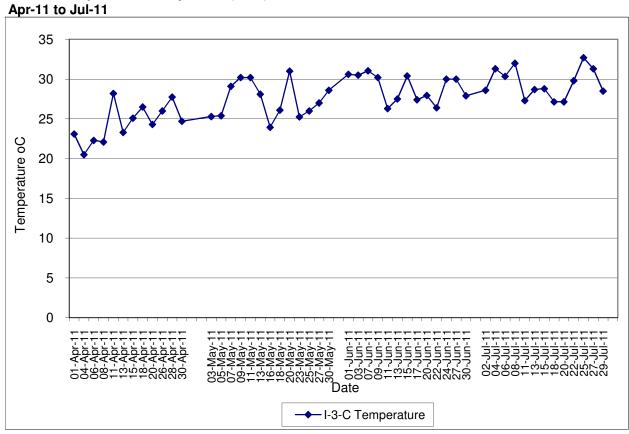
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel Water Quality Results at Hong Hoi Chee Hong Temple (I-2-C)



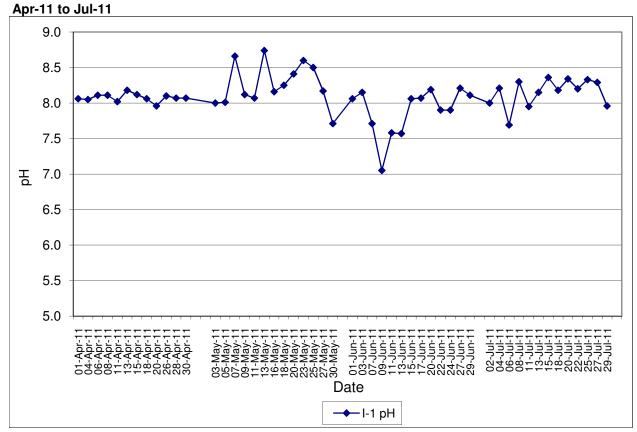
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel Water Quality Results at Squatters (I-3)



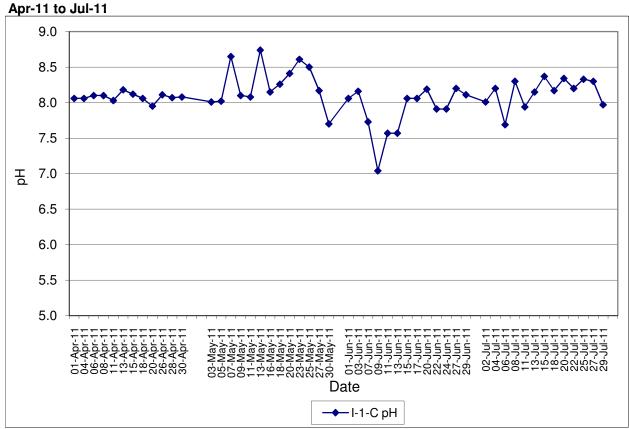
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel Water Quality Results at Squatters (I-3-C)



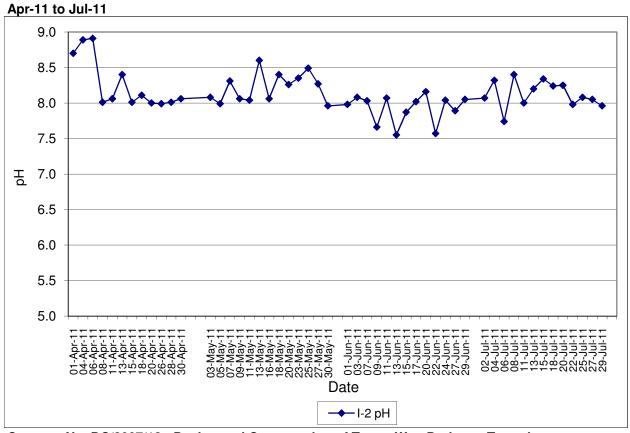
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel Water Quality Results at Sik Sik Yuen Ho Fung College (I-1)



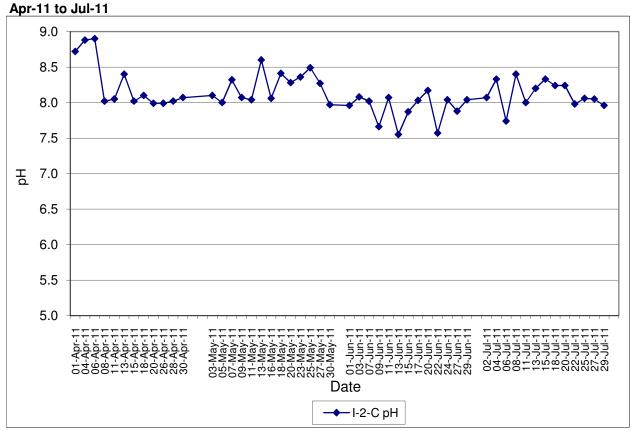
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel Water Quality Results at Sik Sik Yuen Ho Fung College (I-1-C)



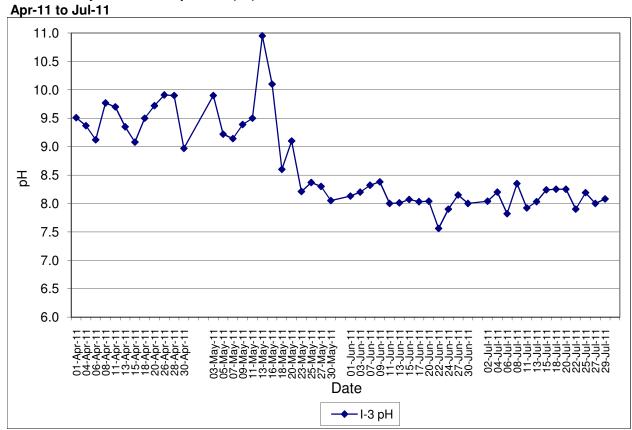
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel Water Quality Results at Hong Hoi Chee Hong Temple (I-2)



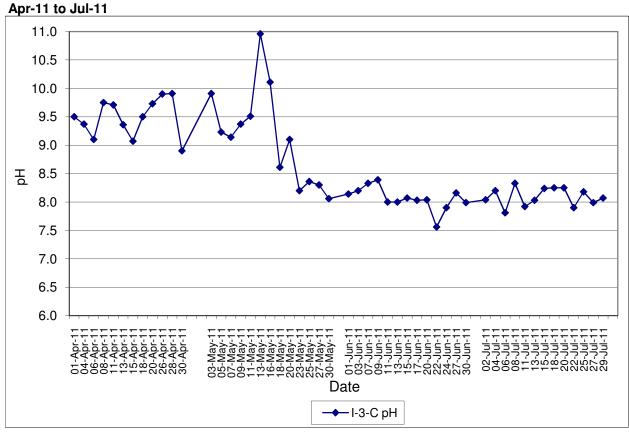
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel Water Quality Results at Hong Hoi Chee Hong Temple (I-2-C)



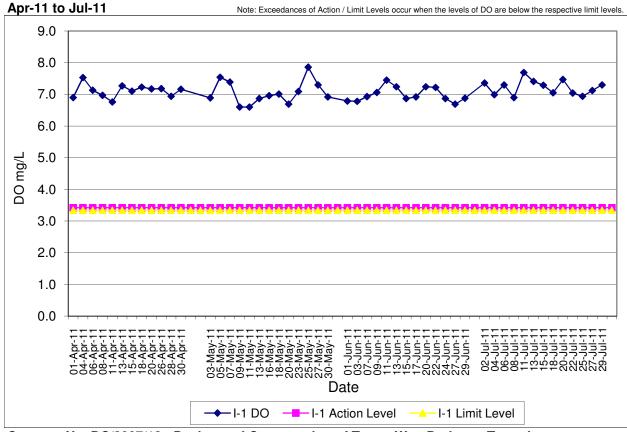
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel Water Quality Results at Squatters (I-3)



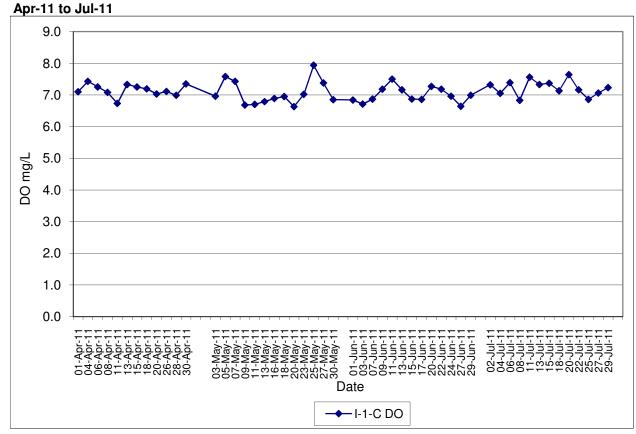
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel Water Quality Results at Squatters (I-3-C)



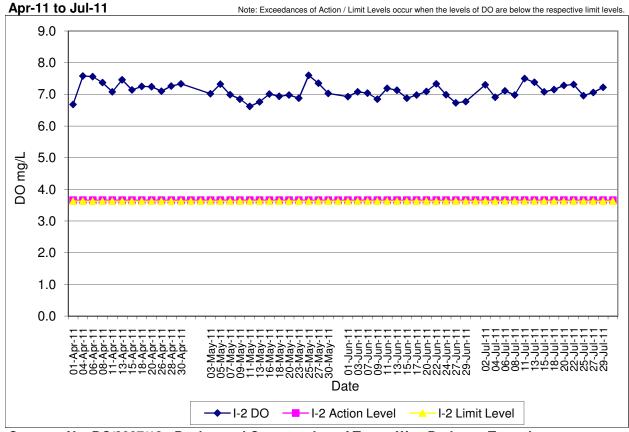
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel Water Quality Results at Sik Sik Yuen Ho Fung College (I-1)



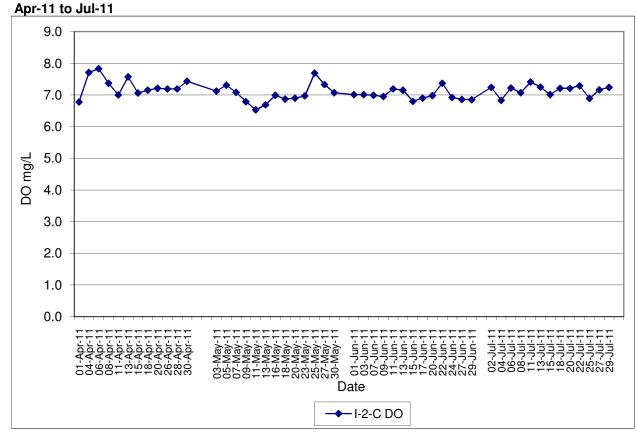
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel Water Quality Results at Sik Sik Yuen Ho Fung College (I-1-C)



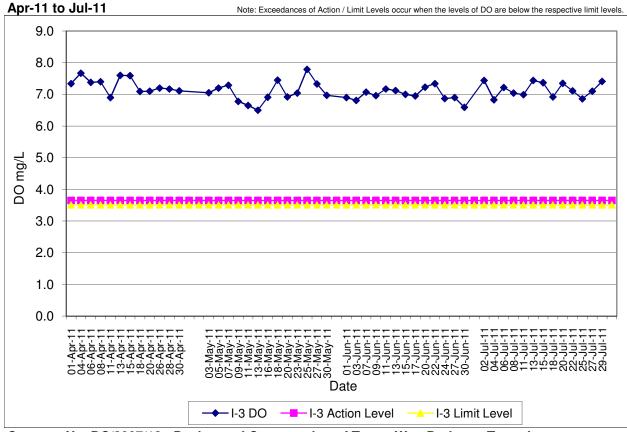
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel Water Quality Results at Hong Hoi Chee Hong Temple (I-2)



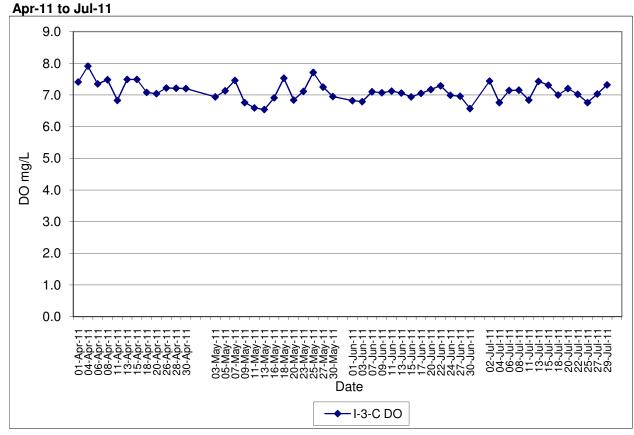
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel Water Quality Results at Hong Hoi Chee Hong Temple (I-2-C)



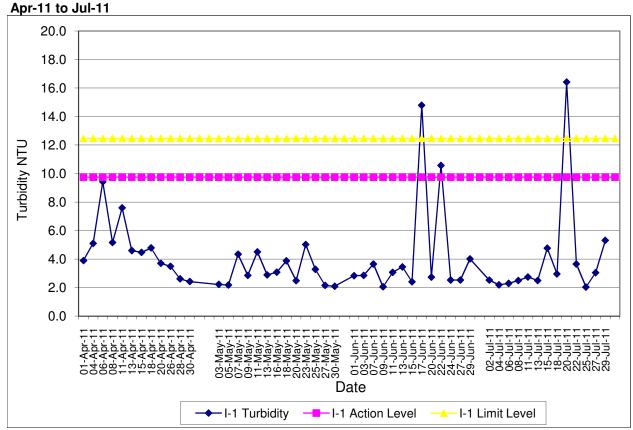
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel Water Quality Results at Squatters (I-3)



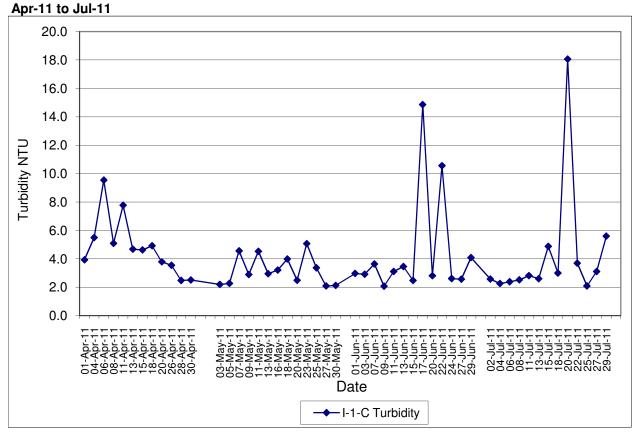
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel Water Quality Results at Squatters (I-3-C)



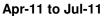
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel Water Quality Results at Sik Sik Yuen Ho Fung College (I-1)

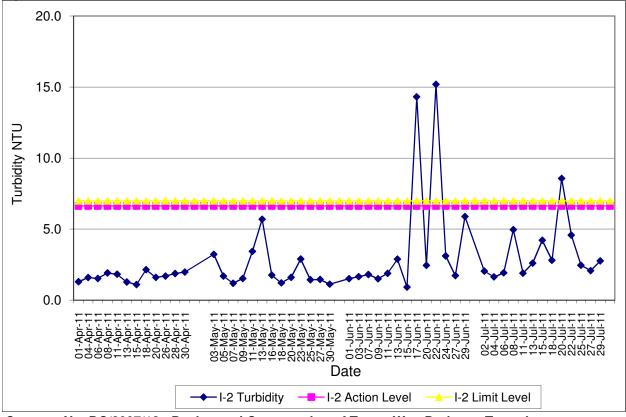


Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel Water Quality Results at Sik Sik Yuen Ho Fung College (I-1-C)

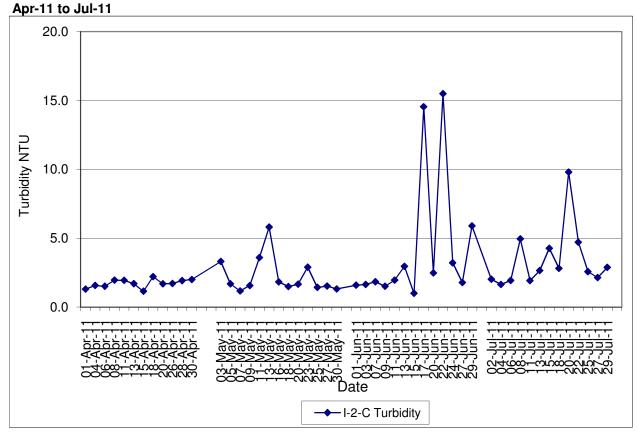


Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel Water Quality Results at Hong Hoi Chee Hong Temple (I-2)



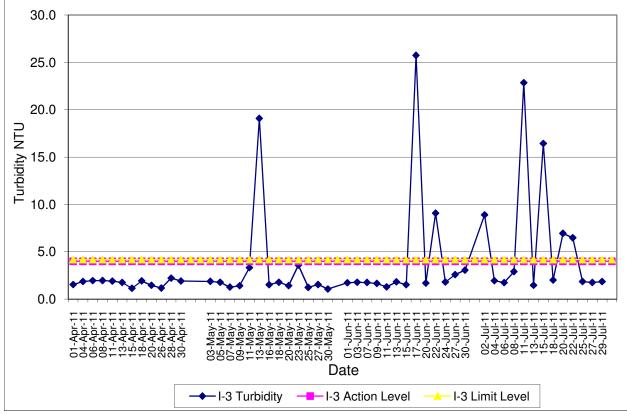


Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel Water Quality Results at Hong Hoi Chee Hong Temple (I-2-C)

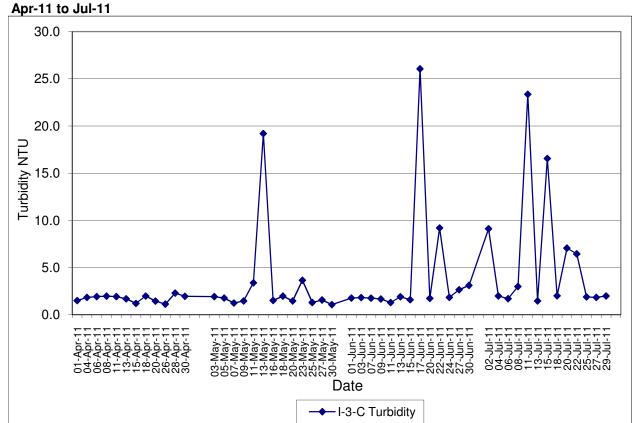


Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel Water Quality Results at Squatters (I-3)

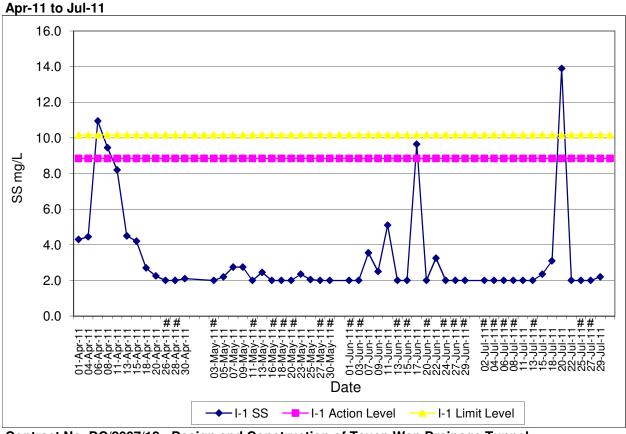




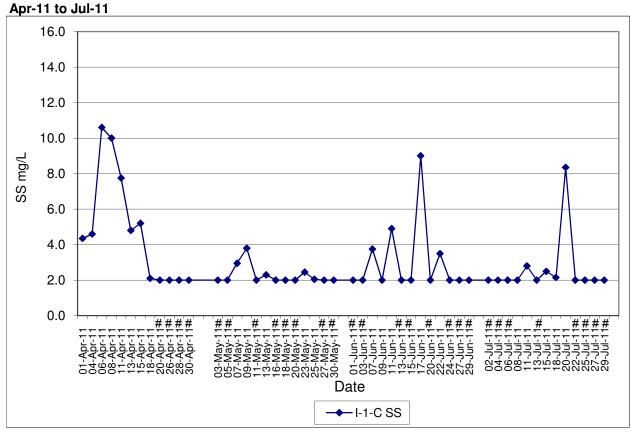
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel Water Quality Results at Squatters (I-3-C)



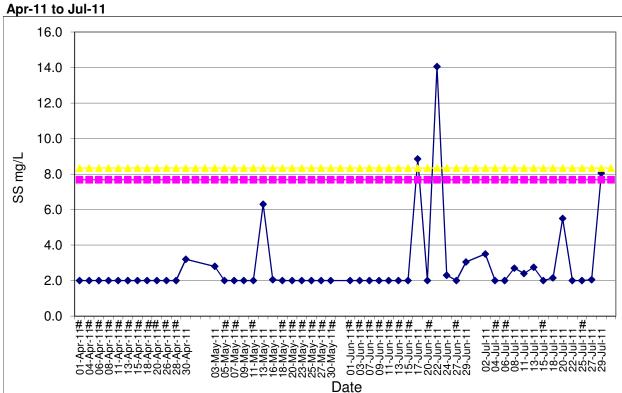
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel Water Quality Results at Sik Sik Yuen Ho Fung College (I-1)



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)



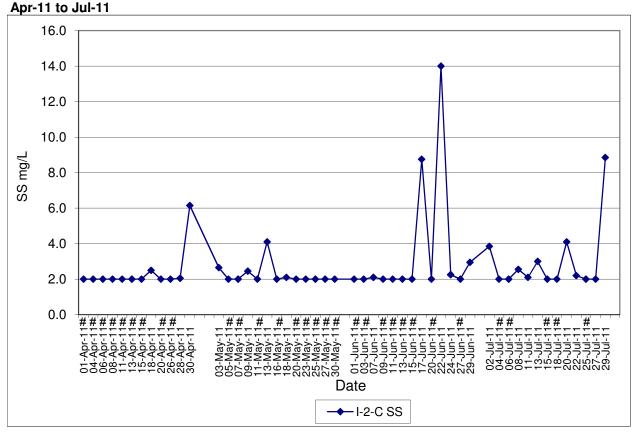
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel Water Quality Results at Hong Hoi Chee Hong Temple (I-2)



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)

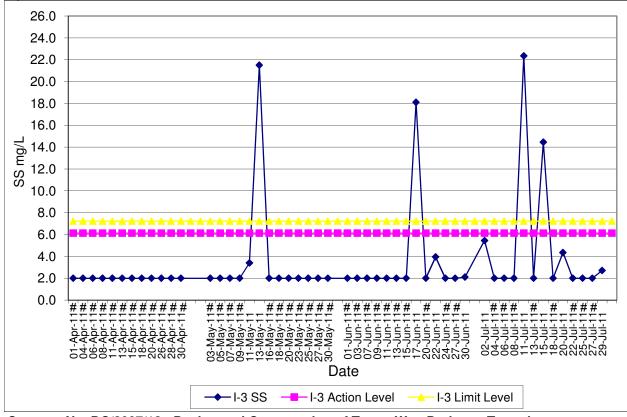
◆ I-2 SS I-2 Action Level

→ I-2 Limit Level

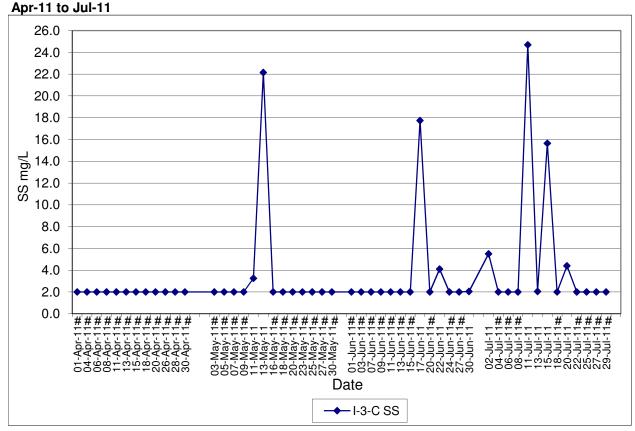


Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel Water Quality Results at Squatters (I-3)

Apr-11 to Jul-11



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



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

Marine Water Quality Impact Monitoring Results

Monitoring Locations	Date	Donth	Start Time	Weather	Water	Tomp	DO(mg/L	Action/Limit	На	Turbidity(NTL	n l	Action/Limit		SS (mg/L)	1/	Action/Limit	Remarks:	Action to be taken
	Date		Start Time	weather	Water Depth(m)	1 2 Avg	1 2	Avg Level of DO(m	g/L) 1 2 Avg	1 2	Avg	Level of Tby	1		Avg L	Level of SS(mg/L)	nemarks:	Action to be taken
Outfall 1 During Flood Tide O-1(FT)	02-Jul-11	Surface Middle Bottom	08:25	Sunny	5 9	30.90 30.90 30.90 30.90 30.88 30.80 30.90	6.76 6.82 6.86 6.91 6.89 6.85	6.89 6.84 / 6.81 6.87 6.99 / 6.96		2.95 3.04 3.07 2.95 2.99 2.97	3.00		2.60 <2.00		2.62		Works in Portion E	Nil
	04-Jul-11	Surface Middle Bottom	09:38	Sunny	4.75 8.5	30.20 30.20 30.20 30.20 30.18 30.10 30.20	7.13 7.15 7.19 7.23	7.21 6.99 / 6.96		3.14 3.19 3.25 3.16 3.18 3.22	3.19		3.80 <2.00	3.70 2.00 2.60	2.68		Works in Portion E	Nil
	06-Jul-11	Surface Middle Bottom	10:40	Sunny		31.10 31.10 31.00 31.00 31.05 31.00 31.10	7.09 7.16 7.19 7.24 7.19 7.17	7.22 7.18 6.99 / 6.96	7.91 7.91 7.91 7.91 7.91 7.91 7.91	4.64 4.60 4.55 4.43 4.47 4.57	4.54		4.00	4.30 3.70	3.97		Works in Portion E	Nil
	08-Jul-11	Surface Middle Bottom	10:42	Sunny		31.60 31.70 31.70 31.60 31.63 31.60 31.60	6.84 6.84 6.89 6.92 6.96 6.94	6.91 6.84 / 6.81 6.95 6.99 / 6.96	8.00 8.01 8.00 8.00 8.00 8.00 8.00	4.19 4.30 4.20 4.16 4.28 4.36	4.25		6.90	6.00 5.60	5.42		Works in Portion E	Nil
	11-Jul-11	Surface Middle Bottom	15:30	Cloudy	7.5	30.30 30.40 30.30 30.30 30.33 30.30 30.40	7.07 7.10 7.17 7.19 7.21 7.25	7.18 6.84 / 6.81 7.23 6.99 / 6.96	8.03 8.03 8.04 8.04 8.03 8.03 8.03	3.01 3.04 3.07 3.12 3.10 3.08	3.07		2.00 3.10		4.38		Works in Portion E	Nil
	13-Jul-11	Surface Middle Bottom	16:40	Cloudy	4.5 8	28.40 28.40 28.40 28.30 28.37 28.40 28.30		7.42 6.84 / 6.81 7.45 6.99 / 6.96		3.43 3.40 3.30 3.50 3.52 3.40	3.43		4.10 4.10	4.00 4.30 4.60	4.35		Works in Portion E	Nil
	15-Jul-11	Surface Middle Bottom	07:43	Cloudy	5.25 9.5	30.10 30.00 30.00 30.00 30.02 30.00 30.00	6.61 6.57 6.53 6.46 6.61 6.65	6.50 6.84 / 6.81 6.63 6.99 / 6.96	7.86 7.87 7.86 7.87 7.87 7.87 7.86	4.88 4.82 4.74 4.81 4.70 4.73	4.78	10.35 / 13.15	6.40 9.40	5.80 8.40 8.10	7.50	14.1 / 18.08	Nil	Nil
	18-Jul-11	Surface Middle Bottom	09:50	Cloudy	5	27.30 27.30 27.30 27.30 27.30 27.30 27.30 27.30	7.08 7.11 7.07 7.00 7.19 7.15	7.04 6.84 / 6.81 7.17 6.99 / 6.96		2.80 2.73 2.55 2.62 2.73 2.77	2.70		2.60	2.10	2.65		Nil	Nil
	20-Jul-11	Surface Middle Bottom Surface	09:43	Cloudy	9	29.20 29.30 29.30 29.20 29.23 29.20 29.20 30.30 30.20	6.88 6.92 7.12 7.22 7.26 7.29 7.28 7.31	7.17 6.84 / 6.81 7.28 6.99 / 6.96	7.90 7.90 7.90 7.90 7.90 7.90 7.90 7.89 7.88	2.40 2.30 2.27 2.31 2.33 2.36 1.62 1.60	2.33		7.10 8.20	7.30 5.80 9.40 2.80	7.43		Nil	Nil
	22-Jul-11	Middle Bottom Surface	10:33	Sunny	4.75 8.5	30.30 30.30 30.28 30.30 30.30 30.30 33.00 33.00	7.19 7.24 7.28 7.30 7.04 7.09	7.22 6.84 / 6.81 7.29 6.99 / 6.96	7.89 7.89 7.89 7.89 7.89 7.89 8.40 8.40	1.62 1.60 1.73 1.77 1.80 1.74 4.51 4.63	1.71		3.50 <2.00	2.40 <2.00 8.00	2.48		Works in Portion E	Nil
	25-Jul-11	Middle Bottom Surface	14:27	Sunny		33.00 33.00 33.00	7.11 7.13 7.00 7.02 7.04 7.07	7.12 6.84 / 6.81 7.01 6.99 / 6.96	8.40 8.40 8.40 8.40 8.41 8.25 8.25	4.77 4.84 4.72 4.66 2.62 2.53	4.69		7.10	7.20 6.50	7.23		Works in Portion E	Nil
	27-Jul-11	Middle Bottom Surface	15:33	Sunny	4.75	30.50 30.50 30.50 30.50 30.50	7.09 7.14 7.19 7.25	7.12 6.84 / 6.81 7.22 6.99 / 6.96	8.24 8.24 8.25 8.24 8.25	2.78 2.72 2.50 2.55	2.62		3.80	4.80 5.80	4.72		Works in Portion E	Nil
	-	Middle Bottom Surface	-	-	-			- 6.84 / 6.81 - 6.99 / 6.96			-		-	-	-			Nil
Control of Outfall 1 During Flood Tide	-	Middle Bottom Surface	-	-	- - 1	30.80 30.80	6.71 6.75	- 6.84 / 6.81 - 6.99 / 6.96 6.73	 7.96 7.96	3.01 3.14	-		2.60	2.00	-			Nil
O-1-C(FT)	02-Jul-11	Middle Bottom Surface	08:00	Sunny		30.90 30.90 30.85 30.80 30.90 30.20 30.20	6.77 6.81 6.89 6.92 7.20 7.23	6.79 6.91	7.96 7.96 7.96 7.96 7.96 7.90 7.90	2.98 3.10 3.00 3.07 3.07 3.12	3.05		2.80 3.30	3.80	2.45		Nil	Nil
	04-Jul-11	Middle Bottom Surface	09:10	Sunny	7.25 13.5	30.20 30.20 30.22 30.20 30.30 31.00 31.00	7.18 7.13 7.11 7.03 7.21 7.25	7.16 7.07	7.90 7.90 7.90 7.90 7.90 7.91 7.91	3.19 3.03 3.22 3.27 4.69 4.62	3.15		3.10 2.60	3.20 2.60 <2.00	3.10		Nil	Nil
	06-Jul-11	Middle Bottom Surface	10:10	Sunny	13.5	31.00 31.10 31.03 31.00 31.10 31.70 31.70	7.28 7.22 7.18 7.15 6.83 6.89	7.25 7.17	7.91 7.91 7.91 7.91 7.91 8.00 8.00	4.51 4.47 4.40 4.37 4.30 4.25	4.51		3.90	4.60 2.90	3.55		Nil	Nil
	08-Jul-11	Middle Bottom Surface	10:10	Sunny		31.70 31.70 31.67 31.60 31.60 30.40 30.40	6.92 6.95 7.02 6.99 7.17 7.12	7.01	8.00 8.01 8.00 8.00 8.01 8.03 8.03	4.18 4.25 4.40 4.43 3.07 3.10	4.30			3.70 3.80 8.00	3.52		Nil	Nil
	11-Jul-11	Middle Bottom Surface	15:02	Cloudy	12 1	30.40 30.30 30.35 30.30 30.30 28.40 28.40	7.03 7.07 7.05 7.10 7.19 7.23	7.21	8.04 8.03 8.03 8.03 8.04 7.99 8.00	3.04 2.98 3.07 3.12 3.50 3.47	3.06		2.80 4.00	4.20	8.37		Nil	Nil
		Middle Bottom Surface	16:10	Cloudy	12.5 1	28.40 28.40 28.40 28.40 28.40 30.10 30.00	7.31 7.38 7.42 7.47 6.71 6.67	6.69	7.99 7.99 7.99 7.99 7.99 7.86 7.86	3.33 3.44 3.00 3.43 4.76 4.88	3.36		4.10 5.70	5.90	4.17		Nil	Nil
	15-Jul-11	Middle Bottom Surface	07:20	Cloudy	1	30.10 30.10 27.30 27.30	6.63 6.65 6.74 6.77 7.11 7.13	7.12	7.86 7.86 7.86 7.86 7.86 7.91 7.91	5.01 5.07 4.92 4.90 2.90 2.88	4.92	- /-	4.90 3.00	6.10 6.70 2.20	5.72	-/-	NII	NII
		Middle Bottom Surface	09:30	Cloudy	13.5 1	27.30 27.20 27.25 27.20 27.20 29.20 29.20	7.05 7.08	6.95 7.07	7.91 7.91 7.91 7.91 7.91 7.90 7.90	2.66 2.73 2.91 2.85 2.27 2.30	2.82		2.40 5.80	2.50 2.60 5.70	2.52		NII	NII NEI
		Middle Bottom Surface	09:20		13.5 1	29.20 29.20 29.22 29.30 29.20 30.30 30.30	7.11 7.14 7.02 6.98 7.22 7.24	7.00 7.23	7.90 7.90 7.88 7.88	2.40 2.43 2.42 2.40 1.88 1.94 1.90 1.86	1.88		14.80	7.70 11.90 2.60 2.30	8.58		NGI	NEI
		Middle Bottom Surface Middle	10:05	Sunny	13 1	30.30 30.30 30.30 30.30 30.30 33.00 33.00 33.00 33.10 33.05	7.18 7.21 7.14 7.12	7.20 7.13	7.89 7.89 8.40 8.41	1.90 1.86 1.82 1.88 4.70 4.68 4.66 4.72	4.65		2.80 8.10	<2.00 6.10	5.45		Nii	Nii
		Bottom Surface Middle	15:05	Sunny	13 1	33.00 33.10 33.05 33.10 33.10 30.50 30.50 30.60 30.60 30.53	7.04 7.07 7.02 7.06 7.05 7.01 7.08 7.11	7.04 7.03	8.40 8.40 8.25 8.24	4.53 4.61 2.70 2.77	2.71		3.60 5.40	3.70 7.00	5.72		Nil	Nii
		Bottom Surface Middle	-	-		30.50 30.50	7.14 7.18		8.24 8.24 	2.44 2.56				4.40	-			Nil
		Bottom Surface Middle	-	-	-			-			-		-	-	-			Nil
		Bottom			-			-		-			-	-				

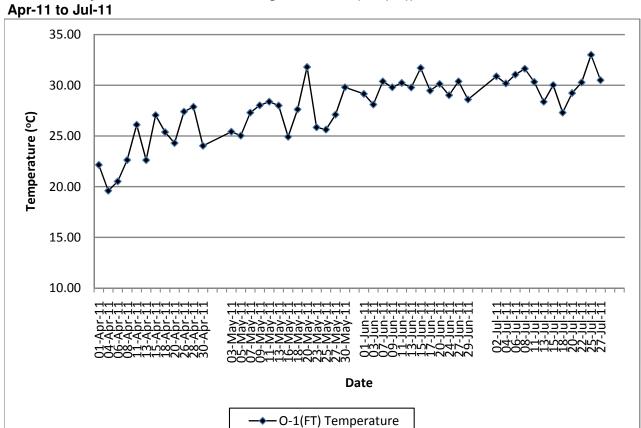
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel

Marine Water Quality Impact Monitoring Results

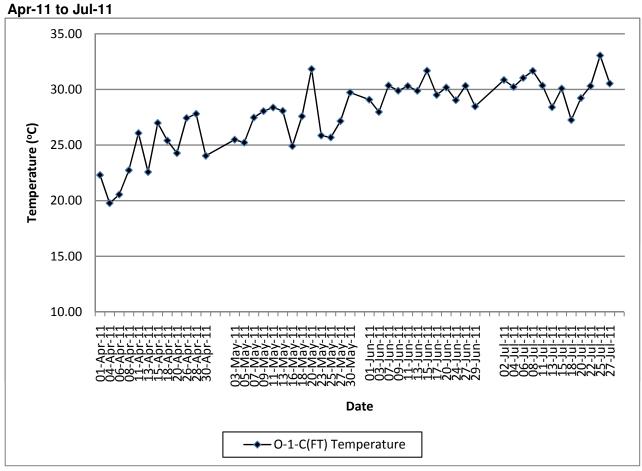
Mail Double like	Maritarian Leasting		Danath	Canal Time	I Manthau	IM/eter	Т			DO(===/L)	1.	ation / limit		all		To only indicate of NE	TLD	A -+: // ::+	1	CC (m=/L)		A stinus /I insit	Demodra	Astiss to be tales
State Stat	Monitoring Locations	Date	Depth	Start Time	vveatner	water Depth(m)					Avg L	Action/Limit .evel of DO(mg/	L) 1		Avg	1 2		Action/Limit Level of Tby	1		Avg	Action/Limit Level of SS(mg/L)	Remarks:	Action to be taken
Part	Outfall 1 During Ebb Tide O-1(ET)	02-Jul-11	Middle Bottom	11:32	Sunny	9	31.00 31.10 30.90 31.00	31.00	6.89 6.94	6.92 6.97	6.91 6.96		7.96 7.96	7.96 7.96	7.96	2.88 2.74 3.00 2.92	2.88		2.20 <2.00	2.90 <2.00			Works in Portion E	Nil
Professional Pro		04-Jul-11	Middle Bottom	14:40	Sunny	4.5 8	30.20 30.20 30.30 30.30	30.27	7.12 7.13	7.09 7.16	7.11 7.15		7.88 7.88	7.88 7.88	7.88	4.20 4.27 4.15 4.18			5.10 4.50	4.20 5.30	4.83		Nil	Nil
Part		06-Jul-11	Middle Bottom	14:27	Sunny	4.5	31.10 31.10 31.10 31.10	31.10	7.15 7.14	7.21 7.08	7.18 7.11		7.96 7.96	7.96 7.96		3.74 3.77 3.78 3.86	3.83		3.80 5.40	4.50 5.60	4.87		Works in Portion E	Nil
140 150		08-Jul-11	Middle Bottom	16:55	Sunny		32.00 32.00 32.00 32.00	32.00	6.86 7.05	6.83 7.02	6.85 7.04		7.99 7.99	7.99 7.99	7.99	2.55 2.64 2.78 2.82	2.70		4.00 3.20	3.80 2.70	3.58		Works in Portion E	Nil
Math Math		11-Jul-11	Middle Bottom	09:33	Cloudy		30.10 30.10 30.10 30.10	30.10	7.08 7.03	7.05 7.00	7.07 7.02		8.03 8.04	8.04 8.04	8.04	2.90 2.97 3.07 3.10	3.00		6.90 7.90	9.40 5.80	6.08		Works in Portion E	Nil
Professional Pro		13-Jul-11	Middle Bottom	11:22	Cloudy	4.5 8	28.20 28.20 28.20 28.20	28.22	7.43 7.34	7.53 7.37	7.48 7.36		8.01 8.01	8.00 8.01	8.01	2.55 2.66 2.73 2.70	2.66		2.50 3.00	3.70 2.90	3.20		Works in Portion E	Nil
Math Math		15-Jul-11	Middle Bottom	12:38	Rainy	8.5	29.90 29.90 29.90 29.90	29.90	6.94 6.77	6.92 6.80	6.93 6.79		7.86 7.85	7.85 7.85		3.62 3.67 3.58 3.64	3.67	11.87 / 13.4	5.00 5.30	3.60 4.20	4.58	13.25 / 14.39	Nil	Nil
23 July 1 200		18-Jul-11	Middle Bottom	14:38	Cloudy	4.75	27.20 27.20 27.20 27.20	27.20	7.02 7.09	7.05 7.12	7.04 7.11	6.7 / 6.48	7.91	7.91		2.50 2.42 2.53 2.56			3.20 3.40	3.10 2.20	2.83		Nil	Nil
Start Star		20-Jul-11	Middle Bottom	15:10	Rainy	8.5	29.00 29.00 29.00 29.00	29.00	7.08 7.16	7.11 7.19	7.10 7.18	6.7 / 6.48	7.92	7.92		2.50 2.52			2.10 <2.00	2.20 2.10			Works in Portion E	Nil
## And Provided Brown Control Form Date 1964 1974 19		22-Jul-11	Middle Bottom	15:33	Sunny	4.75 8.5	30.10 30.10 30.10 30.10	30.10	7.22 7.29	7.26 7.31	7.24 7.30	6.7 / 6.48	7.90 7.90	7.90 7.90	7.90	1.70 1.62			<2.00 2.70	<2.00 <2.00	2.12		Works in Portion E	Nil
Mathematical Number Mathematical Number		25-Jul-11	Middle Bottom	08:50	Sunny	4.5 8	33.00 33.00 33.00 33.00	33.00	6.95 7.05	6.99 7.08	6.97 7.07	6.7 / 6.48	8.30 8.30	8.30 8.30	8.30	3.77 3.86 3.77 3.80	3.83		3.60 3.60	4.40 4.80			Works in Portion E	Nil
March Marc		27-Jul-11	Middle Bottom	10:30	Sunny	4.75	30.10 30.10	30.03	7.12	7.14	7.13	6.7 / 6.48	8.23	8.22	8.23	2.62 2.67	2.59		4.60	3.70			Works in Portion E	Nil
March Control Contro		-	Middle Bottom	-	-	-		-	-	-	-		-	-	-		-		-	-	-			Nil
Color Colo		-	Middle Bottom	-	-	-		-	-	- - -	-		-	-	-		-		- - -	-	-			Nil
State 1,000 1,00	Control of Outfall 1 During Ebb Tide O-1-C(ET)	02-Jul-11	Middle Bottom	11:05	Sunny	12	31.00 31.00 31.00 31.00	30.98	6.86 6.91	6.83 6.93	6.85 6.92		7.96 7.96	7.96 7.96	7.96	2.86 2.94 2.99 3.03	2.95		2.30	2.30			Nil	Nil
06-Mat 1		04-Jul-11	Middle Bottom	14:10	Sunny	6.25	30.30 30.30 30.30 30.30	30.30	7.06 7.16	7.02 7.21	7.04 7.19		7.89	7.89 7.89		4.23 4.66 4.07 4.14			5.10 5.20	5.20 6.40	5.45		Nil	Nil
GS-Jul-11 Golden		06-Jul-11	Middle Bottom	14:00	Sunny	11.5	31.10 31.10 31.10 31.10	31.10	7.16 7.22	7.18 7.24	7.17 7.23		7.96 7.96 7.96	7.96 7.97 7.97		3.74 3.65			6.30 3.60	4.20 4.50	4.57		Nil	Nil
11-3-jul Mode Not Ocusy Court		08-Jul-11	Middle Bottom	16:30	Sunny	5.75 10.5	32.00 32.00 32.10 32.00	32.02	6.87 6.89	6.97 6.91	6.92 6.90		7.98 7.99	7.99 7.99	7.99	2.71 2.66 2.70 2.73	2.65		3.00 2.40	3.50 2.70			Nil	Nil
13-Jul-11		11-Jul-11	Middle Bottom	09:10	Cloudy	6.25 11.5	30.10 30.10 30.10 30.10	30.10	7.09 7.07	7.14 7.10	7.12 7.09		8.04 8.04	8.04 8.03	8.04	2.94 3.07 3.12 3.08	3.01		7.40 9.80	5.70 8.00			Nil	Nil
15-Jul-11 Middle 12-10 Rainy 6.25 29-90		13-Jul-11	Middle Bottom	10:50	Cloudy	6 11	28.20 28.30 28.20 28.20	28.22	7.40 7.51	7.43 7.54	7.42 7.53		8.01 8.00	8.01 8.01	8.01	2.66 2.74 2.78 2.86	2.72		3.80 3.20	6.40 3.30	3.93		Nil	Nil
18-Jul-11		15-Jul-11	Middle Bottom	12:10	Rainy	6.25 11.5	29.90 29.90 29.90 29.90	29.92	6.96 6.87	7.00 6.80	6.98 6.84	- /-	7.86 7.86	7.86 7.86		3.92 3.90 3.75 3.77 2.52 2.60	3.83	- /-	6.50 3.70	4.60 3.50	4.25	- /-	Nil	Nil
Bottom 11 29.00 29.00 6.96 6.99 6.98 7.92 7.92 7.92 7.92 7.92 7.92 7.92 7.92 7.92 7.92 7.93 7.93 7.94			Middle Bottom Surface			6.25 11.5	27.10 27.10 27.10 27.10 29.00 29.00	27.10	7.07 7.01 7.00	7.12 6.99 7.03	7.10 7.00 7.02		7.92 7.92 7.91	7.92 7.91 7.91	7.92	2.53 2.57 2.48 2.53 2.27 2.33	2.54		2.50 6.60 5.90	2.80 5.10 8.10	3.88		Nil	Nil
Bottom Surface Surfa			Bottom Surface			11 1	29.00 29.00 30.20 30.10		6.96 7.06	6.99 7.14	6.98 7.10		7.92 7.90	7.92 7.90		2.57 2.60 1.55 1.62			2.80 <2.00	<2.00 <2.00			Nil	Nil
Bottom 11 33.10 33.00 6.94 6.89 6.92 8.30 8.30 3.80 3.76 4.70 4.50			Bottom Surface		1	11	30.10 30.10 33.10 33.10		7.24 6.96	7.27 7.02	7.26 6.99		7.90 8.30	7.90 8.30		1.68 1.61 3.80 3.74			2.60 5.50	<2.00 5.00			Nil	Nil
Bottom 11.5 30.00 30.00 7.15 7.19 7.17 8.23 8.22 2.64 3.30 3.40 Surface 11.5 30.00 30.00 7.15 7.19 7.17 8.23 8.22 2.62 2.64 3.30 3.40 Surface 11.5 30.00 30.00 7.15 7.19 7.17 8.23 8.22 2.62 2.64 3.30 3.40 Surface 11.5 30.00 30.00 7.15 7.19 7.17 8.23 8.22 2.62 2.64 3.30 3.40 Surface 11.5 30.00 30.00 7.15 7.19 7.17 8.23 8.22 2.62 2.64 3.30 3.40 Surface 11.5 30.00 30.00 Surface 11.5 30.00 30.00 7.15 7.19 7.17 Surface 11.5 30.00 30.00 7.15 7.19 7.17 Surface 11.5 30.00 30.00 Surface 11.5 30.00 30.00 Surface 11.5 30.00 30.00 Surface 11.5 30.00 30.00 Surface 11.5 30.00 30.00 Surface 11.5 30.00 30.00 Surface 11.5 30.00 30.00 Surface 11.5 30.00 30.00 Surface 11.5 Surface 11.5 Surf			Bottom Surface			11	33.10 33.00 30.00 30.00		6.94 6.91	6.89 6.94	6.92 6.93		8.30 8.22	8.30 8.22		3.80 3.76 2.60 2.70			4.70 7.10	4.50 5.00			Nil	Nil
Bottom		27-Jul-11	Bottom Surface	10:06	Sunny	6.25 11.5	30.00 30.00	30.02	7.15	7.19	7.17		8.23	8.22 -		2.62 2.64			3.30	3.40			NII	Nii Nii
		-	Bottom Surface	-	-	-		-	-	-	-			-	-		-		-		-			Nil
		-		-	-	-		-	-	-	-		-	-	-		-		-	-	-			Nil

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

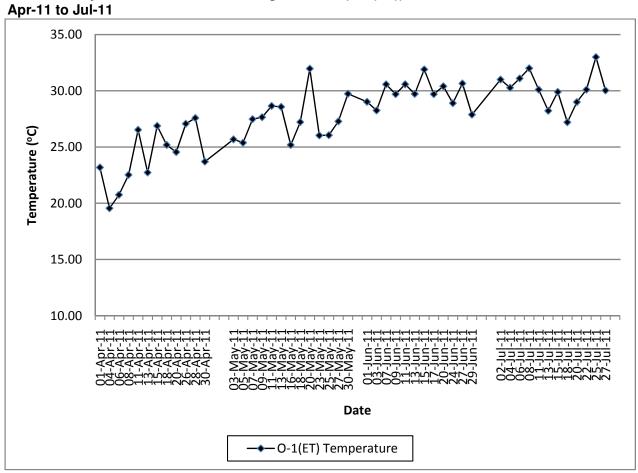
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel Water Quality Results at Outfall 1 During Flood Tide (O-1(FT))



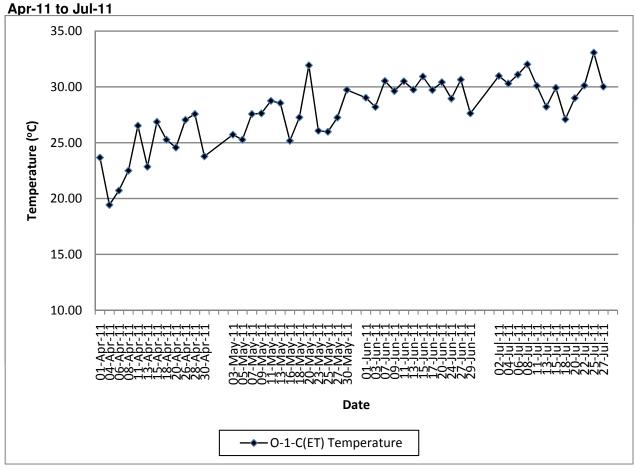
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel Water Quality Results at Control of Outfall 1 During Flood Tide (O-1-C(FT))



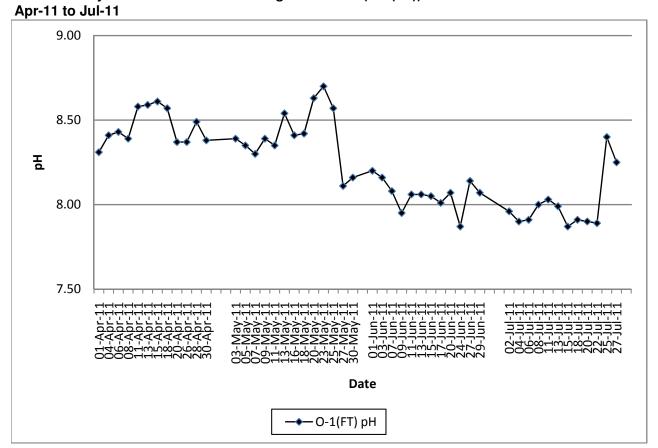
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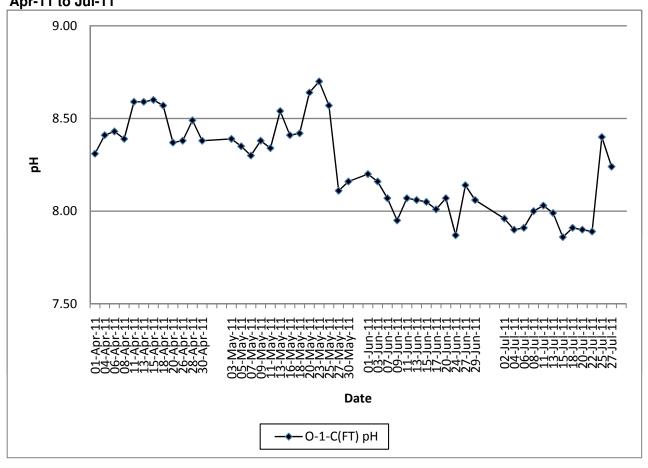
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel Water Quality Results at Control of Outfall 1 During Ebb Tide (O-1-C(ET))



Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel Water Quality Results at Outfall 1 During Flood Tide (O-1(FT))

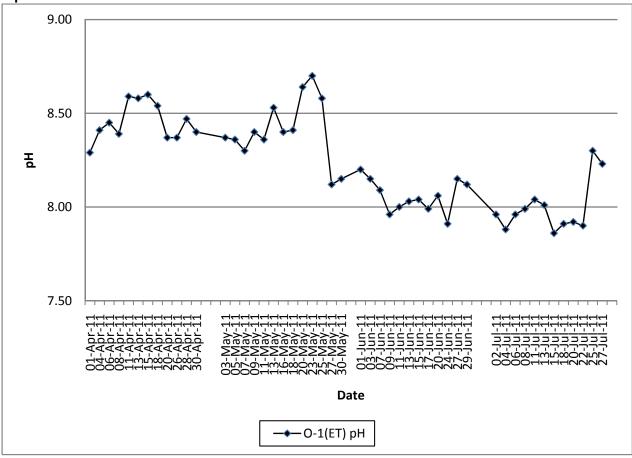


Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel Water Quality Results at Control of Outfall 1 During Flood Tide (O-1-C(FT)) Apr-11 to Jul-11

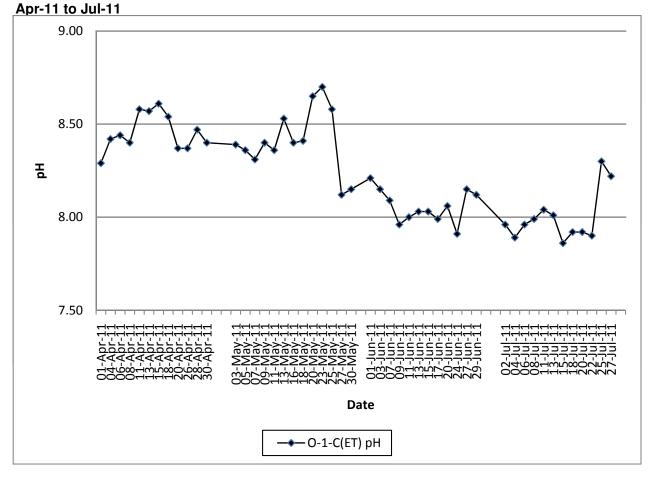


Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel Water Quality Results at Outfall 1 During Ebb Tide (O-1(ET))

Apr-11 to Jul-11

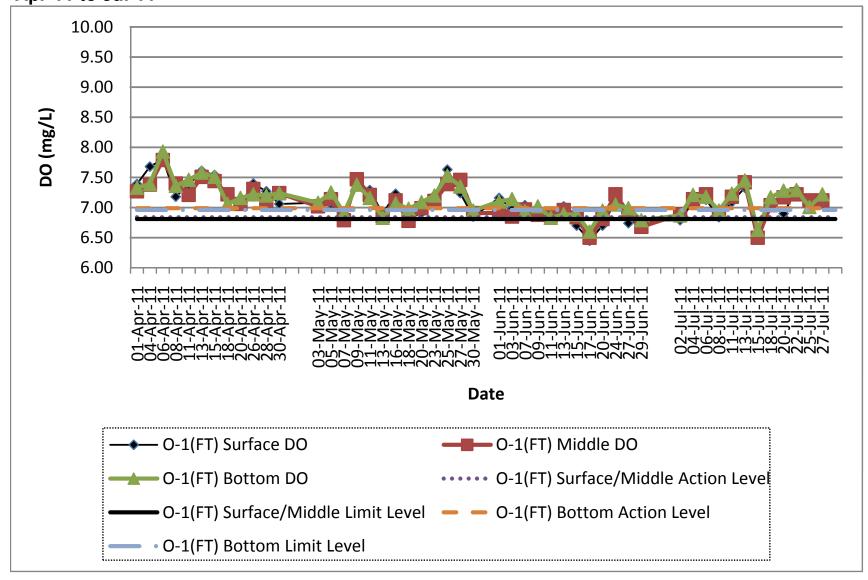


Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel Water Quality Results at Control of Outfall 1 During Ebb Tide (O-1-C(ET))

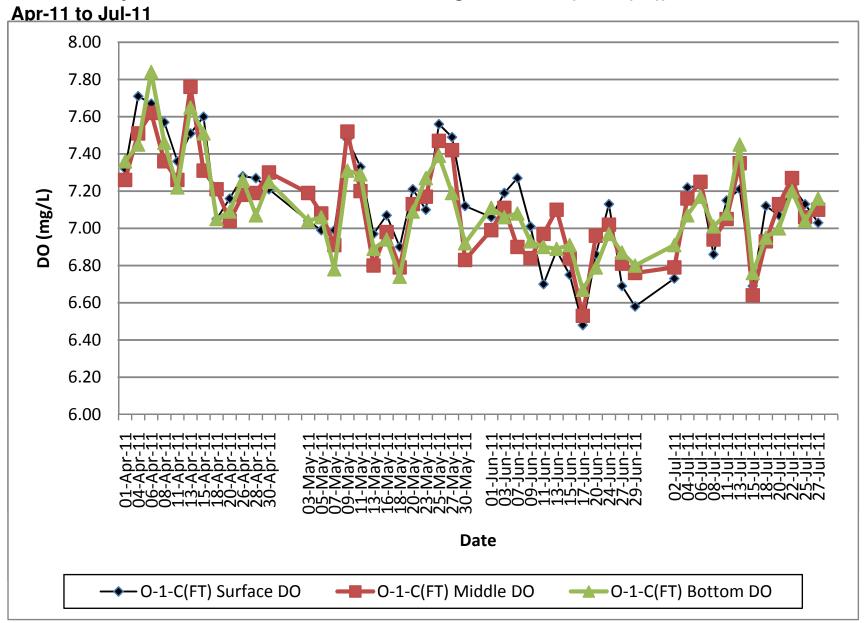


Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel Water Quality Results at Outfall 1 During Flood Tide (O-1(FT))

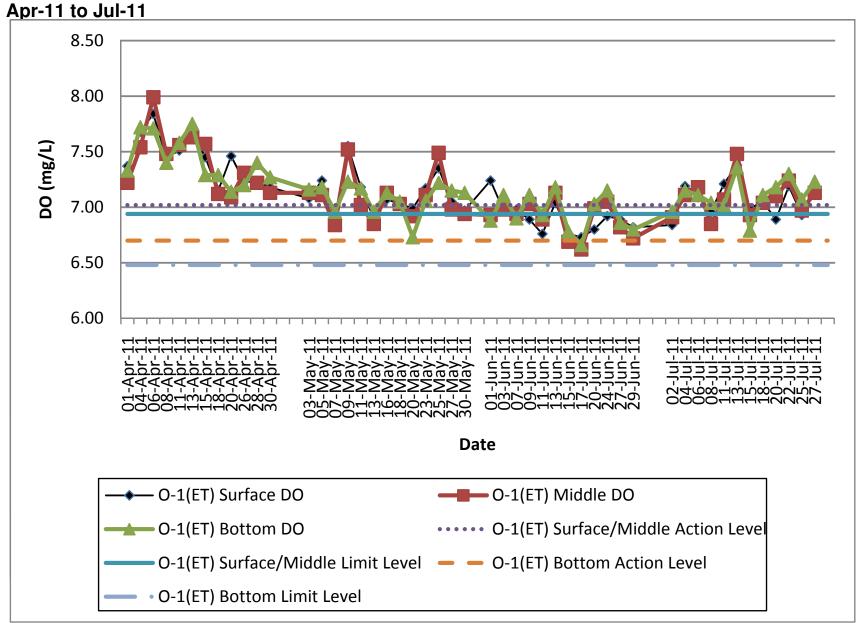
Apr-11 to Jul-11



Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel Water Quality Results at Control of Outfall 1 During Flood Tide (O-1-C(FT))

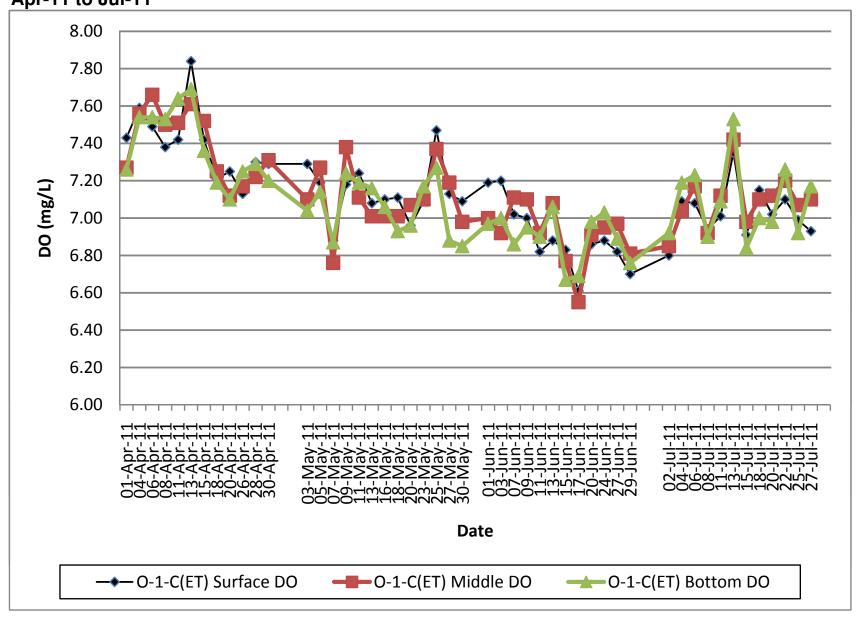


Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel Water Quality Results at Outfall 1 During Ebb Tide (O-1(ET))

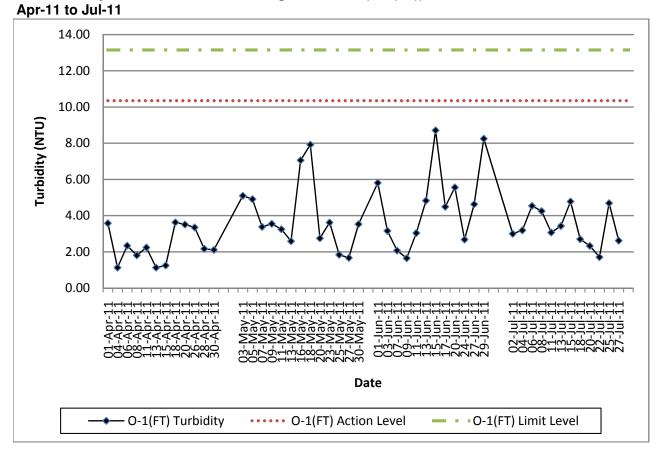


Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel Water Quality Results at Control of Outfall 1 During Ebb Tide (O-1-C(ET))

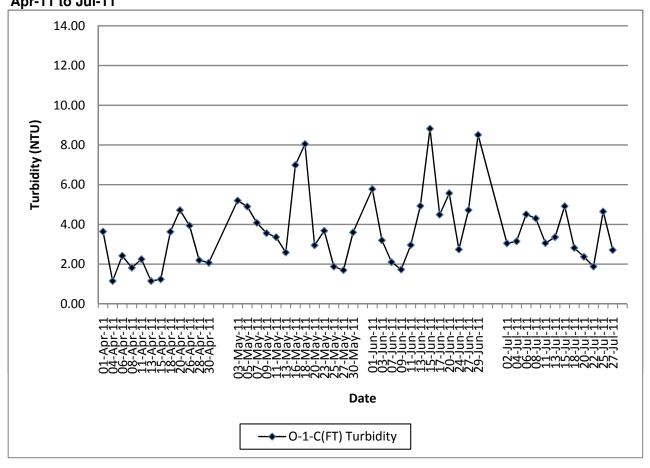
Apr-11 to Jul-11



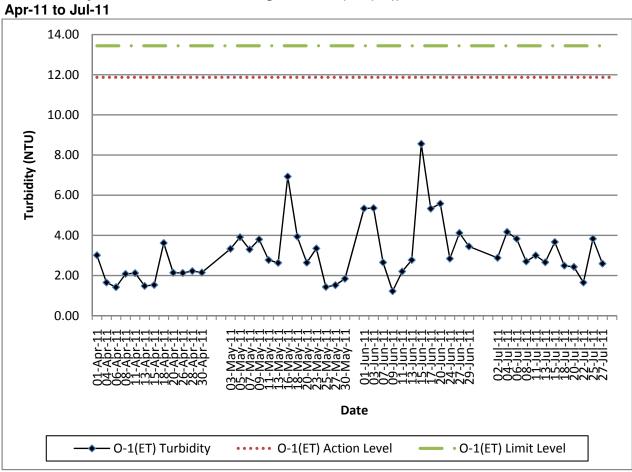
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel Water Quality Results at Outfall 1 During Flood Tide (O-1(FT))



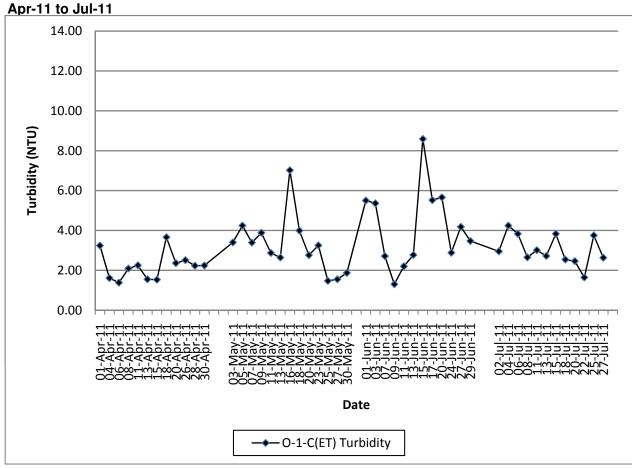
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel Water Quality Results at Control of Outfall 1 During Flood Tide (O-1-C(FT)) Apr-11 to Jul-11



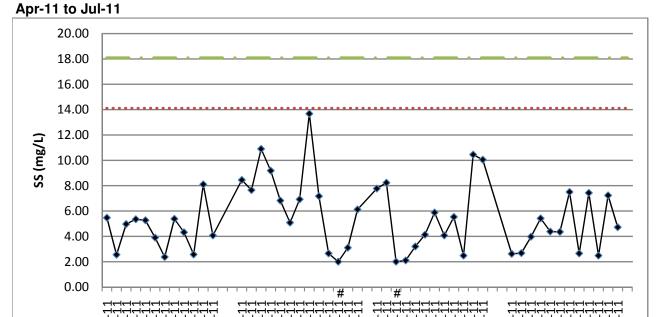
Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel Water Quality Results at Outfall 1 During Ebb Tide (O-1(ET))



Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel Water Quality Results at Control of Outfall 1 During Ebb Tide (O-1-C(ET))



Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel Water Quality Results at Outfall 1 During Flood Tide (O-1(FT))



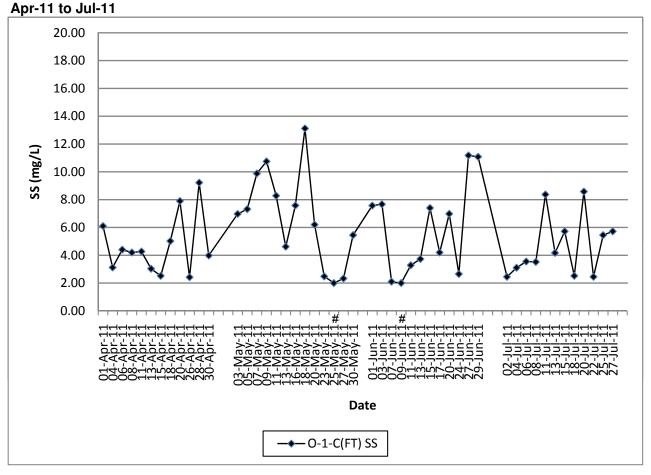
Date

O-1(FT) Limit Level

Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel Water Quality Results at Control of Outfall 1 During Flood Tide (O-1-C(FT))

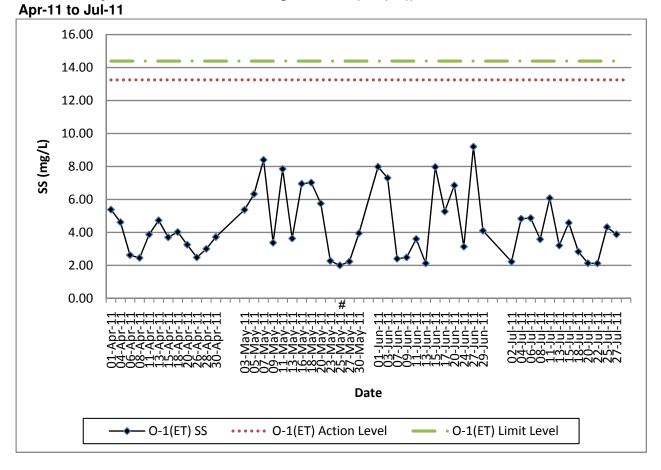
- O-1(FT) SS

••••• O-1(FT) Action Level

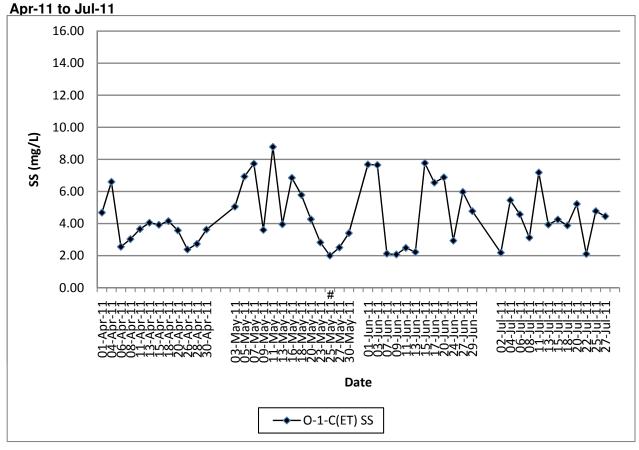


Note: # - For average SS level smaller than 2mg/L, the levels are plotted as 2mg/L in the garphs.

Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel Water Quality Results at Outfall 1 During Ebb Tide (O-1(ET))



Contract No. DC/2007/12 - Design and Construction of Tsuen Wan Drainage Tunnel Water Quality Results at Control of Outfall 1 During Ebb Tide (O-1-C(ET))



Note: # - For average SS level smaller than 2mg/L, the levels are plotted as 2mg/L in the garphs.



Appendix J

Interim Notifications of Environmental Quality Limits Exceedances

Interim Notification of Environmental Quality Limit Exceedance

Incident Report on Limit Level Non-compliance

Project	Tsuen Wan Drainage Tunnel
Date	02-Jul-11
Time	8:25 AM
Monitoring Location	O-1(FT)
Parameter	Dissolved Oxygen (marine surface)
Action & Limit Levels (mg/L)	6.84 / 6.81
Measured Level (mg/L)	6.79
Control Station	O-1-C(FT)
Measured Level at the Control Station (mg/L)	6.73
Possible reason for Action or Limit Level Non-compliance	The measured DO level (marine surface) at the monitoring station was below the baseline limit level, but higher than the DO level of the corresponding control station. Only loading the excavated materials onto the hopper barge was undertaken at the Outfall basin (Portion E) on the monitoring day. No other marine works was conducted. No direct disturbance from the site was observed during monitoring. Therefore, the exceedance was considered to be contributed by natural variation and no further action was required.
Actions taken / to be taken	(1) Silt curtain was provided along the Portion E boundary line and extended from seawater level to the bottom of seabed; (2) floating type silt curtain was employed at the inner side; (3) sufficient slack of silt curtain was allowed to cope with the wave and tidal action to ensure the curtains (outer and inner) were rested on seabed; (4) condition of silt curtains was checked by the supervisor daily; and (5) seawall blocks installation was undertaken within the inner silt curtain area only.
Remarks	None

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Prepared by:	F. C	. Tsang
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Designation: Environmental Team Leader

Signature:

Date: 05-Jul-11

Photographic record for exceedance of Dissolved Oxygen (marine surface) recorded at O-1(FT) on 02-Jul-11



Site photo

Interim Notification of Environmental Quality Limit Exceedance

Incident Report on Limit Level Non-compliance

Project	Tsuen Wan Drainage Tunnel
Date	02-Jul-11
Time	8:25 AM
Monitoring Location	O-1(FT)
Parameter	Dissolved Oxygen (marine bottom)
Action & Limit Levels (mg/L)	6.99 / 6.96
Measured Level (mg/L)	6.87
Control Station	O-1-C(FT)
Measured Level at the Control Station (mg/L)	6.91
Possible reason for Action or Limit Level Non-compliance	The measured DO level (marine bottom) at the monitoring station was below the baseline limit level and slightly lower than the DO level of the corresponding control station (about 0.6%). Only loading the excavated materials onto the hopper barge was undertaken at the Outfall basin (Portion E) on the monitoring day. No other marine works was conducted. No direct disturbance from the site was observed during monitoring. Therefore, the exceedance was considered to be contributed by natural variation and no further action was required.
Actions taken / to be taken	(1) Silt curtain was provided along the Portion E boundary line and extended from seawater level to the bottom of seabed; (2) floating type silt curtain was employed at the inner side; (3) sufficient slack of silt curtain was allowed to cope with the wave and tidal action to ensure the curtains (outer and inner) were rested on seabed; (4) condition of silt curtains was checked by the supervisor daily; and (5) seawall blocks installation was undertaken within the inner silt curtain area only.
Remarks	None

Prepared by:	F. C. Tsang
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Designation: Environmental Team Leader

Signature: Forgten Reof

Date: 05-Jul-11

Photographic record for exceedance of Dissolved Oxygen (marine bottom) recorded at O-1(FT) on 02-Jul-11



Site photo

Interim Notification of Environmental Quality Limit Exceedance

Incident Report on Limit Level Non-compliance

Project	Tsuen Wan Drainage Tunnel
Date	02-Jul-11
Time	11:32 AM
Monitoring Location	O-1(ET)
Parameter	Dissolved Oxygen (marine surface)
Action & Limit Levels (mg/L)	7.02 / 6.94
Measured Level (mg/L)	6.84
Control Station	O-1-C(ET)
Measured Level at the Control Station (mg/L)	6.80
Possible reason for Action or Limit Level Non-compliance	The measured DO level (marine surface) at the monitoring station was below the baseline limit level, but higher than the DO level of the corresponding control station. Only loading the excavated materials onto the hopper barge was undertaken at the Outfall basin (Portion E) on the monitoring day. No other marine works was conducted. No direct disturbance from the site was observed during monitoring. Therefore, the exceedance was considered to be contributed by natural variation and no further action was required.
Actions taken / to be taken	(1) Silt curtain was provided along the Portion E boundary line and extended from seawater level to the bottom of seabed; (2) floating type silt curtain was employed at the inner side; (3) sufficient slack of silt curtain was allowed to cope with the wave and tidal action to ensure the curtains (outer and inner) were rested on seabed; (4) condition of silt curtains was checked by the supervisor daily; and (5) seawall blocks installation was undertaken within the inner silt curtain area only.
Remarks	None

Prepared by: F	. C.	Tsang
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Designation: Environmental Team Leader

Signature: Foughten Reof

Date: 05-Jul-11

Photographic record for exceedance of Dissolved Oxygen (marine surface) recorded at O-1(ET) on 02-Jul-11



Site photo



Site photo

Incident Report on Limit Level Non-compliance

Project	Tsuen Wan Drainage Tunnel
Date	02-Jul-11
Time	11:32 AM
Monitoring Location	O-1(ET)
Parameter	Dissolved Oxygen (marine mid-depth)
Action & Limit Levels (mg/L)	7.02 / 6.94
Measured Level (mg/L)	6.91
Control Station	O-1-C(ET)
Measured Level at the Control Station (mg/L)	6.85
Possible reason for Action or Limit Level Non-compliance	The measured DO level (marine mid-depth) at the monitoring station was below the baseline limit level, but higher than the DO level of the corresponding control station. Only loading the excavated materials onto the hopper barge was undertaken at the Outfall basin (Portion E) on the monitoring day. No other marine works was conducted. No direct disturbance from the site was observed during monitoring. Therefore, the exceedance was considered to be contributed by natural variation and no further action was required.
Actions taken / to be taken	(1) Silt curtain was provided along the Portion E boundary line and extended from seawater level to the bottom of seabed; (2) floating type silt curtain was employed at the inner side; (3) sufficient slack of silt curtain was allowed to cope with the wave and tidal action to ensure the curtains (outer and inner) were rested on seabed; (4) condition of silt curtains was checked by the supervisor daily; and (5) seawall blocks installation was undertaken within the inner silt curtain area only.
Remarks	None

Prepared by	/ :	F.	C.	Tsang
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Designation: Environmental Team Leader

Signature: Foughten Reof

Date: 05-Jul-11

Photographic record for exceedance of Dissolved Oxygen (marine mid-depth) recorded at O-1(ET) on 02-Jul-11



Site photo



Incident Report on Limit Level Non-compliance

Project	Tsuen Wan Drainage Tunnel
Date	02-Jul-11
Time	9:40 AM
Monitoring Location	Squatters (I-3)
Parameter	Turbidity
Action & Limit Levels (NTU)	3.99 / 4.18
Measured Level (NTU)	8.90
Control Station	I-3-C
Measured Level at the Control Station (NTU)	9.11
Possible reason for Action or Limit Level Non-compliance	The measured turbidity level was higher than the baseline limit level, but lower than the turbidity level of the control station (I-3-C). General site cleaning and housekeeping, monitoring of de-formation monitoring point (DMP), drilling, splitting and rock breaking in shaft, curing of planter wall and backfilling at tree pit, and slope reinstatement and backfilling at PB wall were undertaken during measurement. No direct disturbance was observed from the site. The exceedance was considered to be contributed by high turbidity level at upstream location. Since the exceedance was non-project related, no further action was required.
Actions taken / to be taken	The following mitigation measures were provided on-site during monitoring: (1) wastewater was collected and diverted to waste water treatment plant prior to discharge; (2) existing stream was diverted and bunded by sealed concrete block wall; and (3) excavated area was bunded and sealed by concrete block wall to prevent any excavated material runoff from working area.
Remarks	None

Prepared by: Fan Cheong Tsang

Designation: Environmental Team Leader

Signature: Fauftenthon

Date: 05-Jul-11

Photographic record for exceedance of Turbidity recorded at Squatters (I-3) on 02-Jul-11



Photo taken at I-3



Photo taken at I-3-C

Incident Report on Limit Level Non-compliance

Project	Tsuen Wan Drainage Tunnel
Date	08-Jul-11
Time	10:42 AM
Monitoring Location	O-1(FT)
Parameter	Dissolved Oxygen (marine bottom)
Action & Limit Levels (mg/L)	6.99 / 6.96
Measured Level (mg/L)	6.95
Control Station	O-1-C(FT)
Measured Level at the Control Station (mg/L)	7.01
Possible reason for Action or Limit Level Non-compliance	The measured DO level (marine bottom) at the monitoring station was below the baseline limit level and slightly lower than the DO level of the corresponding control station (about 0.9%). Excavation for seawall blocks formation and loading the excavated materials onto a hopper barge were undertaken at the Outfall basin (Portion E) on the monitoring day. No direct disturbance from the site was observed during monitoring. Therefore, the exceedance was considered to be contributed by natural variation and no further action was required.
Actions taken / to be taken	(1) Silt curtain was provided along the Portion E boundary line and extended from seawater level to the bottom of seabed; (2) floating type silt curtain was employed at the inner side; (3) sufficient slack of silt curtain was allowed to cope with the wave and tidal action to ensure the curtains (outer and inner) were rested on seabed; (4) condition of silt curtains was checked by the supervisor daily; and (5) seawall blocks installation was undertaken within the inner silt curtain area only.
Remarks	None

Prepared by	/ :	F.	C.	Tsang
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Designation: Environmental Team Leader

Signature: Foughten Reof

Photographic record for exceedance of Dissolved Oxygen (marine bottom) recorded at O-1(FT) on 08-Jul-11



Site photo



Incident Report on Action Level Non-compliance

Project	Tsuen Wan Drainage Tunnel
Date	08-Jul-11
Time	4:55 PM
Monitoring Location	O-1(ET)
Parameter	Dissolved Oxygen (marine surface)
Action & Limit Levels (mg/L)	7.02 / 6.94
Measured Level (mg/L)	6.96
Control Station	O-1-C(ET)
Measured Level at the Control Station (mg/L)	6.94
Possible reason for Action or Limit Level Non-compliance	The measured DO level (marine surface) at the monitoring station was below the baseline action level, but higher than the DO level of the corresponding control station. Excavation for seawall blocks formation and loading the excavated materials onto a hopper barge were undertaken at the Outfall basin (Portion E) on the monitoring day. No direct disturbance from the site was observed during monitoring. Therefore, the exceedance was considered to be contributed by natural variation and no further action was required.
Actions taken / to be taken	(1) Silt curtain was provided along the Portion E boundary line and extended from seawater level to the bottom of seabed; (2) floating type silt curtain was employed at the inner side; (3) sufficient slack of silt curtain was allowed to cope with the wave and tidal action to ensure the curtains (outer and inner) were rested on seabed; (4) condition of silt curtains was checked by the supervisor daily; and (5) seawall blocks installation was undertaken within the inner silt curtain area only.
Remarks	None

Prepared b	v:	F. C.	Tsang

Designation: Environmental Team Leader

Signature: Foughten Reof

Photographic record for exceedance of Dissolved Oxygen (marine surface) recorded at O-1(ET) on 08-Jul-11



Incident Report on Limit Level Non-compliance

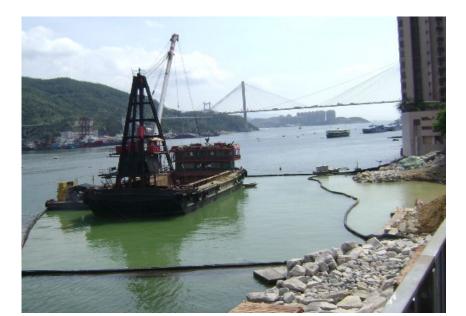
Project	Tsuen Wan Drainage Tunnel
Date	08-Jul-11
Time	4:55 PM
Monitoring Location	O-1(ET)
Parameter	Dissolved Oxygen (marine mid-depth)
Action & Limit Levels (mg/L)	7.02 / 6.94
Measured Level (mg/L)	6.85
Control Station	O-1-C(ET)
Measured Level at the Control Station (mg/L)	6.92
Possible reason for Action or Limit Level Non-compliance	The measured DO level (marine mid-depth) at the monitoring station was below the baseline limit level and slightly lower than the DO level of the corresponding control station (about 1%). Excavation for seawall blocks formation and loading the excavated materials onto a hopper barge were undertaken at the Outfall basin (Portion E) on the monitoring day. No direct disturbance from the site was observed during monitoring. Therefore, the exceedance was considered to be contributed by natural variation and no further action was required.
Actions taken / to be taken	(1) Silt curtain was provided along the Portion E boundary line and extended from seawater level to the bottom of seabed; (2) floating type silt curtain was employed at the inner side; (3) sufficient slack of silt curtain was allowed to cope with the wave and tidal action to ensure the curtains (outer and inner) were rested on seabed; (4) condition of silt curtains was checked by the supervisor daily; and (5) seawall blocks installation was undertaken within the inner silt curtain area only.
Remarks	None

Prepared b	v:	F. C.	Tsang

Designation: Environmental Team Leader

Signature: Foughten Reof

Photographic record for exceedance of Dissolved Oxygen (marine mid-depth) recorded at O-1(ET) on 08-Jul-11



Incident Report on Limit Level Non-compliance

Project	Tsuen Wan Drainage Tunnel
Date	11-Jul-11
Time	1:20 PM
Monitoring Location	Squatters (I-3)
Parameter	Turbidity
Action & Limit Levels (NTU)	3.99 / 4.18
Measured Level (NTU)	22.85
Control Station	I-3-C
Measured Level at the Control Station (NTU)	23.35
Possible reason for Action or Limit Level Non-compliance	The measured turbidity level was higher than the baseline limit level, but lower than the turbidity level of the control station (I-3-C). General site cleaning and housekeeping, monitoring of de-formation monitoring point (DMP), and drilling, rock breaking and mucking out in shaft were undertaken during the monitoring day. No direct disturbance was observed from the site. About 33.2 mm rainfall was recorded by the Hong Kong Observatory on the monitoring day. Therefore, the exceedance was considered to be contributed by high turbidity level at upstream location and rainfall. Since the exceedance was non-project related, no further action was required.
Actions taken / to be taken	The following mitigation measures were provided on-site during monitoring: (1) wastewater was collected and diverted to waste water treatment plant prior to discharge; (2) existing stream was diverted and bunded by sealed concrete block wall; and (3) excavated area was bunded and sealed by concrete block wall to prevent any excavated material runoff from working area.
Remarks	None

Houghten Pheory

Prepared by: Fan Cheong Tsang

Designation: Environmental Team Leader

Signature:

Photographic record for exceedance of Turbidity recorded at Squatters (I-3) on 11-Jul-11



Photo taken at I-3



Photo taken at I-3-C

Incident Report on Limit Level Non-compliance

Project	Tsuen Wan Drainage Tunnel
Date	08-Jul-11
Time	10:42 AM
Monitoring Location	O-1(FT)
Parameter	Suspended Solids (SS)
Action & Limit Levels (mg/L)	14.10 / 18.08
Measured Level (mg/L)	5.42
Control Station	O-1-C(FT)
Measured Level at the Control Station (mg/L)	3.52
Possible reason for Action or Limit Level Non-compliance	The measured SS level at the monitoring station was well below the baseline action/limit level, but higher than the 130% of SS level of the corresponding control station. Excavation for seawall blocks formation and loading the excavated materials onto a hopper barge were undertaken at the Outfall basin (Portion E) on the monitoring day. No direct disturbance from the site was observed during monitoring. Therefore, the exceedance was considered to be contributed by natural variation and no further action was required.
Actions taken / to be taken	(1) Silt curtain was provided along the Portion E boundary line and extended from seawater level to the bottom of seabed; (2) floating type silt curtain was employed at the inner side; (3) sufficient slack of silt curtain was allowed to cope with the wave and tidal action to ensure the curtains (outer and inner) were rested on seabed; (4) condition of silt curtains was checked by the supervisor daily; and (5) seawall blocks installation was undertaken within the inner silt curtain area only.
Remarks	None

Prepared by:	F.	C.	Tsang
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Designation: Environmental Team Leader

Signature: Foughten Reof

Photographic record for exceedance of Suspended Solids (SS) recorded at O-1(FT) on 08-Jul-11



Site photo



Incident Report on Limit Level Non-compliance

Project	Tsuen Wan Drainage Tunnel
Date	11-Jul-11
Time	1:20 PM
Monitoring Location	Squatters (I-3)
Parameter	Suspended Solids
Action & Limit Levels (mg/L)	6.13 / 7.23
Measured Level (mg/L)	22.35
Control Station	I-3-C
Measured Level at the Control Station (mg/L)	24.70
Possible reason for Action or Limit Level Non-compliance	The measured SS level was higher than the baseline limit level, but lower than the SS level of the control station (I-3-C). General site cleaning and housekeeping, monitoring of de-formation monitoring point (DMP), and drilling, rock breaking and mucking out in shaft were undertaken during the monitoring day. No direct disturbance was observed from the site. About 33.2 mm rainfall was recorded by the Hong Kong Observatory on the monitoring day. Therefore, the exceedance was considered to be contributed by high SS level at upstream location and rainfall. Since the exceedance was non-project related, no further action was required.
Actions taken / to be taken	The following mitigation measures were provided on-site during monitoring: (1) wastewater was collected and diverted to waste water treatment plant prior to discharge; (2) existing stream was diverted and bunded by sealed concrete block wall; and (3) excavated area was bunded and sealed by concrete block wall to prevent any excavated material runoff from working area.
Remarks	None

Houghten Pheory

Prepared by: Fan Cheong Tsang

Designation: Environmental Team Leader

Signature:

Photographic record for exceedance of Suspended Solids recorded at Squatters (I-3) on 11-Jul-



Photo taken at I-3



Photo taken at I-3-C

Incident Report on Limit Level Non-compliance

Project	Tsuen Wan Drainage Tunnel
Date	15-Jul-11
Time	9:19 AM
Monitoring Location	Squatters (I-3)
Parameter	Turbidity
Action & Limit Levels (NTU)	3.99 / 4.18
Measured Level (NTU)	16.44
Control Station	I-3-C
Measured Level at the Control Station (NTU)	16.55
Possible reason for Action or Limit Level Non-compliance	The measured turbidity level was higher than the baseline limit level, but lower than the turbidity level of the control station (I-3-C). General site cleaning and housekeeping, monitoring of de-formation monitoring point (DMP), and drilling, splitting, rock breaking and mucking out in shaft were undertaken during the monitoring day. No direct disturbance was observed from the site. About 34.9 mm rainfall was recorded by the Hong Kong Observatory on the monitoring day. Therefore, the exceedance was considered to be contributed by high turbidity level at upstream location and rainfall. Since the exceedance was non-project related, no further action was required.
Actions taken / to be taken	The following mitigation measures were provided on-site during monitoring: (1) wastewater was collected and diverted to waste water treatment plant prior to discharge; (2) existing stream was diverted and bunded by sealed concrete block wall; and (3) excavated area was bunded and sealed by concrete block wall to prevent any excavated material runoff from working area.
Remarks	None

Houghten Pheory

Prepared by: Fan Cheong Tsang

Designation: Environmental Team Leader

Signature:

Photographic record for exceedance of Turbidity recorded at Squatters (I-3) on 15-Jul-11



Photo taken at I-3



Photo taken at I-3-C

Incident Report on Limit Level Non-compliance

Project	Tsuen Wan Drainage Tunnel
Date	15-Jul-11
Time	7:43 AM
Monitoring Location	O-1(FT)
Parameter	Dissolved Oxygen (marine surface)
Action & Limit Levels (mg/L)	6.84 / 6.81
Measured Level (mg/L)	6.59
Control Station	O-1-C(FT)
Measured Level at the Control Station (mg/L)	6.69
Possible reason for Action or Limit Level Non-compliance	The measured DO level (marine surface) at the monitoring station was below the baseline limit level and lower than the DO level of the corresponding control station (about 1.5%). Only maintenance of silt curtain was undertaken at the Outfall basin (Portion E) on the monitoring day. No other marine works was conducted. No direct disturbance from the site was observed during monitoring. Therefore, the exceedance was considered to be contributed by natural variation and no further action was required.
Actions taken / to be taken	(1) Silt curtain was provided along the Portion E boundary line and extended from seawater level to the bottom of seabed; (2) floating type silt curtain was employed at the inner side; (3) sufficient slack of silt curtain was allowed to cope with the wave and tidal action to ensure the curtains (outer and inner) were rested on seabed; (4) condition of silt curtains was checked by the supervisor daily; and (5) seawall blocks installation was undertaken within the inner silt curtain area only.
Remarks	None

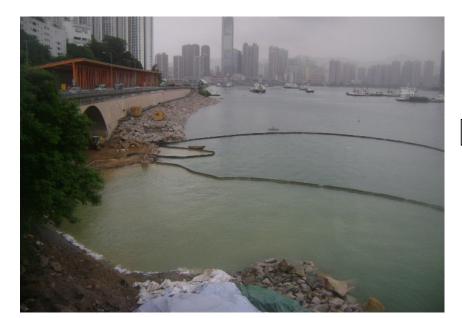
Harften Cheof

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Designation:	Environmental	I eam	Leader
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Signature:

Photographic record for exceedance of Dissolved Oxygen (marine surface) recorded at O-1(FT) on 15-Jul-11



Incident Report on Limit Level Non-compliance

Project	Tsuen Wan Drainage Tunnel
Date	15-Jul-11
Time	7:43 AM
Monitoring Location	O-1(FT)
Parameter	Dissolved Oxygen (marine mid-depth)
Action & Limit Levels (mg/L)	6.84 / 6.81
Measured Level (mg/L)	6.50
Control Station	O-1-C(FT)
Measured Level at the Control Station (mg/L)	6.64
Possible reason for Action or Limit Level Non-compliance	The measured DO level (marine mid-depth) at the monitoring station was below the baseline limit level and lower than the DO level of the corresponding control station (about 2.2%). Only maintenance of silt curtain was undertaken at the Outfall basin (Portion E) on the monitoring day. No other marine works was conducted. No direct disturbance from the site was observed during monitoring. Therefore, the exceedance was considered to be contributed by natural variation and no further action was required.
Actions taken / to be taken	(1) Silt curtain was provided along the Portion E boundary line and extended from seawater level to the bottom of seabed; (2) floating type silt curtain was employed at the inner side; (3) sufficient slack of silt curtain was allowed to cope with the wave and tidal action to ensure the curtains (outer and inner) were rested on seabed; (4) condition of silt curtains was checked by the supervisor daily; and (5) seawall blocks installation was undertaken within the inner silt curtain area only.
Remarks	None

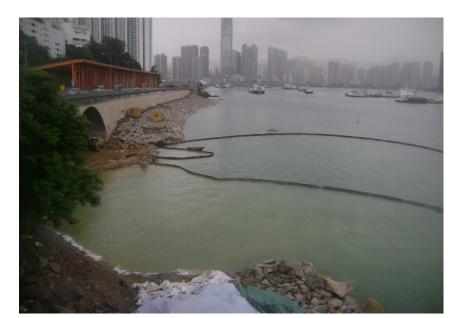
Harften Cheof

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Designation:	nvironmental	I eam	∟eader
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Signature:

Photographic record for exceedance of Dissolved Oxygen (marine mid-depth) recorded at O-1(FT) on 15-Jul-11



Incident Report on Limit Level Non-compliance

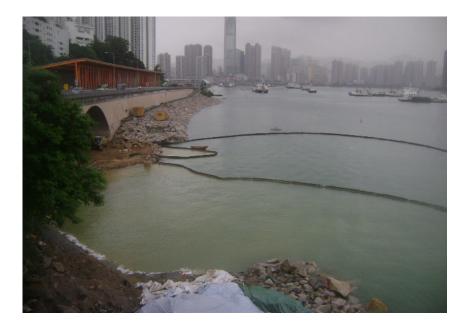
Project	Tsuen Wan Drainage Tunnel
Date	15-Jul-11
Time	7:43 AM
Monitoring Location	O-1(FT)
Parameter	Dissolved Oxygen (marine bottom)
Action & Limit Levels (mg/L)	6.99 / 6.96
Measured Level (mg/L)	6.63
Control Station	O-1-C(FT)
Measured Level at the Control Station (mg/L)	6.76
Possible reason for Action or Limit Level Non-compliance	The measured DO level (marine bottom) at the monitoring station was below the baseline limit level and lower than the DO level of the corresponding control station (about 2.0%). Only maintenance of silt curtain was undertaken at the Outfall basin (Portion E) on the monitoring day. No other marine works was conducted. No direct disturbance from the site was observed during monitoring. Therefore, the exceedance was considered to be contributed by natural variation and no further action was required.
Actions taken / to be taken	(1) Silt curtain was provided along the Portion E boundary line and extended from seawater level to the bottom of seabed; (2) floating type silt curtain was employed at the inner side; (3) sufficient slack of silt curtain was allowed to cope with the wave and tidal action to ensure the curtains (outer and inner) were rested on seabed; (4) condition of silt curtains was checked by the supervisor daily; and (5) seawall blocks installation was undertaken within the inner silt curtain area only.
Remarks	None

Prepared b	v:	F.	C.	Tsan	a

Designation: Environmental Team Leader

Signature: Foughten Reof

Photographic record for exceedance of Dissolved Oxygen (marine bottom) recorded at O-1(FT) on 15-Jul-11



Incident Report on Action Level Non-compliance

Project	Tsuen Wan Drainage Tunnel
Date	15-Jul-11
Time	12:38 PM
Monitoring Location	O-1(ET)
Parameter	Dissolved Oxygen (marine surface)
Action & Limit Levels (mg/L)	7.02 / 6.94
Measured Level (mg/L)	6.99
Control Station	O-1-C(ET)
Measured Level at the Control Station (mg/L)	6.91
Possible reason for Action or Limit Level Non-compliance	The measured DO level (marine surface) at the monitoring station was below the baseline action level, but higher than the DO level of the corresponding control station. Only maintenance of silt curtain was undertaken at the Outfall basin (Portion E) on the monitoring day. No other marine works was conducted. No direct disturbance from the site was observed during monitoring. Therefore, the exceedance was considered to be contributed by natural variation and no further action was required.
Actions taken / to be taken	(1) Silt curtain was provided along the Portion E boundary line and extended from seawater level to the bottom of seabed; (2) floating type silt curtain was employed at the inner side; (3) sufficient slack of silt curtain was allowed to cope with the wave and tidal action to ensure the curtains (outer and inner) were rested on seabed; (4) condition of silt curtains was checked by the supervisor daily; and (5) seawall blocks installation was undertaken within the inner silt curtain area only.
Remarks	None

Prepared by:	F. C.	Tsang
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Designation: Environmental Team Leader

Signature: Foughten Reof

Photographic record for exceedance of Dissolved Oxygen (marine surface) recorded at O-1(ET) on 15-Jul-11



Incident Report on Limit Level Non-compliance

Project	Tsuen Wan Drainage Tunnel	
Date	15-Jul-11	
Time	12:38 PM	
Monitoring Location	O-1(ET)	
Parameter	Dissolved Oxygen (marine mid-depth)	
Action & Limit Levels (mg/L)	7.02 / 6.94	
Measured Level (mg/L)	6.93	
Control Station	O-1-C(ET)	
Measured Level at the Control Station (mg/L)	6.98	
Possible reason for Action or Limit Level Non-compliance	The measured DO level (marine mid-depth) at the monitoring station was below the baseline limit level and lower than the DO level of the corresponding control station (about 0.7%). Only maintenance of silt curtain was undertaken at the Outfall basin (Portion E) on the monitoring day. No other marine works was conducted. No direct disturbance from the site was observed during monitoring. Therefore, the exceedance was considered to be contributed by natural variation and no further action was required.	
Actions taken / to be taken	(1) Silt curtain was provided along the Portion E boundary line and extended from seawater level to the bottom of seabed; (2) floating type silt curtain was employed at the inner side; (3) sufficient slack of silt curtain was allowed to cope with the wave and tidal action to ensure the curtains (outer and inner) were rested on seabed; (4) condition of silt curtains was checked by the supervisor daily; and (5) seawall blocks installation was undertaken within the inner silt curtain area only.	
Remarks	None	

Prepared b	v:	F.	C.	Tsar	a

Designation: Environmental Team Leader

Signature: Foughten Reof

Photographic record for exceedance of Dissolved Oxygen (marine mid-depth) recorded at O-1(ET) on 15-Jul-11



Incident Report on Limit Level Non-compliance

Project	Tsuen Wan Drainage Tunnel		
Date	15-Jul-11		
Time	9:19 AM		
Monitoring Location	Squatters (I-3)		
Parameter	Suspended Solids (SS)		
Action & Limit Levels (mg/L)	6.13 / 7.23		
Measured Level (mg/L)	14.45		
Control Station	I-3-C		
Measured Level at the Control Station (mg/L)	15.65		
Possible reason for Action or Limit Level Non-compliance	The measured SS level was higher than the baseline limit level, but lower than the SS level of the control station (I-3-C). General site cleaning and housekeeping, monitoring of de-formation monitoring point (DMP), and drilling, rock breaking and mucking out in shaft were undertaken during the monitoring day. No direct disturbance was observed from the site. About 34.9 mm rainfall was recorded by the Hong Kong Observatory on the monitoring day. Therefore, the exceedance was considered to be contributed by high SS level at upstream location and rainfall. Since the exceedance was non-project related, no further action was required.		
Actions taken / to be taken	The following mitigation measures were provided on-site during monitoring: (1) wastewater was collected and diverted to waste water treatment plant prior to discharge; (2) existing stream was diverted and bunded by sealed concrete block wall; and (3) excavated area was bunded and sealed by concrete block wall to prevent any excavated material runoff from working area.		
Remarks	None		

Houghten Pheory

Prepared by: Fan Cheong Tsang

Designation: Environmental Team Leader

Signature:

Date: 22-Jul-11

Photographic record for exceedance of Suspended Solids (SS) recorded at Squatters (I-3) on 15-Jul-11



Photo taken at I-3



Photo taken at I-3-C

Incident Report on Limit Level Non-compliance

Project	Tsuen Wan Drainage Tunnel	
Date	15-Jul-11	
Time	7:43 AM	
Monitoring Location	O-1(FT)	
Parameter	Suspended Solids (SS)	
Action & Limit Levels (mg/L)	14.10 / 18.08	
Measured Level (mg/L)	7.50	
Control Station	O-1-C(FT)	
Measured Level at the Control Station (mg/L)	5.72	
Possible reason for Action or Limit Level Non-compliance	The measured SS level at the monitoring station was well below the baseline action/limit level, but slightly higher than 130% of SS level of the corresponding control station. Only maintenance of silt curtain was undertaken at the Outfall basin (Portion E) on the monitoring day. No other marine works was conducted. No direct disturbance from the site was observed during monitoring. Therefore, the exceedance was considered to be contributed by natural variation and no further action was required.	
Actions taken / to be taken	(1) Silt curtain was provided along the Portion E boundary line and extended from seawater level to the bottom of seabed; (2) floating type silt curtain was employed at the inner side; (3) sufficient slack of silt curtain was allowed to cope with the wave and tidal action to ensure the curtains (outer and inner) were rested on seabed; (4) condition of silt curtains was checked by the supervisor daily; and (5) seawall blocks installation was undertaken within the inner silt curtain area only.	
Remarks	None	

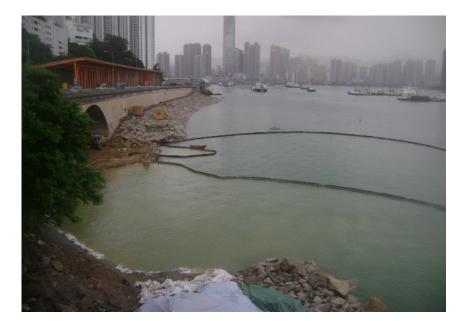
Prepared by:	F. C	C. Tsang
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Designation: Environmental Team Leader

Signature: Hough English

Date: 22-Jul-11

Photographic record for exceedance of Suspended Solids (SS) recorded at O-1(FT) on 15-Jul-11



Incident Report on Limit Level Non-compliance

Project	Tsuen Wan Drainage Tunnel	
Date	20-Jul-11	
Time	3:10 PM	
Monitoring Location	O-1(ET)	
Parameter	Dissolved Oxygen (marine surface)	
Action & Limit Levels (mg/L)	7.02 / 6.94	
Measured Level (mg/L)	6.89	
Control Station	O-1-C(ET)	
Measured Level at the Control Station (mg/L)	7.02	
Possible reason for Action or Limit Level Non-compliance	The measured DO level (marine surface) at the monitoring station was below the baseline limit level and lower than the DO level of the corresponding control station (about 1.9%). Only trimming formation and placing bagged concrete were undertaken at the Outfall basin (Portion E) on the monitoring day. No other marine works was conducted. No direct disturbance from the site was observed during monitoring. Therefore, the exceedance was considered to be contributed by natural variation and no further action was required.	
Actions taken / to be taken	(1) Silt curtain was provided along the Portion E boundary line and extended from seawater level to the bottom of seabed; (2) floating type silt curtain was employed at the inner side; (3) sufficient slack of silt curtain was allowed to cope with the wave and tidal action to ensure the curtains (outer and inner) were rested on seabed; (4) condition of silt curtains was checked by the supervisor daily; and (5) seawall blocks installation was undertaken within the inner silt curtain area only.	
Remarks	None	

Prepared by	/ :	F.	C.	Tsang
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Designation: Environmental Team Leader

Signature: Foughten Reof

Date: 22-Jul-11

Photographic record for exceedance of Dissolved Oxygen (marine surface) recorded at O-1(ET) on 20-Jul-11



Site photo



Incident Report on Limit Level Non-compliance

Project	Tsuen Wan Drainage Tunnel	
Date	20-Jul-11	
Time	12:20 PM	
Monitoring Location	Sik Sik Yuen Ho Fung College (I-1)	
Parameter	Turbidity	
Action & Limit Levels (NTU)	9.75 / 12.47	
Measured Level (NTU)	16.42	
Control Station	I-1-C	
Measured Level at the Control Station (NTU)	18.06	
Possible reason for Action or Limit Level Non-compliance	The measured turbidity level was higher than the baseline limit level, but lower than the turbidity level of the control station (I-1-C). Only rebar fixing for crest platform, fixing concrete block at stage 3, and installation of propping inside cascade were undertaken during the monitoring day. No direct disturbance was observed from the site. About 15.2 mm rainfall was recorded by the Hong Kong Observatory on the monitoring day. Therefore, the exceedance was considered to be contributed by high turbidity level at upstream location and rainfall. Since the exceedance was non-project related, no further action was required.	
Actions taken / to be taken	The following mitigation measures were provided on-site during monitoring: (1) wastewater was collected and diverted to waste water treatment plant prior to discharge; and (2) nullah and site area were separated by sealed concrete block.	
Remarks	None	

Prepared by: Fan Cheong Tsang

Designation: Environmental Team Leader

Signature: Hangten Cheof

Date: 22-Jul-11

Photographic record for exceedance of Turbidity recorded at Sik Sik Yuen Ho Fung College (I-1) on 20-Jul-11



Site photo

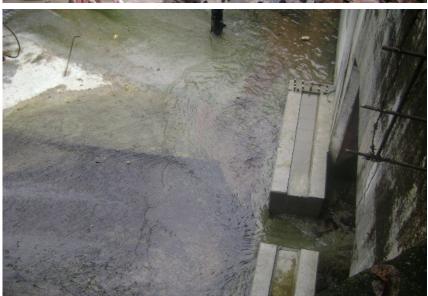


Photo taken at I-1



Photo taken at I-1-C

Incident Report on Limit Level Non-compliance

Project	Tsuen Wan Drainage Tunnel
Date	20-Jul-11
Time	11:50 AM
Monitoring Location	Hong Hoi Chee Hong Temple (I-2)
Parameter	Turbidity
Action & Limit Levels (NTU)	6.63 / 6.99
Measured Level (NTU)	8.56
Control Station	I-2-C
Measured Level at the Control Station (NTU)	9.79
Possible reason for Action or Limit Level Non-compliance	The measured turbidity level was higher than the baseline limit level, but lower than the turbidity level of the control station (I-2-C). Excavation (drilling holes) at vortex drop shaft, excavation (drilling holes) at man access shaft, excavation for drainage pipe next to catchpit WS1, closed formwork for skin wall construction, skin wall construction (break grouting of H-pile), and excavation for 1500 stepped channel were undertaken during the monitoring day. No direct disturbance was observed from the site. About 15.2 mm rainfall was recorded by the Hong Kong Observatory on the monitoring day. Therefore, the exceedance was considered to be contributed by high turbidity level at upstream location and rainfall. Since the exceedance was non-project related, no further action was required.
Actions taken / to be taken	The following mitigation measures were provided on-site during monitoring: (1) wastewater was collected and diverted to waste water treatment plant prior to discharge; (2) existing stream was diverted and bunded by sealed concrete block wall; (3) existing stream was bunded off by sand bag to prevent any excavated material runoff from working area. None

Prepared by: Fan Cheong Tsang

Designation: Environmental Team Leader

Signature: Hauften Cheof

Date: 22-Jul-11

Photographic record for exceedance of Turbidity recorded at Hong Hoi Chee Hong Temple (I-2) on 20-Jul-11



Photo taken at I-2



Photo taken at I-2-C

Incident Report on Limit Level Non-compliance

Project	Tsuen Wan Drainage Tunnel
Date	20-Jul-11
Time	11:00 AM
Monitoring Location	Squatters (I-3)
Parameter	Turbidity
Action & Limit Levels (NTU)	3.99 / 4.18
Measured Level (NTU)	6.94
Control Station	I-3-C
Measured Level at the Control Station (NTU)	7.06
Possible reason for Action or Limit Level Non-compliance	The measured turbidity level was higher than the baseline limit level, but lower than the turbidity level of the control station (I-3-C). Drilling presplit hole, rock breaking and splitting, mucking out and rock mapping were undertaken during the monitoring day. No direct disturbance was observed from the site. About 15.2 mm rainfall was recorded by the Hong Kong Observatory on the monitoring day. Therefore, the exceedance was considered to be contributed by high turbidity level at upstream location and rainfall. Since the exceedance was non-project related, no further action was required.
Actions taken / to be taken Remarks	The following mitigation measures were provided on-site during monitoring: (1) wastewater was collected and diverted to waste water treatment plant prior to discharge; (2) existing stream was diverted and bunded by sealed concrete block wall; (3) excavated area was bunded and sealed by concrete block wall to prevent any excavated material runoff from working area. None

Harften Cheof

Prepared by: Fan Cheong Tsang

Designation: Environmental Team Leader

Signature:

Date: 22-Jul-11

Photographic record for exceedance of Turbidity recorded at Squatters (I-3) on 20-Jul-11



Photo taken at I-3



Photo taken at I-3-C

Incident Report on Limit Level Non-compliance

Project	Tsuen Wan Drainage Tunnel
Date	18-Jul-11
Time	5:07 PM
Monitoring Location	Sik Sik Yuen Ho Fung College (I-1)
Parameter	Suspended Solids (SS)
Action & Limit Levels (mg/L)	8.85 / 10.17
Measured Level (mg/L)	3.10
Control Station	I-1-C
Measured Level at the Control Station (mg/L)	2.15
Possible reason for Action or Limit Level Non-compliance	The measured SS level was well below the baseline action/limit level, but higher than 130% of the SS level of the control station (I-1-C). General site cleaning, drilling hole and installation of rebar on cascade slope, making good formation at spiral ramp central void, bending and installation of rebar at vehicular access and geotechnical instrumentation monitoring were undertaken during the monitoring day. No direct disturbance was observed from the site. Therefore, the exceedance was considered to be contributed by low SS level at upstream location. Since the exceedance was non-project related, no further action was required.
Actions taken / to be taken	The following mitigation measures were provided on-site during monitoring: (1) wastewater was collected and diverted to waste water treatment plant prior to discharge; and (2) nullah and site area were separated by sealed concrete block.
Remarks	None

Harften Cheof

Prepared by: Fan Cheong Tsang

Designation: Environmental Team Leader

Signature:

Date: 25-Jul-11

Photographic record for exceedance of Suspended Solids (SS) recorded at Sik Sik Yuen Ho Fung College (I-1) on 18-Jul-11



Site photo



Photo taken at I-1

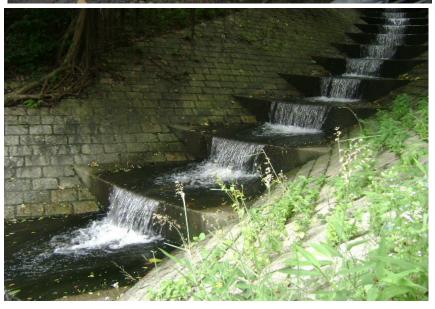


Photo taken at I-1-C

Incident Report on Limit Level Non-compliance

Project	Tsuen Wan Drainage Tunnel
Date	22-Jul-11
Time	2:33 PM
Monitoring Location	Squatters (I-3)
Parameter	Turbidity
Action & Limit Levels (NTU)	3.99 / 4.18
Measured Level (NTU)	6.48
Control Station	I-3-C
Measured Level at the Control Station (NTU)	6.44
Possible reason for Action or Limit Level Non-compliance	The measured turbidity level was higher than the baseline limit level, but lower than 120% of the turbidity level of the control station (I-3-C). General site cleaning and housekeeping, monitoring of deformation monitoring point (DMP), and drilling, splitting, rock breaking and mucking out in shaft were undertaken during the monitoring day. No direct disturbance was observed from the site. Therefore, the exceedance was considered to be contributed by high turbidity level at upstream location. Since the exceedance was non-project related, no further action was required.
Actions taken / to be taken	The following mitigation measures were provided on-site during monitoring: (1) wastewater was collected and diverted to waste water treatment plant prior to discharge; (2) existing stream was diverted and bunded by sealed concrete block wall; (3) excavated area was bunded and sealed by concrete block wall to prevent any excavated material runoff from working area.
Remarks	None

Harften Cheof

Prepared by: Fan Cheong Tsang

Designation: Environmental Team Leader

Signature:

Date: 25-Jul-11

Photographic record for exceedance of Turbidity recorded at Squatters (I-3) on 22-Jul-11



Photo taken at I-3



Photo taken at I-3-C

Incident Report on Limit Level Non-compliance

Project	Tsuen Wan Drainage Tunnel
Date	25-Jul-11
Time	8:50 AM
Monitoring Location	O-1(ET)
Parameter	Dissolved Oxygen (marine surface)
Action & Limit Levels (mg/L)	7.02 / 6.94
Measured Level (mg/L)	6.93
Control Station	O-1-C(ET)
Measured Level at the Control Station (mg/L)	6.99
Possible reason for Action or Limit Level Non-compliance	The measured DO level (marine surface) at the monitoring station was below the baseline limit level and lower than the DO level of the corresponding control station (about 0.9%). Only placing the fill materials for seawall formation and tamping was undertaken at the Outfall basin (Portion E) on the monitoring day. No other marine works was conducted. No direct disturbance from the site was observed during monitoring. Therefore, the exceedance was considered to be contributed by natural variation and no further action was required.
Actions taken / to be taken	(1) Silt curtain was provided along the Portion E boundary line and extended from seawater level to the bottom of seabed; (2) floating type silt curtain was employed at the inner side; (3) sufficient slack of silt curtain was allowed to cope with the wave and tidal action to ensure the curtains (outer and inner) were rested on seabed; (4) condition of silt curtains was checked by the supervisor daily; and (5) seawall blocks installation was undertaken within the inner silt curtain area only.
Remarks	None

Prepared by:	F. C. Tsang
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Designation: Environmental Team Leader

Signature: Hough English

Date: 26-Jul-11

Photographic record for exceedance of Dissolved Oxygen (marine surface) recorded at O-1(ET) on 25-Jul-11



Site photo



Site photo

Incident Report on Action Level Non-compliance

Project	Tsuen Wan Drainage Tunnel
Date	25-Jul-11
Time	8:50 AM
Monitoring Location	O-1(ET)
Parameter	Dissolved Oxygen (marine mid-depth)
Action & Limit Levels (mg/L)	7.02 / 6.94
Measured Level (mg/L)	6.97
Control Station	O-1-C(ET)
Measured Level at the Control Station (mg/L)	7.07
Possible reason for Action or Limit Level Non-compliance	The measured DO level (marine mid-depth) at the monitoring station was below the baseline action level and lower than the DO level of the corresponding control station (about 1.4%). Only placing the fill materials for seawall formation and tamping was undertaken at the Outfall basin (Portion E) on the monitoring day. No other marine works was conducted. No direct disturbance from the site was observed during monitoring. Therefore, the exceedance was considered to be contributed by natural variation and no further action was required.
Actions taken / to be taken	(1) Silt curtain was provided along the Portion E boundary line and extended from seawater level to the bottom of seabed; (2) floating type silt curtain was employed at the inner side; (3) sufficient slack of silt curtain was allowed to cope with the wave and tidal action to ensure the curtains (outer and inner) were rested on seabed; (4) condition of silt curtains was checked by the supervisor daily; and (5) seawall blocks installation was undertaken within the inner silt curtain area only.
Remarks	None

Prepared by: F.	C.	Tsang
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Designation: Environmental Team Leader

Signature: Forgten Reof

Date: 26-Jul-11

Photographic record for exceedance of Dissolved Oxygen (marine mid-depth) recorded at O-1(ET) on 25-Jul-11



Site photo



Site photo

Incident Report on Limit Level Non-compliance

Project	Tsuen Wan Drainage Tunnel
Date	20-Jul-11
Time	12:20 PM
Monitoring Location	Sik Sik Yuen Ho Fung College (I-1)
Parameter	Suspended Solids (SS)
Action & Limit Levels (mg/L)	8.85 /10.17
Measured Level (mg/L)	13.90
Control Station	I-1-C
Measured Level at the Control Station (mg/L)	8.35
Possible reason for Action or Limit Level Non-compliance	The measured SS level at I-1 was higher than the baseline limit level and the SS level of the control station (I-1-C). Only rebar fixing for crest platform, fixing concrete block at stage 3, and installation of propping inside cascade were undertaken during the monitoring day. The Contractor has provided wastewater treatment plant for the site effluent before discharge and erected the sealed concrete block wall to separate the existing stream and site works area. No wastewater directly discharged from the site was observed. Although the SS level at I-1 was about 66% higher than that at I-1-C, no direct sources of impact from the site were identified. As such, no further mitigation measures or actions were recommended.
Actions taken / to be taken	The following mitigation measures were provided on-site during monitoring: (1) wastewater was collected and diverted to waste water treatment plant prior to discharge; and (2) nullah and site area were separated by sealed concrete block.
Remarks	None

Prepared by: Fan Cheong Tsang

Designation: Environmental Team Leader

Signature: Hangten Cheof

Date: 28-Jul-11

Photographic record for exceedance of Suspended Solids (SS) recorded at Sik Sik Yuen Ho Fung College (I-1) on 20-Jul-11



Site photo

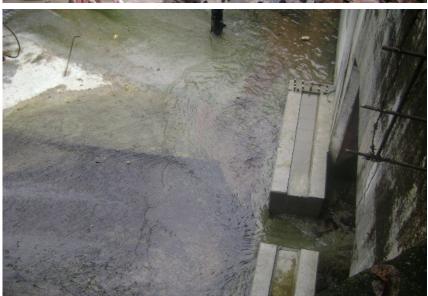


Photo taken at I-1



Photo taken at I-1-C

Incident Report on Limit Level Non-compliance

Project	Tsuen Wan Drainage Tunnel
Date	20-Jul-11
Time	11:50 AM
Monitoring Location	Hong Hoi Chee Hong Temple (I-2)
Parameter	Suspended Solids (SS)
Action & Limit Levels (mg/L)	7.68 / 8.34
Measured Level (mg/L)	5.50
Control Station	I-2-C
Measured Level at the Control Station (mg/L)	4.10
Possible reason for Action or Limit Level Non-compliance	The measured SS level was lower than the baseline acvtion/limit level, but slightly higher than 130% of the SS level of the control station (I-2-C). Excavation (drilling holes) at vortex drop shaft, excavation (drilling holes) at man access shaft, excavation for drainage pipe next to catchpit WS1, closed formwork for skin wall construction, skin wall construction (break grouting of H-pile), and excavation for 1500 stepped channel were undertaken during the monitoring day. No direct disturbance was observed from the site. About 15.2 mm rainfall was recorded by the Hong Kong Observatory on the monitoring day. Therefore, the exceedance was considered to be contributed by natural variation and and rainfall. Since the exceedance was non-project related, no further action was required.
Actions taken / to be taken Remarks	The following mitigation measures were provided on-site during monitoring: (1) wastewater was collected and diverted to waste water treatment plant prior to discharge; (2) existing stream was diverted and bunded by sealed concrete block wall; (3) existing stream was bunded off by sand bag to prevent any excavated material runoff from working area. None

Prepared by: Fan Cheong Tsang

Designation: Environmental Team Leader

Signature: Hauften Cheof

Date: 28-Jul-11

Photographic record for exceedance of Suspended Solids (SS) recorded at Hong Hoi Chee Hong Temple (I-2) on 20-Jul-11



Photo taken at I-2



Photo taken at I-2-C

Incident Report on Limit Level Non-compliance

Project	Tsuen Wan Drainage Tunnel
Date	25-Jul-11
Time	2:27 PM
Monitoring Location	O-1(FT)
Parameter	Suspended Solids (SS)
Action & Limit Levels (mg/L)	14.10 / 18.08
Measured Level (mg/L)	7.23
Control Station	O-1-C(FT)
Measured Level at the Control Station (mg/L)	5.45
Possible reason for Action or Limit Level Non-compliance	The measured SS level at the monitoring station was well below the baseline action/limit level, but slightly higher than 130% of the SS level of the corresponding control station. Only placing the fill materials for seawall formation and tamping was undertaken at the Outfall basin (Portion E) on the monitoring day. No other marine works was conducted. No direct disturbance from the site was observed during monitoring. Therefore, the exceedance was considered to be contributed by natural variation and no further action was required.
Actions taken / to be taken	(1) Silt curtain was provided along the Portion E boundary line and extended from seawater level to the bottom of seabed; (2) floating type silt curtain was employed at the inner side; (3) sufficient slack of silt curtain was allowed to cope with the wave and tidal action to ensure the curtains (outer and inner) were rested on seabed; (4) condition of silt curtains was checked by the supervisor daily; and (5) seawall blocks installation was undertaken within the inner silt curtain area only.
Remarks	None

Prepared by: F. C. T	sang
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Designation: Environmental Team Leader

Signature: Forgten Reof

Date: 01-Aug-11

Photographic record for exceedance of Suspended Solids (SS) recorded at O-1(FT) on 25-Jul-11



Site photo



Site photo

Incident Report on Action Level Non-compliance

Project	Tsuen Wan Drainage Tunnel
Date	29-Jul-11
Time	10:02 AM
Monitoring Location	Hong Hoi Chee Hong Temple (I-2)
Parameter	Suspended Solids (SS)
Action & Limit Levels (mg/L)	7.68 / 8.34
Measured Level (mg/L)	8.05
Control Station	I-2-C
Measured Level at the Control Station (mg/L)	8.85
Possible reason for Action or Limit Level Non-compliance	The measured SS level was higher than the baseline action level, but lower than the SS level of the control station (I-2-C). General site cleaning, housekeeping and temporary traffic arrangement (TTA); excavation and mucking out from de-aeration chamber; preparation work for blasting; cleaning grouting and excavation at Portion G; demobilization at Portion G jacking pit; and formwork for skin wall construction were undertaken during the monitoring day. No direct disturbance was observed from the site. Therefore, the exceedance was considered to be contributed by high SS level at upstream location. Since the exceedance was non-project related, no further action was required.
Actions taken / to be taken Remarks	The following mitigation measures were provided on-site during monitoring: (1) wastewater was collected and diverted to waste water treatment plant prior to discharge; (2) existing stream was diverted and bunded by sealed concrete block wall; (3) existing stream was bunded off by sand bag to prevent any excavated material runoff from working area. None

Prepared by: Fan Cheong Tsang

Designation: Environmental Team Leader

Signature: Hangten Cheof

Date: 04-Aug-11

Photographic record for exceedance of Suspended Solids (SS) recorded at Hong Hoi Chee Hong Temple (I-2) on 29-Jul-11



Photo taken at I-2



Photo taken at I-2-C

Incident Report on Limit Level Non-compliance

Project	Tsuen Wan Drainage Tunnel
Date	29-Jul-11
Time	8:53 AM
Monitoring Location	Squatters (I-3)
Parameter	Suspended Solids (SS)
Action & Limit Levels (mg/L)	6.13 / 7.23
Measured Level (mg/L)	2.70
Control Station	I-3-C
Measured Level at the Control Station (mg/L)	<2.00
Possible reason for Action or Limit Level Non-compliance	The measured SS level was well below the baseline action/limit level, but higher than 130% of the SS level of the control station (I-3-C). General site cleaning and housekeeping, monitoring of deformation monitoring point (DMP), and drilling, rock breaking and mucking out in shaft and modification of temporary drain were undertaken during the monitoring day. No direct disturbance was observed from the site. Therefore, the exceedance was considered contributed by natural variation. No further action was required.
Actions taken / to be taken	The following mitigation measures were provided on-site during monitoring: (1) wastewater was collected and diverted to waste water treatment plant prior to discharge; (2) existing stream was diverted and bunded by sealed concrete block wall; and (3) excavated area was bunded and sealed by concrete block wall to prevent any excavated material runoff from working area.
Remarks	None

Prepared by: Fan Cheong Tsang

Designation: Environmental Team Leader

Signature: Hough English

Date: 04-Aug-11

Photographic record for exceedance of Suspended Solids (SS) recorded at Squatters (I-3) on 29-Jul-11



Photo taken at I-3



Photo taken at I-3-C



Appendix K

Complaint Log

APPENDIX K

COMPLAINT LOG

Complaint No.	Log Ref.	Date/Location	Complainant	Details of Complaint	Investigation / Mitigation Action	Status
1	CIR-001	9 March 2009 at Outfall	Public through EPD	EPD has received a complaint (EPD ref: EP3/N22/RW/04846-09) regarding to muddy effluent discharged from the outfall of the construction site from a public on 9 March 2009. Site investigation was also carried out by EPD with the Contractor on the same day.	Findings/ Observations In the afternoon on 9 March 2009, the Contractor was carrying out regular maintenance for removing silt accumulated in the wastewater treatment plant. During the maintenance works, some residual silt inside the plant was accidentally leaked out to the outfall discharge outlet. The reason was that a flexible pipe for disposing silt was found connecting to the concrete platform of the outfall discharge outlet. Conclusion/Remedial Action The complaint was valid and it was due to maintenance works at the wastewater treatment plant at the outfall area. The contractor had cleaned up the silt at discharge outlet and the channel at the outfall area on 12 March 2009 as shown in the attached photo. The ET will closely inspect the discharge outlet and the channel during the routine site inspections and provide advice to the Contractor. The Contractor was also advised to provide mitigation measures during any occasion of the maintenance work on the wastewater treatment plant. The discharge pipe of the treatment plant should be plugged and ensure not functioned when carrying out maintenance works on the wastewater treatment plant in order to prevent the discharge of silt or muddy water to the outlet. Flexible pipe for discharge of sludge should not be placed on the concrete platform under the outfall discharge outlet. For disposal of slit or sludge in the wastewater treatment plant, tanker should be used.	Closed
2	CIR-002	8 May 2009 at Outfall	Public through EPD	EPD has received a complaint (EPD ref: EP3/N22/RW/09755-09) regarding to construction dust from the outfall	Findings/ Observations Regular 1-hour TSP monitoring, in accordance with EM&A Manual, is performed by Environmental Team. The monitoring station concerned is ASR9 (i.e. at the podium level of Greenview Terrace facing to the construction site). The closest date for the 1-hour TSP concentration monitoring was on 6	Closed

Complaint No.	Log Ref.	Date/Location	Complainant	Details of Complaint	Investigation / Mitigation Action	Status
				construction site on 8 May 2009. Site investigation was also carried out by EPD with the Contractor on 14 May 2009.	May 2009 and 12 May 2009 at Greenview Terrace, ASR9. Soil nailing works and loading & unloading excavated materials were observed during monitoring. In accordance with the EM&A Manual and the Baseline Monitoring Report, all 1-hour TSP concentrations at ASR9 were below the established Action and Limit Levels. No exceedance was recorded on 6 and 12 May 2009. The contractor and the environmental team were also undertaken site investigation on the subject area in response to the complaint. It was confirmed that the air quality mitigation measures as recommended in EIA have been provided by the Contractor. The mitigation measures are as follows: • Water spraying was provided to the exposed surface. • Several automatic sprinklers were provided at the outfall construction site for water spraying of the haul road. • Water spraying was provided during dust generating works (e.g. rock breaking and soil nailing works). Conclusion/Remedial Action Based on the site inspection and monitoring results, the complaint is considered not justifiable since no action & limit level exceedance on construction dust are identified. Air quality mitigation measures as recommended in EIA have been implemented in order to control and minimise the air quality impact and nuisance arising from the construction activities. Nevertheless, in view of the recent dry and sunny weather, the haul road and the exposed area would be dry very quickly. The Contractor was recommended to provide more frequent water spraying especially in the dry and sunny weather.	
3	CIR-003	14 May 2009 at Outfall	Public through EPD	EPD has received a complaint (EPD ref: EP/RW/080206) regarding to daytime construction rock breaking at 7:15 am	The closest date to the complaint for the 1-hour TSP monitoring & daytime construction noise monitoring was on 12, 18 and 27 May 2009 at Greenview Terrace, ASR9 and NSR9. Soil nailing, excavation, rock breaking, loading and unloading the materials were observed during monitoring period. The measured noise levels complied with the limit level in accordance with the EIAO-TM. All 1-hour TSP concentrations at ASR9 were below the established Action and Limit Levels. No 1-hour TSP	Closed

Complaint No.	Log Ref.	Date/Location	Complainant	Details of Complaint	Investigation / Mitigation Action	Status
				and dusty at the outfall construction site on 14 May 2009.	exceedance was recorded. The contractor and the environmental team were also undertaken site investigation on the subject area in response to the complaint. Air quality mitigation measures as recommended in EIA have been implemented by the Contractor. However, noise mitigation measures could be further improved. Based on our site inspection and monitoring results, the complaint for dust is considered not justifiable since no action & limit level exceedance on construction dust is identified. Air quality mitigation measures as recommended in EIA have also been implemented in order to control and minimise the air quality impact arising from the construction activities. In view of the recent dry and sunny weather, the haul road and the exposed area would be dry very quickly. The Contractor was recommended to enhance water spraying especially in the dry and sunny weather. On the other hand, the complaint for noise is considered due to works and the Contractor was agreed to improve the on-site noise mitigation measures such as the following measures. ET's site inspection and the joint inspection with relevant parties was conducted on 29 May 2009 and 4 June 2009 respectively to confirm all the below measures have been implemented. • For the idling plant, it should be switched off to reduce noise level generated. • The sound insulation sheets and noise insulation materials should be placed to enclose the breaking tip tightly and also aside or surrounding the breaking activities as recommended in the following photos 1-3 in noise mitigation measures. • Noise monitoring frequency was increased in order to check the effectiveness of the mitigation measures. The additional measurement was taken on 27 May, 8 June, 10 June and 12 June 2009 after all the measures implemented. The noise levels (L _{eq. 30 min}) were 70.9 dB (A), 70.5 dB (A), 70.3 dB (A) and 70.3 dB (A) respectively, which comply with the limit level in accordance with the EIAO-TM. Soil nailing, excavation and rock breaking were observed during monitoring	

Complaint No.	Log Ref.	Date/Location	Complainant	Details of Complaint	Investigation / Mitigation Action	Status
					The measures were well in place and seemed effective during the measurement.	
4	CIR-004	10 July 2009 at Outfall	Public through EPD	EPD has received a complaint (EPD ref: EP3/N22/RW/15137-09) regarding to construction dust from the outfall construction site on 10 July 2009.	Findings/ Observations 1-hour TSP concentration monitoring was on 10 July 2009 at Greenview Terrace, ASR9. Soil nailing works, concrete breaking, excavation and loading & unloading excavated materials were observed during monitoring. All 1-hour TSP concentrations at ASR9 were below the established Action and Limit Levels. No exceedance was recorded on 10 July 2009. The contractor and the environmental team were also undertaken site investigation on the subject area in response to the complaint. It was confirmed that the air quality mitigation measures as recommended in EIA have been provided by the Contractor. The mitigation measures are as follows: • Water spraying was provided to the exposed surface. • Automatic sprinklers were provided at the outfall construction site for water spraying of the haul road. • Water spraying was provided during dust generating works (e.g. rock breaking and soil nailing works). • Tarpaulin was used for covering the dusty works in the Portal area. Conclusion/Remedial Action The complaint is considered not justifiable since no action & limit level exceedance on construction dust are identified	Closed
5 & 6	CIR-005	29 July 2009 & 11 August 2009 at Outfall	Public through SOR	SOR has received two complaints (SOR ref: (DC/2007/12)/M45/5 00/02480, 02500) from Greenview Terrace regarding to daytime construction noise exceedance	Findings/ Observations Soil nailing, excavation, rock breaking and drilling, loading and unloading the materials were generally observed during monitoring period in July and August 2009. According to the noise monitoring results from 6 July 2009 to 31 August 2009 at NSR 9, the measured noise levels complied with the limit level in accordance with the EIAO-TM. All 1-hour TSP concentrations at ASR9 were below the established Action and Limit Levels from 6 July 2009 to 25 August 2009. Conclusion/Remedial Action The dust complaint on 22 July 2009 was due to the soil nailing works. The	Same Case with Complai nt No.

Complaint No.	Log Ref.	Date/Location	Complainant	Details of Complaint	Investigation / Mitigation Action	Status
				recorded at NSR9 on 8, 22, 23, 27 and 29 July 2009 and a large amount dust generated at the outfall construction site. The complaint dates were corresponded to 29 July and 11 August 2009.	Contractor was reminded enhance the dust mitigation measures during soil nailing works. A designated staff was provided to spray water continuously during soil nailing. A nylon bag was placed on the drilling hole and keeping wet to suppress dust. A sprinkler was added at the hillside of the site and water spraying was provided continuously during operation of drilling to suppress dust. The documented complaint for noise is considered to trigger the action level and the Contractor was also reminded to enhance the on-site noise mitigation measures continuously. The enhanced mitigation measures are proposed as follows: • A staff from the Contractor was designated to take the reading of Leq (5mins) at the roof of Greenview Terrace. In case of the Leq (5min) exceed 73 dB(A), the Contractor would re-schedule the noisy plants to mitigate the escalation of noise level. • The designated staff was reminded to record all the weather condition including raining and wind speed. • Tools box talk for the Contractor's Team was carried out for reminding that the movable barrier should be placed to the breaking activities as much as possible. • Movable noise barriers were placed on site and the movable noise barriers were also modified. • Existing 25 ton rock breaker had been replaced by the another breaker. • The breaking tap of the 25 ton rock breaker had been replaced by another breaking tap. • A joint filler wall was installed at the vertical face of westbound to mitigate the noise rebound from the vertical face to high level of Greenview Terrace. From the additional monitoring data and monitoring data under regular EM&A requirements, noise level (L _{eq, 30 min}) between 6 July to 31 August 2009 was in the range of 71 to 74 dB(A) to the nearest integer. The noise monitoring frequency was maintained in twice per week to check whether the mitigation measures are effective. From the information of the Contractor, all the mitigation measures were implemented on 31 August	

Complaint No.	Log Ref.	Date/Location	Complainant	Details of Complaint	Investigation / Mitigation Action	Status
					2009. Noise levels ($L_{eq, 30 \text{ min}}$) were also re-measured after the implementation of the mitigation measures. Noise level ($L_{eq, 30 \text{ min}}$) from 4 Sep to 28 Sep 2009 was in the range of 70 to 73 dB(A) to the nearest integer after the implementation of the mitigation measures. In our investigation, there was no exceedance of the measured noise level at Greenview Terrace.	
7	CIR-006	12 August 2009 at Outfall	Public through SOR	SOR has received a complaint (SOR ref: (DC/2007/12)/M45/5 00/02527) from Greenview Terrace, via Apple Daily regarding to daytime construction noise level (L _{eq(30min)}) was sometimes more than 80 dB(A) and a large amount dust generated at the outfall construction site. The complaint date was corresponded to 12 August 2009.	Findings/ Observations Soil nailing, excavation, rock breaking and drilling, loading and unloading the materials were generally observed during monitoring period in July and August 2009. According to the noise monitoring results from 6 July 2009 to 31 August 2009 at NSR 9, the measured noise levels complied with the limit level in accordance with the EIAO-TM. All 1-hour TSP concentrations at ASR9 were below the established Action and Limit Levels from 6 July 2009 to 25 August 2009. Conclusion/Remedial Action The dust complaint was considered not justifiable since no action & limit level exceedance on construction dust were identified. However, it was a recurrent case from Greenview Terrace. The Contractor was recommended to enhance water spraying continuously especially in rock breaking activities. On the other hand, there was no noise levels (Leq(90min)) from the measurement taken from ET was more than 80 dB(A). However, it was a recurrent case from Greenview Terrace. The Contractor was reminded to enhance the on-site noise mitigation measures. The enhanced mitigation measures are proposed as follows: • A staff from the Contractor was designated to take the reading of Leq (5mins) at the roof of Greenview Terrace. In case of the Leq (5min) exceed 73 dB(A), the Contractor would re-schedule the noisy plants to mitigate the escalation of noise level. • The designated staff was reminded to record all the weather condition including raining and wind speed. • Tools box talk for the Contractor's Team was carried out for reminding that the movable barrier should be placed to the breaking activities as	Closed

Complaint No.	Log Ref.	Date/Location	Complainant	Details of Complaint	Investigation / Mitigation Action	Status
					 much as possible. Movable noise barriers were placed on site and the movable noise barriers were also modified. Existing 25 ton rock breaker had been replaced by the another breaker. The breaking tap of the 25 ton rock breaker had been replaced by another breaking tap. A joint filler wall was installed at the vertical face of westbound to mitigate the noise rebound from the vertical face to high level of Greenview Terrace. From the additional monitoring data and monitoring data under regular EM&A requirements, noise level (Leq, 30 min) from 6 July to 31 August 2009 was in the range of 71 to 74 dB(A) to the nearest integer. The noise monitoring frequency was maintained in twice per week to check whether the mitigation measures are effective. From the information of the Contractor, all the mitigation measures were implemented on 31 August 2009. Noise levels (Leq, 30 min) were also re-measured after the implementation of the mitigation measures. Noise level (Leq, 30 min) from 4 Sep to 28 Sep 2009 was in the range of 70 to 73 dB(A) to the nearest integer after the implementation of the mitigation measures. 	
8	CIR-007	14 August 2009 at Outfall	Public through EPD	EPD has received a complaint (EPD ref: EP3/N22/RW/17978-09) from Greenview Terrace regarding to daytime construction noise from the outfall construction site. The complaint date was corresponded to 14 August 2009.	Findings/ Observations Soil nailing, excavation, rock breaking and drilling, loading and unloading the materials were generally observed during monitoring period in July and August 2009. According to the noise monitoring results from 6 July 2009 to 31 August 2009 at NSR 9, the measured noise levels complied with the limit level in accordance with the EIAO-TM. Conclusion/Remedial Action This was a recurrent case from Greenview Terrace. The documented complaint for noise is considered to trigger the action level and the Contractor was reminded to enhance the on-site noise mitigation measures continuously. The enhanced mitigation measures are proposed as follows: • A staff from the Contractor was designated to take the reading of Leq	Same Case with Complai nt No. 11

Complaint No.	Log Ref.	Date/Location	Complainant	Details of Complaint	Investigation / Mitigation Action	Status
					 (5mins) at the roof of Greenview Terrace. In case of the Leq (5min) exceed 73 dB(A), the Contractor would re-schedule the noisy plants to mitigate the escalation of noise level. The designated staff was reminded to record all the weather condition including raining and wind speed. Tools box talk for the Contractor's Team was carried out for reminding that the movable barrier should be placed to the breaking activities as much as possible. Movable noise barriers were placed on site and the movable noise barriers were also modified. Existing 25 ton rock breaker had been replaced by the another breaker. The breaking tap of the 25 ton rock breaker had been replaced by another breaking tap. A joint filler wall was installed at the vertical face of westbound to mitigate the noise rebound from the vertical face to high level of Greenview Terrace. From the additional monitoring data and monitoring data under regular EM&A requirements, noise level (Leq, 30 min) from 6 July to 31 August 2009 was in the range of 71 to 74 dB(A) to the nearest integer. The noise monitoring frequency would be maintained in twice per week to check whether the mitigation measures are effective. From the information of the Contractor, all the mitigation measures were implemented on 31 August 2009. Noise levels (Leq, 30 min) were also re-measured after the implementation of the mitigation measures. Noise level (Leq, 30 min) from 4 Sep to 28 Sep 2009 was in the range of 70 to 73 dB(A) to the nearest integer after the implementation of the mitigation measures. 	
9	CIR-008	17 August 2009 at Portion D of the Site	Public through SOR	SOR has received a complaint (SOR ref:(DC/2007/12)/M4 5/500/02546) from Long Bench Garden	Findings/ Observations Soil nailing, excavation, rock breaking and drilling, loading and unloading the materials were generally observed during monitoring period in August 2009. The monitoring results from 3 August 2009 to 31 August 2009 at NSR 8 showed the measured noise levels complied with the limit level in accordance with the EIAO-TM. The contractor and the environmental	Closed

Complaint No.	Log Ref.	Date/Location	Complainant	Details of Complaint	Investigation / Mitigation Action	Status
				regarding to noise nuisance generated from the daytime construction work (rock-breaking) in Portion D of the Site. The complaint date was corresponded to 17 August 2009.	team were also undertaken site investigation on the subject area in response to the complaint. Noise mitigation measures should be enhanced continuously due to this complaint. Conclusion/Proposed Action The documented complaint for noise is considered to trigger the action level and the Contractor was reminded to enhance the on-site noise mitigation measures continuously. The enhanced mitigation measures are recommended as follows: Movable noise barriers had been placed towards the direction of Long Bench Garden, particular for the pipe pile works in the portal. Tools box talk for construction team was carried out for reminding that the movable barrier should be placed to the breaking activities as much as possible. The existing noisy 25 ton rock breaker had been replaced by the other breaker. A joint filler wall had been fixed on the vertical face of west bound to absorb the noise generated towards Long Beach Garden. Noise monitoring frequency was increased twice per week by ET due to this complaint. The measured noise levels were complied with the limit level in accordance with the EIAO-TM. No further complaint was received from Long Bench Garden within the reporting month.	
10	CIR-009	22 August 2009 at Outfall	Public through SOR	A complaint (SOR ref: (DC/2007/12)/M45/5 00/02628) was received from Greenview Terrace regarding to daytime construction noise level (Leq(30min)) was sometimes exceeded 75 dB(A)	Findings/ Observations Soil nailing, excavation, rock breaking and drilling, loading and unloading the materials were generally observed during monitoring period in July and August 2009. The monitoring results from 6 July 2009 to 31 August 2009 at NSR 9 showed the measured noise levels complied with the limit level in accordance with the EIAO-TM. The contractor and the environmental team were also undertaken site investigation on the subject area in response to the complaint. Noise mitigation measures should be enhanced continuously due to this complaint. Conclusion/Proposed Action The documented complaint for noise is considered to trigger the action level and the Contractor was reminded to enhance the on-site noise	Same Case with Complai nt No. 11

Complaint No.	Log Ref.	Date/Location	Complainant	Details of Complaint	Investigation / Mitigation Action	Status
				at the outfall construction site. The complaint date was corresponded to 22 August 2009.	mitigation measures continuously. The enhanced mitigation measures are recommended as follows: • A staff from the Contractor was designated to take the reading of Leq (5mins) at the roof of Greenview Terrace. In case of the Leq (5min) exceed 73 dB(A), the Contractor would re-schedule the noisy plants to mitigate the escalation of noise level. • The designated staff was reminded to record all the weather condition including raining and wind speed. • Tools box talk for the Contractor's Team was carried out for reminding that the movable barrier should be placed to the breaking activities as much as possible. • Movable noise barriers were placed on site and the movable noise barriers were also modified. • Existing 25 ton rock breaker had been replaced by the another breaker. • The breaking tap of the 25 ton rock breaker had been replaced by another breaking tap. • A joint filler wall was installed at the vertical face of westbound to mitigate the noise rebound from the vertical face to high level of Greenview Terrace. From the additional monitoring data and monitoring data under regular EM&A requirements, noise level (Leq, 30 min) from 6 July to 31 August 2009 was in the range of 71 to 74 dB(A) to the nearest integer. The noise monitoring frequency was maintained in twice per week to check whether the mitigation measures are effective. From the information of the Contractor, all the mitigation measures were implemented on 31 August 2009. Noise levels (Leq, 30 min) were also re-measured after the implementation of the mitigation measures. Noise level (Leq, 30 min) from 4 Sep to 28 Sep 2009 was in the range of 70 to 73 dB(A) to the nearest integer after the implementation of the mitigation measures. In our investigation, there was no exceedance of the measured noise level at Greenview Terrace.	

Complaint No.	Log Ref.	Date/Location	Complainant	Details of Complaint	Investigation / Mitigation Action	Status
11	CIR-010	24 September 2009 at Outfall	Public through SOR	A complaint (SOR ref: (DC/2007/12)/M45/5 00/02749) was received from Greenview Terrace regarding to daytime construction noise level (Leq(30min)) was sometimes exceeded 75 dB(A) at the outfall construction site.	Findings/ Observations Soil nailing, excavation, rock breaking and drilling, loading and unloading the materials were generally observed during monitoring period in July and September 2009. The monitoring results from 6 July 2009 to 29 October 2009 at NSR 9 showed the measured noise levels complied with the limit level in accordance with the EIAO-TM. The contractor and the environmental team were also undertaken site investigation on the subject area in response to the complaint. Noise mitigation measures have been enhanced continuously due to this complaint. Conclusion/Proposed Action The documented complaint for noise is considered to trigger the action level and the Contractor was reminded to enhance the on-site noise mitigation measures continuously. The enhanced mitigation measures were implemented as follows: A staff from the Contractor was designated to take the reading of Leq (5mins) at the roof of Greenview Terrace. In case of the Leq (5min) exceed 73 dB(A), the Contractor would re-schedule the noisy plants to mitigate the escalation of noise level. The designated staff was reminded to record all the weather condition including raining and wind speed. Tools box talk for the Contractor's Team was carried out for reminding that the movable barrier should be placed to the breaking activities as much as possible. Movable noise barriers were placed on site and the movable noise barriers were also modified. Existing 25 ton rock breaker had been replaced by the another breaker. The breaking tap of the 25 ton rock breaker had been replaced by another breaking tap. A joint filler wall was installed at the vertical face of westbound to mitigate the noise rebound from the vertical face to high level of Greenview Terrace.	Closed

Complaint No.	Log Ref.	Date/Location	Complainant	Details of Complaint	Investigation / Mitigation Action	Status
					From the additional monitoring data above and the regular monitoring under EM&A requirements, the measured noise levels were complied with the limit level in accordance with the EIAO-TM. From the noise level on 25 September 2009 and 2 October 2009, the trend of noise level seemed to be increased since the decoration work at 14/F Greenview Terrace was the domain noise source during the monitoring. The noise level during that time would be considered for reference only. There was no exceedance of the measured noise level at Greenview Terrace in our investigation.	
12	CIR-011	2 October 2009 at I-3	Public through EPD	EPD has received a complaint (EPD ref: EP3/N22/RW/22016-09) regarding to construction dust at the Intake-3 on 2 October 2009.	Findings/ Observations There is no representative air monitoring location as stated in the EM&A Manual. The contractor and the environmental team were undertaken site investigation on the subject area at 08-Oct-09 in response to the complaint. Air quality mitigation measures as recommended in EIA have been implemented by the Contractor. However, the dust impact by exposed area could be further improved. The mitigation measures during the site investigation were observed as follows: Water spraying was provided to the exposed surface. Wheel washing facilities for dump trucks was provided at the site exit. Water spraying was provided during excavation and loading/unloading works Conclusion/Proposed Action Based on our site inspection, the complaint for dust is considered justifiable as it is due to windy erosion on the exposed surface. Air quality mitigation measures as recommended in EIA have also been implemented in order to control and minimise the air quality impact arising from the construction activities. In view of the recent dry season, the haul road and the exposed area would be dry very quickly. The Contractor was recommended to provide water spraying more frequently especially in the dry season.	Closed

Complaint No.	Log Ref.	Date/Location	Complainant	Details of Complaint	Investigation / Mitigation Action	Status
13	(DC/200 7/12)/ M45/50 0/2923 & email on 11 Novemb er 2009 from MCSJV	9 November 2009 at Outfall	Greenview Terrace through EPD	Movable noise barrier was not placed close enough to the piling machine.	 Immediate Action The rig was re-orientated and the barrier was placed closed to the drilling head. Follow-up Action Training was conducted to the operator to ensure that the workers aware that the barrier should be placed closed not the drilling head not the machine itself. In order to prevent future occurrence, a permit to dig system was adopted. It should be checked by the Contractor and endorsed by the SOR before starting the drilling rig. The follow up action was checked and a permit to dig system has been implemented. 	Closed
14	(DC/200 7/12)/ M45/50 0/2978 & email on 19 Novemb er 2009 from MCSJV	18 November 2009 at Outfall	Greenview Terrace through EPD	Rock-breaking activity carried out in the eastern area of Portion D, closest to Greenview Terrace, was not totally screened and line of sight of the breaker was observed from the NSR.	 Follow up Action The bamboo scaffold was extended further away from stage 3 scaffold to further screen off the activities to the Greenview. The length of the extension was about 8 to 10 m. A strong reminded was given to the relevant staff and sub-contractor and the barrier should be placed in the right orientation before breaking. The mitigation measures were strictly followed as stated in the proposal. The follow up action and relevant records was checked. 	Closed
15.	CIR-12	19 January 2010 at Intake-3 construction site	Public through EPD	EPD has received a public complaint (EPD ref: EP3/N22/RW/01270-10) regarding effluent discharge at Intake-3 construction site on 19 January 2010.	Findings/ Observations The effluent discharge on 19 January 2010 was due to the leakage of Gabion wall at I3. The water from the rock drilling work was flowing through the gap of the Gabion Wall to the watercourses at I3. Immediate Action The contractor had sealed the gap at the Gabion Wall immediately after the incident. Conclusion/Proposed Action Based on our site inspection, the complaint was due to leakage of Gabion	Closed.

Complaint No.	Log Ref.	Date/Location	Complainant	Details of Complaint	Investigation / Mitigation Action	Status
					wall. The area would be checked and maintained continuously to avoid recurrence case. The above identified mitigation measures have been implemented by the Contractor on 22 January 2010 and ET has also checked the implementation on 31 January 2010. The ET will closely inspect the watercourses during the routine site inspections and provide advice to the Contractor.	
16	CIR-13	19 January 2010 at Intake-3 construction site	Public through EPD	EPD has received a public complaint (EPD ref: EP3/N22/RW/01319-10) regarding daytime construction noise at Intake-3 construction site on 19 January 2010.	 Findings/ Observations The monitoring station concerned is NSR6 (i.e. at Squatter facing to the construction site). Excavation, soil nailing, rock drilling and breaking, loading and unloading the materials were generally observed during monitoring period in mid-January 2010. The measured noise levels in January 2010 complied with the limit level in accordance with the EM&A Manual. These cases would also be treated as two action level exceedances on noise. The Contractor and the Environmental Team were also undertaken site investigation on the subject area in response to complaint. The noise mitigation measures during the site investigation were recommended as follows: Sound insulation sheets were installed covering the working area during breaking and rock drilling in order to block the line of sight to the NSR. Noise insulation materials were used to enclose the drilling rig tightly. Conclusion/Proposed Action Based on the site inspection and monitoring results, the complaint was due to noise generated by rock breaking work. The identified mitigation measures have been discussed with the Contractor and the Contractor has submitted the remedial proposal. The proposal was implemented by the Contractor on 25 January 2010 and ET has also checked the implementation on 31 January 2010. The Contractor was also advised to review the mitigation measures from time to time near the NSR at I3. The 	Closed.
					ET will closely inspect the area during the routine site inspections and provide advice to the Contractor.	
17	CIR-13	21 January 2010 at Intake-3	Public through	EPD has received a public complaint (EPD ref:	Refers to Investigation /Mitigation Action for Complaint No. 16.	Closed

Complaint No.	Log Ref.	Date/Location	Complainant	Details of Complaint	Investigation / Mitigation Action	Status
		construction site	EPD	EP3/N22/RW/01444- 10) regarding daytime construction noise at Intake-3 construction site on 21 January 2010.		
18	CIR-14	27 August 2010 near Intake-2 construction site	Public through DSD	DSD has received a public complaint regarding choked sewage manhole (MH1) at Lo Wai Road construction site on 27 August 2010.	Findings/ Observations During DSD inspection on 30 August 2010, improper discharge from the site to manhole, MH3, which is located downstream of MH1 was observed. ET had received those information from the Contractor on 09 September 2010. Site investigation was also carried out by SOR's representative with the Contractor on 01 September 2010. Checking with the site log, the construction activity at Lo Wai on 27 August 2010 was pipe jacking only. No site formation works was undertaken. The contractor and SOR's representative have undertaken site investigation on the subject area on 01 September 2010. On-site flow test at Portion G had conducted. Maeda works area is located at the lower section of Lo Wai Road and manhole MH3 is adjacent to the works area. MH1 (choked sewage manhole) is located at the upper section of Lo Wai Road. MH2 manhole is located middle section of Lo Wai Road. MH2 are outside the works area. Water flow test for manhole MH2 and MH3 and no blockage was observed. Sewage overflow was found at MH1 during the joint site inspection on 01 September 2010 It was reported that there were water pipes connected between the site and the MH3. Discharge was found in MH3 during DSD inspection. The contractor claimed that the purpose of the water pipes was to direct the storm water and underground water inside the concrete pipe "pipe jacking". There was no discharge license for that portion. The Contractor had stopped on 01 September 2010 the water pumping to MH3 and	Closed

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					apply the discharge license for the Lo Wai site. Conclusion/Proposed Action Based on the joint site inspection, the choked manhole MH1 was not due to works activities. The Contractor had clean up the choked manhole MH1 and no sewage overflow from MH1 was observed. The Contractor was requested to divert the storm water to desilting system prior to discharge while no such discharge can be made until a valid discharge license is granted. The ET will closely inspect the vicinity area during the routine site inspections and provide advice to the Contractor as necessary.	
19&20	CIR-15	17 November 2010 at outfall construction site	Public through EPD	EPD has received a public complaint (EPD ref: EP3/N22/RW/24002-10 and EP3/N22/RW/24006-10) regarding daytime construction noise about derrick barge squeaking and rock breaking at Outfall construction site on 17 November 2010.	Findings/ Observations Drilling, excavation, marine mud dredging, rock breaking, mucking-out process and crane operation were observed during site inspections on 2 and 17 December 2010. The monitoring results measured on 15 November 2010 and 25 November at NSR 9 showed that the measured noise levels complied with the limit level (75 dB(A)) in accordance with the EIAO-TM. As part of the investigation of the noise complaints, the Contractor and the ET conducted additional site inspections and reviewed and audited the current noise mitigation practices and the Contractor's environmental performance on-site. Conclusion / Proposed Action The documented complaints for noise triggered the action level of the noise monitoring. The Contractor had implemented the following on-site noise mitigation measures: Erection of temporary noise insulation sheet at the rim of the spiral ramp construction site; Moveable barriers for rock breaker; Wrapping noise absorptive material at the rock breaker head; Tailor made noise enclosure for drilling rig; Semi-enclosed muck out process at muck hopper; Use of rock splitter (which is a relatively quieter method in contrast to rock breaker); and Noise insulation blanket enclosing the crane engine of derrick barge.	Closed

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					reported in the Complaint Investigation Report submitted on 24 December 2010. The measured noise level after implementation of the noise mitigation measures ranged from 69 to 73 dB(A) to the nearest integer and complied with the limit level in accordance with the EIAO-TM. The results showed that noise mitigation measures were effective. The contractor was advised to review the mitigation measures from time to time near the NSR 9. The ET would closely inspect the area during the routine site inspections and provide advice to the Contractor.	
21	CIR-16	10 January 2011 at outfall construction site	Public through EPD	EPD has received a public complaint (EPD ref: EP3/N22/RW/00484-11) regarding dark smoke emission from derrick barge and construction noise and dust at Outfall construction site on 10 January 2011.	Findings/ Observations 1. Dark Smoke Emission from Derrick Barge Dark smoke emitted from the derrick barge was promptly investigated after the receipt of the complaint. The issue was found specific to the mechanical operation of the barge working at the site at that moment. The derrick barge being complained was then replaced by another barge without the relevant mechanical issue. No further complaint was received since then. 2. Construction Dust Regular 1-hour TSP monitoring, in accordance with EM&A Manual, was carried out by the Environmental Team (ET). The monitoring station concerned is ASR 9, located at the podium level of Greenview Terrace facing the construction site. In January, 1 hour TSP concentration monitoring had been conducted on 4, 10, 14, 20 and 26 January 2011 at Greenview Terrace (ASR). Rock breaking, drilling and excavation were observed during monitoring. No exceedance was recorded. The contractor and the environmental team were also undertaken site investigation at the subject area on 21 January 2011 in response to the complaint. It was confirmed that the air quality mitigation measures as recommended in EIA had been provided by the Contractor. The mitigation measures are as follows: Water spraying surrounding the spiral ramp; Water spraying for rock drilling and rock breaking;	Closed

Complaint No.	Log Ref.	Date/Location	Complainant	Details of Complaint	Investigation / Mitigation Action	Status
					 derrick barge; Water spraying for the exposed surface and the haul road; Water spraying for trucks and vehicles at the site exit. 3. Construction Noise The documented complaints for noise triggered the action level of the noise monitoring. The Contractor had implemented the following on-site noise mitigation measures: Extension of Temporary noise insulation barrier (made of noise blanket) at the rim of the spiral ramp construction site facing Greenview Terrace; Movable noise barriers to surround the rock breaking activities at the spiral ramp where it is in safe ground condition; Tailor made noise enclosure for rock drilling machine; Semi-enclosed muck out process at muck hopper (with noise curtain underneath); Use of temporary noise enclosure for piling work at Castle Peak Road; Noise insulation blanket enclosing the crane engine of derrick barge; Additional noise blanket along the railings of the spiral ramp; and Use of rock splitter (which is a relatively quieter method in contrast to rock breaker). Noise monitoring has been increased to twice per week and the results will be reported in the Complaint Investigation Report to be submitted in mid-February 2011. The measured noise level after implementation of the noise mitigation measures ranged from 71 to 74 dB(A) to the nearest integer and complied with the limit level in accordance with the EIAO-TM. The results showed that noise mitigation measures were effective. The contractor was advised to review the mitigation measures from time to time near the NSR 9. The ET would closely inspect the area during the routine site inspections and provide advice to the Contractor. 	
					Conclusion / Proposed Action 1. Dark Smoke Emission from Derrick Barge Dark smoke emitted from the derrick barge was considered a stand-alone	

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					incident and was specific to the derrick barge being complained. No further complaint was received after the barge was replaced by another. 2. Construction Dust Based on our site inspection and monitoring results, the complaint was considered not justifiable since no action and limit level exceedance on construction dust were identified. Air quality mitigation measures as recommended in EIA were implemented in order to control and minimize the air quality impact and nuisance arising from the construction activities. Nevertheless, the Contractor was reminded to enhance the air quality mitigation measures such as increasing the water spraying frequency and ensure proper functioning of the automatic sprinklers at the Outfall construction site. 3. Construction Noise Noise measurement results between 10 and 28 January 2011 were below the limit level (75 dB(A)) and complied with the noise criterion. The Contractor had implemented various mitigation measures on site to alleviate the construction noise impact. The ET will remind the Contractor to enhance and maintain the normal functioning of the measures continuously to minimize the impact. The Contractor should also closely liaise with the nearby residents and inform the progress of the construction and the implementation of the environmental mitigation measures at the Outfall construction site.	
22	CIR-17	30 June 2011 at Intake-3 construction site	Public through EPD	EPD has received a public complaint (EPD ref: EP3/N22/RW/12759-11) regarding construction dust and daytime construction noise from the Intake-3 construction site on 30 June	1. Findings / Observations Checking with the site log, construction activities conducted at I-3 were breaking / mucking out and rock splitting inside the shaft, curing of planter wall, backfilling at tree pit, slope reinstatement and backfilling at PB wall, monitoring of de-formation monitoring point, and general site cleaning and housekeeping. The Contractor and ET undertook site investigations on the subject area on 8 and 20 July 2011. The following dust and noise mitigation measures were implemented during site investigations: Dust Mitigation Measures (implemented prior to the complaint) All the main haul road was paved;	Closed

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				2011.	 Material transported by a dump truck was covered with impervious sheeting; Exposed soil slope surface near the PB wall was covered by tarpaulin sheets; Hoardings (with 2.4 m high) were provided along the site boundary next to the access road; Regular watering on haul roads by sprinklers was observed; Vehicle speed limit of 5 km per hour was implemented within the construction site; Water spraying for dust suppression of on-going "dusty" activities (essentially including drilling and rock breaking within the shaft of about 16.5 m below ground) was observed; Construction Noise Mitigation Measures (implemented prior to the complaint) Temporary noise barriers (about 4 m high) were erected on the shaft concrete block wall; Quiet plant (rock splitter) was employed for shaft excavation; Noise from generator was screened by a temporary noise barrier; and Breaker heads of rock breaking machine were wrapped with sound insulating materials. 	
					2. <u>Conclusion / Proposed Action</u> As there are no substantial noise sources at I-3 other than the project construction activities, it is considered that the noise complaint is project-related. In accordance with the Event / Action Plan for Construction Noise specified in the EM&A Manual, noise monitoring frequency at the squatters (NSR 6) near I-3 were increased to twice per week (from 11 July 2011 to 30 July 2011) due to this complaint. The measured noise levels (L _{eq, 30 min}) are shown in the following table. The measured noise levels, ranged from 60.0 dB(A) to 68.9 dB(A), are well below the limit level (75 dB(A)) in accordance with the EIAO-TM. During the site investigations on 8 and 20 July 2011, the above noise mitigation measures were continuously implemented. No further noise complaint was received in July 2011. Thus, with the consideration of the noise measurement results	

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					constru	ction noise ise mitiga	e is consid	dered acc	eptable. Th	nitigation measures, the ne Contractor will maintain bove to minimise noise	
					Date	Start Time	End Time	L _{eq} , dB(A)	Limit Level, dB(A)	Major Construction Noise Sources	
					6-Jul-11	11:17	11:47	60.0	75	Crane operation	
					14-Jul-11	16:00	16:30	67.0	75	Drilling and rock breaking	
					15-Jul-11	17:00	17:30	68.9	75	Drilling and rock breaking	
					18-Jul-11	13:30	14:00	65.7	75	Drilling and crane operation	
					20-Jul-11	13:10	13:40	68.1	75	Drilling and rock breaking	
					28-Jul-11	13:35	14:05	64.9	75	Drilling and excavation	
					30-Jul-11	09:10	09:40	63.6	75	Drilling and crane operation	
					Remark: The loca and the	ation of pov utilization ti	wered med me for each	chanical eq n PME may	uipment (PN) not be cons	ME) will change occasionally tant.	
					measur control	es aforem	nentioned have bee	were implement	plemented ented at I-3	on site. Additional dust by the Contractor in early	
					2) Wat	ter hoses de frame c	have bee	en installe ing; and	ed to the dr	stalled for the drilling rig; rilling rig within the tailor- f intermediate platform of	

Complaint No.	Log Ref.	Date/Location	Complainant	Details of Complaint	Investigation / Mitigation Action	Status
					the shaft. The Contractor have continuously applied all the above mentioned dust suppression measures to minimise airborne dust generation, as observed during the site investigation on 20 July 2011. No dust dispersion from the construction site was observed during the site investigations on 8 and 20 July 2011. In addition, no further construction dust complaint is received in July 2011. As such, it is considered that the dust suppression measures implemented on site are adequate to minimise dust nuisance. The Contractor will maintain these measures on site for construction dust control. 3. Follow Up Action(s)	
					For this complaint, the Contractor has implemented adequate mitigation measures for construction dust and noise control. As no further complaint is received in July 2011, it is considered that the complaint is closed. Nevertheless, the ET will continuously review the condition of the site during the routine site inspections, inspect proper functioning of the aforementioned construction dust and noise mitigation measures, and provide advice to the Contractor to be vigilant and tailor mitigation measures in advance of future planned site work activities.	

Signed by Environmental Team Leader: Date:	15 August 2011
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